



NEWSWAVE

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

IN THIS EDITION:

Spring 2013

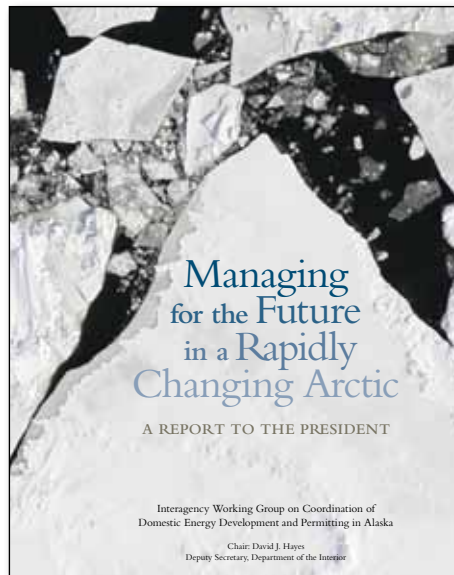
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Implementing the National Ocean Policy Secretary Jewell Dives In

By Liza Johnson, DOI

Interior’s new Secretary, Sally Jewell, has embraced the newly released final implementation plan for the President’s National Ocean Policy for the Stewardship of the Ocean, Our Coasts, and the Great Lakes. “As the new Secretary for one of the federal departments most involved in implementing President Obama’s National Ocean Policy, I look forward to working with the National Ocean Council to build on its collaborative accom-

See Action Plan page 23



As part of the Administration’s Arctic Strategy, Interior played a leadership role in developing the new report highlighting the need for a coordinated approach in the Arctic. Report cover image credit: NOAA



Secretary Jewell was sworn in on April 12, 2013. The National Ocean Policy Implementation Plan was released on April 16. Photo credit: Tami Heilemann, DOI

Managing Resources in a Rapidly Changing Arctic

New Report Part of White House Strategy

By Joel Clement and Randal Bowman, DOI

The Arctic is warming faster than any other region on Earth, bringing dramatic reductions in sea-ice extent, altered weather, and thawing permafrost. Implications of these changes include rapid coastal erosion threatening villages and coastal facilities, loss of wildlife habitat, ecosystem instability, and unpredictable impacts on subsistence activities and critical social needs.

Increased human activity in this environmentally-sensitive region

See Arctic page 9

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Visit us online: <http://www.doi.gov/pmb/ocean/index.cfm>

This issue of NEWSWAVE features stories that illustrate the broad scope of Interior's stewardship mission for our ocean, coastal and Great Lakes resources.

Interior has a major role in implementing both the President's National Ocean Policy and the Arctic Strategic Plan. From the newly designated San Juan Islands Monument to the 'Rigs to Reefs' program, Interior's ocean and coastal activities are designed to protect valuable resources while providing benefits to all Americans.

Interior works in partnerships at regional and local levels to protect endangered species and their habitats, address threats from invasive species, and further adaptive management capabilities by delivering data, tools and maps to inform decisions and create resiliency across the nation.

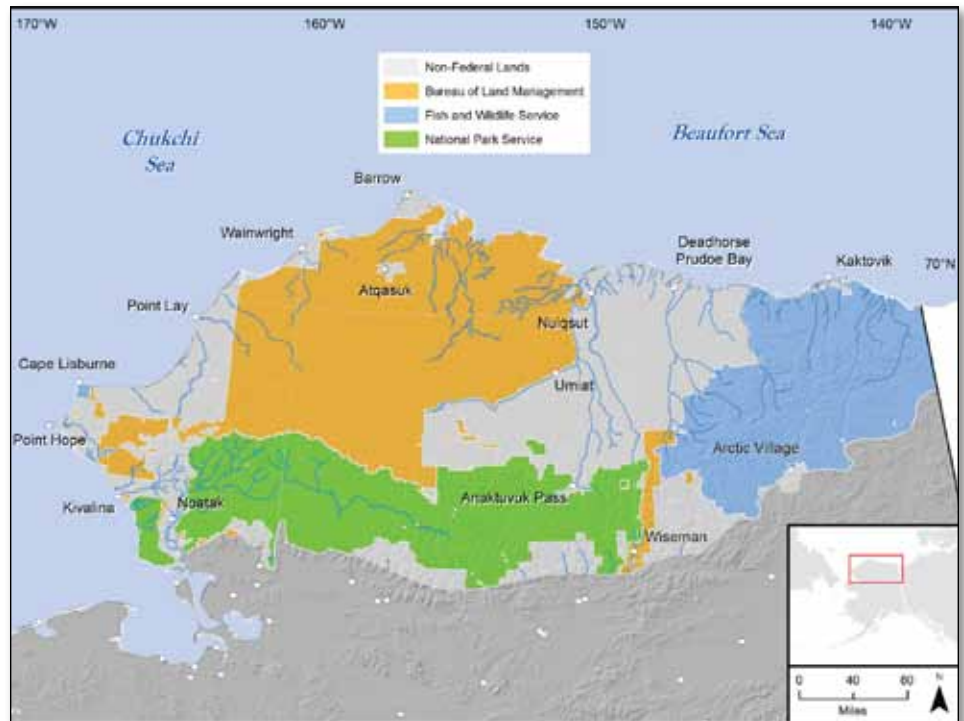


June 4-6, 2013
held at Washington,
D.C.'s NEWSEUM
<http://nmsfocean.org/CHOW-2013>



Watch a video about USFWS specialized fish marking trailers that travel throughout the Pacific Northwest marking and tagging different sets of fish stocks. www.youtube.com/watch?v=QXbjy4qpOVs

See related story page 17



This map shows the large areas of federal and non-federal land ownership within the Arctic. Interior is responsible for managing areas colored orange (BLM), blue (USFWS) and green (NPS). Image credit: Scenarios Network for Alaska and Arctic Planning, Univ. of Alaska, Fairbanks. See related story page 1.

San Juan Islands Designated as National Monument

Home to bald eagles, orca whales, harbor seals and other rare species, the San Juan Islands is a chain of 450 islands, rocks and pinnacles. Located in Washington State's Puget Sound, the archipelago provides an opportunity for visitors, campers, kayakers and birdwatchers to experience the natural beauty of the undeveloped, rugged landscape. A number of historic lighthouses are located on the islands, as well as cultural resources and fossils dating back 12,000 years. The islands are part of the traditional territories of the Coast Salish people who first used the area near the end of the last glacial period, about 12,000 years ago. Europeans explored the area in the late 18th century, opening the way for additional settlement.

The San Juan Islands National Monument was designated by President Obama on April 1, 2013, culminating years of locally-driven conservation efforts to ensure this treasured landscape will be conserved for future generations to enjoy. The monument will be managed by the Interior's Bureau of Land Management.

The local community and congressional delegation leading the conservation efforts had support from Senator Maria Cantwell and Representative Rick Larsen, Senator Patty Murray, then-Representative Jay Inslee, and now Representative Suzan DelBene.

"At long last, these 1,000 acres of cherished lands in the San Juan Islands will be on the map as a National Monument," said Cantwell. "For generations to come, residents



The San Juan Islands are a beautiful archipelago of more than 450 islands, rocks, and pinnacles in the northern reaches of Washington's Puget Sound. Photo credits: BLM.

and tourists alike will be able to enjoy these marvels of the San Juans – where the land meets the sea. This much-deserved designation comes thanks to the hard work of many, from Watmough Bay to the White House." As one of five new national monuments designated by President Obama under the 1906 Antiquities Act, the San Juan Islands include nearly 1,000 acres of land. Recreational opportuni-

ties in the San Juan Islands include wildlife watching, fishing, hunting, hiking, boating and camping.

BLM Principal Deputy Director Neil Kornze said, "These lands are some of America's most breathtaking and they'll now be permanently protected as National Conservation Lands."

<http://www.blm.gov/or/resources/recreation/sanjuans/>



Sea Turtles Benefit From Marine Protected Areas

Study offers first look at green sea turtle habitat use in the Dry Tortugas National Park

By Rachel Pawlitz, Kristen Hart and Dave Zawada, USGS

A new study confirms that green sea turtles are spending much of their time in protected sites within both Dry Tortugas National Park and the surrounding areas of the Florida Keys Marine National Sanctuary. The USGS study is the first to track the federally protected turtles in Dry Tortugas National Park.

Green turtles are listed as endangered in Florida and threatened throughout the rest of their range. The habits of green sea turtles after their forays to nest on beaches in the Southeast U.S. have long remained a mystery. Until now, it was not clear whether the turtles made use of existing protected areas, and few details were available as to whether they were suited for supporting the green sea turtle's survival. By using satellite tags, the USGS researchers were able to analyze and track the turtles' movement patterns. "Our goal was to better understand what types of habitats they used at sea and whether they were in fact putting these designated areas to use. This study not only shows managers that these designated protected areas are already being used by turtles, but provides insight into the types of habitats they use most," said the study's lead author, Kristen



A green sea turtle, sporting a USGS satellite tag, is released into the water of Dry Tortugas National Park, Florida. Photo credit, Andrew Crowder, USGS

"We were thrilled to find that these turtles used some areas already under 'protected' status. The ultimate goal is to help managers understand where these endangered turtles are spending their time both during the breeding period and then when they are at feeding areas."

Worldwide declines in seagrasses – one of the most important habitats sea turtles rely on for food – have already been documented, making data about habitat use critical for managers."

- Kristen Hart, USGS research ecologist

Hart. The team learned about the turtle's habitat needs during the nesting season by using ATRIS, a georeferenced, underwater camera system developed by the USGS to collect over 195,000 seafloor images. Researchers surveyed the areas frequented by turtles within Dry Tortugas National Park by photographing the seafloor in a series of parallel lines totaling 70 kilometers (over 43 miles). Using a habitat map derived from those images, they found that the turtles most commonly used shallow seagrass beds and degraded coral reefs that have been overgrown by

a mixed assemblage of other organisms, such as sea fans, sponges, and fire coral.

"Our synergistic approach of combining satellite telemetry data with an extensive habitat map proved to be an effective way to find out exactly what habitats these nesting turtles were using in the Park," said Dave Zawada, a USGS research oceanographer and co-author on the study. "We hope to keep pushing the frontier of what is known about in-water sea turtle habitat use, as this type of scientific information is vital for understanding whether conservation measures are effective," said Hart.

<http://www.usgs.gov/newsroom/article.asp?ID=3575>



A green sea turtle on Loggerhead Key, Dry Tortugas National Park, Florida. Photo credit: Kaare Iverson, USGS.



The U.S. Extended Continental Shelf Project Team

By Ann Tihansky and Deborah Hutchinson (USGS)

Superior Honors State Department Recognizes Team and Accomplishments

On April 4, 2013, the Department of State (DOS) presented Superior Honor Awards to the Senior agency representatives and the Integrated Regional Team leads working on the U.S. Extended Continental Shelf Project. The Interior Department, through USGS, contributes to the accomplishments of this team.

Superior Honorees:

Senior agency leads:

USGS: Deborah Hutchinson,
NOAA: Margot Bohan,
DOS: Brian Israel, Barbara Moore, and Brian Van Pay

Regional team leads:

Arctic-Andrew Armstrong, (NOAA),

Gulf of Mexico-Matthew Arsenault (USGS),

Gulf of Alaska and Bering Sea-Ginger Barth (USGS),

Central Pacific-Barry Eakins (NOAA),

Pacific West Coast-Jennifer Henderson (NOAA),

Atlantic-Larry Mayer (Univ. of New Hampshire),

Pacific Islands-Daniel Scheirer (USGS).

The mission of the U.S. Extended Continental Shelf Project (ECS) is to establish the full extent of the continental shelf of the United States beyond 200 nautical miles, consistent with international law. A critical part of this project relies on analysis and mapping of large areas of the seafloor around the U.S. continental margins. The data collection aspect of the ECS effort is the largest and potentially most significant interagency marine survey ever undertaken by the U.S.

Where a nation can demonstrate that it has extended continental shelf—seafloor beyond 200 nautical miles from shore that meets criteria set forth in Article 76 of the United Nations Convention on the Law of the Sea—it can exercise certain sovereign rights over seabed and sub-seabed resources there. Preliminary studies have indicated that the U.S. extended continental shelf likely totals at least 1 million square kilometers—an area about twice the size of California or nearly half the area of the Louisiana Purchase.

Data collection and analysis are critical to the ECS Project as it comes to a more definitive conclusion about the extent of U.S. extended continental shelf.

<http://continentalshelf.gov/>

At left: Deborah Hutchinson (USGS, standing) leads a discussion with technical team members at the Extended Continental Shelf Project Team 2012 Technical Workshop at USGS, Woods Hole, MA. Photo credit: Brian Van Pay, DOS. <http://soundwaves.usgs.gov/2012/10/meetings.html>

The project began in 2003 with the first of 28 research expeditions to collect multibeam bathymetric data along the deep-water portions of the U.S. margins, including its island territories. Beginning in 2007, the U.S. has participated or led seven research cruises to collect seismic and geophysical data, with five of those cruises in partnership with Canada in the Arctic utilizing two-icebreakers. (See a full summary of cruise missions: <http://continentalshelf.gov/missions.html>). The project has supported 11 workshops that bring together regional experts in geology, bathymetry, and data management. In spring 2012, the U.S. Extended Continental Shelf Project held a Technical Workshop at the U.S. Geological Survey Woods Hole Coastal and Marine Science Center in Massachusetts followed by a Scenarios Workshop in Washington, DC to describe the options and uncertainties associated with delineating the extended continental shelf. The two DOS Honor Awards recognize the large work and effort that brought the project to this phase of understanding.

Although there are still several more data collection cruises required, the project now moves to its next significant phase, which is to begin synthesizing the vast amount of information already gathered into a form that can be used by Department of State to be consistent with customary interna-

See ECS Honors page 11

National Invasive Species Achievement Awards

On March 22, the Aquatic Nuisance Species Task Force, the National Invasive Species Council and the Federal Interagency Committee for Management of Noxious and Exotic Weeds presented the 2013 National Invasive Species Achievement Awards.

Of the eight awards given to outstanding individuals and organizations for their accomplishments and dedication, four were recognized for their efforts in controlling and preventing aquatic invasive species.

“We applaud the winners of the invasive species achievement awards for demonstrating visionary leadership, innovation, and creativity in your efforts to protect our vital natural resources from the harmful impacts of invasive species,” said Lori Faeth, Deputy Assistant Secretary for Policy and International Affairs at the Department of the Interior.



Above, the common carp, *Cyprinus carpio*, is one of seven carp species that have been introduced to U.S. waters. Learn more: <http://asiancarp.org/>



New Water Quality Test Keeps Beaches Safe

A new rapid water-quality test may prevent beaches from being closed by providing accurate same day results of bacteria levels, according to a new study by the USGS.

With increasing outbreaks of waterborne illnesses, beaches have been at the forefront of recent research on human health risk.

This new rapid water-quality test, developed by the Environmental Protection Agency (EPA), will help managers across the country determine whether beaches are safe for swimming in order to keep the public from getting sick. Previous tests could not provide same-day results, so managers had to decide whether to close a beach based on findings from the day before.

USGS scientist Meredith Nevers said, “Our research shows that EPA’s rapid test can be an effective tool for beach managers to help keep their recreational beach goers happy and safe.”

Beach closures not only impact recreational users in the summer-time, but they also create huge losses for the local economy.

The test can be used at both fresh-water and marine beaches.

<http://www.usgs.gov/newsroom/article.asp?ID=3529>

For Outstanding Achievement in Aquatic Invasive Species Outreach and Education

The Lake George Association in New York is recognized for its Lake Steward program, which combines prevention measures to stop the spread of invasive species with public outreach and education, while collecting invaluable invasive species data.

For Lifetime Invasive Species Achievement – Aquatic

Rick Johnson, Coordinator of the Thurston County Noxious Weed Agency in Washington State, is recognized for his 34-year record of commitment to invasive plant management, and has served on multiple weed management committees, boards and associations. Rick led a program for the management of Brazilian Elodea in the Chehalis River system, an initiative which spanned multiple agencies over the course of ten years.

For Outstanding Aquatic Invasive Species Leadership

Dr. Richard Everett of the United States Coast Guard is recognized for leading Coast Guard initiatives to prevent the arrival and spread of aquatic nuisance species and being instrumental in developing measures for the U.S. government and the international maritime community to prevent the spread of invasive species through ballast water.

For Outstanding Aquatic Invasive Species Volunteer

The Malheur Wildlife Associates, Friends of Malheur National Wildlife Refuge in Oregon are recognized as a strong proponent of the Aquatic Health Program at Malheur refuge, where they have led efforts to combat the common carp, an invasive species.

Interior Hosts Three Knauss Sea Grant Marine Policy Fellows

Fellows are working at Interior's Office of Policy Analysis and the US Fish and Wildlife Service

By Nicole Bransome (DOI), Carrie Givens (USFWS), Umi Muawanah (USFWS)

Interior is hosting three of the 49 Knauss Marine Policy Fellows for the 2013 calendar year. The Knauss Fellowship, begun in 1979, presents outstanding graduate students an opportunity to spend a year working with marine policy and science experts in Washington, D.C. The program, named for marine scientist and former NOAA Administrator John A. Knauss, is coordinated by NOAA's National Sea Grant Office.

Nicole Bransome is spending the year as the inaugural Knauss Fellow for Interior's Ocean, Coasts and Great Lakes Coordination team at the Main Interior Building in downtown Washington. Bransome is finishing her M.S. in the Marine Estuarine Environmental Science program at the University of Maryland Chesapeake Biological Lab, with a focus in quantitative fisheries ecology.

As a policy and communications specialist, Bransome is helping coordinate Interior's ocean role across bureaus and with federal, regional, state, tribal, and NGO partners and is supporting Interior's implementation of the National Ocean Policy (NOP) through the Ecosystem Based Management subgroup. She is also supporting the U.S. Coral Reef Task Force, contributing to *NEWSWAVE* and developing other communication products.



Three Knauss Sea Grant Fellows working at Interior for 2013 calendar year are, from left, Carrie Givens, Umi Muawanah, and Nicole Bransome. Photo credit: Najwa Obeid, National Science Foundation.

Bransome's position provides her with the big national picture of how ocean policy accommodates management of diverse resources, both within Interior and with external partners.

Carrie Givens, a recent Ph.D. graduate of the University of Georgia Department of Marine Sciences, is spending her year working in Arlington, Va., for the U.S. Fish and Wildlife Service's Division of Fish and Aquatic Conservation.

As a fish and wildlife biologist, Givens is helping to address invasive species threats through such activities as assisting with injurious species policy, writing rules to evaluate and list species as injurious, developing models for assessing threats, and conducting outreach.

Givens will represent the USFWS on the DOI One-Health Group, an interdepartmental team focused on disease and emergency management and will also complete a one-month field detail with regional aquatic invasive species coordinators.

Umi Muawanah recently completed her PhD in agriculture and resource economics. She will spend one year working for the U.S. Fish and Wildlife Service's

National Fish Habitat Partnership Program and the National Fish Passage Program.

Muawanah is applying her background in natural resource economics to fisheries and aquatic resource conservation. Muawanah is leading a study, collaborating with Susan Wells (USFWS) and Amy Unthank (U.S. Forest Service), on the economic benefits of fish friendly culverts on flood resiliency, with a case study of Alaska. Another exciting project for Muawanah includes developing a user guide for economic valuation of partnership projects.

Upon finishing her fellowship, Muawanah will apply her U.S. fisheries conservation and management experience to the position she will resume at the Indonesia Ministry of Marine Affairs and Fisheries.

Previous Sea Grant Knauss Fellows work at Interior, bringing strong ocean and coastal experience to the Department include: USFWS Director Dan Ashe, Bill Archambault, Amardeep Dhanju, Jason Goldberg, Angela Gustavson, Matt Huggler, Liza Johnson, Marty Kodis, Abby Lynch, Don MacLean, John Primo, Caitlin Snyder, Bret Wolfe, and others.

For more information: <http://www.seagrant.noaa.gov/knauss/>

Interactive Mapping Workshops Gather Ocean Use Information

Wide Spectrum of Ocean Users Participate

Sara Guiltinan, BOEM

Ocean use experts contributed their knowledge about human uses for the Washington Ocean Uses Atlas project through four mapping workshops held in Port Angeles and Aberdeen, WA, in April 2013.

The Washington Ocean Uses Atlas is one of three state-level mapping efforts that are part of the Pacific Regional Ocean Uses Atlas (PROUA) project. The partnership leverages resources and fulfills multiple information needs. Bureau of Ocean Energy Management (BOEM) and Washington state agencies funded the NOAA Ocean Uses Team to map human uses in ocean areas offshore Washington State.

Nearly 80 participants representing a wide spectrum of ocean user communities collectively mapped a variety of ocean uses in recreational, commercial, and industrial sectors through an interactive mapping process. They focused on Washington's coastal and offshore waters from Port Angeles west along the Strait of Juan de Fuca, south to the Oregon border, out to 200 nautical miles offshore.

The NOAA Coastal Services Center motto of "linking people, information, and technology" was brought to life as participants delineated areas of ocean use with a digital pen that projected the information to a live map visible to the whole group. Through this process, their spatial knowledge was captured and digitized in real-



Participants at the Port Angeles mapping workshop share their knowledge about ocean use by delineating areas with a digital pen onto a live map that was projected onto a whiteboard. Photo credit: Sara Guiltinan, BOEM

time. Some of the most valuable information was not spatial, but contextual information about the importance of place, reflecting cultural perspectives from participants passionate about Washington's coastal assets.

Participants commented, "I appreciated the collaboration of the multiple agencies. The group facilitators were skilled at running the groups, they were supportive, friendly, orderly and focused on the task," and, "a picture is worth a thousand words – this mapping exercise helped us paint the picture."

Information captured during the workshops will be used to inform both Washington State's Marine Spatial Planning process and BOEM's planning for offshore renewable energy development.

BOEM and the NOAA Ocean Uses Team will conduct similar workshops in Oregon during early June and then in Hawaii to complete the PROUA project. Learn more: <http://www.boem.gov/uploaded-Files/PROUA-Fact-Sheet.pdf> Washington Marine Spatial Planning at <http://www.msp.wa.gov/>



Secretary Jewell (center) visiting an offshore drilling rig and production platform in the Gulf of Mexico. Photo credit: Maria Eames, BSEE

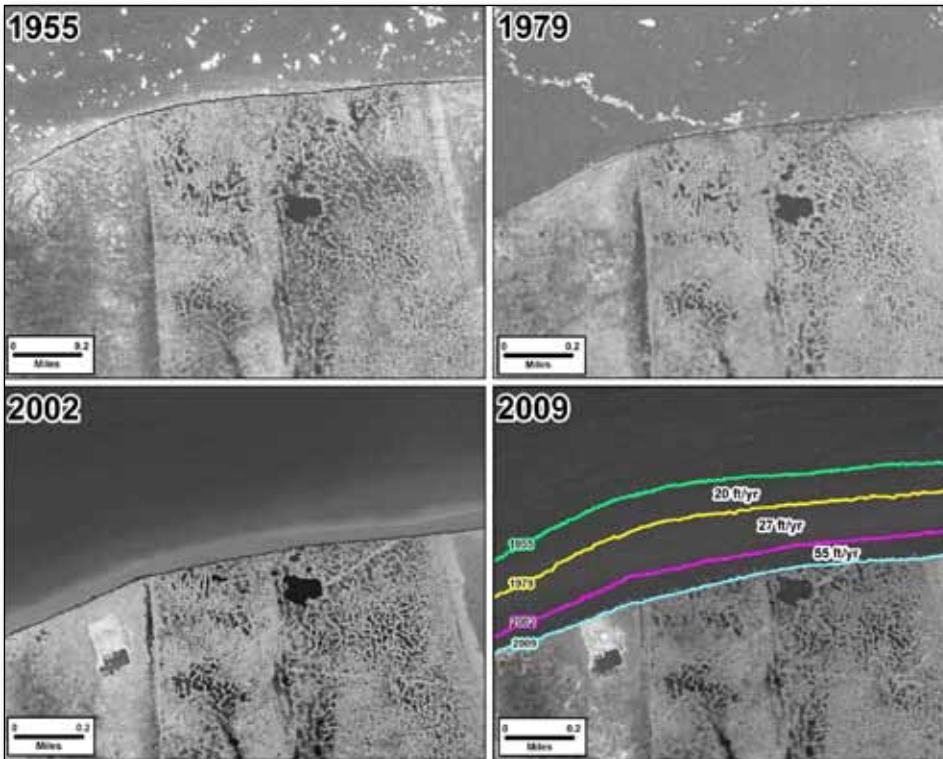
Secretary Jewell visits Offshore Oil Rig

Secretary Jewell visited an offshore drilling rig and production platform in the Gulf of Mexico on May 3 as part of a two-day visit to the Department's regional offices that oversee oil and gas development in federal waters. Secretary Jewell met with Interior employees, praising them for their professionalism and commitment to their mission, including safe and responsible energy development and Gulf Coast restoration.

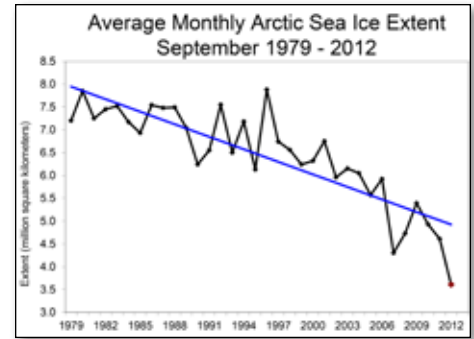
"Oil and gas production from the Gulf of Mexico plays an important role in powering our nation and strengthening our economy," said Jewell.

"The Department of the Interior will continue to work with industry to ensure that these resources are developed safely and responsibly, while also delivering a fair return to the American taxpayer, businesses and communities."

<http://www.interior.gov/news/press-releases/secretary-jewell-tours-offshore-drilling-rig-production-platform-in-gulf-of-mexico.cfm>



Aerial imagery of tundra and ocean showing the extent of coastal erosion between years 1955 and 2009. Approximately 7,000 acres of land were washed into the sea along a 40-mile stretch of Beaufort Sea coastline. For year-to-year reference, note the relative position of the large lake near the center of the photo. The colored lines in the 2009 image show shoreline locations from previous years indicated. Photo credit: Benjamin M. Jones, USGS



The total extent (million km²) of minimum annual sea ice coverage throughout the entire Arctic has been trending lower during the period for which satellite data have been available (1979-2012). Note: the last 6 years has been lower than for any previous annual record. Graphic image: National Snow and Ice Data Center.



Coastal erosion in Shishmaref, AK. Photo credit: R.A. Winfree, NPS

Arctic continued from page 1
has significant implications for managing a U.S. Arctic that is currently largely devoid of the costly infrastructure necessary to support activities related to oil and gas development on- and off-shore and increased shipping through the region.

A recent report to the President recommends improved agency and interagency management in the U.S. Arctic. The report, from the Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska, chaired by Deputy Secretary David Hayes, was prepared by DOI, NOAA, and the White House Office of Science and Technology Policy, in consultation with the National Ocean Council, the National Security Staff, and the Arctic Research Commission.

Interior is one of more than 20 federal agencies with responsibilities in the U.S. Arctic for resource management, scientific research, homeland security, emergency preparedness and response, maritime and aeronautical safety, and support to communities and Alaska Natives. Many partners in the region work closely with these agencies to achieve a wide range of management goals, including state agencies, tribal governments and Alaska Native organizations, municipal governments, industrial and commercial stakeholders, and conservation organizations. The report managers made extensive contacts with all of these stakeholders, particularly in the Native community to ensure that their needs and perspectives were included into the discussion.

Perspectives of these partners vary, particularly regarding development, but there is broad interest in supporting stable economies, thriving cultures, and sustainable ecosystems. Among the concerns shared by stakeholders are bureaucratic processes that require engagement with many agencies on related issues, which can burden stakeholders and communities. Partners want a framework for more inclusive, efficient, and transparent engagement that does not add layers of process. This report is an important step in creating this framework.

The President signed the National Strategy for the Arctic Region on May 10, 2013. http://www.whitehouse.gov/sites/default/files/docs/nat_arctic_strategy.pdf



Arctic issues present new challenges for integrating cultural, environmental and economic factors in decision-making about development and conservation. Photo credit: Federal Aviation Authority.

The Arctic report includes the following recommendations:

1. Adopt an Integrated Arctic Management approach when making stewardship and development decisions in the U.S. Arctic;
2. Ensure on-going high-level White House leadership on Arctic issues;
3. Strengthen key partnerships, particularly with the State and Alaska Natives;
4. Promote better stakeholder engagement;
5. Coordinate and streamline federal actions relative to:
 - Linking science and management: 1- strengthen the capacity of science programs to provide focused, ecosystem-based information needed by decision-makers; and 2- improve decision-makers' access to integrated scientific information and traditional knowledge relevant to management in the Arctic and
 - Coordinate environmental (NEPA) evaluations,
 - Identify important ecological and subsistence areas,
 - Scenario planning; and
 - International cooperation.

Read the full report:

<http://www.doi.gov/news/upload/ArcticReport-03April-2013PMsm.pdf>

Managing Arctic Marine Ecosystems

Collaborative and Integrative is the Rule



Dr. James Kendall (left), Regional Director, BOEM Alaska Outer Continental Shelf Region, explores Alaska's marine environment with renowned Arctic/Antarctic explorer and underwater photographer Shawn Harper. Photo credit: Lynn Kendall.

By Matthew Blazek, BOEM

Dr. James Kendall, Regional Director of the BOEM Alaska Outer Continental Shelf Region, represented Interior's perspective on integrated Arctic management strategies at the 28th Lowell Wakefield Fisheries Symposium in Anchorage, AK on March 27, 2013.

The symposium theme, "*Responses of Arctic Marine Ecosystems to Climate Change*", was aimed at advancing participants' understandings of present and future responses of Arctic marine ecosystems to climate change. The symposium brought together tribal, state, and federal government representatives to discuss collaborative approaches to understanding and managing living marine resources in a changing Arctic. It also focused on managing human responses—locally, regionally, and globally—as they pertain to changing arctic marine ecosystems.

Kendall joined other panelists from NOAA and the State of Alaska to discuss the national effort towards 'An Integrated Arctic Management (IAM) Framework' during an evening session. Kendall presented examples of how BOEM is making progress in applying such strategies in the Arctic in terms of energy development highlighting collaborations among scientists and regional federal, state, and tribal partners and future environmental and operational challenges. Following these presentations, Fran Ulmer, chair of the U.S. Arctic Research Commission, facilitated a discussion between the panelists and symposium participants (members of the scientific, government, and Alaska Native communities) focused on advancing the concept of better integrating science into decision making. *See related story page 1.*

BOEM is striving to be in the forefront of integrated management practices through the adoption of an adaptive and ecosystem-based approach to management. Advances along these lines require acknowledgement that the Arctic is a dynamic, unique, and challenging place to operate. Collaboration with partners is the rule not the exception.



Gerrod Smith (center) of the Shinnecock Indian Nation, shares thoughts from a breakout discussion with fellow panelists Jack Travelstead (Virginia Marine Resource Commission) (left) and Renee Searfoss (USEPA) (right) at the MARCO Ocean Planning Workshop. Photo credit: Joe Milmoie, USFWS

Stakeholder Engagement Key to Mid-Atlantic Regional Ocean Planning Process

By Mid-Atlantic Regional Planning Body (RPB) Co-Leads: Sarah Cooksey (Delaware Coastal Program), Gerrod Smith (Shinnecock Indian Nation), and Maureen Bornholdt (BOEM)

The Mid-Atlantic Regional Council on the Ocean (MARCO), convened more than 170 diverse stakeholders and marine planning practitioners from the mid-Atlantic coastal area at the first regional planning workshop April 4-5 in Arlington, VA. Together they discussed how to best plan and responsibly use and conserve the region's ocean resources. Maureen Bornholdt, RPB federal co-chair with Interior's BOEM said the workshop, "has been a very illuminating conversation." "To facilitate future planning, we need to build trust and respect amongst our groups."

Nancy Sutley, Chair of the White House Council on Environmental Quality and Co-Chair of the National Ocean Council addressed the stakeholder group, "One of our fundamental strengths as a nation is to use the innovative spirit of people working on the ground to solve problems, we support your efforts going forward and all of



Methane gas bubbles rise from the seafloor among communities of chemosynthetic mussels. These bubbles, originally noticed during a multibeam sonar survey by NOAA in 2012 is what led scientists to the deepwater canyon area. Image courtesy of Deepwater Canyons 2013 - Pathways to the Abyss, NOAA, BOEM, USGS

Deepwater Canyon Expedition

Scientists have discovered extensive communities of chemosynthetic mussels a mile below the ocean surface in the Norfolk Canyon east of Virginia. The find occurred during the joint BOEM-NOAA-USGS study of deepwater Atlantic Canyons. Researchers on the NOAA ship *Ronald H. Brown* spent April 30 to May 27 exploring the canyons and historic shipwrecks. You can follow their discoveries and see imagery through the on-line blog.

<http://oceanexplorer.noaa.gov/explorations/13midatlantic/welcome.html>

us in the federal government look forward to working with you."

Marine planning will result in enhanced agency coordination and increased efficiency for decision-making under existing ocean resource management authorities. The Mid-Atlantic RPB is working to identify regional marine planning objectives and opportunities for stakeholder participation and to help ocean resource managers find compatibilities between conservationists and a growing number of users who are all vying for ocean resources and space.

Stakeholders included Tribal Nations, state coastal zone managers, shipping and port management, the Atlantic States Fisheries, environmental organizations, offshore energy industries, and other state, federal and local representatives.

ECS Honors continued from page 5

tional law in delineating the outer limits of the extended continental shelf. Earlier in 2013, a pilot project – utilizing the western Gulf of Mexico – began to apply the variables in Article 76 and develop the documentation. Work in additional regions where the U.S. expects to delineate an extended continental shelf is expected to continue through the end of this decade.

Law of the Sea: <http://www.un.org/Depts/los/>

USGS videos:

<http://gallery.usgs.gov/videos/268>

<http://gallery.usgs.gov/videos/430>



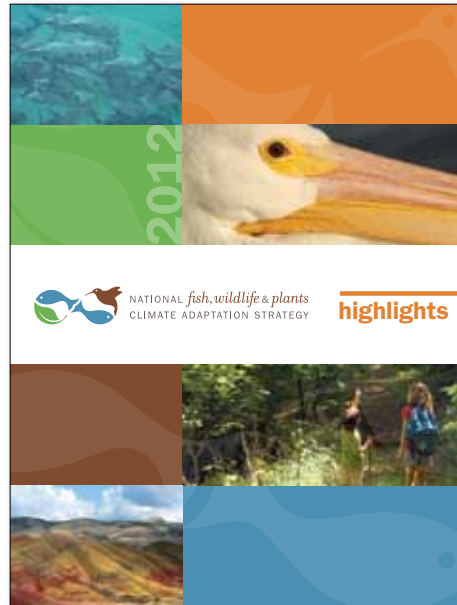
Strategy Provides Road Map for Adapting to Climate Change

The National Fish, Wildlife and Plants Climate Adaptation Strategy is the first nationwide strategy to help public and private decision makers address the impacts that climate change is having on natural resources and the people and economies that depend on them. The unified approach was developed in partnership with State and Tribal agencies in response to a request by Congress. It is the product of extensive national dialogue that spanned nearly two years and was shaped by comments from more than 55,000 Americans.

Fish, wildlife, and plant resources provide important benefits and services to Americans every day, including jobs, income, food, clean water and air, building materials, storm protection, tourism and recreation. For example, marine ecosystems sustain a U.S. seafood industry that supports approximately 1 million jobs and \$116 billion in economic activity annually.

The Strategy provides a roadmap of key steps needed over the next five years to reduce the current and expected impacts of climate change which include: changing species distributions and migration patterns, the spread of wildlife diseases and invasive species, the inundation of coastal habitats with rising sea levels, changing productivity of our coastal oceans, and changes in freshwater availability.

<http://www.doi.gov/news/pressreleases/national-strategy-will-help-safeguard-fish-wildlife-and-plants-in-a-changing-climate.cfm>



The National Fish, Wildlife and Plants Climate Adaptation Strategy identifies seven key steps to help safeguard the nation's fish, wildlife and plants in a changing climate.

Watch the on-line video and learn more: <http://www.wildlifeadaptationstrategy.gov/>

Download the brochure: <http://www.wildlifeadaptationstrategy.gov/pdf/Strategy-Highlights-Brochure.pdf>

FEDERAL COASTAL PARTNERS

Visit FEMA's Coastal Partner Pages where you can see the various roles of federal agencies that work together to provide science, services and support to coastal communities to ensure resource protection, community safety and reduced risk.

<http://www.fema.gov/protecting-homes/coastal-partner-pages>



Resources for Informing Adaptive Management Strategies

The Interior Department has published two guides that assist natural resource managers in developing and implementing adaptive management techniques to help make complex management decisions.

Read about a coastal example of adaptive management in Delaware Bay on page 13.

The Adaptive Management Technical Guide includes a discussion of the basic criteria for applying adaptive management, as well as step-by-step descriptions of implementation.

<http://www.doi.gov/ppa/upload/Tech-Guide.pdf>

The Applications Guide includes examples, case studies and discussion of "how-to" issues. It provides federal, state, tribal and other natural resource managers with tools to more effectively address the complexities and uncertainties involved in natural resource management, especially under challenging conditions such as climate change. The Applications Guide is available for download and was designed to complement and build on the framework established by the Technical Guide.

<http://www.doi.gov/ppa/upload/DOI-Adaptive-Management-Applications-Guide.pdf>

These guides are part of Interior's commitment to help natural resources managers deal with climate change and other natural resource challenges.

An Adaptive Management Story

Red Knots and Horseshoe Crabs

By Alexa Marcigliano, USFWS

Delaware Bay hosts the second largest population of migrating shorebirds in North America. The red knot is one migratory shorebird species that relies heavily on a supply of horseshoe crab eggs during its annual stopover along the mid-Atlantic coast. More than half of the total flyway population of the red knot depends specifically on the horseshoe crab eggs found along Delaware Bay to survive the journey between breeding in the Arctic tundra and wintering as far south as South America.

The horseshoe crab is a key element in medical research, a major resource for the bait industry, and an essential food source for migrating shorebirds like the red knot. These multiple values present a management challenge for fisheries along the Atlantic Coast. Horseshoe crabs are often harvested for conch and American eel fisheries along the Atlantic Coast and his-

torically nearly four million crabs were harvested annually for fertilizer and animal food in the late 1800s and early 1900s.

In the spring, both red knots and horseshoe crabs arrive at Atlantic Coast beaches. The horseshoe crabs lay their eggs from late spring through early summer. Over the course of several days each female can lay up to 100,000 eggs. Meanwhile, the red knots spend up to two weeks feeding on these eggs, preparing for their continued migration north. Each red knot can double its weight by eating the nutrient-rich eggs, making this resource critical to their survival.

Because of the human demand on horseshoe crabs throughout history, and a large harvest increase in the 1990s, red knots have had a difficult time finding enough eggs to sustain their migration. The red knot is currently a candidate for the federal Threatened and Endangered Species List.

To ensure that there are enough horseshoe crabs for humans and red knots, fisheries and migratory bird specialists are working to-

gether to create innovative management strategies. The Atlantic States Marine Fisheries Commission (ASMFC) developed the Interstate Fishery Management Plan for Horseshoe Crab in 1998 that assigned mandatory state-by-state harvest quotas and created the 1,500 square mile Carl N. Shuster Jr. Horseshoe Crab Sanctuary off the mouth of Delaware Bay.

In addition, experts with the Adaptive Resource Management work group of the ASMFC are creating models to project potential outcomes of different horseshoe crab harvest management decisions. The ASMFC's Horseshoe Crab and Delaware Bay Ecosystem Technical Committees review the models and then make recommendations to the Horseshoe Crab Management Board of the ASMFC. Conserving one species to save another has been a cooperative and innovative process. Hopefully these adaptive management strategies will help both horseshoe crab and red knot populations rise in the coming years. Learn more: <http://www.usgs.gov/newsroom/article.asp?ID=2843>



Horseshoe crabs congregate annually at Delaware Bay and lay masses of eggs, a critical food source for red knots and other shorebirds. Photo credit: Greg Breese, USFWS



During their migration, red knots make a stopover in Delaware Bay to forage for horseshoe crab eggs. Photo credit: Conor McGowan, USGS



The Horseshoe Crab
Limulus polyphemus

HORSESHOE CRABS

Horseshoe crabs are not crabs at all – in fact, they are more closely related to spiders, ticks and scorpions. While historically horseshoe crabs have been used in fertilizer, most horseshoe crab harvest today comes from the fishing industry, which uses the crab as bait, and the pharmaceutical industry, which collects their blood for its clotting properties. While the crabs are returned after their blood is taken, the estimated mortality rate for bled horseshoe crabs can be as high as 30 percent. Horseshoe crab eggs are critical to several species of migrating shorebirds. Competing uses for horseshoe crabs require collaborative and adaptive ways to manage multiple species that depend on one another. See related story page 13.

<http://www.fws.gov/northeast/pdf/horseshoe.fs.pdf>



Horseshoe crab eggs. Photo credit: USFWS

Forage Fish Critical Links in Complex Food Web Central Puget Sound, Washington

By Theresa L. Liedtke and Collin D. Smith, USGS



USGS crew members (left to right) Theresa “Marty” Liedtke, Lisa Gee, Ryan Tomka, and Collin Smith hauling a sampling net over an eelgrass bed on Bainbridge Island, WA. Photo credit: David Ayers, USGS

USGS scientists have been conducting surveys for juvenile surf smelt (*Hypomesus pretiosus*) and sand lance (*Ammodytes hexapterus*) in Washington's Puget Sound—a large estuarine system adjacent to a robust metropolitan area. Surf smelt and sand lance are two species of forage fish in this region. They are of interest because they provide a key link in the marine food web between zooplankton (tiny aquatic animals) and larger fish, seabirds, and marine mammals. In Puget Sound, these forage fish are consumed by such economically and socially valuable predators as salmon, killer whales, and many marine birds.

This study is part of a larger effort within the Effects of Urbanization project task under the Coastal Habitats in Puget Sound (CHIPS) program. CHIPS is an interdisciplinary collaboration designed to coordinate, integrate, and link USGS studies with the goals and objectives of Federal, State, Tribal, and local governments, along with nongovernmental organizations (NGOs), universities, and private industry. Surf smelt and sand lance

spawn on the upper intertidal areas of beaches in Puget Sound. As their eggs develop and they transform into juvenile fish, they reside near the beach for an unknown period of time. The movements and distribution of these juvenile fish after the spawning period are poorly understood. USGS scientists investigated the use of nearshore habitats by juvenile stages of surf smelt and sand lance because nearshore areas are commonly used as nursery and rearing grounds for other species. This work will be integrated to inform other current and future habitat assessments.

USGS Fact Sheet about forage fish studies in Puget Sound:

<http://pubs.usgs.gov/fs/2012/3023/>
<http://soundwaves.usgs.gov/2013/04/>



Juvenile sand lance (*Ammodytes hexapterus*) (top) and surf smelt (*Hypomesus pretiosus*) collected on Bainbridge Island, WA. Scale in inches. Photo credit: David Ayers, USGS

News from the US Coral Reef Task Force

By Liza Johnson, DOI

The U.S. Coral Reef Task Force (USCRTF) is focused on three major initiatives in the National Ocean Policy Implementation Plan that will strengthen how agencies collaborate to protect coral reef ecosystems. They are focusing efforts on three major threats: land-based sources of pollution, climate change, and planned and unplanned physical impacts.

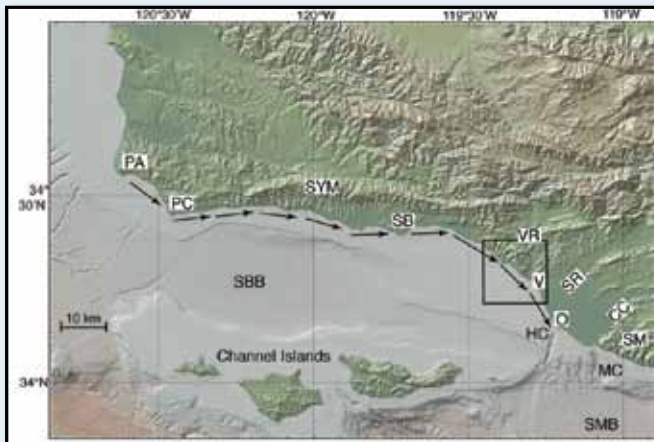
The USCRTF discussed progress and steps forward for each of the initiatives. Eileen Sobeck, USCRTF Co-Chair and Interior Acting Assistant Secretary for Insular Areas, joined the Assistant Administrator for NOAA Fisheries, and three Governor Members' representatives in sharing remarks with the Task Force members at the meeting February 18-21 in Washington, D.C. Deerin Babb-Brott, Director of the National Ocean Council, presented information about how the USCRTF is engaged with implementing the National Ocean Policy (NOP). NOAA National Marine Fisheries Service staff presented information about the proposed listing of 66 coral species through the Endangered Species Act (ESA). The USCRTF explored how best to proactively implement the ESA to protect these species, enhance recovery of the currently listed and proposed coral species, and address species management while easing the additional administrative burden of the ESA requirements. Senior Economist at the World Bank, Mr. Pawan Patil, gave the keynote presentation at the last US



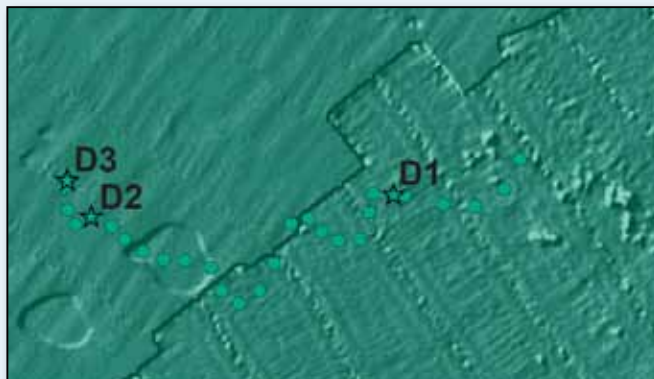
The USCRTF helps build partnerships, strategies, and support for on-the-ground action to conserve coral reefs. In front, from left, Paul Sturm (Ridge to Reefs), Susie Holst (NOAA) and Emma Anders (State of Hawaii), present information about the Watershed Partnership Initiative to Task Force members from left, Barbara Best (USAID), William Aila (Hawaii DNR?), Gib Owen (USACE), Lelei Peau (American Samoa), Eileen Sobeck (DOI), Liza Johnson (DOI), Eric Schwab (NOAA), Shannon Simpson (NOAA), Demaris Delgado (Puerto Rico), Don Schregardus (Navy), Kate Bowers (DOJ) and Karen Wardzinski (DOJ). Photo credit: Paulo Maurin, NOAA

See Task Force page 22

USGS Releases New Map Series



At left is a physiographic map of the Santa Barbara Channel region, part of the newly released USGS California State Waters Map series. The California Ocean Protection Council initiated the California Seafloor Mapping Program (CSMP), designed to create a comprehensive seafloor map of high-resolution bathymetry, marine benthic habitats, and geology within the 3-nautical-mile limit of California's State Waters. The CSMP approach is to create highly detailed seafloor maps through collection, integration, interpretation, and visualization of swath sonar data, acoustic backscatter, seafloor video, seafloor photography, high-resolution seismic-reflection profiles, and bottom-sediment sampling data. The map products display seafloor morphology and character, identify potential marine benthic habitats, and illustrate both the surficial seafloor geology and shallow (to about 100 m) subsurface geology.



At bottom left - Detailed view of seafloor character mapped southwest of Ventura, approximately 4.5 km offshore of Ventura River mouth showing locations of periodic real-time video observations (dots) and digital still photographs (stars). See report and mapping products online: <http://pubs.usgs.gov/sim/3254/>

BSEE Holds Public Meetings on Decommissioning Oil and Gas Platforms in the Gulf of Mexico

As part of a six-member, inter-agency working group, Interior's Bureau of Safety and Environmental Enforcement (BSEE) held two stakeholder workshops to share information and address concerns about decommissioning obsolete oil and gas platforms in the Gulf of Mexico with stakeholders from the charter and recreational fishing and diving communities, trawling operations, decommissioning industry and the oil and gas industry. They were held in Houston (Nov. 2012) and New Orleans (Feb. 2013). Transcripts and videos from the workshops are available on-line.

[http://www.bsee.gov/BSEE-Newsroom/Multimedia/Videos\(1\).aspx](http://www.bsee.gov/BSEE-Newsroom/Multimedia/Videos(1).aspx)

Federal regulations require that offshore oil and gas platforms be removed from the marine environment and taken to shore for disposal within one year from termination of the oil and gas lease, or when they are no longer useful for operations. An alternative to on-shore disposal is the conversion of retired platforms to permitted and permanently submerged artificial reefs, commonly referred to as 'Rigs to Reefs'.

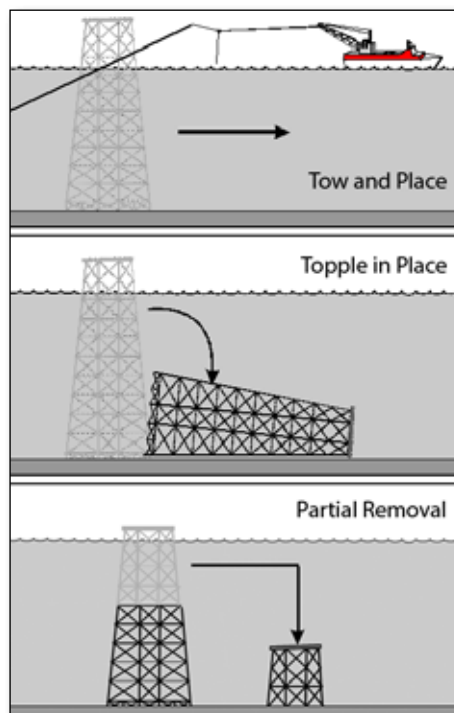
BSEE is responsible for ensuring that when an operator is no longer producing oil or gas from a well, the well is permanently sealed to protect the environment. Companies must also remove all structures which could affect the environment and impede navigation or other uses of the area. These obligations are part of the original lease terms.



"Rigs-to-Reefs" is a term used for a policy allowing obsolete, nonproductive offshore oil and gas platforms to be converted as artificial reefs to support marine habitat.

Generally, when the useful life of an oil and gas platform is over, it must be decommissioned (i.e. dismantled and disposed of) according to the terms of the Department of the Interior lease by which the platform was authorized.

Interior regulations include a disposal option that, under certain circumstances, allows keeping a biologically valuable structure in the marine environment as an artificial reef through a process called "Rigs-to-Reefs." Artificial reefs not only can enhance aquatic habitat, but also provide an additional option for conserving, managing, and/or developing fishery resources and can provide recreational opportunities.



BSEE works closely with NOAA, the Army Corps of Engineers (ACE), the U.S. Coast Guard, the Environmental Protection Agency, BOEM and the Gulf Coast states to assist with the inclusion of appropriate oil and gas infrastructure into each state's artificial reef program.

Operators with non-productive platforms can apply to the ACE and the appropriate states, and if approved, may request BSEE approval to dispose of their platform within the guidelines set forth by the appropriate organizations.

BSEE will soon issue a revised policy which will remove the previously required five-mile buffer zone between state artificial reefing areas and allow for reefing obsolete structures in place when appropriate, providing all materials that could pose a risk to the environment are first removed. The bureau is also working on a GIS mapping system that will indicate the location of offshore oil and gas platforms with overlays that demonstrate those listed as "idle" or no longer in use, and those with the necessary structure to be considered for artificial reefing. States and stakeholders will be able to use the mapping system to facilitate comprehensive planning for the inclusion of offshore oil and gas infrastructure into the artificial reef program.

Learn more: <http://www.bsee.gov/Exploration-and-Production/Decommissioning/index.aspx>

At left: Three methods of platform removal and reefing are used in the 'Rigs to Reefs' process. Schematic: BSEE.

Salmon in the Classroom

By Amanda Fortin, USFWS

In March 2013, nearly 100 fourth- and fifth-grade students took a 70-mile field trip into the Columbia River Gorge to release a tank full of Chinook salmon fry they raised from eggs into Washington's Drano Lake. This was the final step of their three-month 'Salmon in the Classroom' program. Developed with the support of Portland Public Schools, the Portland Black Parent Initiative, the Urban League, and the Oregon Youth Development Council, the USFWS brought this program to students at Boise-Eliot-Humboldt Elementary School in Portland, OR. Using curriculum developed and implemented by the Spring Creek Information and Education Office, 'Salmon in the Classroom', involves students in raising salmon from egg to fry stage in their classroom and ties to environmental education objectives in all subject areas. A variety of activities integrate the lifecycle of salmon into lesson plans ranging from art to engineering.

USFWS biologists work with teachers to provide guidance at

each stage of growth, lead activities that build an understanding of salmon's importance, and foster greater environmental awareness.

The students learn about their watershed and how their activities make an impact on salmon and other species. Fish in the Boise-Eliot/Humboldt 'Salmon in the Classroom' project have experienced good fortune. Every egg taken to the school survived and in March, the students visited the Spring Creek National Fish Hatchery, toured facilities, fed fish, took a guided nature walk, and said a final good-bye to the Chinook fry. While the salmon took their next step in their journey to the Pacific Ocean, the students' enthusiasm in learning more about salmon, environmental stewardship and maybe even conservation career pathways is on the rise at Boise-Eliot/Humboldt.

That fits well with USFWS's efforts to increase access to its conservation education programs and inspire people of all ages to learn about -- and care for -- fish, wildlife and plants and their habitats.

"The Fish and Wildlife Service strives to foster environmental awareness and citizenship by con-



Steve Lazzini, USFWS Biological Technician, at the Spring Creek National Fish Hatchery, shows students how scientists mark fish so biologists can identify them when they are recaptured later. Photo credit: Meghan Kearney, USFWS

necting people with nature," said Mike Carrier, Assistant Regional Director for Fishery Resources. "While the outdoors is always the best place to make that connection, 'Salmon in the Classroom' offers urban students an opportunity to see conservation in action, inspire them to enjoy the outdoors and to contemplate a career path they might someday choose."

<http://www.fws.gov/pacific/news/news.cfm?id=2144375205>

Watch a fish tagging video:

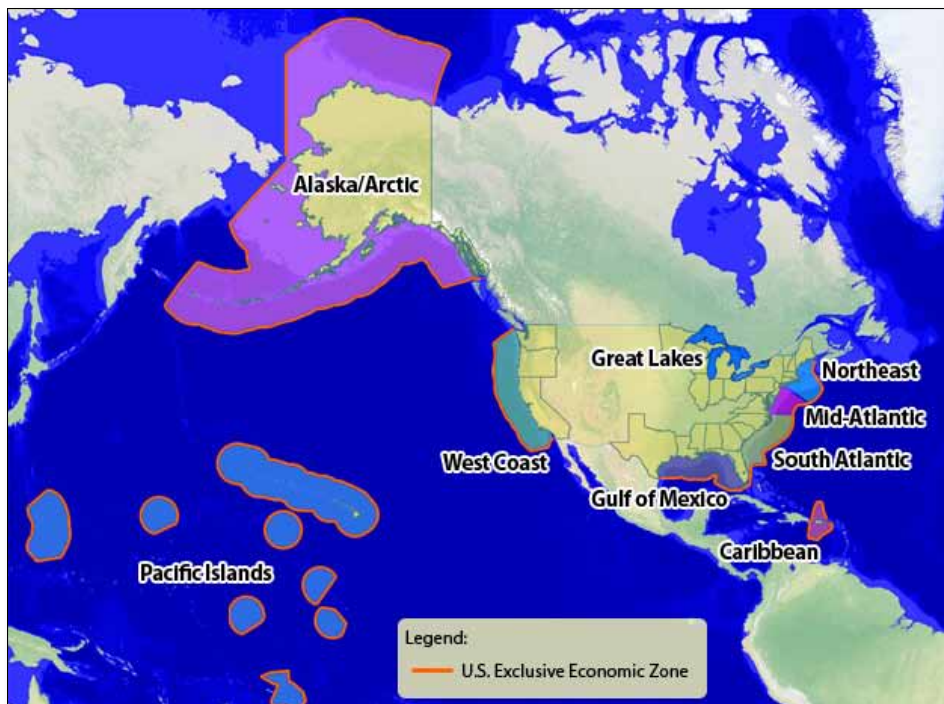
www.youtube.com/watch?v=QXbjy4qpOVs



Cheri Anderson, USFWS Education Specialist, discusses how healthy watersheds support healthy salmon populations. Photo credit: Pat Edwards, USFWS



Students release juvenile Chinook salmon they have raised for the past 70 days as part of the USFWS Salmon in the Classroom program. Photo credit: Pat Edwards, USFWS



News from **Council of Great Lakes Governors and USGS**

Partnerships for Informed Management and Use of Great Lakes Water

In order to better understand the impact of water withdrawals from the Great Lakes by municipal, industrial, agricultural and other users, a new effort is underway to document the cumulative impacts these withdrawals could have on the Basin's water resources and ecosystems. The Council of Great Lakes Governors (CGLG), a regional partnership formed on behalf of the eight Great Lakes States, is also spearheading the Ocean partnership in the Great Lakes-St. Lawrence River Basin. The Council is initiating a cumulative impact assessment for the Basin to help advise decision-makers.

The CGLG's cumulative impact assessment for the Great Lakes-St. Lawrence River Basin will build on data collected by the USGS National Water Use Information Program and will include other components of the water budget from the federal agencies in both Canada and the U.S. This groundbreaking effort will directly influence the decisions and actions of water users and managers in the region, and will provide an example for other regions seeking to examine water use impacts at the watershed scale. Partnerships at the regional scale ensure that stakeholders are engaged in this discussion and that the appropriate science and planning tools are available to help inform the decision-making process. <http://water.usgs.gov/wateravailability/greatlakes/info.html>



Expansive shorelines exposed due to low water levels at Old Mission Peninsula, Lake Michigan. Photo credit: Norman Grannemann, USGS

News from the Regions

Across the Nation, the Interior Department provides leadership and coordination for ocean, coastal and Great Lakes activities. Interior supports regional partnerships and efforts to address common concerns within the regions.

Interior contacts and related links for activities in the nine regions:

Northeast

Bob LaBelle (BOEM)

Leann Bullin (BOEM)

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

<http://northeastoceancouncil.org/>

Mid-Atlantic

Maureen Bornholdt (BOEM)

Leann Bullin (BOEM)

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

<http://www.midatlanticocean.org>

South Atlantic

Eric Strom (USGS)

(North Carolina, South Carolina, Georgia, Florida)

<http://www.southatlanticalliance.org>

Caribbean

Sherri Fields (NPS)

(Puerto Rico, U.S. Virgin Islands)

Gulf of Mexico

Linda Kelsey (USFWS)

(Alabama, Florida, Louisiana, Mississippi, Texas)

<http://www.gulfofmexicoalliance.org>

West Coast

Joan Barminski (BOEM)

Ellen Aronson (BOEM)

(California, Washington and Oregon)

<http://westcoastoceans.org>

Great Lakes

Phyllis Ellin (NPS),

Norman Grannemann (USGS)

Charlie Wooley (USFWS)

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

<http://www.epa.gov/glnpo/glri/>

<http://www.cglg.org/>

Pacific Islands

Richard Hannan (USFWS)

(American Samoa, Commonwealth of Northern Mariana Islands, Guam, Hawaii)

Alaska/Arctic

Jim Kendall (BOEM)

(Alaska)

Tsunami Preparedness Week in California

During the week of March 24-30, Cal Emergency Management Agency and the California Geological Survey joined with the National Oceanic and Atmospheric Administration and their local and state partners to observe Tsunami Preparedness Week. Preparedness efforts included testing the tsunami warning communications system, participating in table-top exercises, public education forums, and development of brochures, videos and other materials for children, boaters and the general public.

“Even though all levels of government continue to enhance our preparedness and response capabilities, individual preparedness remains the biggest weakness we face,” said Cal EMA Secretary Mark Ghilarducci. A new study published by the U.S. Geological Survey, “Community Exposure to Tsunami Hazards in California,” provides first responders, emergency planners and other stakeholders, with valuable new information about the people who live in, work in, and visit tsunami hazard areas in 20 counties and 94 incorporated cities located along the state’s coast. This information provides local planners with a new tool to help refine their tsunami outreach efforts, as well as emergency preparedness and response efforts during future exercises and emergencies.

The USGS report builds upon tsunami inundation maps that were previously developed by Cal EMA, CGS and the University of Southern California depicting the maximum extent of tsunami inundation for all 20 coastal counties.



Tsunami warning signs are an important part of the community emergency preparedness efforts.

“Even though California has the most communities designated by NOAA as ‘TsunamiReady,’ we are not resting on our laurels,” said Ghilarducci. “This new study by the USGS will help make California’s coastal communities even better prepared by providing emergency planners, first responders and elected officials with data they can use to build on the information already provided by the tsunami inundation maps.”

“Having a better sense of the number and type of people that are in tsunami-prone areas of each coastal community allows emergency managers to develop tsunami outreach and preparedness strategies that are tailored to address local conditions and needs,” said USGS geographer Nathan Wood, lead author of the new report. “CGS values this study and its partnership with the USGS,” said Dr. John Parrish, the State Geologist of California and head of CGS. “This product will greatly improve the generation of tsunami hazard products and the ability of state agencies to assist local communities prepare for future tsunamis events.” Learn more: <http://www.usgs.gov/newsroom/article.asp?ID=3535#.UX8BRLUqZ3A> www.tsunami.ca.gov myhazards.calema.ca.gov

USGS and Google Partner on Emergency Public Alerts

Emergency notifications for earthquakes, severe weather and other public safety matters are now available through Google Public Alerts. The system provides access to information during crises through the online tools you use every day. The Google Crisis Response team wants to make it easy for people to find critical information during emergencies and is doing so by partnering with authoritative sources to include public alert data into Google products.

Users will see public alerts in Google Search and Google Maps based on search queries such as “earthquake Hawaii” or “weather Tampa, Florida.” In addition to the alert, you’ll also see relevant response information such as event descriptions, safety tips, maps, and links to websites with useful information.

Earthquake data from the U.S. Geological Survey (USGS) have been incorporated into the system, as well as weather data from the U.S. National Oceanic and Atmospheric Administration (NOAA) National Weather Service. Users can go to the Google Public Alerts website and search for key terms to find relevant information: What’s happening? Where and when will an event strike? How severe will it be? Within minutes after an earthquake occurs, the USGS records and publishes information on the origin time, location and magnitude. This information is now distributed simultaneously on Google websites. <http://www.usgs.gov/newsroom/article.asp?ID=3446#.UX79k7UqY10>

Tiny Stowaways in Ship's Ballast

By Barbara Wilcox, USGS

Invasive species that hitch rides into new environments via global trade and travel can cause immense environmental and economic damage in the United States and throughout the world. They can degrade vital industrial structures as well as ecosystems and food webs. Yet it's hard to imagine a prosperous 21st century without global trade, even if it inadvertently brings invasive species to our shores. Often, these marine invasives arrive in the ballast water that ocean-going ships carry to balance their loads. USGS has partnered with other agencies and private industry to characterize the threat of marine invasive species at a global level. USGS science provides data to help establish ballast water discharge standards, and also helps to develop ballast treatment systems that will stop invasive species before they gain hold.

The highly invasive zebra mussel (*Dreissena polymorpha*), causes billions in damage annually to North American boats, docks, hydroelectric systems and other vital infrastructure and resources. Zebra mussels also compromise food webs by attaching to other animals and jeopardizing their survival. Zebra mussels were first reported in the Great Lakes in 1988, where they probably arrived as plankton in the ballast tanks of ocean-going ships from Europe. By 2007, they had spread into U.S. waterways as far away as Lake Mead, often by unwitting recreational boaters hauling their vessels from place to place.



Left: The empty interior of an ocean-going ship's ballast tank. Such tanks are filled with water to balance a ship's load. Unless the water is treated before it is emptied into foreign waters, it can introduce foreign organisms into the water that may become established and compete with native species. USGS scientists are taking up the challenge of dosing, mixing and testing cost-effective treatments for these large tanks that will kill the organisms but render the water safe for discharge. Right: Invasive zebra mussels found in Lake Huron. Photo credits: USGS

Prevention is best

It's almost always too late to get rid of such pests once they are established. It's much easier to stop aquatic species from becoming introduced by treating incoming ballast water before it is discharged into unfamiliar waters.

For several decades, state and federal governments and the International Maritime Organization have been crafting requirements for treatment of ships' ballast water. These standards could be implemented worldwide by 2020, but key to global adoption is having consistent, reliable and easily followed standards and methodologies. USGS scientists are evaluating both risk-based and quantitative ballast-water discharge standards to protect marine ecology. USGS is developing emergency ballast-water treatment systems and freshwater ballast treatment systems that are safe and effective while also being cost-efficient and easy to use in partnership with the National Park Service and private firms.

Finally, USGS and the U.S. Environmental Protection Agency have co-produced the first large-scale comparative atlas of non-native marine species in the North Pacific, giving resource managers data with which to strategize against possible future threats. Learn more:

USGS Invasive Species Program
http://www.usgs.gov/ecosystems/invasive_species/index.html

Under siege! America's most unwanted invasive species

http://www.usgs.gov/blogs/features/usgs_top_story/under-siege-america's-most-unwanted-invasive-species/

Interactive map of nonindigenous species in your state

<http://nas.er.usgs.gov/queries/StateSearch.aspx>

Invasive species in the Great Lakes

http://www.glsc.usgs.gov/main.php?content=research_invasive&title=Invasive%20Species0&menu=research

Restoring Flow in the Everglades

On May 15, part of the old Tamiami Trail roadway through the Everglades was demolished beneath the new one mile bridge that was built as part of the efforts to restore water flow in the Everglades. The road has been a physical barrier preventing water flow through the Everglades. Two weeks earlier, on May 1, Secretary Jewell visited Everglades National Park and reaffirmed the Administration's unprecedented commitment to restoration efforts in South Florida. "President Obama has kept his commitment to the people of Flor-



Construction crews restore flow to a part of the Everglades by removing a section of the Old Tamiami Trail in South Florida. Photo credit: NPS

ida to make Everglades restoration a high priority. Together we have made great strides in getting the water right and reducing the threats to this great ecosystem," said Jewell. "We still have much work to do from addressing invasive species to

developing new water projects, and we will work with the state, Native American Tribes, local governments and all the stakeholders to get the job done."

<http://www.doi.gov/news/photos/secretary-jewell-tours-everglades.cfm>

Oil Platforms and California Fishes

Fishes residing near oil platforms in southern California have similar contaminant levels as fishes in nearby natural sites, according to two recent reports by the USGS, which were conducted to assist the Bureau of Ocean Energy Management (BOEM) in understanding potential consequences of offshore energy development.

Since the underwater portion of many offshore oil and gas platforms often provides habitat to a large number of fishes and invertebrates, some stakeholders have called for ocean managers to consider a "Rigs-to-Reefs" option during the decommissioning phase of a platform. The findings of this study address questions regarding how the industrial legacy of this kind of artificial reef may affect local fish populations. *(See related story page 16)*

Scientists analyzed the amount of contaminants from crude oil exposure present in three species of

fish residing at oil platforms within the Santa Barbara Channel and the San Pedro Basin in California. The amount of contaminants present in fish tissue samples at seven platform sites was compared to samples at natural nearby sites.

Some of the most important contaminants related to oil operations are polycyclic aromatic hydrocarbons (PAHs). Several PAHs are probable human carcinogens and many are toxic to fish and other aquatic life. Scientists were able to develop a new, more accurate method of sampling small traces of PAHs that may have been ingested and broken down within the fish. Samples were taken from species thought to be most sensitive to PAH contamination. These species, including Pacific sanddab, kelp rockfish, and kelp bass, also tend to be targeted by fishermen. PAH concentrations were either very low or undetectable in all fish sampled for this study.

"These important results suggest two things," said BOEM marine

biologist Donna Schroeder. "First, existing offshore oil platforms provide food and shelter to local fishes without increasing their background contaminant loads. Second, since there is no detectable PAH signal from ongoing operations, we would expect that if the State of California wanted to implement a "Rigs-to-Reefs" program, there would likely be no change, pollution-wise, in the quality of the offshore environment, which appears to be pretty good." <http://www.usgs.gov/newsroom/article.asp?ID=3546>



Rockfishes inhabit oil platforms offshore of California. Photo credit: Donna Schroeder, BOEM

Tiny Grazers Play Key Role in Ecosystem Health



Gammarus mucronatus, an amphipod grazer that can promote healthy eelgrass beds. Photo credit: Matthew Whalen, UC Davis (copyrighted)

Tiny sea creatures no bigger than a thumbtack are being credited for playing a key role in helping provide healthy habitats for many kinds of seafood.

The little crustacean “grazers,” some resembling tiny shrimp, are critical in protecting seagrasses from overgrowth by algae. They are helpful in maintaining aquatic health for native and economically important species. The researchers found that these plant-eating animals feast on nuisance algae that grow on seagrass that provides nurseries for many seafood species. The grazers are also an important food source for other larger organisms.

“Inconspicuous creatures often play big roles in supporting productive ecosystems. “Think of how vital honeybees are for pollinating tree crops or what our soils would look like if we did not have earthworms”, said Matthew Whalen, the study’s lead author who conducted this work while at Virginia Institute of Marine Science (VIMS) and is now at the University of California, Davis.

USGS scientist and coauthor, Jim Grace, emphasized that seagrass habitats are also quite beneficial to people.

“Not only do these areas serve as nurseries for commercially important fish and shellfish, such as blue crabs, red drum, and some Pacific rockfish, but they also help clean our water and buffer our coastal communities by providing shoreline protection from storms,” said Grace. “These tiny animals, by going about their daily business of grazing, are integral to keeping healthy seagrass beds healthy.” In fact, if not for the algal munching of these grazers, algae could blanket the seagrasses, blocking out sunlight and preventing them from photosynthesizing, which would ultimately kill the seagrasses.

“Coastal managers have been concerned for years about excess fertilizer and sediment loads that hurt seagrasses,” said J. Emmett Duffy of Virginia Institute of Marine Science and coauthor of the study. “Our results provide convincing field evidence that grazing by small animals can be just as important as good water quality in preventing nuisance algae blooms and keeping seagrass beds healthy.”

This research by Virginia Institute of Marine Science and USGS researchers is the first in a series of studies worldwide on seagrass ecosystems.

http://www.usgs.gov/newsroom/article.asp?ID=3544&from=rss_home

At right- Comparison of algae fouling on eelgrass with and without grazers. Photo credit: Matthew Whalen, UC Davis (copyrighted)

Task Force continued from page 15

Coral Reef Task Force Meeting on the Global Partnership for Oceans, inspiring ideas about engaging more partners outside the Federal, State, and Territorial governments.

The Watershed Partnership Initiative (WPI) subgroup announced plans to bring the watershed coordinators together at the next USCRTF meeting to enhance collaborative use of multiple resources. They also shared recent status reports and accomplishments addressing land-based sources of pollution.

The USCRTF Coral Reef Injury and Mitigation Working Group continues to develop a guidance resource for reef managers on coral reef impact, avoidance, minimization, mitigation, and restoration from both planned and unplanned impacts. The Climate Change Working Group discussed developing state and territory coral bleaching response plans and adaptation strategies to address the impacts of climate change and ocean acidification on coral reefs.

The Fall meeting, hosted by the U.S. Virgin Islands government, will be focused on USVI and Caribbean regional issues, the proposed ESA coral listing and the Administration’s Tourism Initiative. <http://www.coralreef.gov/>



pishments and its new plan to improve our ocean, coasts, and Great Lakes,” said Secretary Jewell. “As stewards of millions of acres of marine and coastal national parks and wildlife refuges, as well as 1.7 billion underwater acres of the Outer Continental Shelf, the Interior Department praises President Obama’s foresight in planning for the management of the oceanic and coastal treasures that are so important to America’s environment and economy.”

The Secretary of the Interior and other Cabinet officials are members of the National Ocean Council--charged with implementing the President’s National Ocean Policy established by Executive Order 13457 in 2010.

On April 16, the White House, on behalf of the National Ocean Council, released the final National Ocean Policy Implementation Plan that addresses national priorities for a strong ocean economy, safety and security, coastal and ocean resilience, local decisions and choices, and the science and information needed to inform society in priorities and support decisions. The Plan was developed with significant input from national, regional, and local stakeholders and the general public following release of the draft plan in 2012. Interior’s Bureaus were actively involved in the development of the Plan, and are committed to implementing the actions within the Plan. Interior has over 80 specific actions, second only to National Oceanic and Atmospheric Administration.

Below are a few examples that highlight Interior’s role in the broader interagency effort.

OCEAN.DATA.GOV

Ocean.data.gov is a web portal that includes data, information, and decision-support tools for a wide variety of users. Interior leadership and support have been instrumental in developing and contributing data to, as well as maintaining, the interagency data framework. By 2015, all Federal non-classified geospatial data and information will be available through:

[Ocean.Data.Gov](http://ocean.data.gov)

U.S. CORAL REEF TASK FORCE

Interior serves as the co-chair of the U.S. Coral Reef Task Force, (*see related story page 15*) which includes Federal agencies and State and Territorial members. The Task Force is undertaking several actions in the Implementation Plan, including coordinated projects in targeted locations to reduce impacts of land-based pollutants on coral reefs through its Watershed Partnership Initiative, creating reef resilience and adaptive management strategies, and developing a reference handbook for managers as they assess, mitigate, and restore coral reef ecosystems.

OFFSHORE ENERGY

Interior supports a number of offshore energy actions that contribute to the national economy and national safety and security as well as ensuring the development of these energy sources contributes to coastal resilience and ecosystem health. Through coordinated approaches, the Plan will help streamline the permitting process but does not affect any statutory or regulatory obligations. Specific actions related to oil and gas are focused on preventing spills in the Arctic including technological developments that minimize risk and

improve response, containment, and support infrastructure and planning in the challenging Arctic environment. These actions bring together Federal agencies, industry, academia, and international partners and rely on completing scientifically based field or test tank experiments and tests of response tools for U.S. Arctic marine waters. These actions are also designed to improve resilience to risks associated with increased shipping activity through the Arctic waters.

Actions related to renewable offshore energy activities include compiling available and relevant climate, water, wind, and weather data; environmental models of seasonal and extreme conditions; and other information to support the development of the Nation’s coastal and offshore renewable energy, including wind, ocean thermal, and hydrokinetic (e.g., waves, tidal energy) resources.

Additionally, the plan calls for analyzing economic contributions and impacts (including job creation) of emerging ocean uses on the communities and regions dependent on marine and coastal resources. These include renewable energy, aquaculture, and biotechnology. Programs like these require Interior to play a leadership role in implementing the Plan, supporting regional decisions and supporting the larger vision of the National Ocean Policy: “An America whose stewardship ensures that the ocean, our coasts, and the Great Lakes are healthy and resilient, safe and productive, and understood and treasured so as to promote the well being, prosperity, and security of present and future generations.”

Read the Implementation Plan:
<http://www.whitehouse.gov/oceans>

Get Outdoors!

Visit your ocean, coasts and Great Lakes

The Surfing Bison



Are you looking for a place to go fishing? To the beach? Maybe you're searching for activities to enjoy with your family or friends on your next vacation? Luckily, the Department of the Interior has many affordable opportunities. Some are closer to home than you think. Interior's Ocean, Coasts and Great Lakes are waiting. Where will you make outdoor memories this summer?

Explore these online resources for ideas that will help you enjoy your resources in no time!

Nicole Bransome, DOI

Visit one of our ocean and coastal parks and see why these public gems attract over 86 million visitors each year. Eighty-four coastal and marine national parks include coral reefs, kelp forests, glaciers, estuaries, beaches, wetlands, historic forts and shipwrecks. Water recreation opportunities like surfing, canoeing, kayaking, scuba diving, and family beach adventures, abound. www.nature.nps.gov/water/oceancoastal/

June 1-9 is **National Fishing and Boating week**. Visit takemefishing.org, where all the resources you'll need to get started with fishing are the catch of the day! From the "beginners guide to fishing" to "boating safety" and "how to get a fishing license," this site, compiled by the Recreational Boating and Fishing Foundation through the U.S Fish and Wildlife Service, will have your family out and landing fish in no time. Make sure to check out the list of free fishing days by state and go get your feet wet with fishing for the first time!

National Wildlife Refuges are another affordable travel destination. Refuges are in all 50 states, within less than an hour's drive from most major American cities. They offer a rich variety of recreational choices that include hiking, bird watching, fishing, canoeing and kayaking, photography, hunting, and a host of other outdoor pleasures. Check out an interactive map to help you plan your trip to a coastal wildlife refuge near you:

<http://www.fws.gov/refuges/>



Photo courtesy of Take Me Fishing.



Photo credit: Liza Johnson

Check out recreation.gov for one stop to help plan your summer fun. The interagency website allows you to search for activities on an interactive map, see ready-made itineraries for destination cities, and make reservations. It includes multimedia and mobile features. Topics include "Day Hikes for Weekend Warriors" and "Car Camping for Beginners."

Take a picture and submit it to our "Share the Experience" photo contest. The winning photograph will appear on the 2015 America the Beautiful pass for entrance to federal recreation sites. Other prizes include \$15,000 and a chance to be featured on the Interior's popular social media platforms. For more information: <http://www.doi.gov/news/pressreleases/department-of-the-interior-announces-start-of-2013-share-the-experience-photo-contest.cfm>