



NEWSWAVE

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

October 2010

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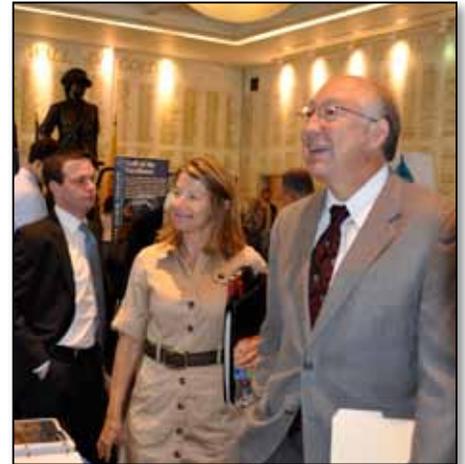
The Nation's New Ocean Policy

Executive Order for the Stewardship of Our Oceans, Coasts, and Great Lakes

On July 19th, 2010, President Obama signed an [Executive Order](#) establishing a comprehensive, integrated National Policy that calls for the long term preservation and sustainable uses oceans, coasts and Great Lakes.

Secretary Ken Salazar issued a memorandum on September 7 to all Assistant Secretaries and Heads of Bureaus and Offices indicating

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Secretary Salazar and Associate Deputy Secretary Laura Davis visit Interior's exhibit at Capitol Hill Oceans Week before the Secretary made his keynote address (*story page 8*).

Papahānaumokuākea Marine National Monument becomes UNESCO World Heritage Site

By Randal Bowman

On July 30, 2010, Delegates to the United Nations Educational, Scientific and Cultural Organization's (UNESCO) 34th World Heritage Convention in Brasilia, Brazil, agreed to inscribe (designate) Papahānaumokuākea Marine National Monument as one of only 26 mixed (natural and cultural) World Heritage Sites in the World. The vote establishes the first mixed World Heritage Site in the U.S., which covers an area of nearly 140,000 square miles.

Secretary of the Interior Ken Salazar commended the World Heritage Committee for adding



Announcement of the inscription of Papahānaumokuākea as a U.N. World Heritage Site, July 30, 2010, at the UNESCO Conference in Brasilia, Brazil. (Photo courtesy of the State Department)

Papahānaumokuākea Marine National Monument in the Northwestern Hawaiian Islands to the pres-

See UNESCO page 4



Department of the Interior's Coordinated Ocean, Coastal and Great Lakes Activities

The National Ocean Policy is out and the President signed E.O. 13457 establishing the new ocean governance structure for the Federal Government. The Deputies Committee of the new National Ocean Council (NOC) held its first meeting on September 24th. Stay tuned for more news about the NOC as it begins to direct the implementation of the National Ocean Policy.

We have many significant developments this year pertaining to the Interior's role as stewards of our ocean, coastal and Great Lakes resources. Recognizing our stewardship role, on September 7, 2010, Secretary Salazar issued a memorandum directing DOI to take action to fully implement the National Ocean Policy and the Executive Order. He commended Interior employees working on this effort.

In addition to the National Ocean Policy, our other cover story focuses on UNESCO's inscription of Papahānaumokuākea Marine National Monument into the prestigious list of World Heritage sites. These are just a few recent highlights.

Earlier this year, Secretary Salazar articulated our leadership role in implementing ocean-related policies as the keynote speaker at Capitol Hill Oceans Week, June 7-9, 2010, while other Interior leaders shared their expertise in sessions focused on future energy directions and impacts on ocean and coastal resources. Associate Deputy Secretary, Laura Davis, convened stakeholders to share the White House's National Ocean Policy announcement. Eileen Sobek, Deputy Assistant Secretary for Interior, spoke at Coastal America's Corporate Wetlands Restoration Partnership awards ceremony on the importance of the public-private partnership in preserving and restoring aquatic habitats.

Interior is partnering with other federal agencies to co-host the upcoming Coastal Zone 11 conference in Chicago 2011. Abstracts are due October 21. Visit: <http://www.doi.gov/initiatives/CZ11/index.htm>

The NewsWave has a new feature section called, The Surfing Bison, where we highlight unique and interesting ocean, coastal or Great Lakes resource topics that can be found on the internet. The logo was specially created for our program by the late Michael Gauldin. We welcome your suggestions and contributions. Please contact Terry Holman or Ann Tihansky for details.

We look forward to hearing from you and sharing what you do.

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The Department is actively coordinating coastal and ocean activities: (above) Associate Secretary Davis announcing the new National Ocean Policy through stakeholder meetings; Interior's display booth at Capitol Hill Oceans Week (right).



DOI provides Arctic Research for Extended Continental Shelf Project

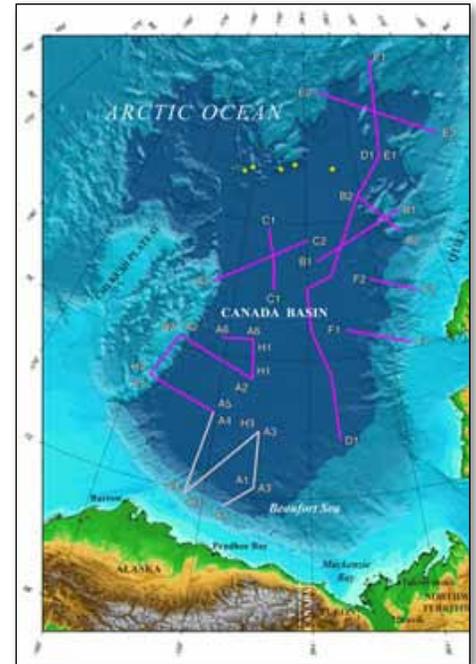
American and Canadian scientists spent this summer mapping the Arctic seafloor and gathering data to help define the outer limits of the continental shelf and collect water samples to better understand ocean chemistry in this remote region. Research is coordinated by the U.S. Extended Continental Shelf Task Force, an interagency group led by U.S. Department of State, Department of the Interior and National Oceanic and Atmospheric Administration.

Scientists set sail August 2 and returned September 6, 2010. U.S. Coast Guard Cutter Healy met up with the Canadian Coast Guard Ship Louis S. St-Laurent at sea where the ships took turns break-

ing ice for each other during the mission.

Under international law, specifically the United Nations Convention on the Law of the Sea, every coastal nation automatically has a continental shelf out to 200 nautical miles or to a maritime boundary. The Convention also states that a nation is entitled to continental shelf beyond 200 nautical miles if certain criteria are met, an area that is referred to as the “extended continental shelf.”

The U.S. Geological Survey is the lead science agency for the United States in the 2010 mission. “In this expedition, Canada and the U.S.



Map of the Arctic Ocean and planned cruise track lines for the expedition to map the ocean at the top of the world. Map courtesy of the USGS.

See Arctic continued on page 5

Sea Turtle Nests and Hatchlings Relocated to Avoid Encountering Oil

Since June 26, 135 sea turtle nests have been relocated by government agencies and FedEx from beaches in the path of the oil spill in Alabama, Mississippi and the Florida Panhandle to a secure, climate-controlled facility at NASA’s Kennedy Space Center on Merritt Island, Fla. By August 3, 2010, 2,168 hatchlings completed their incubation and were released into the Atlantic Ocean.

Scientists from the U.S. Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission, the National Park Service and NOAA devised the rescue plan rather than risk the hatchlings encountering oil as they entered the Gulf of Mexico. Sea turtle conservation groups were also consulted, and FedEx developed a transportation solution to traverse 500-plus miles of Florida per run with minimal vibration and close temperature control.



Loggerhead hatchling hits the beach.

“While there are still many nests left to hatch at Kennedy, we’re ecstatic about the early results from this high-stakes mission to preserve and protect these amazing sea creatures,” said Tom Strickland, As-

stant Secretary of the Interior for Fish and Wildlife and Parks, who attended the release along with Nick Wiley, Executive Director of the Florida Fish and Wildlife Conservation Commission, and Virginia Albanese, CEO of FedEx Custom Critical. “Thanks to the helping hands of many terrific partners, we are seeing success from an unprecedented operation to save this year’s hatchlings from what could have been a catastrophic loss,” said Strickland.

Story from: <http://www.doi.gov/news/pressreleases/Relocated-Sea-Turtle-Hatchlings-Released-into-Atlantic-Ocean.cfm> and The Fish and Wildlife Refuge System’s “Refuge Update” www.fws.gov/refuges



An endangered leatherback turtle hatchling.

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tigious UNESCO World Heritage List. “I am pleased that the World Heritage Committee recognized the unique cultural and natural heritage of Papahānaumokuākea Marine National Monument and the commitment of the United States and the state of Hawai‘i to conserve it,” Salazar said.

The Papahānaumokuākea Marine National Monument is the single largest conservation area under the U.S. flag, and one of the largest marine conservation areas in the world. It encompasses 139,797 square miles of the Pacific Ocean (105,564 square nautical miles) an area larger than all the country’s national parks combined. The extensive coral reefs found in Papahānaumokuākea are home to over 7,000 marine species, one quarter of which are found only in the Hawaiian Archipelago. Many of the islands and shallow water environments are important habitats for rare species such as the threatened green sea turtle and the endangered Hawaiian monk seal.



The small islands, reefs, and shoals of Papahānaumokuākea represent the longest, clearest and oldest example of island formation and atoll evolution in the world, spanning 28 million years. It contrasts strikingly with Hawai‘i Island’s continued

volcanic growth at the southeastern end of the Hawaiian Archipelago.

The near pristine remote reefs, islands, and waters of Papahānaumokuākea provide refuge and habitat for a wide array of threatened and endangered species and is one of the last predator-dominated coral reef ecosystems on the planet; manō (sharks) and ‘ulua (jacks) dominate the underwater landscape. The region also provides critical nesting and foraging grounds for 14 million seabirds making it the largest tropical seabird rookery in the world.

Indigenous cultural connections to the sea are additional attributes to the globally significant natural resources of Papahānaumokuākea.



Images from Papahānaumokuākea: left to right on this page: dazzling corals and reef fish, Hawaiian monk seal and a red spined urchin.

Modern Hawaiian wayfinders (non-instrument navigators) still voyage for navigational training on traditional double-hulled sailing canoes; an aspect of inscription unique to Papahānaumokuākea.

World Heritage status places this traditional skill, which was used to navigate across the world’s largest ocean, onto the world stage. World Heritage designation does not change the Monument’s cooperative federal-state management mission, plan or structure. Nor does it

impose, change or add regulations or restrictions. It is managed jointly by the Department of the Interior’s Fish and Wildlife Service, NOAA, and the State of Hawaii. The Monument’s management philosophy and regulations have always been designed to “bring the place to the people” through education, virtual exposure, and extremely limited visitation. All human access and activity will remain by permit only, with visitation by the public restricted to Midway Atoll National Wildlife Refuge under strict carrying-capacity guidelines.

The name, Papahānaumokuākea has great significance and meaning. Taken apart, “Papa” (earth mother), “hānau” (birth), “moku” (small island or large land division), and “ākea” (wide) bespeak a fertile woman giving birth to a wide stretch of islands beneath a benevolent sky. Taken as one long name, Papahānaumokuākea can be seen as a symbol of hope and regeneration for the Kūpuna Islands and the main Hawaiian Islands. And through the mana (spiritual power) of Papahānaumokuākea’s name, one that encourages abundance and the procreative forces of earth, sea, and sky, the Native Hawaiian people hope that the cultural, spiritual and physical health of their people will grow as well.

For more information and audio files to help understand and pronounce the name visit: <http://papahanaumokuakea.gov/about/name.html>



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the Department's commitment to implementing this policy. The memorandum states, "The Department played a key role in developing this comprehensive national policy and I am committed to implementing it. All bureaus and offices shall take action to fully implement the Executive Order.... The Department's ocean initiatives are coordinated by Associate Deputy Secretary Laura Davis and the Senior Ocean Policy Team. The Team has initiated a number of projects in anticipation of the new policy, including a 'one DOI' approach to ensure effective cross-bureau coordination in regional coastal and marine spatial planning initiatives; developing consistent tools for assessments within the Department of impacts of climate change and sea level rise, to be followed by establishing processes for prioritization of work for infrastructure placement and habitat restoration projects; and an aggressive communication program with our stakeholders. Our Departmental policies will also be updated to reflect the Executive Order and the Department's ocean initiative."

The Executive Order strengthens ocean governance and coordination across multiple agencies. It also creates a National Ocean Council (NOC) with recommendations that prioritize actions for the NOC to pursue. The Executive Order adopts the [Final Recommendations of the Interagency Ocean Policy Task Force](#) and directs Federal agencies to take the appropriate steps to implement them.

Read the Executive Order:

<http://www.whitehouse.gov/files/documents/2010stewardship-eo.pdf>



An image from the Arctic Ocean. The view of ocean, ice and sky across the horizon, as seen from the U.S. Coast Guard Cutter Healy on August 8, 2010.

Arctic continued from page 3

are working together to delineate the extended continental shelf in the Arctic to better determine where the Convention's criteria can be met," said USGS scientist Brian Edwards, chief scientist on the Healy. "The Arctic Ocean is an area of great interest for science, resource conservation, and possible economic development," said USGS scientist Deborah Hutchinson. "Because there is an area with considerable overlap between the U.S. and Canadian extended continental shelves, it makes sense to share data sets and work together in the remote and challenging environments of the Arctic Ocean." Additional USGS crew was researching ocean chemistry pertaining to carbon species. The oceans currently absorb approximately one-third of total emissions of carbon dioxide (CO₂) generated by fossil fuel combustion. As the CO₂ is absorbed by the ocean, it forms carbonic acid and lowers the slightly alkaline pH of seawater. This suite of chemical changes is known collectively as ocean acidification. Ocean acidification is an emerging global problem because as CO₂ emissions continue, so will the lowering of ocean pH that may cause profound changes in marine food webs and global ecosystems.

The USGS, along with other federal agencies, is working with the international scientific community to help standardize and compile information that adequately describes ocean chemistry trends, analyzes relations between these trends and carbon sources, cycles, and human activities.

For additional information on this expedition as well as photographs and video from past cruises, visit the Extended Continental Shelf Project and the USGS monthly publication [Sound Waves](http://continentalsshelf.gov) <http://continentalsshelf.gov>, <http://soundwaves.usgs.gov/2009/04/>, <http://soundwaves.usgs.gov/2010/08/>

Information on the United Nations Convention on the Law of the Sea can be found at: <http://www.un.org/Depts/los/index.htm>

Coastal America and the Corporate Wetlands Restoration Partnership Recognize Senator Kerry with Coastal Stewardship Award

U.S. Senator John F. Kerry (Massachusetts) was recognized with the John H. Chafee Coastal Stewardship Award for his life-long commitment to protecting the ocean and coastal resources of this country, for his leadership in the establishment of the Coastal America Learning Center Network and the Corporate Wetlands Restoration Partnership, and for his many legislative accomplishments. The John H. Chafee Coastal Stewardship Award was created to “recognize a person who, whether in government, the private sector, or academia, has consistently displayed outstanding leadership of national significance related to restoring and protecting our nation’s coastal resources.”



Senator John Kerry accepts his award while Leon Panetta, Rock Salt, and Eileen Sobek look on.

Larry Robinson, Assistant Secretary for Oceans and Atmosphere Department of Commerce, noted Senator Kerry many efforts on behalf of our nation’s oceans, coasts and Great Lakes. The ceremony also consisted of talks on the importance and contributions of the Corporate Wetlands Restoration Partnership (CWRP), including remarks by Eileen Sobek, Deputy Assistant Secretary for the Department of the Interior, on the importance of the CWRP public-private partnership.

Among his other accomplishments, Senator Kerry was recognized for his national leadership as a critical environmental legislator over a quarter century and as a constant steward of the marine environment, and a valuable supporter of Coastal America. As the current Chairman of the Foreign Relations Committee he is working to broker a world-wide climate change agreement and is championing U.S. accession to the Law of the Sea. Senator Kerry was also instrumental in the establishment of the Coastal America Learning Center Network in 1996 and the Corporate Wetlands Restoration Partnership in 2000.



Deputy Assistant Secretary Eileen Sobek recognizes the importance of partnership during Coastal America’s Coastal Stewardship Award ceremony.

The award was presented at a ceremony in the Senate Caucus Room on Capitol Hill on the evening of June 24th. Leon Panetta, Director, Central Intelligence, and former recipient of the Chafee Award for his efforts while Chair of the Pew Oceans Commission, provided congratulatory remarks as did U.S. Senator Sheldon Whitehouse (RI). Pat Hester, Vice-President, Spectra Energy Corporation & CWRP National Committee Chair, and Dr. Jerry Schubel, President, Aquarium of the Pacific & Chair of the Learning Center Network expressed appreciations for Senator Kerry’s consistent support for the Coastal America Partnership. Dr.



Eileen Sobek (center left) and Terry Holman (center right), celebrate the Stewardship awards with Coastal America staff Scott Johnston (far left) and Director Virginia Tippie (far right).

Remote-Sensing Workshop in the Bahamas

On June 7, 2010 an Executive Session of the workshop conveners was held at the Police Conference Center in East Street, Nassau, Bahamas to launch a week-long training course on remote sensing imagery for hazards. The first-ever disaster preparedness Workshop with the Government of The Bahamas was initiated to provide historic training to National Emergency Management Agency's (NEMA's) first responders as part of an innovative initiative involving the U.S. Embassy, U.S. Geological Survey (USGS), US Department of Defense - United States Northern Command (USNORTHCOM), the Bahamas National Emergency Management Agency (NEMA) and The Bahamian National Geographic Information Systems (BNGIS) Center.

A 3-day course was conducted at the BNGIS entitled: "Satellite and RADAR Imagery Applications for Hazards Professionals " by Peter Chirico, Kate Malpeli and Jean Weaver from the USGS. Fifteen selected participants representing the Bahamas National Geographic Information Systems Centre, Royal Bahamas Defense Force, the Royal Bahamas Police Force, The Water & Sewerage Corporation, Grand Bahama Port Authority, the Meteorological Department, Bahamas Electricity Corporation, NEMA, C.R. Walker Senior High School teacher and students, and the Department of Environmental Health Services provided an excellent cross section of users.

Read more: http://www.thebahamasweekly.com/publish/bis-news-updates/BNGIS_Centre_Reports_on_a_Successful_Remote_Sensing_Workshop11425.shtml

Two New Research Vessels Aim to Improve Understanding of Great Lakes

The U.S. Geological Survey Great Lakes Science Center will receive two new research vessels that will provide faster transportation and make it easier for researchers to navigate shallower waters, allowing scientists to better study fish populations, aquatic habitats, invasive species, and biological processes in the Great Lakes. On August 29, 2010, the Associated Press (AP) ran a brief story on the USGS awarded contract to build the two vessels with a brief interview of [Russ Strach](#), USGS Great Lakes Science Center Director. The AP story was carried by many local

news outlets in the Great Lakes Region triggering additional inquiries from local media including MY TV 20 (WMYD Detroit) the Craig Fahle Show (Detroit Public Radio Station) discussing the new vessels and current research activities in the Great Lakes.

Read more: <http://detnews.com/article/20100829/METRO/8290316/New-vessels-aim-to-strengthen-Great-Lakes-research>



Bird's eye view of the coastline along the northern Gulf of Mexico, Santa Rosa Island, FL.

Capitol Hill Oceans Week Highlights Ocean Energy Issues

Capitol Hill Oceans Week 2010, hosted by the National Marine Sanctuary Foundation, took place June 8-10, 2010. The premier ocean-focused conference in Washington, D.C., provides ocean policy stakeholders with opportunities to advance current ocean and coastal issues. This year's theme focused on the intersection between ocean and energy issues.

The event was sponsored by the U.S. Department of the Interior, NOAA, Monterey Bay Aquarium, National Geographic Society, Pacific Life, Sea Research Foundation, Keith Campbell Foundation for the Environment, National Ocean Industries Association, Alaska SeaLife Center, and the World Wildlife Fund.

Interior Secretary Ken Salazar gave a keynote address and made several major policy announcements. These involved the establishment of a Memorandum of Understanding that created the Consortium of States for alternative wind energy along the Atlantic Coast, with a 10-year vision for a new energy future. He ended the keynote with a call to learn from past lessons to bring us to a new day with more attention to resources, restoration, refuges, energy, economics, and security.

Panel speakers included Members of Congress, as well as representatives of the federal and state government, industry, academia, and nonprofit organizations. Discussions examined the many ways in which ocean energy choices can help shape a secure future for both coastal communities and marine resources. These involved the policy, legal, regulatory, financial, and

infrastructure challenges in developing clean ocean energy sources and suggested potential solutions to help secure a healthy ocean and clean energy future. Included in the discussions was a talk on how energy activities impact ocean and coastal resources with U.S. Geological Survey Director Marcia McNutt as one of the panelists.

The agenda and videos of many of the presentations and discussions are available online: <http://www.nms-focean.org/CHOW-2010-agenda>



Interior Co-Hosts Coastal Zone 11

DOI is working with NOAA, the US Army Corps of Engineers, EPA and the State of Illinois Department of Natural Resources to host Coastal Zone 11.

The program will include plenary sessions, technical presentations, special panel discussions, café conversations, poster sessions, field trips and training opportunities.

Present your research findings, participate in a workshop, co-sponsor a special session, host an associated professional meeting. Learn more online.

A promotional poster for Coastal Zone 2011. The top text reads "Coastal Zone 2011 Chicago, Illinois" in blue and green, followed by "JULY 17 TO 21, 2011" and "HYATT REGENCY CHICAGO" in smaller blue text. Below that, it says "Winds of Change: Great Lakes, Great Oceans, Great Communities" in blue. On the right, it lists "CZ11 partners to date: NOAA, DOI, USACE, EPA" and "Abstracts for CZ11 are due October 21, 2010" in green. At the bottom, it provides the website "http://www.doi.gov/initiatives/cz.html" in green. The background features a blue silhouette of the Chicago skyline and a white sailboat with a blue sail on a blue body of water with green reeds in the foreground.

<http://www.doi.gov/initiatives/CZ11/index.htm>

The American Tradition of Protecting Natural Resources An Historical Summary

The first in a three-part series

By Matthew Cimitile and Ann B. Tihansky

The concept of setting aside public lands for present and future generations began as an American phenomenon. The first large natural resource park was formally established by Congress in 1872 declaring that the area would be forever preserved. President Ulysses S. Grant signed the bill that established Yellowstone as the nation's, and the world's, first national park. The bill called for the "withdrawal from settlement, occupancy, or sale" of a tract of wilderness sprawling over 3,400 square miles in order to "dedicate and set apart as a great national park". The dedication of Yellowstone began a precedent for the practice of preserving unique, pristine and historically significant areas that has been adopted by other nations around the globe.

Setting aside lands and resources for ecosystems and people is key to successful management strategies that strive to conserve and establish compatible and sustainable uses of natural resources. As special parts of the earth's landscape are identified and recognized for their unique characteristics, they can be protected in a wide variety of ways. Each designation has specific objectives and management requirements. As you would expect, there are different purposes for protecting natural resources as well as

varying levels of responsibility for enforcing their protected status. What are the differences between these designations in America? Some of the designations indicate who or what level of government created the area. Others indicate the level of protection and possible goals this management method provides. While the first areas set aside to accomplish conservation objectives by the Department of the Interior were land areas, some of the largest protected areas include our nation's ocean and coastal resources. In fact, the three newest national marine monuments totaling 53 million acres include the Marianas Trench, Rose Atoll, and Pacific Remote Islands Marine National Monuments. Together these monuments comprise one of the largest areas ever set aside. Discussions are currently ongoing about how best to manage them for the benefit of all interested parties.

Protecting coastal and ocean areas is vital because these areas play an enormous role in cycling our planet's resources and energy. However, protecting these areas presents many challenges. Many are remotely located or require unique modes to access or even view them. Also, our oceans are so vast, we have barely begun to explore them and are just beginning to realize how much we still need to learn about what and where the resources are that need to be protected. As we move forward in managing and protecting

coastal and ocean resources, it is important to understand the differences between protected designations. Read on to learn more interesting facts, historic legislative acts and designation definitions that give protected status to some of America's most treasured landscapes and resources.



Preservation Facts

First National Wildlife Refuge: In 1903, President Theodore Roosevelt designated a coastal island in Florida as the Nation's first National Wildlife Refuge (NWR). Pelican Island NWR was set aside to protect brown pelicans and other native birds nesting there. This was the first time the federal government set aside land for the sake of wildlife. Since then, the National Wildlife Refuge System has grown to include more than 550 refuges, encompassing over 150 million acres, administered by the U.S. Fish and Wildlife Service. <http://www.fws.gov/refuges/>



First National Seashore: The broad expanse of coastal dunes and beaches situated on the eastern outskirts of North Carolina's Atlantic coastline known as Cape Hatteras National Seashore was authorized by Congress on August 17, 1937, and established on January 12, 1953. <http://www.nps.gov/caha/index.htm>, <http://www.npca.org/parks/cape-hatteras-national-seashore.html>

First Marine Protected Area: The Key West NWR, 1908, the Hawaiian Islands NWR and the Alaska Maritime NWR were established in 1909. The marine areas of **San Juan County/Cypress Island Marine Biological Preserve** in Washington was designated in 1923, making it the first preserved aquatic site in the country. <http://mpa.gov/dataanalysis/mpainventory>

Extremely Remote: The eight atolls and islands included within **Pacific Remote Islands Marine National Monument** are farther from human population centers than any other U.S. area.

They represent one of the last frontiers and havens for wildlife in the world, and comprise the most widespread collection of pelagic, coral reef, seabird, and shorebird protected areas on the planet under a single nation's jurisdiction. The Islands in the Alaska Maritime National Wildlife Refuge includes 3.4 million acres of spectacular volcanic islands of the Aleutian chain, the seabird cliffs, the remote Pribilof Islands, and icebound lands washed by the Chukchi Sea, provide essential habitat for some 40 million seabirds, represent-

ing more than 30 species. <http://www.fws.gov/pacificremotelandsmarinemonument/>, <http://alaskamaritime.fws.gov/>

Home to the Most Threatened Species: Haleakala National Park on the island of Kahului in Hawaii is inhabited by 36 endangered species, from the Hawaiian goose and crested honeycreeper (both birds) to the Hawaiian monk seal and Hawaiian hoary bat. <http://www.nature.nps.gov/biology/endangeredspecies/database/search.cfm>

Biggest Refuges: Both the Arctic National Wildlife Refuge and the Yukon Delta National Wildlife Refuge are more than 19.6 million acres each; the Marine National Monuments in the Pacific are orders of magnitude larger than those in the Arctic areas. For example: the Marianas Trench NWR in the Marianas Trench Marine National Monument is over 50 million acres on the bottom of the ocean. The Wrangell-Saint Elias National Park stretches for 13.2 million acres along southeastern Alaska and into Canada. <http://arctic.fws.gov/> <http://www.nps.gov/wrst/index.htm>

Smallest Refuge: Tybee National Wildlife Refuge began as a one-acre oyster shoal, Oysterbed Island, the result of spoil disposal mandated by harbor dredging activity by the U.S. Army Corps of Engineers. On May 9, 1938, President Franklin D. Roosevelt signed an executive order protecting it as a breeding area for migratory birds and other wildlife. Located in the mouth of the Savannah River, it is now a 100-acre refuge. <http://www.fws.gov/>

refuges/profiles/index.cfm?id=41624

Lowest Elevation: The Marianas Trench is the deepest point on Earth and the **Marianas Trench Marine National Monument** includes some of the lowest places on earth, miles below sea level, deeper than the height of Mount Everest. It includes some 50,532,102 acres of virtually unknown characteristics. Read more in this issue's "Surfing Bison" feature. <http://www.fws.gov/marianastrenchmarinemonument/>

<http://www.fws.gov/marianastrenchmarinemonument/MTMNM%20brief.pdf>

First National Park: In 1872, President Grant and Congress established Yellowstone National Park as America's first national park. Located in Wyoming, Montana and Idaho, Yellowstone was set aside as "a public park or pleasuring-ground for the benefit and enjoyment of the people." <http://www.nps.gov/yell/index.htm>



In our next issue: **Part 2: Major Land and Water Conservation Acts in U.S. History.**

Deep Dark Secrets of the Marianas Trench National Marine Monument

<http://www.fws.gov/marianastrenchmarinemonument/MTMNM%20brief.pdf>

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

The Surfing Bison



The **Marianas Trench Marine National Monument** consists of approximately 95,216 square miles of submerged lands and waters of the Mariana Archipelago. It includes three units: the **Islands Unit**, the **Volcanic Unit**, and the **Trench Unit**. The Marianas Trench Marine National Monument was established by Presidential Proclamation 8335 in January 2009. Only recently have scientists visited the realm of the monument, observing previously unknown biological, chemical, and geological wonders of nature.

- The Marianas Trench is the deepest point on Earth, deeper than the height of Mount Everest above sea level. It is five times longer than the Grand Canyon and includes some 50,532,102 acres of virtually unknown characteristics.



- In the **Volcanic Unit** – an arc of undersea mud volcanoes and hydrothermal vents support unusual life forms that survive in the midst of highly acidic and boiling water.

- The Champagne vent, found at the NW Eifuku volcano, produces almost pure liquid carbon dioxide. A pool of liquid sulfur exists at the Daikoku submarine volcano. The only other known location of molten sulfur is on Io, one of Jupiter's moon.



Fish and corals living at the summit of East Diamante volcano, nicknamed "The Aquarium", by scientists. Carbon dioxide bubbles (top left) and the white chimneys (bottom left) of the NW Eifuku volcano. (all photos courtesy of NOAA).

- In the **Islands Unit**, basaltic rock foundations support unique reef habitats and marine biological communities. These reefs and waters include the greatest diversity of seamount and hydrothermal vent life yet discovered.

- Hydrothermal vents at about 475 feet at the submerged caldera at Maug spew acidic water at scalding temperatures. It is one of only a few known places in the world where photosynthetic and chemosynthetic communities of life co-exist.

- The coral reef ecosystems within the Islands Unit have the highest density of sharks anywhere in the Pacific.

- This vast and unique area has many secrets to yield and many potentially valuable lessons that can benefit the rest of the world.

