



NEWSWAVE

NEWS FROM THE U.S. DEPARTMENT OF THE INTERIOR: OCEAN, COASTS AND GREAT LAKES

Winter 2012

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Secretary Salazar discusses wetland restoration efforts in the Everglades.

White House Seeks Public Comment on Priority Actions for Nation's Ocean and Coastal Resources

On January 12, the National Ocean Council released for public comment, the draft National Ocean Policy Implementation Plan, an action plan to address the most pressing challenges facing

See White House page 14

Interior Provides \$20 Million in Grants to Conserve Coastal Wetlands

On January 3, Secretary Salazar announced \$20.5 million in grants to conserve and restore coastal wetlands and their fish and wildlife habitat. The grants will support 24 projects in 13 states and will be awarded and matched by nearly \$21 million in partner contributions from state and local governments, private landowners and conservation groups under the 2012 National Coastal Wetlands Conservation Grant Program.

“Coastal wetlands serve as some of nature’s most productive fish and wildlife habitat while providing storm protection, improved water quality, and abundant recreational opportunities for local communities,” Salazar said. “I am pleased that with these grants we are able

See Coastal Wetlands page 11



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These are the nine regional planning areas for ocean, coastal and Great Lakes resources: 1-The Northeast, 2- Mid-Atlantic, 3-South Atlantic, 4-Caribbean, 5-Gulf of Mexico, 6-West Coast, 7-Great Lakes, 8-Pacific Islands, 9-Alaska/Arctic.

DOI's Coastal and Marine Spatial Planning Teams

Headquarters: Terry Holman (DOI) Ocean and Coastal Office, Randy Bowman (DOI) Ocean and Coastal Office, Alan Thornhill (BOEM), Renee Orr (BOEM), Rodney Cluck (BOEM), Steve Textoris (BOEM), Amardeep Dhanju (BOEM), David Diamond (BOEM), John Haines (USGS), Cliff McCreedy (NPS), Chris Darnell (FWS), Bret Wolfe (FWS)

Regional Contacts:

ALASKA: Lead: Jim Kendall (BOEM), Catherine Coon/Fred King (BOEM), Jeff Mow/Tahzay Jones (NPS), Leslie Holland-Bartels (USGS)

CARIBBEAN: Lead: Sherri Field (NPS), Leo Miranda (FWS), Jess Weaver (USGS)

GREAT LAKES: Lead: Charlie Wooley (FWS), Gary Vequist (NPS), Leon Carl (USGS),

GULF OF MEXICO: Lead: Linda Kelsey (FWS), Cherry Green (NPS), Gary Mowad (FWS), Jess Weaver (USGS), James Sinclair (BOEM), Pasquale (Pat) Roscigno (BOEM)

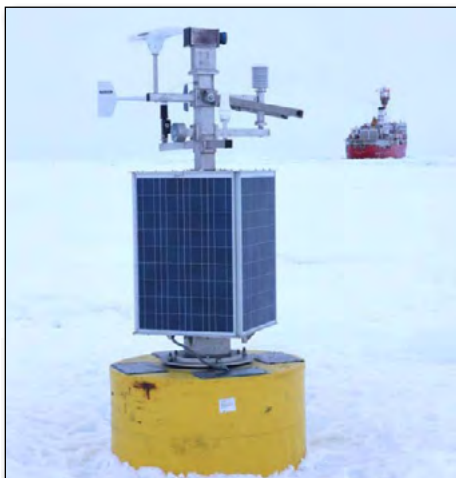
MID-ATLANTIC: Lead: Maureen (Mo) Bornholdt (BOEM), Rick Harris (NPS), Michele Desautels (BOEM), Mary Boatman (BOEM), Dave Russ (USGS), Sherry Morgan (FWS)

NORTHEAST: Lead: Bob LaBelle (BOEM), Maureen (Mo) Bornholdt (BOEM), Rick Harris (NPS), Michele Desautels (BOEM), Mary Boatman BOEM, Dave Russ (USGS), Sherry Morgan (FWS)

PACIFIC ISLANDS: Lead: Richard Hannan (FWS), Ray Sauvajot (NPS), Mike Shulters (USGS), Joan Barminski (BOEM), Sara Gultinan (BOEM)

SOUTH ATLANTIC: Lead: Eric Strom (USGS), Michele Desautels (BOEM), Mary Boatman (BOEM), Rick Huffines (FWS), Catherine (Anna) Toline (NPS)

WEST COAST: Lead: Ellen Aronson (BOEM), Sarah Allen/Ray Sauvajot (NPS), Joan Barminski (BOEM), Sara Gultinan (BOEM), Richard Kearny (FWS), Frank Shipley (USGS)



A researcher from Environment Canada deployed an O-buoy (Ozone-buoy) near 88°N on the ice for long-term air-quality monitoring. This is the farthest north that an O-buoy has been deployed and will provide both air-quality and meteorology data for the duration of its battery life (expected to be about 2 years). You can access this data and hourly webcam images: through the O-buoy web page (<http://obuoy.datatransport.org>, click O-buoy #4). See related article page 7.

Restoring the Elwha River

Support behind the historic dam removal

By Ryan Sloan



Secretary Salazar speaks at a ceremony on the Elwha Dam just before removal began on September 17, 2011. Photograph by Guy Gelfenbaum (USGS).

The goal of restoring the Elwha River to its natural state took a big step forward on September 17, 2011. Work began with the first stages of removing two dams: the Glines Canyon Dam and the Elwha River Dam. No dam removal project of this magnitude has been previously attempted. Put in motion by an Act of Congress in 1992, the Elwha River Restoration Project is aimed at fully restoring the native ecosystem along the Elwha River corridor. The process of dam removal is anticipated to take about 2½ years. Once removed, the Elwha River will flow freely for the first time in nearly a century. The dam removal project is the centerpiece of a multifaceted watershed restoration effort that has taken decades to prepare. A rigorous pre- and post-project monitoring program will provide an immense collection of data and lessons learned for dam removal practitioners to use in future efforts. In addition to the physical removal of the dams,



On left-The Elwha River (mouth in foreground) flows into the Strait of Juan de Fuca from Washington's Olympic Mountains (background). Map showing the locations of the Elwha and Glines Canyon Dams on the Elwha River in northern Washington State along the northwest coast of the US. Image credits: USGS

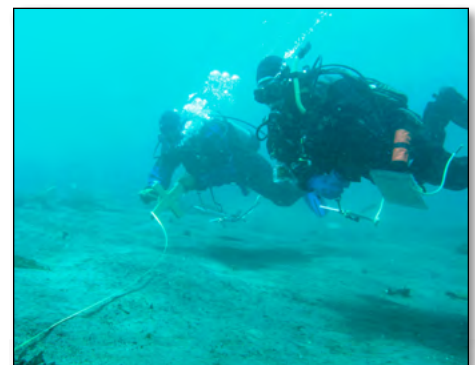
several scientific and technical programs will provide valuable insights to understanding ecosystem effects, will assist in data collection methods, and will help to expedite future dam removal projects.

One of the scientific technical programs is a collaborative project between the United States Geological Survey (USGS), the Environmental Protection Agency (EPA) and the Lower Elwha Klallam Tribe. This study is exploring and cataloging the marine life at the mouth of the Elwha River. Dive teams from both agencies are studying how underwater plant and animal life react and adapt to the dam removal. The study is designed to provide scientists with valuable details of ecosystem restoration. The project will establish and monitor transects throughout the Elwha River nearshore zone, as well as at sites far from the Elwha River mouth. These areas will be monitored during and after dam removal to see how fish, kelp and invertebrate populations respond to changes in deposited and sus-

pending sediments. More than 19 million cubic meters of sediment has accumulated behind both of the Elwha River dams and a portion of this sediment will be carried downstream. USGS studies indicate that high concentrations of sediment will create turbid conditions in the river and coastal waters seasonally for up to five years. New supplies of sediment will flow downriver to the beaches of the river delta and will likely slow or reverse the recent erosion on the beach.

Before the dam removal began, USGS began another project on

See Elwha page 14



USGS scientists conduct submarine mapping activities using SCUBA. Photo credit: USGS

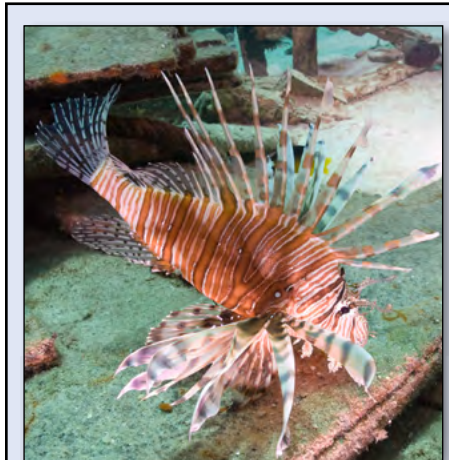
NPS Develops Plan to Address Aquatic Invader

By Cliff McCreedy, NPS

A diver or snorkeler visiting the marine parks of South Florida and the Virgin Islands is likely to encounter a new and beautiful occupant of the coral reef adorned with red stripes and long, quill-like fins. Yet despite its graceful and enchanting appearance, the lionfish (*Pteriois volitans*) is a dangerous, uninvited guest in our Atlantic, Gulf of Mexico and Caribbean parks. Native to the western Pacific and Indian Oceans, lionfish were not found in North America until recently. Unfortunately, like many other exotic pet and aquarium species, the lionfish found its way into the marine environment because of a release from an aquarium, probably in South Florida in the early 1980s. The consequences of its introduction are potentially severe, including unacceptable impacts to the resources and values of parks, as well as to visitor safety and experience.

Lionfish are voracious predators

capable of removing a tremendous amount of forage fish across a wide range of native fish species, as well as preying upon invertebrates. They can reduce native species biomass and diversity and actively



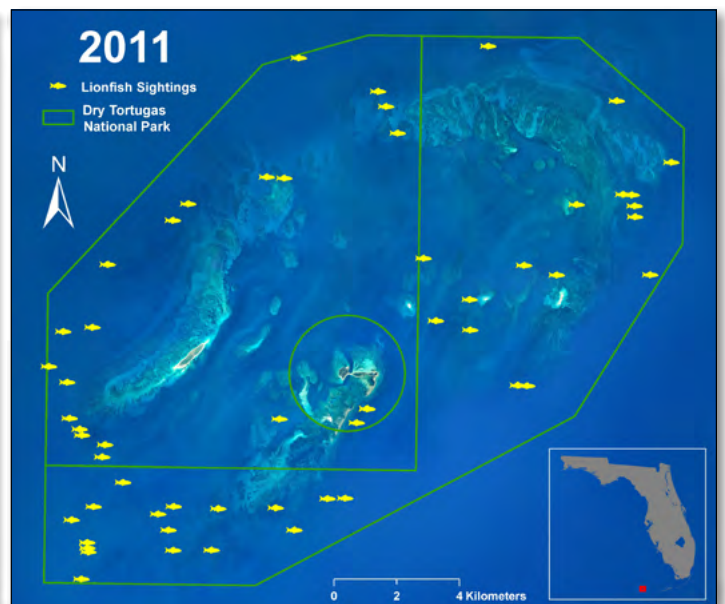
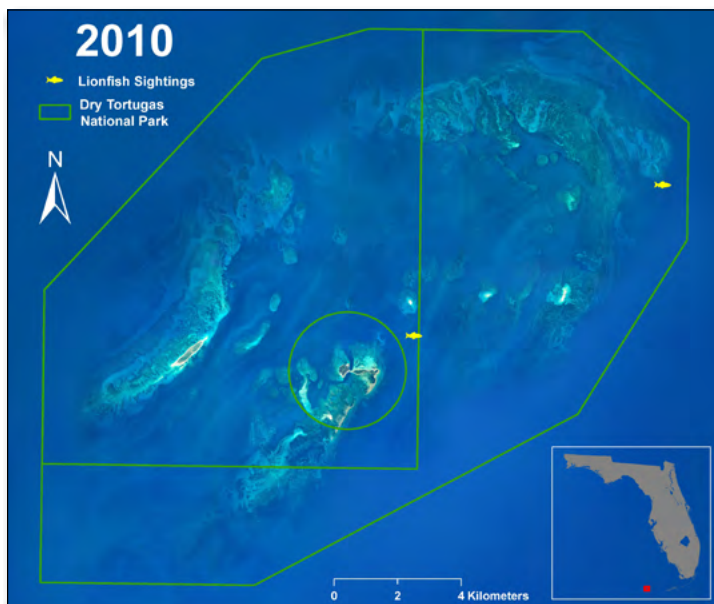
The lionfish is currently the only known marine invasive fish to have established itself throughout the Caribbean and the coastal waters of the southeastern United States. Management and control may require novel approaches and will require close coordination across state, federal and international boundaries.



National Park Service diver captures a lionfish at Biscayne National Park. Photo credit: NPS

compete with native fish for food. Lionfish also threaten ecologically important herbivorous fish species that maintain optimal conditions for coral recruitment and growth. These impacts will likely exacerbate the stressors of pollution, fishing, and climate change which already undermine the ecological integrity of coral reefs and marine communities. In addition to diminishing visitor

See Invader page 12



Lionfish sightings increased exponentially in the Dry Tortugas National Park between 2010 and 2011. Yellow fish symbols indicate where lionfish were observed in the Park area during visual census dives conducted by multiple agencies in 2010 and 2011. Image credit: Judd Patterson, National Park Service.

USGS and USFWS Conduct Annual Manatee Health Assessments in Florida



On November 9 and 10, 2011, as part of the 2011-2012 winter health assessments, eight manatees, including a large cow and her male calf, were captured using nets. Lori Caramanian, DOI Deputy Assistant Secretary for Water and Science, participated along with USGS scientists, USFWS staff, biologists from the Florida Fish and Wildlife Conservation Commission, veterinarians, researchers, and students from the University of Florida and several other universities. The team collected samples and biological data. Additional manatee captures took place in December 2011 and January 2012 that resulted in a total of 25 manatee health assessments for this winter season.

USGS staff included Bob Bonde, Cathy Beck, Maggie Hunter, Jim Reid, Susan Butler, Gaia Meigs-Friend, Jonathan Saunders, Donna Killian, Rachel Pawlitz, and Ken Rice. USFWS staff included Deborah Rocque and Michael Lusk and staff of the Crystal River National Wildlife Refuge.

For more information see *Surfing Bison* feature this issue or visit: <http://fl.biology.usgs.gov/Manatees/manatees.html>



USGS Director Marcia McNutt (far left) and Interior's Deputy Assistant Secretary for Water and Science, Lori Caramanian (far right), presented the award to the podcast production team (left to right) of Betsy Boynton, Matthew Cimitile and Ann Tihansky.



USGS Coastal and Marine Geology Podcast Series Wins 2011 Shoemaker Award

By Matthew Cimitile

The U.S. Geological Survey (USGS) Office of Communications and Outreach awarded the Coastal and Marine Geology Podcast Series the 2011 Shoemaker Award in the Audio/Visual Product category.

The Shoemaker Awards recognize extraordinary examples of communicating complex scientific concepts and discoveries that capture the interest and imagination of the American public or increase understanding about USGS's scientific mission.

The podcast series highlights coastal and marine science research topics such as measuring and forecasting the impacts of extreme storms on coastal environments, understanding the chemistry of ocean acidification and the effects of African dust on coral-reef health. The team was recognized at the annual USGS Awards Ceremony held October 25, 2011, at the USGS National Center in Reston.

View podcasts: <http://coastal.er.usgs.gov/podcast/>



Partnerships Improve Understanding of Sea-Level Rise Effects in California

Excerpted from: http://www.fws.gov/refuges/RefugeUpdate/pdfs/refUp_NovDec_2011.pdf

By Ryan Sloan

Partnerships between the USFWS, USGS, NOAA's Tijuana River National Estuarine Research Reserve (NERR), and the California and North Pacific Landscape Conservation Cooperatives (LCC's) are teaming up to redefine sea-level rise data on the Nation's West Coast. The sea-level rise modeling project uses points that span roughly 800 miles along the Pacific Coast—from the northern Humboldt Bay National Wildlife Refuge to the southern Tijuana Slough Refuge, with San Pablo, Seal Beach and San Diego Bay Refuges in between. The project is designed to foster "a bottom-up approach" to evaluate local sea-level rise effects at several sites along the coastline. Through the development of high-resolution digital elevation models (DEMs), combined with monitoring, inventorying, and analysis of local ecosystems, the local data will be applied to the larger landscape level. By sharing data, the project will add previously unknown details and set benchmarks. San Diego Bay Refuge Manager Andy Yuen, said the project is "putting in permanent benchmarks, so we'll be able to precisely measure sea-level rise" for years to come. Pacific Southwest Region Refuge System Inventory and Monitoring Specialist Giselle Block added that the project's data and findings will, "support the needs of refuges relative to sea-



Above- Aerial view of the intricate marsh coastline of Humboldt Bay National Wildlife Refuge in northern California. Photo Credit: Tupper Ansel Blake, Humboldt Bay National Wildlife Refuge

At right- To the endangered California least tern, which nests on beaches at San Diego Bay National Wildlife Refuge, minor sea-level rise could mean major habitat disruption. (Mark Pavelka, USFWS)



level rise, specifically subjects such as adaptation planning and climate monitoring" and will inform future refuge management decisions. LCCs facilitate collaboration across larger spatial scales. Block said, "we were able to work at sites that span the Pacific Coast using a consistent set of methods and an analytical approach." Without the LCCs, "it is unlikely that we would have obtained funding to conduct work at such a broad spatial scale." That consistency will provide refuge managers with information that is relevant to their immediate locale but is also applicable at the regional landscape level. It will permit valid ecosystem com-

parisons up and down California. "By working with the LCCs," said Block, "we are able to examine tidal marsh ecosystems along the entire coast, allowing us to identify major similarities and differences in elevation, plant communities and vulnerability to sea-level rise and extreme flooding events."

This kind of information is crucial to Refuge Managers like Yuen, because many species—including the endangered California least tern, the endangered light-footed clapper rail and the threatened western snowy plover—live and nest on beaches that are inches to feet above sea level.

BOEM's Science Day

Cultivating Interagency Research Partnerships and Collaboration

By Marjorie Weisskohl, BOEM

Scientists from the Bureau of Ocean Energy Management's Environmental Studies Program (BOEM-ESP) showcased their research at a BOEM Science Day event December 13, welcoming members of the federal National Oceanographic Partnership Program (NOPP) to a day of scientific briefings focused on Applied Science for Informed Decisions on Ocean Energy. The program was held at the Consortium for Ocean Leadership, a nonprofit organization based in Washington, DC, that represents 97 of the leading public and private ocean research and education institutions, aquaria and industry with the mission to advance research, education and sound ocean policy. In his opening remarks, Rodney Cluck, Chief of BOEM's Division of Environmental Sciences, said, "We have the responsibility to oversee 1.7 billion acres on the U.S. OCS and a \$35 million environmental science budget – amounting to two cents per acre – and no ships of our own. Partnerships are critical to helping BOEM make decisions with the best information available."

Cluck is also co-chair of the Interagency Working Group on Ocean Partnerships, and emphasized the importance of working together and across organizations. "Bringing people together from various federal agencies to discuss science needs is critical, and partnerships are really the only way we can achieve a lot of these goals," Cluck said. Creating opportunities to collaborate on future ocean science enhances BOEM's ability to manage exploration and development of the nation's offshore energy and mineral resources. In fact, these partnerships complement the environmental research required by legislation governing BOEM's mission.

"Because our program relies on applied science, we actually decide what the research projects are going to look like because we know how they will be used in the decision-making or the decision-informing documents," said Alan D. Thornhill, Ph.D., BOEM's Chief Environmental Officer.

During the day-long event, scientists from BOEM's ESP presented a diverse program of science in the context of ocean energy-related activities such as oil and gas exploration and drilling, site and design



The flyer for BOEM's Environmental Studies Program Science Day features a blue background with a silhouette of a whale breaching the water. The text is white and yellow. At the top left is the BOEM logo. The title 'Environmental Studies Program Science Day' is in yellow. The date and time 'December 13, 2011 9:30 am – 3:00 pm' are in white. The tagline 'Applied Science for Informed Decisions on Ocean Energy' is in white. The word 'AGENDA' is in white. The schedule includes: 9:30 AM View Posters and Meet the Scientists; 10:00 – 12:00 Opening Remarks by Dr. Rodney Cluck, Chief, Division of Environmental Sciences; Dr. Alan Thornhill, Chief Environmental Officer; Benthic Biology: Mr. Greg Boland; Birds and Fish: Dr. Mike Rasser; Marine Mammals: Dr. Jim Price; LUNCH – On your own; 1:00 – 3:00 Social Science: Dr. John Primo; Marine Archaeology: Dr. James Moore; Physical Oceanography: Dr. Guillermo Auad; Atmospheric Sciences: Dr. Ron Lai; Oil Spill Research and Modeling: Dr. Walter Johnson. At the bottom, it says 'Hosted at the Consortium for Ocean Leadership National Oceanographic Partnership Program Office 1201 New York Ave NW, 4th Floor Washington, DC 20005'. Contact information for Jennifer Ewald (703-787-1608) is provided. The BOEM logo is at the bottom right. Photo Credit: James Sinclair (BOEM).

The flyer and program agenda for BOEM's Environmental Science Program's Science Day, December 13, 2011.

of renewable wind platforms and oil spill research and modeling. Presentations also highlighted work in biological, physical and social science aspects of oceanography as well as important partnerships in these BOEM studies (see program flyer above). Two presentations explored offshore energy development in the context of social sciences and anthropology. Further discussions highlighted how research is used in National Environmental Policy Act (NEPA) docu-

See Science Day page 10



Dr. Rodney Cluck, Chief of BOEM's Division of Environmental Sciences addresses participants at BOEM Science Day.

Cool Arctic Science

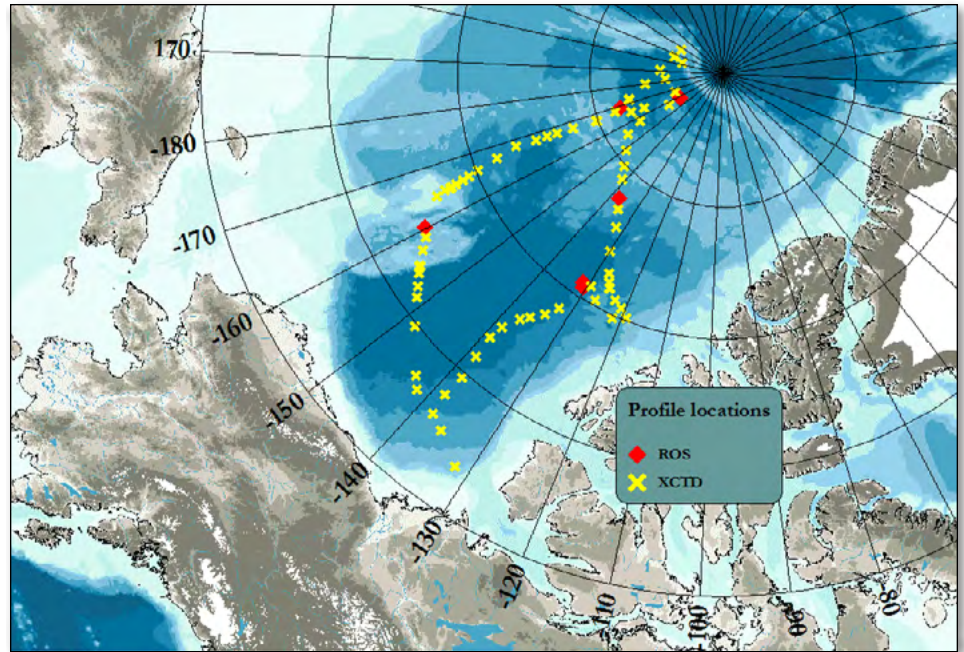
2011 Cruise Expands Knowledge Base and Technological Expertise in the Arctic Ocean

Kugluktuk to Cambridge Bay, Nunavut

By Deborah Hutchinson

The fourth and last currently planned joint U.S. – Canadian two-icebreaker expedition in the Arctic took place for 6 weeks in August and September, 2011. The Canadian Coast Guard ship *Louis S. St-Laurent* (*Louis*) worked in tandem with the U.S. Coast Guard Cutter *Healy* (*Healy*) to map remote and ice-covered regions of the Arctic Ocean. Both the U.S. and Canada are defining their respective extended continental shelf boundaries using criteria set forth in the Convention on the Law of the Sea.

The international team was led by chief scientists Dr. Larry Mayer (*Healy*, University of New Hampshire) and Dr. David Mosher (*Louis*, Geological Survey of Canada). They collaboratively collected multichannel seismic reflection (*Louis*) and multibeam bathymetric data (*Healy*) along some of the most poorly mapped ridges and basins of the Arctic Ocean (see map). Approximately 1,400 km of multichannel seismic reflection data were collected. This new information, combined with surveys since the work began in 2007 combine for a total of more than 15,000 km of high-quality multichannel seismic reflection data, many thousands of kilometers of multibeam bathymetric data, and more than 120 sonobuoy refraction profiles. The 2011 cruise also marked a few firsts for operating new technology in parts of the Arctic Ocean where surface ships have rarely been



Map of the Arctic Ocean showing locations where physical and geochemical measurements were taken during the *Louis* 2011 cruise. ROS (red diamonds) are full conductivity, temperature and depth (CTD) rosettes. Source: J. Eert, 2011, Cruise Report.

able to operate. The 2011 cruise began with a 1,200 km multichannel seismic transect north from the Chukchi Plateau across Nautilus Basin, Alpha Ridge, Makarov Basin and Lomonosov Ridge. The two ships alternated as ice breakers for one another depending on whether they were collecting multichannel seismic data or multibeam bathymetric data.

The multichannel seismic reflection profile acquired from the Chukchi Plateau north to Lomonosov Ridge is the first continuous seismic profile collected in this part of the Arctic Ocean, and provides some of the first images that cross the entirety of Alpha Ridge and Markarov Basin. Images show clear sedimentary records and basement morphology. The profile provides information for understanding geologic relations among the various ridges and basins that will be useful for applying the criteria of Article 76 of the Convention on the Law of the Sea. These new profiles also will

be tied to other information such as pre-existing geologic samples, ACEX drill holes, and multichannel seismic data to help confirm interpretations. Another success was the 21-hour test deployment of an Autonomous Underwater Vehicle (AUV) to acquire multi-beam bathymetry under the ice. During the test, the AUV acquired approximately 110 km of EM 2000 Kongsberg multibeam echosounder data on the Canadian margin in water depths up to 3400 m from about 100 m above the seafloor. This first successful deployment and recovery of an AUV in 100 percent ice-cover demonstrates the utility of this technology for areas of the seafloor that are difficult or impossible to access using traditional surface ships.

Additional scientific activities took place during the cruise. These included: deployment of an aerial unmanned vehicle (UAV), collection of chemical and physical oceanography samples, gravity

See Arctic page 13

News from the Regions

Across the Nation, the Interior Department provides leadership and coordination for ocean, coastal and great lakes activities. Federal partners support state-led regional ocean partnerships to address common concerns within the regions.

Interior Contacts for Regional Ocean Partnerships

The Regional Ocean partnerships (ROPs) are state-led collaborations designed to enhance coordination between the States. Each ROP has a Federal Working Group that supports its efforts. To facilitate DOI's support of the ROPs, we have identified leads to coordinate our Bureaus' input into these partnerships. This section of the NewsWave is for updates from these regions and the partnerships. This issue, we are highlighting DOI leads and members of the Regional Ocean Partnerships. We will continue to provide regular updates of regional activities in subsequent issues.

Interior Regional Contacts

Northeast

(Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut)

Northeast Regional Ocean Council (NROC), <http://collaborate.csc.noaa.gov/nroc/default.aspx>

NROC-ROP-Lead: Bob LaBelle, (BOEM), Michele Desautels, (BOEM), Dave Russ (USGS), Walter Barnhardt (USGS), Dennis Reidenbach (NPS), Susan Russell-Robinson (USGS), Sherry Morgan (FWS)

Gulf of Mexico

(Alabama, Florida, Louisiana, Mississippi, Texas)

Gulf of Mexico Alliance (GOMA) <http://www.gulfofmexicoalliance.org/index.php>

GOMA-ROP-Lead: Linda Kelsey (FWS), Mickey Plunkett (USGS), Sherri Fields (NPS), Cherry Green (NPS) Pasquale (Pat) Roscigno (BOEM), James Sinclair (BOEM), Melanie Damour (BOEM)

Great Lakes

(Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin)

Great Lakes Restoration Initiative (GLRI) <http://www.epa.gov/glnpo/glri/>

GLRI-ROP-Lead: TBD, Phyllis Ellin (NPS), Norm Granneman (USGS), Leon Carl-(USGS), Charles Wooley (FWS)

West Coast

(California, Washington and Oregon)
ROP-Governors Alliance (WCGA) <http://westcoastoceans.gov/>

WCGA-ROP-Lead: Joan Barminski (BOEM), Sara Gultinan (BOEM), Randolph See (USGS), Nancy Lee (USGS)

Mid-Atlantic

(Maryland, New York, New Jersey, Delaware, Virginia)

Mid-Atlantic Regional Ocean Council (MARCO) <http://www.midatlanticocean.org/>

MARCO-ROP-Lead: Maureen Bornholdt (BOEM), Charlie Roman (NPS), Michele Desautels (BOEM)

South Atlantic

(North Carolina, South Carolina, Georgia, Florida)

Southeast Atlantic Alliance (SAA) <http://www.southatlanticalliance.org/work.htm>

SAA-ROP-Lead: Eric Strom (USGS), Sherri Fields (NPS), Catherine (Anna) Toline (NPS)





Participants in the Environmental Sciences Day included BOEM employees (l to r): Amardeep Dhanju, John Primo, Guillermo Auad, James Moore, Brad Blythe, Gregory Boland, Jennifer Ewald, Ron Lai, Rodney Cluck, Alan Thornhill, James Price, Walter Johnson, and Michael Rasser.

Science Day continued from page 7

ments to establish effective buffer zones to protect sensitive habitat or archaeological sites, set limitations on noise levels during construction of oil and gas platforms or future wind turbines, or meet other requirements that protect human, marine and natural resources in the coastal region. Attendees represented agencies that are part of the National Oceanographic Partnership Program, or NOPP, a collaboration of federal agencies that provides leadership and coordination of national oceanographic research and education initiatives. These include: the U.S. Arctic Research Commission, Department of Energy, Fish and Wildlife Service, U.S. Geological Survey, Department of the Navy, National Oceanic and Atmospheric Administration, and the Smithsonian Institution. BOEM's Science Day provided a day of interaction among its members to learn about other agency research needs and to discuss how best to leverage financial resources, personnel, ships and equipment to meet common goals. Jennifer Ewald emphasized how vital the NOPP relationships are to developing an effective broad federal collaborative framework. The National Ocean Policy Implementation Plan (see related article this issue) calls for scientifically informed use and management of ocean and coastal resources. BOEM Science Day is one way Interior contributes to this collaborative effort. Learn more: <http://www.boem.gov/studies/> Presentations from Science Day are available at: <http://www.nopp.org/2012/> Click on the 'BOEM Science Day Presentations' link.



Top, Greg Boland (BOEM) shows Ann Tihansky of the Interior Department's Oceans, Coasts and Great Lakes Activities team, a specimen of the giant deepsea isopod, *Bathynomus giganteus*.

Bottom, Bill Moser (at left), Invertebrate Zoology Collection Specialist and Cheryl Bright, Invertebrate Zoology Collection Manager, both of the Smithsonian Institution, discuss Gulf of Mexico survey program specimens with Greg Boland. Since 1979, significant specimens from 23 different BOEM-funded research studies have been deposited in the Smithsonian's Department of Invertebrate Zoology Collections where they remain available for study. The large numbers of specimens, broad regional and chronological coverage and the extensive accompanying datasets make these collections invaluable for comparative studies.



Coastal Wetlands continued from page 1

to help our state partners implement some of their high-priority projects that support both conservation and recreation along their coasts.”

The grants will be used to acquire, restore or enhance coastal wetlands and adjacent uplands to provide long-term conservation benefits to fish, wildlife and their habitat. States receiving funds include Alaska, California, Delaware, Florida, Georgia, Hawaii, Maine, Maryland, Massachusetts, New Jersey, Texas, Virginia and Washington.

The National Coastal Wetlands Conservation Grant Program is administered by the U.S. Fish and Wildlife Service and funded under provisions of the 1990 Coastal Wetlands Planning, Protection and Restoration Act. Funding is provided by Sport Fish Restoration Act revenue – money generated from an excise tax on fishing equipment, motorboat and small engine fuels.

The grants support President Obama’s America’s Great Out-

doors initiative for conservation, recreation and reconnecting people to the outdoors. A recent 50-State Report lists more than 100 of the country’s most promising projects – a result of 50 meetings with governors and stakeholders held by Salazar and other senior Interior officials to solicit ideas on how to best implement AGO in their states – including two projects that will be supported by these grants. These two projects are:

Bird Island Cove Estuarine Habitat Restoration Project

– The Texas Parks and Wildlife Department was awarded a \$1 million grant to protect and restore coastal and estuarine barrier island habitats in West Galveston Bay along the north shoreline of Galveston Island, Texas. The project will restore approximately 70 acres of estuarine marsh complex, which will provide additional protection to the existing intertidal marsh that has been degraded by the effects of relative sea level rise.

Thousand Acre Marsh Wetland Protection Project – The Dela-

ware Division of Fish and Wildlife and Delaware’s Open Space Program will acquire the 194-acre Yardley-Dale property, part of the Thousand Acre Marsh along the Delaware River in New Castle County. The Thousand Acre Marsh is a haven for breeding and wintering waterfowl, waterbirds, muskrat, and fish. The marsh also provides critical wintering habitat for bald eagles. Delaware Fish and Wildlife plans to install a platform for bird watching with interpretive signage, blinds for duck hunters, and a trail system to provide public access.

Including the 2012 grants, the Service has awarded nearly \$300 million to coastal states and territories since the program began in 1992. When the 2012 projects are complete, about 293,000 acres of habitat will have been protected, restored or enhanced as a direct result of these grants.

A complete list of projects funded by the 2012 grant program can be found online at:

<http://www.fws.gov/coastal/CoastalGrants/index.html>



Coastal areas comprise less than 10 percent of the nation’s land area yet support a significant number of wildlife species, including 75 percent of migratory birds, nearly 80 percent of fish and shellfish and about half of all threatened and endangered species.

Invader continued from page 4

experience, lionfish pose a threat of injury and illness to visitors from stings caused by venomous spines. Efforts to monitor and control lionfish have increased as lionfish have expanded their range across the South Atlantic, Caribbean and Gulf of Mexico. Biscayne National Park established a lionfish monitoring program in 2008. The first lionfish appeared in Biscayne NP in 2009. Since then over 1,000 have been detected and removed. Lionfish also have been detected at Buck Island Reef and Virgin Islands National Monuments, and at Virgin Islands, Dry Tortugas, and Everglades National Parks. Gulf Islands and Canaveral National Seashores and other National Parks are threatened.

The National Park Service held a multi-disciplinary workshop in Miami in September 2011, to respond to the threats from invasive lionfish and to develop a service-wide invasive species response plan. Resource managers, Superintendents, interpreters and risk managers from affected parks, Washington D.C. and regional NPS offices attended along with external experts in lionfish biology and control. While participants agreed that eradication is not possible,

Proposed lionfish actions are:

- evaluate and prioritize park areas for lionfish control, and set numeric control targets for reducing lionfish populations;
- detect and report the presence of lionfish, and utilize available tools and internal and external resources for their removal;
- monitor lionfish populations and native species, consider potential ecological impacts, and apply adaptive management approaches;
- interpret the lionfish invasion, communicate the impacts, and create an active public to engage in park stewardship and invasive species response;
- reduce risks and ensure safety of visitors, park staff and volunteers by utilizing Operational Leadership and NPS safety guidance and procedures, communicating risk, providing training, and by following safe lionfish handling practices.



National Park Service intern Amanda Lawrence holds up the largest lionfish captured to date as of November 30, 2011. Photo credit: Kara Wall, Intern NPS

a plan emerged with practical approaches to guide Parks in policy and responses that address specific biogeography and local conditions. Resource managers and experts outside NPS are already reviewing the NPS plan for use in other domestic and international efforts. The report, *Lionfish Response Plan: A Systematic Approach to Managing Impacts from the Lionfish, an Invasive Species, in Units of the National Park System* is available at: www.nature.nps.gov/water/oceans.cfm and www.nature.nps.gov/publications/nrpm



Lionfish like to hide in ledges, caves and overhanging areas. Above, a NPS diver spots a lionfish hiding in a man-made structure at Biscayne National Park.

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measurements and long-term deployment of meteorological buoys.

The unmanned aerial vehicle (UAV) flew nine Arctic missions from both the ship (Louis) and from the ice for scientific purposes. The UAV-mounted cameras were used to image ice conditions and search for marine mammals.

Physical and chemical oceanography measurements were taken to further scientific understanding of water masses, ocean circulation, biogeochemical cycles, and indicators of climate change in the Arctic Ocean with various techniques that measured properties of the top 1,000 meters of the water column, and drift bottles for ocean circulation studies. As a continuation of ocean acidification studies that began in 2010, USGS also collected more than 500 discrete water samples, and approximately 9000 underway water samples to provide some of the first-ever observations of sea-water carbon dioxide and pH in these remote parts of Earth. Gravity data were collected using vessels and the same type of equipment. The simultaneous acquisition of gravity with three meters on two vessels is unusual and offers the opportunity to compare methods and including the effect of ice breaking on data quality. In addition to normal ice observing, ice monitoring, and ice forecasting during the cruise by the Canadian Ice Service and U.S. National Ice Center, several buoys for long-term meteorological and physical oceanography observations were deployed. These included buoys deployed on the ice for the Surface Velocity Program, the Upper Temperature of the Ocean program, and the U.S. Interagency Arctic

Buoy Program. A researcher from Environment Canada deployed an O-buoy (Ozone-buoy) near 88°N on the ice for long-term air-quality monitoring. This is the farthest north that an O-buoy has been deployed and will provide both air-quality and meteorology data for the duration of its battery life (expected to be about two years). Access this data and hourly web-cam images: through the O-buoy web page (<http://obuoy.data-transport.org>, click O-buoy #4).

BOEM Discusses Five Year Draft Leasing Program in the Arctic at Public Seminar

On January 26, Shoshana Lew, Senior Advisor at BOEM, participated in a seminar coordinated by the Environmental Law Institute at their office in Washington, DC. Lew joined other panelists Eleanor Huffines of the Pew Environment Group, Jessica Lefevre of the Alaska Eskimo Whaling Commission and Stacy Linden of the American Petroleum Institute to discuss the draft leasing program and aspects of science needs, impacts of oil and gas activity, and how the leasing program aligns with other ongoing ocean management processes such as coastal and marine spatial planning. The event was free to the public. Learn more: <http://www.eli.org/Seminars/event.cfm?eventid=674>

The draft five-year leasing program for oil and gas on the outer continental shelf is open for public comment through Feb. 8, 2012.

<http://www.boem.gov/5-Year/2012-2017/>



BOEMRE Awards \$5.6 Million for Arctic Environmental Study-- Research to Focus on Hanna Shoal Ecosystem in Alaska's Chukchi Sea

September 20, 2011, the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), signed a cooperative agreement with the University of Texas at Austin and a team of Arctic researchers for a comprehensive study of the Hanna Shoal ecosystem in the Chukchi Sea off Alaska's northwest coast. BOEMRE Director Michael R. Bromwich said, "This five-year study will greatly contribute to the body of knowledge regarding the biological diversity of the Hanna Shoal area and will provide additional valuable information about the ecosystem that supports marine life."

<http://www.boemre.gov/ooc/press/2011/press0920.htm>

White House continued from page 1

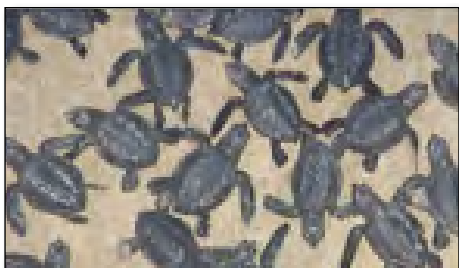
ocean, coastal, and Great Lakes resources. Marking an important step in implementing the Nation's first comprehensive ocean policy, the draft Implementation Plan details more than 50 actions the Federal Government will take to improve the health of the ocean, coasts, and Great Lakes.

As demands on oceans continue to grow, the National Ocean Policy brings common-sense collaboration to the management of marine resources and economies. It will help protect ocean resources to allow future economic growth and ensure Americans continue to benefit from vital uses of the ocean for commerce, recreation, national security and other activities essential to our economy and quality of life.

The actions outlined in the Implementation Strategy reflect ideas and input from extensive public and stakeholder engagement during two previous public comment periods, numerous listening sessions, and face to face meetings around the country. Interior is a key member of the National Ocean Council and plays a significant role with its NOC colleagues on a number of actions.

Visit: www.whitehouse.gov/oceans to view the complete draft Implementation Plan; and submit comments.

The draft will be available for public comments through **February 27, 2012**.



Elwha continued from page 3

August 26, 2011 conducting its final beach erosion survey of the Elwha River delta. The survey is part of an ongoing assessment of how damming the river has affected the ecosystem. Historical photographs and topographic-survey data document severe beach erosion, corroborated by 7 years of USGS beach surveys in collaboration with the Lower Elwha Klallam Tribe and the Washington State Department of Ecology.

The USGS will continue these surveys to gain valuable information about how the beach responds to the restored sediment supply. Such studies are important to evaluating the effectiveness of coastal restoration efforts and contribute significantly to the general science of dam removal. It is expected that ecosystem function and productivity will be regenerated and a wide range of benefits for a healthy watershed will emerge over time.

Learn more: <http://usgs.gov/elwha/> and <http://www.nps.gov/olym/naturescience/elwha-ecosystem-restoration.htm>; and <http://www.elwhainfo.org/elwha-river-watershed/dam-removal>

See also: USGS Fact Sheet 2011-3097, <http://pubs.usgs.gov/fs/2011/3097/>

<http://www.usgs.gov/newsroom/article.asp?ID=2872>

Recent USGS Soundwaves articles: <http://soundwaves.usgs.gov/2011/11/>

<http://soundwaves.usgs.gov/2011/10/fieldwork3.html>

<http://soundwaves.usgs.gov/2011/10/pubs.html>

Watch time-lapse and animated video of dam removal:

<http://www.youtube.com/watch?v=BdBjJ-ikS3M>, <http://www.youtube.com/watch?v=mQusj6tD97w&feature=related>



Heather Baron, Oregon State University, uses a personal watercraft equipped with a Global Positioning System (GPS), a computer, and single-beam echosounder to map seafloor depths. Photo credit: Andrew Stevens

Winter Manatee Health Assessments

<http://fl.biology.usgs.gov/Manatees/manatees.html>

<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=A007>

<http://soundwaves.usgs.gov/2009/03/fieldwork2.html>

The Surfing Bison is a regular feature that explores Interior's Coastal, Ocean and Great Lakes topics found on the internet.

The Surfing Bison



By Ann Tihansky and Rachel Pawlitz



The Florida manatee (*Trichechus manatus latirostris*) shown at left, is a subspecies of the West Indian manatee, a marine mammal adapted to tropical and subtropical regions. Monitoring manatee health is required under the Endangered Species Act and the Marine Mammal Act because of the animal's endangered status.

Much of the offshore region along the northwest Florida coast is ideal manatee habitat during most of the year, but during the winter, offshore water temperatures often go below optimal conditions for manatee survival. The constant flow of warmer ground water discharging from springs in this coastal region provides important winter refuge areas for manatees.

Many manatees depend on this spring flow and return to specific springs regularly. So each winter, USGS scientists, USFWS staff, biologists from the Florida Fish and Wildlife Conservation Commission, veterinarians, researchers, and students participate collaboratively in annual manatee health assessments in Crystal River, Florida. When the same individual manatee is caught repeatedly, scientists can track its health over time, much like giving it an annual physical checkup. Repeat catches provide data on vital signs and yield samples of tears, DNA, blood, urine, and feces for laboratory analysis. They also provide an opportunity to collect visual data on manatees, using such unique marks as boat scars to identify individuals. These data are incorporated into a large photo ID database used to research manatee life histories, migration patterns, and population dynamics.



Pulling an aquatic mammal that weighs more than half a ton out of the water is a carefully choreographed operation requiring teamwork and experience. The annual assessments, are large group efforts designed to examine as many manatees as possible over a short timeframe, and so small beaches are used as examining tables. The beaches are cleared of rocks and hard objects, and commonly a rug is placed over the sand to minimize any injury and make the manatee as comfortable as possible. The beaches are exposed only at low tide, creating a short window of time for the health assessments.