

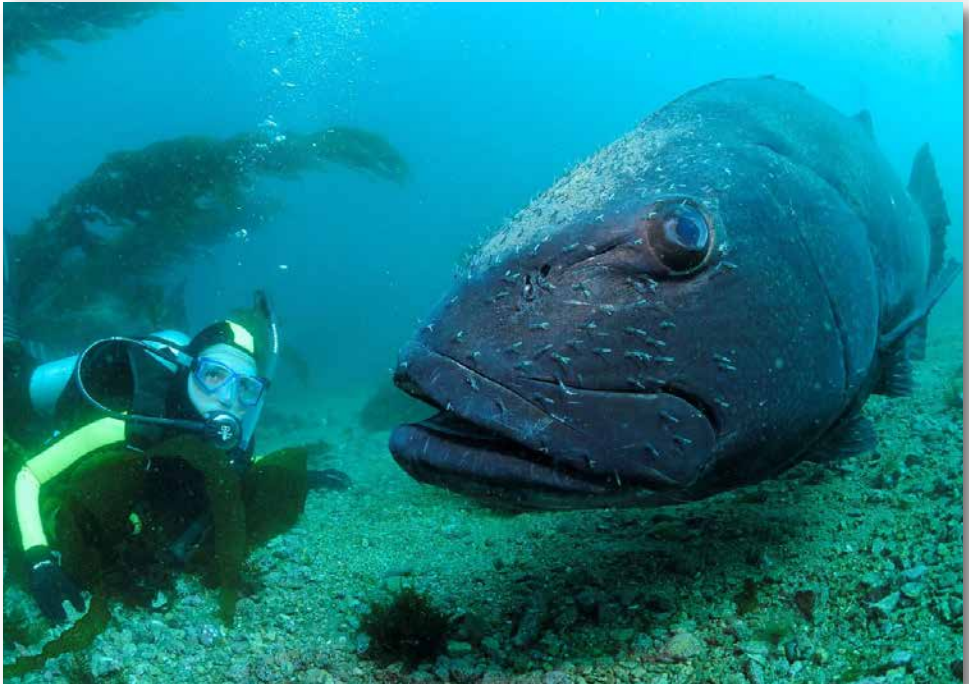


NEWSWAVE

Selected news stories from across the U.S. Department of the Interior's Ocean, Great Lakes and Coasts

Fall 2023

Our Blue Portfolio



Read **NEWSWAVE**: www.doi.gov/ocean/newswave
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If you have any questions, comments or want to receive **NEWSWAVE** by email, contact: Ann Tihansky: tihansky@usgs.gov

For more information:

Liza Johnson—Ocean, Great Lakes, and Coasts Coordinator, Office of the Assistant Secretary for Insular and International Affairs
1849 C Street, NW, Mail Stop 3117
Washington, D.C. 20240
Telephone: 202-208-1378
liza_m_johnson@ios.doi.gov

Above: A view of Magen's Bay from a lookout on the Magen's Bay trail located on the northern coast of the Caribbean island of St. Thomas, USVI, the site of the 47th U.S. Coral Reef Task Force meeting. *See related story page 24.* The trail connects the top of the island to the beach, passing through a range of ecosystems; a mixed dry forest, a moist-tropical forest and a muddy mangrove forest punctuated by large crab holes that eventually leads out to the sandy beach. The Nature Conservancy manages this important conservation area. Photo credit: Ann Tihansky, USGS.

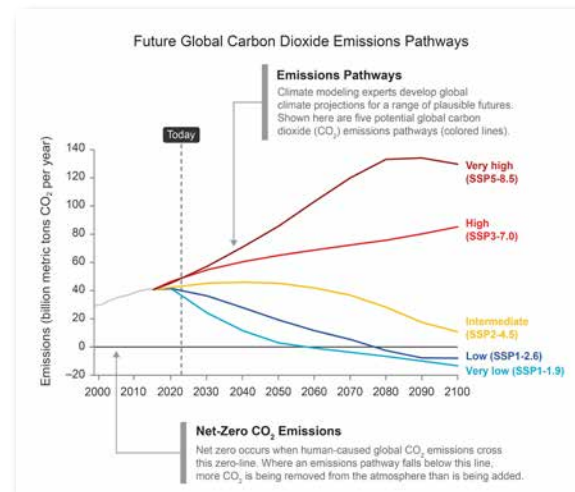
Cover photos: Top: Youth point to areas where mud volcanoes are found within the Mariana trench—the deepest place in the ocean. The Commonwealth of the Northern Marianas Islands (CNMI) Public School System's hands-on 3D display showcases detailed bathymetry data that brings deep geologic features to life. Photo credit: Jihan Younis, USFWS Bottom: A giant sea bass (*Stereolepis gigas*) visits with a diver at Channel Islands National Park in CA. Photo credit: Jeffrey Bozanic, NPS. Learn more: <https://www.nps.gov/chis/learn/nature/giant-black-seabass.htm>

Fifth National Climate Assessment Released

To equip Americans with the best available science and understanding of climate change impacts in the U.S., the President released the Fifth National Climate Assessment (NCA5). NCA5 assesses changes in the climate, national and regional impacts, and options for reducing present and future risk. The report indicates that every region of the country is already experiencing the impacts of climate change. It also highlights ambitious climate actions that already are underway in every region.

More than 30 USGS scientists helped author this authoritative, definitive assessment of the impacts of climate change in the U.S. Learn more about USGS Climate Science Capabilities: <https://www.usgs.gov/science/science-explorer/climate/capabilities>

There are also significant investments across the Federal government to invest in clean energy, reduce carbon pollution and improve resilience. Read the White House Fact Sheet: <https://www.whitehouse.gov/briefing-room/statements-releases/2023/11/14/fact-sheet-biden-harris-administration-releases-fifth-national-climate-assessment-and-announces-more-than-6-billion-to-strengthen-climate-resilience-across-the-country/>



Future carbon emission scenario pathways from the White House Fact Sheet



Eroding permafrost on Alaska's Arctic Coast. Photo credit: Christopher Arp, USGS



Assistant Secretary for Insular and International Affairs Carmen G. Cantor (center) is joined by DOI staff attending the U.S. Coral Reef Task Force Meeting in October in the USVI. (See related story page 24) Photo credit: DOI

\$1.4 Million for Coral Reefs

The U.S. DOI's Office of Insular Affairs (OIA) announced \$1,432,994 in FY23 Coral Reef and Natural Resources Program (CRNR) grant funding for protecting coral reef and natural resources in the territories and the freely associated states.

"Coral reefs are important income generators for tourism and food industries in island economies; and while coral reefs protect and harbor fish and other coastal resources, they also provide islands with critical protection from erosion and wave action from storms," said Assistant Secretary Cantor. The projects and programs (including the National Coral Reef Management Fellowship program) funded through the CRNR program are described in the News Release: <https://www.doi.gov/oia/press/OIA-Announces-%241.4-Million-in-FY2023-Funds-to-Protect-and-Support-Coral-Reefs-in-the-Insular-Areas>



A coral reef in American Samoa. Photo credit: American Samoa Coral Reef Advisory Group

Big News for Offshore Wind!

On December 6, South Fork Wind delivered the nation's first offshore-wind-generated power to the grid. Less than a month earlier, Empire Wind in New York became the sixth commercial-scale offshore wind energy project to be approved in the U.S., following Coastal Virginia Offshore Wind project (the nation's largest offshore wind project so far) which was approved in October. These projects continue to move the U.S. closer to the goal of deploying 30 gigawatts of offshore wind energy capacity by 2030.

"The American offshore wind industry is continuing to expand rapidly, creating good-paying union jobs across the manufacturing, shipbuilding and construction sectors," said Secretary Deb Haaland. "Together with the labor community, industry, Tribes, and partners from coast to coast, we will continue to expand clean energy development in a manner that will benefit communities, strengthen our nation's energy security, and address climate change."

"Extensive engagement with Tribes, other government partners, ocean users, concerned citizens, and more has helped us



to avoid or reduce user conflicts while facilitating the responsible development of offshore wind projects. We look forward to continuing our work with them as we move this industry forward," said BOEM Director Elizabeth Klein. Read more:

Empire Wind: <https://www.doi.gov/pressreleases/biden-harris-administration-approves-sixth-offshore-wind-project>

Vineyard Wind: <https://www.doi.gov/pressreleases/biden-harris-administration-approves-largest-offshore-wind-project-nation>

Celebrating 50 Years of Protecting Endangered Species

By Chloe Leaverton and Valerie Fellows (USFWS)

The Endangered Species Act (ESA) has prevented the extinction of hundreds of iconic American species and protected their habitats and the ecosystems that support them. This landmark conservation tool is celebrating its golden anniversary. Each of these species is a part of the web of life, with unique cultural and biological communities essential to our combined well-being. When we invest in conservation, we invest in our own future; ensuring healthy air, land and water and a world rich with biodiversity. As we face great environmental challenges, the ESA can be more inspiring than ever. Read more:

<https://www.fws.gov/library/collections/endangered-species-act-50-more-important-ever>



Whooping cranes feed at Aransas National Wildlife Refuge, TX. Photo credit: Jeff Adams, USFWS
Learn more: <https://www.fws.gov/story/2023-08/whooping-cranes-reflecting-50-years-esa-protection-and-habitat-conservation#:~:text=After%2050%20years%20of%20federal,exist%20in%20the%20wild%20today>

Alarming Future for California's Coastline

By Peter Pearsall (USGS)

Computer modeling by USGS and the University of South Wales-Sydney applies advanced technology to estimate shoreline change, highlighting the potential impact of sea-level rise and other local processes on California's coastal landscapes. The findings predict significant beach erosion by 2100 due to sea-level rise and other factors and have significant implications for coastal communities, ecosystems, and industries that rely on California's beaches. The potential loss of such a significant percentage of beaches would not only impact tourism and recreation but also threaten coastal infrastructure and habitats. Further, beaches are the first line of defense against coastal flooding.

"Understanding the potential impact of sea-level rise and other processes on California's beaches allows policymakers, land-use planners, and communities to develop effective strategies for coastal management and climate adaptation," said USGS scientist Patrick Barnard, a co-author of the study. While the new study provides the first-ever results at this scale and resolution for Northern California, it serves as an update to previous shoreline change projections for Central and Southern California. The previous results have been used extensively for coastal vulnerability assessments and adaptation planning, and are currently included in the Our Coast Our Future web tool.

Learn more: <https://ourcoastourfuture.org/>

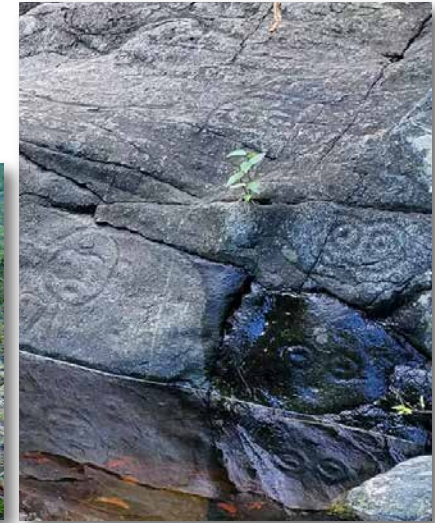


Shoreline modeling predictions for California coastline areas produced by the current CoSMoS-COAST model. The predictions represent the shoreline position in 2100 with 1.0 m of sea level rise. The yellow bands represent the projected shoreline position and (parametric) uncertainty, and the orange/red bands represent the potential storm-driven erosion uncertainty. View the image on-line: <https://www.usgs.gov/media/images/shoreline-modeling-predictions-produced-current-cosmos-coast-model> Read the study: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2022JF006936>, Image credit: USGS

History, Culture and Stunning Natural Resources of the U.S. Virgin Islands National Park

Humans have called St. John, one of the U.S. Virgin Islands, home for over 3000 years. The Virgin Islands National Park offers a wide range of activities to learn and explore whether you're interested in hiking, boating, snorkeling, history or just taking in the views on these tropical islands. Visit the photo gallery to see images of sea turtles, beautiful beaches, historic and cultural sites, birds, fish, plants, and hurricane recovery, watch videos and check in with web cams. <https://www.nps.gov/viis/learn/photosmultimedia/index.htm>

Visit the park on-line to learn more: <https://www.nps.gov/viis/learn/index.htm>



Clockwise: A green sea turtle glides over a seagrass meadow. Photo credit: Caroline Rogers, USGS; Taino petroglyph carvings along the Reef Bay Trail show faces with animal features and other symbols central to the indigenous Taino culture. Photo credit: Beth Parnicza, NPS; The view of Trunk Bay from 'The Overlook'. Photo credit: Anne Finney; Stonework ruins of the sugar plantation of Cinnamon Bay on St. John, USVI. Photo credit: Kimberly Boulon



Marine Debris: One Big Ocean, One Big Issue

In 2020, the National Park Service teamed up with the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program to raise awareness about the sources and impacts of marine debris and to encourage individuals to take action to prevent marine debris.

This five-year partnership supports the development and installation of outreach and educational exhibits in coastal national parks. Each exhibit reflects the local and regional debris issue and seeks to inspire action through engaging and interactive exhibits. From teaming up with local artists who create sculptures that showcase local issues, to creating traveling displays that reach neighboring schools, each display is unique with its own story to tell. See the displays and learn more about each one. So far the exhibits are at:

- Cape Cod National Seashore, MA,
- Bering Land Bridge National Preserve, AK
- Biscayne National Park, FL
- Cape Lookout National Seashore, NC
- Kaloko-Honokōhau National Historical Park, HI
- Kenai Fjords National Park, AK

Visit the photo gallery online: <https://go.nps.gov/1f4d8o>



Elephant Seal Rescue

A plastic ring toy known as an Aerobie created a problem for two different juvenile elephant seals (*Mirounga angustirostris*) this year on Drake's Beach in Point Reyes National Seashore, CA.

Both seals were found with the plastic rings stuck around their necks. These kinds of entanglements are especially dangerous since they continue to tighten as the animal grows, causing life-threatening injuries. Luckily, experts from The Marine Mammal Center and NPS Point Reyes National Seashore were able to safely remove the ring from one seal. While the second seal left the area before the team could intervene, it is hopeful that the team will see the seal again and will be able to remove the entanglement. You can prevent potentially fatal threats like this by packing out, and properly disposing of any items you bring to outdoor environments. If you plan to dispose of any ring-shaped items, please cut them first so they won't end up strangling wildlife.



Above: A juvenile elephant seal with a red Aerobie toy stuck around its neck lies in a group of

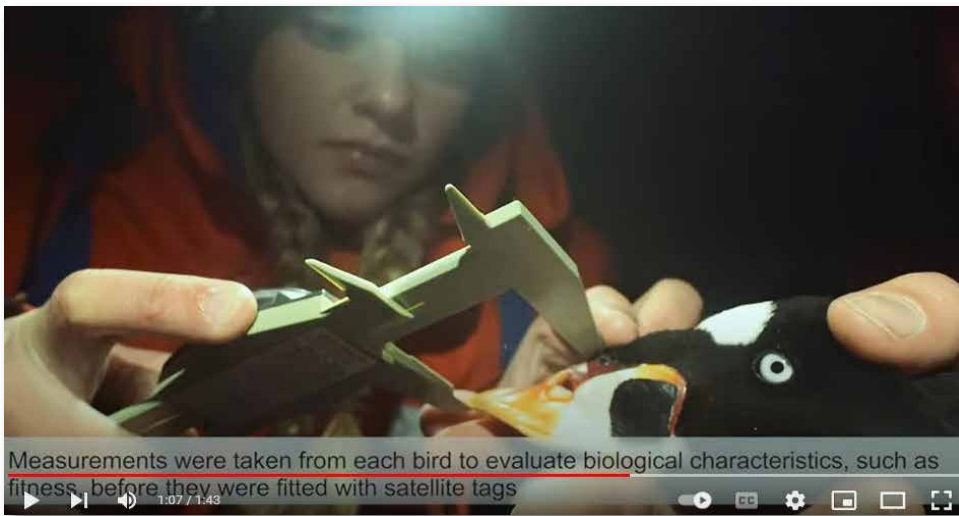
elephant seals on Drakes Beach, Point Reyes National Seashore, CA. Inset: Trained staff from The Marine Mammal Center hold up the ring they safely removed from the seal. Photo credits: Marine Mammal Center



Above: A map table exhibit at the Bering Land Bridge National Preserve in Alaska, shows the Northern Pacific region and comes to life with hands-on interactive buttons that can be pushed to light up the map to illustrate how marine debris can travel by ocean currents and winds and how that can impact birds, whales and other migratory wildlife. Coastal communities on both sides of the Bering Strait are affected by marine debris as it washes on shore and impacts wildlife. Communities are working to monitor and address the problem. Photo credit: NPS



Artist Cindy Pease Roe (center) and project team members, Laura Ludwig and Aleutia Scott admire the 14-foot marine debris shark sculpture installed at the Cape Cod National Seashore, MA. Photo credit: NPS



Measurements were taken from each bird to evaluate biological characteristics, such as fitness, before they were fitted with satellite tags

Above: A BOEM biologist takes measurements to learn more about surf scoter populations. The team of scientists used innovative satellite tag technology to track the birds through their entire ranges. Photo credit: BOEM) Middle: A Surf scoter with a new tag, is released. Photo credit: BOEM Below: A northern gannet, (*Morus bassanus*) is a large pelagic bird that dives for fish from the air, coming ashore only to breed. Photo credit: Jonathan Fiely, USGS



Watch the video as scientists catch and tag the birds:

<https://www.youtube.com/watch?v=E5Ylsth7ozU>

A Diving Bird Study Informs Offshore Wind

BOEM funded a study with the U.S. Fish and Wildlife Service and the USGS between 2012 and 2016, to track bird movements to inform wind energy decisions and minimize impacts to wildlife.

Using innovative satellite tag technology, Northern Gannets, Red-throated Loons, and Surf Scoters were tracked throughout their entire range, including the waters off the US Mid-Atlantic coast.

This is the most comprehensive satellite tracking study of marine birds ever conducted in this part of the world.

The baseline information will be used to avoid and minimize the impacts of future offshore wind energy development.

Read more about this study. <https://espis.boem.gov/final%20reports/5635.pdf>



Fish Passage Funding Opportunity to Protect Aquatic Species and Habitats

The USFWS is seeking project applications for up to \$36 million in fish passage funding

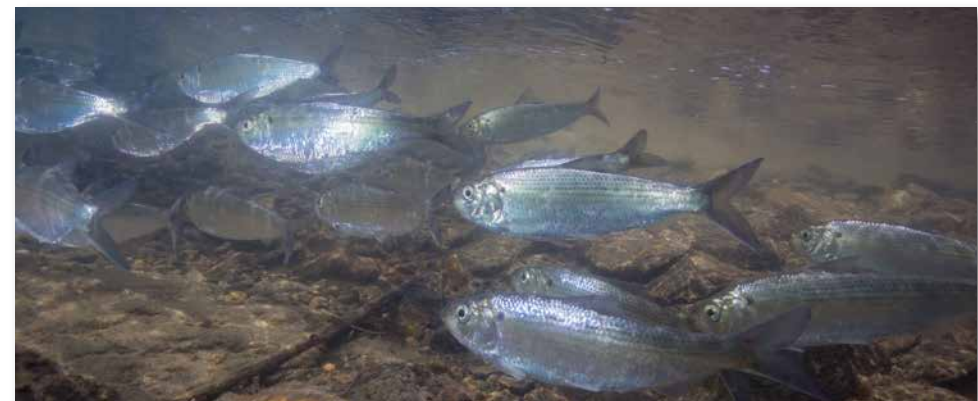
Selected projects will be part of a five-year, \$200 million Bipartisan Infrastructure Law investment to restore aquatic ecosystems, through the National Fish Passage Program. This once-in-a-generation opportunity to invest in our nation's rivers, streams, and communities will address outdated, unsafe or obsolete dams, culverts, levees and other barriers fragmenting our nation's rivers and streams.

Learn more: <https://www.fws.gov/page/national-fish-passage-programs-bipartisan-infrastructure-law-2024-funding-opportunity-guidance>

Read more about the National Fish Passage Program: <https://www.fws.gov/program/national-fish-passage> For funding opportunity details please visit: <https://www.fws.gov/service/us-fish-and-wildlife-service-seeks-project-applications-36-million-fish-passage-funding>



Perched culverts (top) are impassible by fish and other aquatic life. This newly constructed bridge (bottom) in the Town of Charleston, ME will allow aquatic life to reconnect with upstream habitats. Photo credit: USFWS



Alewife, are several other fishes that as a group are commonly referred to as river herring; alewife, blueback herring, American shad, hickory shad and other migratory shad on the east coast. Alewives spawn in freshwater but spend most of their life at sea. In spring, they migrate from the ocean back to their home rivers to spawn. These species and many others, including some at-risk and listed species, depend on connected streams and high-quality habitat to survive. During the past 200 years, many of these populations of fish have decreased drastically, in large part due to the proliferation of barriers like dams, undersized culverts, and watershed development that blocks fish from their natural migrations. Photo credit: Ryan Hagerty, USFWS

Restored Barrier Islands Host Nesting Endangered Sea Turtles Once Again!

By Nanciann Regalado (USFWS)

Wildlife biologists have all the fun. Imagine flying in a small plane over the Gulf of Mexico, conducting a survey of birds nesting on small islands scattered in the northern Gulf of Mexico. These islands offer prime habitat for colonial nesting birds such as pelicans, terns and skimmers. Unfortunately, these sites are disappearing as barrier islands slowly erode away in the face of hurricanes, other storms, changes in sediment, and sea level rise. The State of Louisiana, DOI, EPA, USDA and NOAA are all working to restore barrier islands for bird habitat and other ecological benefits using settlement funds from the 2010 Deepwater Horizon oil spill. As State and Federal Trustees, they are responsible for restoring natural resources injured by the spill and while they have successfully completed multiple barrier island restoration projects, they plan to accomplish more.

In 2022, while flying above one of the Chandeleur Islands in Breton National Wildlife Refuge, Todd Baker, a project manager with Louisiana's Coastal Protection and Restoration Authority (CPRA) realized he was looking at tracks known as a "crawl," a feature made by a female sea turtle searching for a place to lay her eggs. He was surprised because sea turtles have not been seen on these islands in decades.

Baker, who spent many years as a state wildlife biologist, knew immediately the significance of his observation. Before long, he was standing on the island with USFWS biologists Barret Fortier and Dianne Ingram. The biologists also found evidence that hatchlings had emerged from at least one nest on the island.

USFWS staff determined the hatchlings to be Kemp's ridley sea turtles, and crawl survey data indicated that in addition to Kemp's nests, loggerhead sea turtles also nested on the



island. Both species of sea turtles are Federally listed; the Kemp's ridley are endangered and loggerheads are threatened.

The finding was the first known observation of wild sea turtle hatchlings on the Chandeleur Islands in at least 75 years. That summer, biologists documented more than 54 sea turtle crawls: five confirmed nests - two loggerhead and three kemp's ridley (the most endangered sea turtle in the world). What's more, two live Kemp's hatchlings were seen making their way to the water.

More good news came in summer 2023! State and Federal biologists conducted another round of surveys to see whether the turtles' use of the island was an anomaly or whether surveys could establish repeated use. Biologists made multiple flights to the island, landed on the water, and waded to shore to document crawls, nests, and hatchling activity. To the delight of all involved, 54 crawls were found and 12 nests were confirmed. Hatchlings were seen once again.

This time, the biologists gathered data they hoped would help them understand the turtle's preferred habitat for nesting. This information is going to help them design a better restoration project - one that will restore the island for bird habitat while also considering sea turtle suitability. The Trustees have set a goal of having multiple design alternatives ready for the public to review by the end of 2025.

To learn more about the Deepwater Horizon Trustees work to restore the Gulf of Mexico, please visit: www.gulfspillrestoration.gov

Above: Todd Baker (at left) and sea plane pilot participate in aerial biological surveys of Louisiana coastal barrier islands. Opposite page: Todd Baker (center) helps a team of biologists excavate a Kemp's ridley nest while Barrett Fortier, USFWS wildlife biologist (top left), oversees the work. Photo credits: CPRA



Kemp's ridley (*Lepidochelys kempii*) hatchlings making their way across the beach. Photo credit: NPS

Can the Ocean Store more CO₂ to Help Address Climate Change?

By Jessica Fitzpatrick and Kevin Kroeger (USGS)

Did you know that the ocean captures a large amount of carbon dioxide from the atmosphere, helping mitigate climate change? Scientists are investigating whether oceans can store even more of the greenhouse gas than they already do.

The USGS and partners are answering questions such as how carbon reaches oceans, how much carbon is already sequestered there, how much more could be captured and how long it can be contained. Plus, scientists are researching how certain minerals might augment the storage process. The type of carbon they are studying could also help neutralize ocean acidification. The science is aimed at gaining insights into the role wetlands and the ocean play in a comprehensive strategy to address climate change and human-caused carbon emissions.

“Several approaches are being considered and combined in an effort to reduce greenhouse gases to targeted levels in the next century, and part of that strategy is looking at the oceans,” said USGS research chemist Kevin Kroeger.

USGS scientists are involved in several projects regarding carbon storage along the coasts to learn more about carbon storage in plants and soils as well as the release of methane and other gases from various types of wetlands. “The USGS has been researching carbon capture on land and in oceans for several years, and we are embarking on two new projects to study the ocean in more detail and learn how certain processes may help sequester additional carbon that does not contribute to ocean acidity.” The USGS is working with other federal government agencies, academic institutions and industry partners that include the National Oceanic and Atmospheric Association (NOAA), the National Park Service’s (NPS) Cape Cod National Seashore, the Woods Hole Oceanographic Institution, Vesta, the University of Connecticut, the Smithsonian Environmental Research Center, California State University East Bay, the City College of New York and Silvestrum Climate Associates.

Read the Science Snippet: <https://www.usgs.gov/news/science-snippet/can-oceans-store-more-co2-help-climate-change>

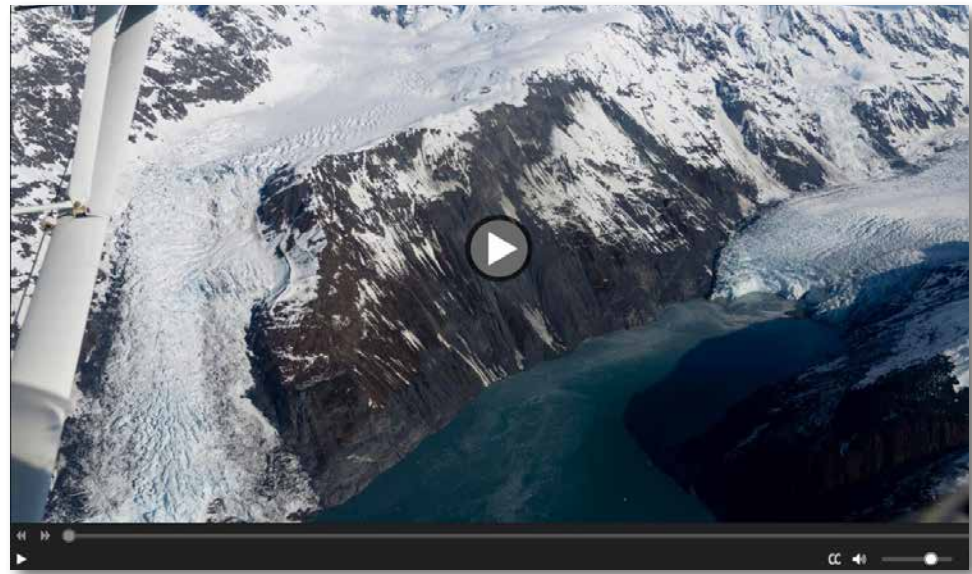
USGS Provides Pre-Tidal Restoration Data for Herring River Estuary: <https://www.usgs.gov/centers/new-england-water-science-center/news/usgs-provides-pre-tidal-restoration-data-herring>

Learn more about Climate Science, visit the USGS Climate Science Explorer: <https://www.usgs.gov/science/science-explorer/climate>



Wetlands play a key role in the coastal carbon cycle, removing carbon dioxide from the atmosphere during photosynthesis and releasing carbon dioxide and methane during respiration. The amount of methane emission is critical to determining how a wetland interacts with the global climate system. Here Rebecca Sanders-DeMott and Adrian Mann measure carbon dioxide and methane fluxes in a clear chamber in a Phragmites wetland in Mashpee, MA. Photo credit: USGS

The process of storing and releasing carbon within coastal wetlands is called, “blue carbon.”



Watch the video: <https://www.usgs.gov/media/videos/prince-william-sound-landslide-hazards-project-overview>

Reducing Risks from Barry Arm Landslide and Tsunami Hazards

By Marisa Macias (USGS)

Barry Arm is a large glacier-permafrost-related landslide located in northwest Prince William Sound, AK. It’s a massive landslide; a mile and a half wide by 3,000 feet high and over 500 million cubic meters in volume. If the Barry Arm landslide releases into the fjord, it could create a very significant tsunami within Prince William Sound. Scientists are working as part of a multi-agency, multi-Region, multi-Program effort to advance the mission for public safety and preparedness.

Since we have a history of similar types of events in the area (Lituya Bay 1958, Taan Fjord 2015), it is a very plausible scenario. If a catastrophic landslide fails at Barry Arm, it could possibly send several rounds of damaging water to inundate, flood, and tear apart parts of the harbor and coastline of Whittier, AK and the surrounding area in about 20 to 22 minutes. A recent video discusses the potential scenario and the interagency partnerships that are working to reduce risk and loss as well as advance the state of the science and forecasting and warning systems.

Delivering Climate Science

The USGS provides climate science to policymakers, resource managers, and the public to help guide better decisions for building sustainable resource stewardship across America’s public lands and beyond. Explore USGS Climate Science Capabilities.

Visit: <https://www.usgs.gov/science/science-explorer/climate/capabilities>



Capturing the Beauty of the Sea- A photography primer

Photos and article by Jesse Pluim (BLM)

Are you ready to get more out of your ocean photography?

Imagine capturing the magic of coastal landscapes, from the serene beauty of an ocean sunset to the dramatic power of crashing waves. In this seascape photography primer featuring BLM's California Coastal National Monument, you'll learn some best practices that will turn these picturesque scenes into stunning images that will awe you and your audience.



Photo 1-Point Pinos at Blue Hour. Shutter Speed 1/10, Aperture F/11. Wind is perpendicular to the shore. The slower shutter speed gives the wave a sense of 'crashing' but is still fast enough to retain the form of the wave. The higher aperture number allows both the foreground and background to be in focus.

Master Your Camera Settings

Understanding the fundamentals of camera settings is vital in capturing the perfect sea scape photograph.

Shutter Speed: To capture the dynamic nature of the sea, shutter speed is your best friend. Faster speeds can freeze the motion of crashing waves, or slower speeds can turn a tide pool into an ethereal soup. If you are unsure about what shutter speed to choose, set your camera to 1/20. This will capture the shape of the wave with a bit of dynamic blur. But the final image is up to your taste. Take photos at different speeds to figure out which style is right for you. Make sure to bring a tripod if your shutter speed is lower than the size of your lens. For example: if you are shooting without a tripod with a 50mm lens, your shutter speed should be at least 1/50th of a second or higher; 100 mm = 1/100 sec or higher. Any lower than that, and you will need a tripod.

Aperture: Adjust your aperture to control the depth of field. A smaller aperture (higher f-number) will keep both the foreground and background in focus, while a wider aperture (lower f-number) will create a beautiful, soft background blur. However, the smaller aperture generally requires a slower shutter speed, so bring a tripod.



Photo 2-Sea Stars on the California Coastal National Monument. Shutter Speed 1/1000, Aperture f/5.6. With fast shutter speed, the details of a crashing wave are frozen in place. The lower aperture number allows the sea stars to be the focus of the image.

Composition Matters

Another essential aspect is the art of composition. Composing your sea scape photograph is crucial to creating a visually appealing image.

Rule of Thirds: Imagine your frame divided into nine equal parts, like a tic-tac-toe board. Placing your main subject or horizon on one of these lines or their intersections can create a balanced and visually pleasing composition (see example in Photo 1).

Leading Lines: Use natural elements such as rocks, piers, or the shoreline to guide the viewer's eye through the image, leading them to the main point of interest.



Photo 4-Ocean spray at Piedras Blancas Light Station at midday, with shutter speed of 1/1250. By exploring the area before I take out the camera, I found this little blowhole that, in the afternoon at hightide, produced a rainbow. It's the little details like this that make your photos special (Note: for ocean spray rainbows, always shoot at high shutter speeds to capture the distinct color bands.)

Timing is Everything

The sea and coastal landscapes transform with the changing light, and being in the right place at the right time is key.

Golden Hour: The hour after sunrise and the hour before sunset provide soft, warm, and golden light that enhances the colors and textures of the sea and shoreline.

Blue Hour: Just before sunrise and after sunset, the 'blue hour' offers a serene and moody atmosphere, perfect for capturing the tranquility of the sea.

Weather: Check the wind and tide patterns of the area that you are photographing. Winds moving perpendicular to the coast will create big, dramatic waves, while parallel winds create lower, choppy waters.

Finally, remember to put down the camera and explore the environment. The details you discover during this process will be what sets your photos apart from others. It's more than just photography; it's an opportunity to immerse yourself in the beauty of the sea and share it with the world in a way that will leave a lasting impression.

Visit the Monument online: <https://www.blm.gov/programs/national-conservation-lands/california/california-coastal>



Photo 3-Point Pinos at Blue Hour. Shutter Speed 1/20, Aperture f/11. This photo was taken twenty minutes before Photo 1. As you can see, changing light can dramatically affect the mood of a landscape.

Expanding Angling Education to More National Park Service Locations

By Lisa Morse (IGFA Education Director)

Excerpted from: <https://igfa.org/2023/10/31/igfa-and-nps-unite-for-youth-and-family-fishing-adventures/>

Building off a pilot program that completed in 2022, the International Game Fish Association (IGFA) and the National Park Service (NPS) teamed up in 2023 to provide hands-on instruction on recreational fishing basics and ethical angling practices to grow recreational fishing opportunities in NPS locations across the country. From trout streams to coastal waters, these events are an extension of the Junior Ranger: Let's Go Fishing! activity book and Junior Ranger Angler badge.

Beginning in May 2023, IGFA staff and educators traveled to several sites to facilitate educational and recreational events and provide training for park staff, volunteers, and interns with educational materials and fishing equipment through the IGFA's Passports to Fishing program that remained at each site to continue providing angling education events for their visitors.

The IGFA emphasizes responsible recreation and environmental stewardship through these programs, teaching participants proper fish handling techniques, how to understand fishing regulations, and the importance of using of circle hooks for catch-and-release purposes. All fish were released during these events.

Since 2019, more than 3,300 junior anglers have been reached in 15 different NPS locations. The pilot program and extension of this project were both made possible in part by a grant received from the National Park Foundation.



IGFA Education Director Lisa Morse teaches staff at Padre Island National Seashore, TX how to tie the rig used for the Learn-to-Surf Fish clinic. Photo Credit: IGFA



IGFA Youth Angling Instructor Joanna Olczyk holds a false albacore caught by Aiden during the Ebony Anglers Legacy Camp held at Cape Lookout National Seashore, NC on October 7, 2023. Photo Credit: Ebony Anglers

Download the Junior Ranger: Let's Go Fishing! activity book: <https://www.nps.gov/subjects/fishing/junior-ranger-fishing.htm>.

For more information about the IGFA, visit: www.igfa.org



Secretary Haaland's NEWSWAVE 5

By Secretary Deb Haaland

Each NEWSWAVE issue, Secretary Haaland shares five selected highlights of the work DOI is doing to bolster our Blue Portfolio.

See these and other press releases at: <https://www.doi.gov/news>

Photo credits: DOI

1. Elevating Indigenous Knowledge in Hawai'i

This summer, I traveled to Hawai'i to see how President Biden's Investing in America agenda is advancing collaborative conservation throughout the islands. Since time immemorial, the Native Hawaiian Community has responsibly and sustainably fished the surrounding waters through techniques like Loko i'a – traditional Hawaiian fishponds that keep fish populations resilient and the community well fed. Like so many of our treasured resources, the viability of Loko i'a is threatened by the climate crisis. Researchers from the U.S. Geological Survey's Climate Adaptation Science Center work with members of the Native Hawaiian Community to enhance these irreplaceable ponds, and I'm grateful for this indispensable collaboration on behalf of our planet.



2. Making a Clean Energy Future a Reality

A thriving domestic offshore wind industry is key to realizing the clean energy future we deserve. This year, the Bureau of Ocean Energy Management approved the Coastal Virginia Offshore Wind project. As the largest offshore wind project in our nation's history, it will provide around 2,600 megawatts of clean, reliable energy capable of powering over 900,000 homes. It's just one of six offshore wind projects approved by this Administration and a piece of our broader efforts to make this vital industry a reality for millions of Americans.



3. Climate Resilience in the Pacific Islands

As we continue to address the growing impacts of the climate crisis, ensuring that communities throughout the Pacific Islands have the resources they need to meet this moment will prove essential. I was grateful to visit the Commonwealth of the Northern Mariana Islands, Guam, the Republic of Palau and the Federated States of Micronesia to discuss how investments in climate resilience and ecosystem restoration will make a tangible impact in the protection and preservation of these stunning islands and the communities that steward them.

4. Collaboration to Protect Coral Reef Ecosystems

Our country's coral reef ecosystems are integral to healthy coastlines and healthy people, but growing threats like the climate crisis and ocean acidification put their longevity at risk. Assistant Secretary Carmen G. Cantor led the 47th gathering of the United States Coral Reef Task Force – an interagency body that brings together expertise from the federal government, states, territories, freely associated states and other critical partners to understand and mitigate these threats.



5. One Year of Combatting Plastic Pollution

Addressing plastic pollution is crucial for the health of our shared landscapes and ecosystems. Last year, I issued Secretary's Order 3407 to phase out the sale of single-use plastics – like plastic water bottles and bags – on our public lands. Since then, our bureaus have announced implementation plans and improvements like water bottle filling stations across Interior-managed lands. Together, we are realizing a sustainable future for all of us.





South Pass Bird Island Resurrected Using Oil Spill Settlement Funds

By Nanciann Regalado (USFWS)

Trustees U.S. Fish and Wildlife Service, NOAA and Louisiana agencies team up for the birds!



June 2023

Top: Aerial view of South Pass Bird Island, LA. Photo credit: Teal Waterstrat, USFWS
View a time-lapse video of the resurrection process here: https://www.youtube.com/watch?v=ICH_I0G82Qc

In summer 2023, a five-acre island rose from the Gulf of Mexico to provide new and much-needed bird habitat in an area where suitable spots for nesting colonial waterbirds are in short supply due to erosion and sea level rise. Funds for the South Pass Bird Island Restoration Project came from damages related to an offshore oil spill that occurred in 2016, that contaminated the Gulf’s deep-sea floor, its water column and surface, and injured marine organisms, fish, and wildlife. After the spill, the USFWS, NOAA, and the State of Louisiana acted as Trustees for the Shell Green Canyon Block 248 Natural Resource Damage Assessment and Restoration (NRDAR) and by 2019, had completed an assessment of the injury caused and a plan for restoring injuries to colonial nesting birds, such as terns and gulls. Shell Offshore Inc agreed to pay \$3.9 million in damages via a settlement agreement. The South Pass Bird Island Restoration Project is approximately 16 miles south southwest of Venice, Louisiana. In June 2023, sediment was pumped from two nearby crevasses that extend off the west bank of South Pass and discharge into East Bay. Within three months, the five-acre island was complete. Based on observations of other similar islands, the restored island is expected to support 125 gull and 188 tern nests per acre. Other bird species are also expected to benefit from newly created marsh habitat; ground-nesting waterbirds, including various species of terns and skimmers, as well as gulls, often nest on islands where their eggs and young are safe from predation by mammals.

Read the report: https://pub-data.diver.orr.noaa.gov/admin-record/6103/Final%20DARP-EA_SGC248.pdf



Aerial view of South Pass Bird Island, LA (September 2023) with South Pass and the crevasses that extend off it’s west bank and discharge into East Bay in the background. Sediment from crevasse cleanouts is considered a “replenishable resource” because the borrow area will be refilled by sediment from the Mississippi River in a few years. Photo credit: Patrick Quigley (Gulf Coastal Photo).

The Trustees for the Natural Resource Damage Assessment have a high degree of confidence that the adage “if you build it, they will come” is true for South Pass Bird Island because crevasse sediment has proven particularly well suited for creating bird habitat.



A young bird lover gently holds a juvenile wood duck (*Aix sponsa*) during an annual banding event. Photo credit: USFWS



The seashore provides critical habitat for several species of ground nesting shorebirds including least terns, snowy plovers, wilson’s plovers, and black skimmers. Some migratory species travel great distances to raise their young on Gulf of Mexico beaches. Photo credit: NPS



At left: (from left) USVI Governor Albert Bryan, NOAA's Assistant Administrator for the National Ocean Service Nicole LeBoeuf, DOI's Assistant Secretary for Insular and International Affairs Carmen Cantor and American Samoa Governor Lemanu Peleti Mauga during formal meetings and (at right) during site visits. Photo credits Ann Tihansky, USGS

U.S. Virgin Islands Hosts 47th Coral Reef Task Force Meeting

By: Leslie Marie Henderson (NOAA USVI CZ/ Coral Management Liaison) and Ann Tihansky (USGS)

In October 2023, the U.S. Virgin Islands (USVI) hosted the 47th U.S. Coral Reef Task Force (USCRTF) meeting. DOI's Assistant Secretary for Insular and International Affairs Carmen Cantor and NOAA's Assistant Administrator for the National Ocean Service Nicole LeBoeuf co-chaired the meeting and were joined by USVI Governor Albert Bryan, American Samoa Governor Lemanu Peleti Mauga, White House Council on Environmental Quality Chair Brenda Mallory, White House Associate Director for Puerto Rico and the Territories Gretchen Sierra-Zorita, and key member Principals from across other federal, state, and territorial agencies, as well as the

Caribbean Fishery Management Council. It was a highly successful meeting with productive discussions, ground-breaking policy announcements, and awards recognizing key contributors and accomplishments. Numerous site visits showcased local projects, partners, and natural resources.

Specifically, the Task Force members successfully adopted three Resolutions: (1) The U.S. Coral Reef Task Force (USCRTF) recognizes the continued, severe threat posed by Stony Coral Tissue Loss Disease (SCTLD) and other significant coral disease outbreaks to the long-term health and vitality of America's coral reefs. The viability of coral reef ecosystems requires continued and enhanced response, prevention, and preparedness efforts. The National Action for Coral Disease Outbreak Prevention, Rescue, and Recovery resolution commits USCRTF members

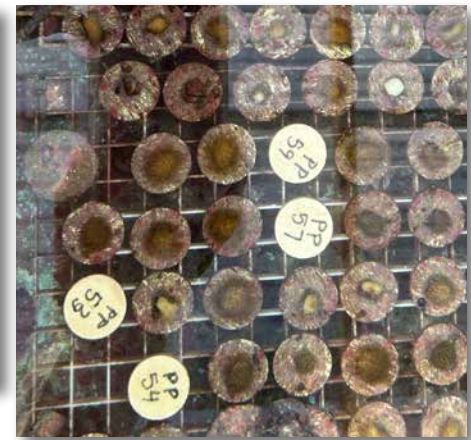
to enhance actions to ameliorate the wide-ranging and severe impacts of the disease in the Atlantic-Caribbean region, prevent SCTLD transmission to the Pacific region, and create

A snorkeler points out a partially bleached Elkhorn (*Acropora palmata*) coral colony on St. Thomas, USVI during a site visit as part of the 47th U.S. Coral Reef Task Force Meeting in October 2023. Corals throughout the Caribbean were bleaching in October due to a prolonged period of warm sea surface temperatures. Photo credit: Leslie Henderson (USVI-CZ) *Read the related story page 36.*



White House Council on Environmental Quality Chairwoman, Brenda Mallory addressed the USCRTF members and general audience during the public business meeting. Photo credit: Ann Tihansky, USGS

a framework for future preparedness and response to other disease outbreaks of significant impact. Read the resolution: <https://www.coralreef.gov/resolutions.html>
Visit: <https://www.coralreef.gov/disease/>
The Stony Coral Tissue Loss Disease semi-annual newsletter: <https://www.flseagrant.org/publication/stony-coral-tissue-loss-disease-semi-annual-newsletter-winter-2023-edition/>
(2) Corals as National Natural Infrastructure. Read the Resolution here: https://www.coralreef.gov/assets/meeting47/pdf/Resolution47.2_Coral-Reefs-As-Natural-Coastal-Infrastructure_10-20-23.pdf
Learn more about how science informs nature-based solutions for coastal resilience: <https://www.usgs.gov/programs/cmhrp/news/usgs-science-informs-nature-based-solutions-policies-protect-us-coral-reefs#science>



Coral fragments growing in one of University of the Virgin Islands' (UVI) lab tanks. Photo credit: Ann Tihansky, USGS

(3) An amendment to the Watershed Partnership Initiative (WPI) Resolution 28.1 allows for new watersheds to be adopted and will use lessons learned from previous Watershed Partnership Initiative sites to guide these new watersheds toward achieving similar successful outcomes. Related, the Salt River Bay, St. Croix, USVI was named as the next USCRTF WPI priority site. As DOI has significant jurisdictional authority in this area, USVI has requested DOI to be the Federal co-lead for this WPI. Learn more about this area's significant natural and cultural resources through the NPS Salt River website: <https://www.nps.gov/sari/planyourvisit/upload/SARI-Unigird-both-sides-smaller.pdf>



An educational kayak trip through the St. Thomas East End Reserves among various coastal ecosystems to Cas Cay, an undeveloped and protected mangrove island, was led by VI EcoTours, an important natural resources informal educator in the area. Photo credit: Ann Tihansky, USGS

This meeting also brought all the USCRTF working group leaders together for the first time. The working groups are the major workhorses of the task force and this event helped them exchange critical information across topical areas. Learn more: https://www.coralreef.gov/working_groups.html

A major highlight of the week was USVI Governor Albert Bryan signing an executive order declaring many of the territory's ecosystems, including coral reefs, mangroves, beaches, and seagrass beds, as natural infrastructure. The governor also instructed local agencies to seek increased funding to protect and conserve them.



Site visits are always a highlight of the USCRTF jurisdictional meetings. This year included a watershed tour and kayak trip through the St. Thomas East End Reserves to Cas Cay, a protected mangrove island. Other visits included University of the Virgin Islands' (UVI) new lab facilities to see ongoing coral and mangroves restoration research, snorkeling at several NPS and Refuge sites, measuring mangrove outplants at Hull Bay and learning about community-led watershed restoration efforts.



Participants witnessed coral bleaching and impacts of disease and engaged with scientists to discuss the impacts of warmer-than-normal water temperatures, Stony Coral Tissue Loss Disease, and other challenges affecting coral reefs in the USVI. Read more: <https://www.doi.gov/pressreleases/assistant-secretary-cantor-co-chairs-us-coral-reef-task-force-us-virgin-islands> See related stories in this issue of *NEWSWAVE*.



Top: USCRTF participants learn about community-led restoration efforts at Hull Bay. Middle: UVI mangrove seedlings prior to outplanting, Bottom: USCRTF participants toured an area where mangroves damaged during 2017 back-to-back Hurricanes Irma and Maria are getting assistance with recovery through community-led outplanting and monitoring of young seedlings. Photo credits: Ann Tihansky, USGS

Corals Provide National Natural Infrastructure aka: Nat Nat Frat

On October 26, 2023, the U.S. Coral Reef Task Force approved a resolution recognizing coral reefs of U.S. states and territories as national, natural infrastructure. (See *related story page 24*)

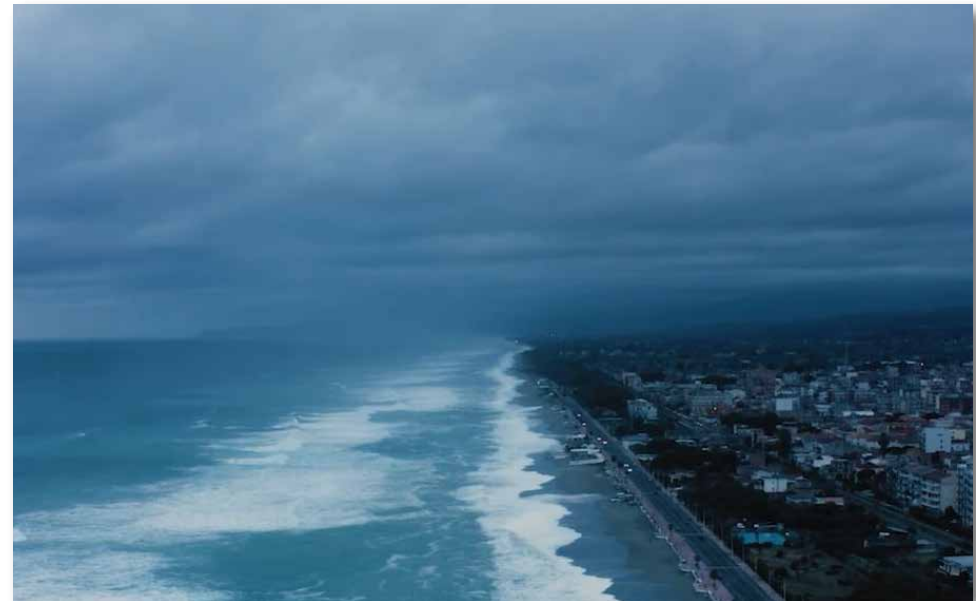
Coral reefs act like submerged breakwaters by breaking waves and dissipating their energy offshore before they flood coastal properties and communities. This is an enormously valuable function: In 2017, Hurricanes Harvey, Irma and Maria alone caused over \$265 billion in damage across the nation.

Restored reefs not only support critical biodiversity and coastal economies—they also reduce flood risks to coastal communities from storms and sea-level rise. In total, the annual coastal flooding risk reduction benefits provided by U.S. coral reefs exceed \$1.8 billion (2020). Learn more: <https://www.usgs.gov/media/images/economic-benefit-coral-reef-lined-coastlines-us>,

Read the news: <https://www.usgs.gov/programs/cmhrp/news/us-coral-reef-task-force-recognizes-coral-reefs-national-infrastructure-paving>
Watch the video: <https://www.usgs.gov/media/videos/curt-storlazzi-coral-reefs-national-natural-infrastructure>



The underwater view of a wave breaking over a shallow fringing coral reef in Tumon Bay, Guam. Photo credit: USGS



Coastal flooding and erosion from extreme weather events affect thousands of vulnerable coastal communities. Coral reefs, in particular, can substantially reduce coastal flooding and erosion by dissipating as much as 97 percent of incident wave energy. Photo credit: USGS



Ranger Jihan Younis and Student Conservation Association intern Jody share a map of the magnificent Mariana Trench with enthusiastic 4-H camp participants. Photo by: 4-H Camp Maga'Lahi

New Superintendent for the Mariana Trench Marine National Monument (MTMNM)

By Ivan Vicente (USFWS)

In August 2023 in Garapan, Saipan, the USFWS announced Dr. Sean Macduff as the new superintendent for the Mariana Trench Marine National Monument (MTMNM) beginning in mid-September, 2023. Macduff is looking forward to sharing deep stories.

The Mariana Trench Marine National Monument protects the submerged lands and waters around the three northernmost Mariana Islands, an arc of 18 undersea volcanoes and thermal vents west of the Marianas, and the trench itself. The Mariana Trench is the deepest trench on Earth, deeper than the height of Mount Everest above sea level. Macduff will oversee the iconic feature and the surrounding natural areas, which include the Mariana Trench National Wildlife Refuge and the Mariana Arc of Fire National Wildlife Refuge.

“I fully support indigenous communities leading in the naming of monument



MTMNM Superintendent Sean Macduff. Photo credit: USFWS

features, especially those that are culturally, ecologically, and economically meaningful,” said Macduff.

Macduff was raised in the Mariana Islands where resource sustainability and environmental stewardship were a constant life lesson. Macduff started his conservation career in

Hawai‘i as a Graduate Research Fellow with the National Science Foundation from 2008 to 2013. He also studied coral reefs in Hawai‘i and Saipan for the University of Hawai‘i at Mānoa (UHM), where he earned his Bachelor of Science degree in marine biology and biological oceanography. He went on to earn his Doctorate in zoology from the UHM. Macduff has more than 15 years of experience in science and management of marine ecosystems. Superintendent Macduff will lead all Trench Monument program operations from the USFWS offices and visitor contact station in Garapan and is responsible for all supervisory and operational elements of the USFWS conservation management of the MTMNM.



A group of 4-H campers pose at the USFWS Refuge where some of the camp programs are hosted. The USFWS is committed to encouraging continued cultural connections to the Monument and sharing the local culture and way of life in the Marianas through environmental education and community engagement. Photo credit: 4-H Camp Maga'Lahi

“I am excited about returning home to Saipan and being the loudest (and deepest) advocate for the Mariana Trench Marine National Monument,” said Macduff. “As a native Chamorro who was raised in the Mariana Islands, I understand the importance of 'getting it right' for the local community. I'm passionate about science and applying a collaborative and informed management approach to solve issues important to ecosystem health and the communities who depend on them.” Among his favorite hobbies, Sean enjoys photography and being immersed in the environment. Sean and his family are thrilled about their return to Sean’s home.

Learn more: <https://www.fws.gov/press-release/2023-08/mtmnm-new-superintendent>



The **Mariana Trench** was created geologically as the Pacific Plate plunged beneath the Philippine Sea Plate and into the Earth’s mantle and contains some of the deepest known points in the global ocean. The Mariana Trench is also recognized by the international scientific community as the oldest place geologically on the floor of any ocean on earth. Due to its inaccessibility, the region is virtually unexplored, and much remains to be learned about its ecological and biological characteristics.

Visit the Mariana Trench Marine National Monument on-line:

<https://www.fws.gov/national-monument/marianas-trench-marine>

Visit the Mariana Trench National Wildlife Refuge on-line:

<https://www.fws.gov/refuge/mariana-trench>

Visit the Mariana Arc of Fire National Wildlife Refuge on-line:

<https://www.fws.gov/refuge/mariana-arc-fire>

At left: Inquisitive minds gather around the large and mesmerizing Commonwealth of Northern Mariana Islands (CNMI) Public School Systems 3D display, where detailed bathymetric data unveil the iconic features of the Mariana Forearc and Trench. Photo credit: Jihan Younis, USFWS

DOI Partnership Training 2.0

By Guillermo Auad (BSEE)

In winter 2022, more than 70 DOI employees participated in “Building Research Partnership for Good Decisions: Making Possible the Impossible,” a course offered through DOI’s employee training and development system, DOI Talent. DOI employees designed and led the three session training to serve as a guide for those involved or interested in collaborative work. This training was highlighted in the NEWSWAVE Winter-Spring 2022 issue on page 22: <https://www.doi.gov/sites/doi.gov/files/newswave-winter-spring2022.pdf>

Building upon the success of the initial training program, an expanded version is planned to be offered in May 2024, continuing to advance partnership capabilities and outreach. New sessions in topical areas are planned to include partnering with tribes, and new approaches to public/private partnering. Based on feedback from the first course, there will also be networking opportunities through lightning talks where participants can showcase their experiences and hear directly from other participants on additional case studies, lessons learned and best practices. The course will be hosted on DOI Talent and is open to ALL Federal employees. The training will take place on Thursdays in May (May 2, 9, 16, 23, and 30) from 2:00 to 3:30 p.m. EST. Attendance will be both in person and online. For additional information, DOI employees can access this link: <https://doimsp.sharepoint.com/sites/bsee-SharePoint/SitePages/DOI-Lecture-Series-on-Partnerships.aspx>

All other Federal employees interested in the training please contact Dr. Lauren Mittman at lauren.mittman@bsee.gov



The Marine Arctic Ecosystem Study (MARES) partnership international coordination meeting brought partners together in Seattle, Washington, in October 2019. Photo credit: Guillermo Auad, BSEE



The BSEE and the Ohmsett Facility are international research members of Fisheries and Oceans Canada, a Multi-Partner Research Initiative whose mission is to foster an integrated, global research network with government agencies, academia, response organizations, the oil industry, indigenous communities, and other oil spill science and response experts. Read more in the Ohmsett Gazette: <https://ohmsett.bsee.gov/gazette.html>

Traditional Knowledge

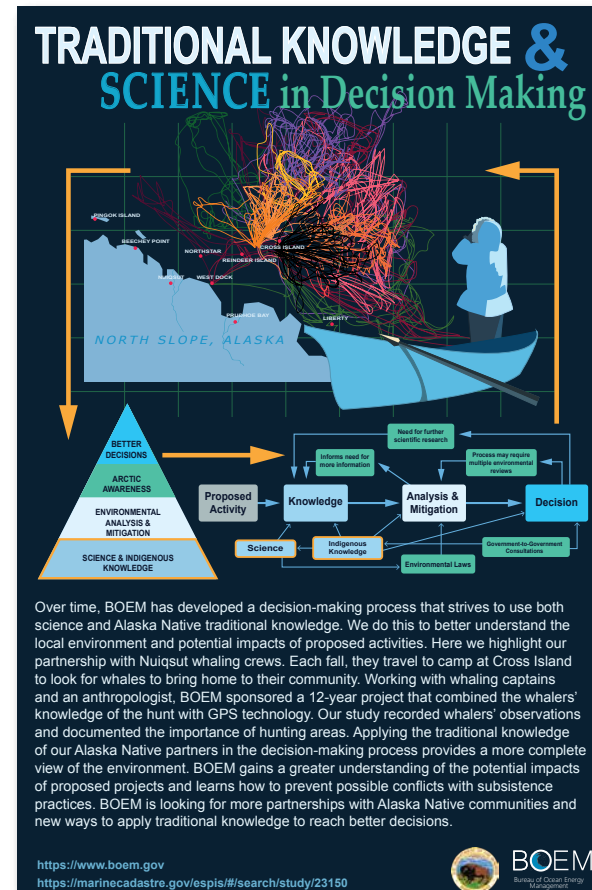
Many Indigenous communities possess a deep understanding of complex systems based on close interactions with their surroundings over many generations. BOEM strives to treat traditional and scientific knowledge as complementary knowledge systems. BOEM has learned that using both perspectives can provide a more complete understanding of the environment and result in better management decisions. Today, BOEM applies traditional knowledge from four primary sources: tribal consultations, public comments, scientific research, and collaborations with indigenous communities. Through our relationships with Indigenous organizations and Tribal governments, we can learn and better understand how to incorporate traditional ecological knowledge (TEK) frameworks. Doing so improves our ability to explore climate change, environmental sustainability, and resource management.

What is Traditional Ecological Knowledge (TEK)?

Traditional knowledge can be defined as a body of evolving practical knowledge based on observations and personal experience of indigenous residents over an extensive time period. It can be described as information based on the experiences of a people passed down from generation to generation. It includes extensive understanding of environmental interrelationships and can provide a framework for determining how resources are used and shared.

BOEM acknowledges that traditional knowledge is:

- Holistic
- Local and highly contextual
- Shared through kinship that promotes survival and well-being
- Dynamic rather than rigid
- Based on experience
- More than a collection of observations
- An important sociocultural component that anchors community values and can be part of a community’s spiritual and cultural identity
- A framework that emphasizes a fundamental sense of unity in which people are viewed as part of the environment.



Over time, BOEM has developed a decision-making process that strives to use both science and Alaska Native traditional knowledge. We do this to better understand the local environment and potential impacts of proposed activities. Here we highlight our partnership with Nuiqsut whaling crews. Each fall, they travel to camp at Cross Island to look for whales to bring home to their community. Working with whaling captains and an anthropologist, BOEM sponsored a 12-year project that combined the whalers’ knowledge of the hunt with GPS technology. Our study recorded whalers’ observations and documented the importance of hunting areas. Applying the traditional knowledge of our Alaska Native partners in the decision-making process provides a more complete view of the environment. BOEM gains a greater understanding of the potential impacts of proposed projects and learns how to prevent possible conflicts with subsistence practices. BOEM is looking for more partnerships with Alaska Native communities and new ways to apply traditional knowledge to reach better decisions.

<https://www.boem.gov>
<https://marinecadastre.gov/espis/#/search/study/23150>

Learn more about TEK here: <https://www.boem.gov/about-boem/traditional-knowledge>

The poster at left describes a decision-making process that outlines how BOEM uses both science and Alaska Native traditional knowledge.

Image credit: BOEM
 You can find the poster on-line: https://www.boem.gov/sites/default/files/documents/regions/alaska-ocs-region/tribal-and-community-liaison/2019_1004_AFN_poster.pdf



Hōkūleʻa's arrival and dockside ceremony was a meaningful experience for the crew, the Indigenous people of Ventura, Hawaiians and Polynesians in the community, and the public. Photo credit: Luke Richards

A Voyage for Earth: Moananuiākea

By Sara Guiltinan (BSEE)

In October, the community of Ventura, CA shared in a magnificent cultural exchange when the traditional Hawaiian deep sea voyaging canoe, Hōkūleʻa, and her crew arrived in the Ventura Harbor. The community was honored to host the 62-foot double-hulled canoe, her support boat, and her well-traveled crew. Hōkūleʻa's visit is part of the Moananuiākea Voyage, a circumnavigation of the Pacific Ocean that reclaims and perpetuates Polynesian voyaging heritage. It is Hōkūleʻa's 15th major voyage in her first 50 years. The voyage is focused on reclaiming culture, traditions, and our relationship to home and our island Earth. The voyage is planned to cover 43,000 nautical miles, over 47-months (2023-2027) circumnavigating the Pacific by traditional Polynesian voyaging canoes Hōkūleʻa and Hikianalia with 400 crew visiting 36

countries and archipelagoes, nearly 100 indigenous territories, and 345 ports. In Ventura, Hōkūleʻa celebrated culture, tradition, and Indigenous wisdom. The Barbareño/Ventureño Band of Mission Indians (Chumash) welcomed the crew to their lands and waters, local hula schools graced the shore with traditional dance, and Chumash and Fernandeano Tataviam tomol paddlers shared their canoe heritage and expertise. DOI employees from BSEE, BOEM, NPS, and USFWS took part in the festivities. The Hōkūleʻa crew were endlessly generous with their time and stories during their six-day visit. An important objective of the Moananuiākea Voyage is sharing the magnificence of the world's largest ocean and amplifying the movement to care for it, because life on Earth will not be healthy without a healthy ocean. This mission is shared by the Department of the Interior and across Interior's Blue Portfolio: <https://www.doi.gov/ocean>

The Ventura, CA community was particularly grateful to see Hōkūleʻa and crew before they changed the Moananuiākea sail plan. Because of the devastating fires on Maui and unprecedented weather patterns, Hōkūleʻa will make her last southern California stop in San Diego and will return to Hawaiʻi. She plans to complete the rest of the Moananuiākea Voyage after some time at home.

To learn more about the Moananuiākea Voyage, Hōkūleʻa and her crew, and the Polynesian Voyaging Society, visit: <https://hokulea.com/>



At right: While in Ventura, CA, hundreds of local students and community members—including BSEE, BOEM, NPS, and USFWS employees—toured Hōkūleʻa and learned about voyaging from her crew. Hōkūleʻa docked at the Ventura Yacht Club, where BSEE employee Sara Guiltinan and her family presented Captain Mark Ellis with the Ventura Yacht Club burgee (flag) to commemorate Hōkūleʻa's time in Ventura. Photo credit: Sean Guiltinan

West Coast Ocean Alliance and Tribal Caucus Annual Summit

By Sara Guiltinan (BSEE)

In October 2023, the West Coast Ocean Alliance (WCOA) held its Annual Summit in Portland, Oregon. It was the WCOA's first in-person meeting—with virtual option—since 2019 and Alliance members from Tribes, State governments, and Federal agencies were excited to be together again. With the recent influx of Infrastructure Investments and Jobs Act funds, the WCOA has greater capacity for projects and new staff, fellows, and contractors to support them. Two key benefits from the WCOA are information-sharing and relationship-building among Tribal, State, and Federal co-managers. New and seasoned WCOA members reaped those benefits over the two-day WCOA Summit, including DOI representatives from BIA, BOEM, BSEE, and USFWS.

Some of the key projects discussed at the Summit:

- A 5-year Strategic Plan,
- West Coast Ocean Health Dashboard,
- Future Offshore Wind Summit.

The WCOA Ocean Tribal Caucus held a Tribal Summit immediately before the WCOA Summit and shared important outcomes with WCOA members.

Learn more about the West Coast Ocean Alliance, please visit: <https://www.westcoastcoceanalliance.org/>



The DOI Ocean, Great Lakes and Coastal Program was well-represented at the WCOA Summit. From left: Necy Sumait (BOEM), David Ball (BOEM), Sara Guiltinan (BSEE), Natalie Dayal (BOEM), Yvonne Fish (BIA), Stefanie Stavrakas (USFWS). Photo credit: West Coast Ocean Alliance

Sea Lamprey Workshop

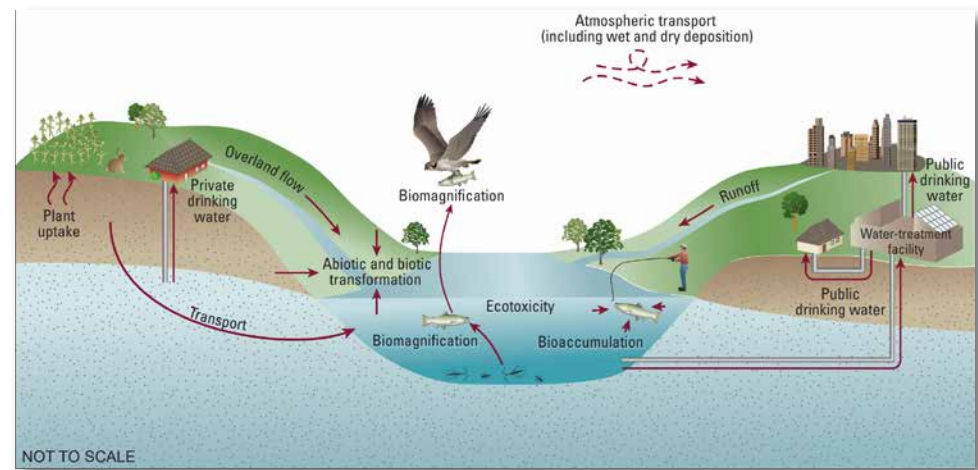
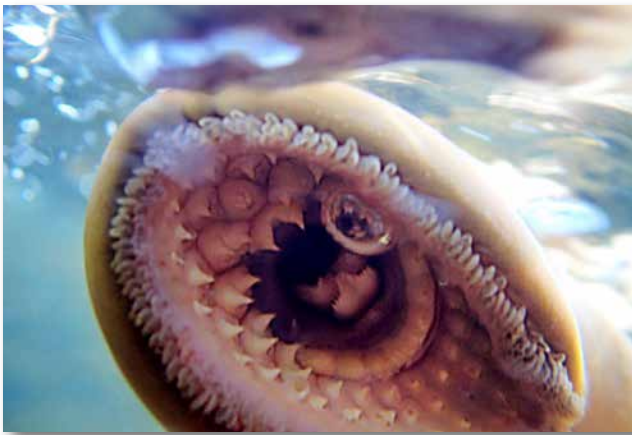
Partnership helps exchange information and ideas to improve control of the invasive sea lamprey

Personnel from the USGS Great Lakes Science Center (GLSC) and the Upper Midwest Environmental Sciences Center (UMESC) participated in the Sea Lamprey Annual Workshop on January 31-February 1, 2023, in Green Bay, WI. Sponsored by the Great Lakes Fishery Commission and hosted by UMESC the workshop brought together Sea Lamprey Control Program personnel from USFWS and Fisheries and Oceans Canada, Great Lakes Fishery Commission staff, USGS, and university researchers from both US and Canada. They participated in presentations and breakout sessions to learn and share ideas about improvements and critical issues faced by sea lamprey control in the Great Lakes. Read more: USGS GLSC Hosts sea lamprey researchers: <https://www.usgs.gov/centers/great-lakes-science-center/news/glsc-hosts-visiting-sea-lamprey-researchers-pacific-coast>

Read about how the USFWS is combating sea lamprey in the Great Lakes through partnerships and with new technologies: <https://www.fws.gov/story/combating-sea-lamprey-great-lakes-new-technologies>

Learn more: <https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=836>

Top: A sea lamprey (*Petromyzon marinus*) in a tank at the Hammond Bay Biological Station, a field station of the Great Lakes Science Center. Middle: Nick Johnson pipettes a sea lamprey pheromone into a vial. Research on pheromones aims to develop tools to disrupt sea lamprey migration and reproduction as well as improve trapping efforts. Bottom: USGS researchers working out of the Hammond Bay Biological Station (HBBS). With the growing threat to Great Lakes fisheries caused by sea lamprey invasion, the facility has a primary mission of developing control measures for sea lampreys and conducting research to aid in restoring native fish populations. Photo credits: Andrea Miehl, USGS
Learn more about the Hammond Bay Biological Station: <https://www.usgs.gov/centers/great-lakes-science-center/science/hammond-bay-biological-station>



Conceptual diagram showing the major mechanisms of the fate, transport, and exposure pathways of perfluoroalkyl and polyfluoroalkyl substances (PFAS) in the environment. Image credit: Jacqueline Olsen, USGS; Watch an general PFAS overview video: <https://www.usgs.gov/media/videos/usgs-laboratory-analysis-and-polyfluoroalkyl-substances-pfas> Image credit: USGS

PFAS in Chesapeake Bay Watershed

By Kelly Smalling (USGS)

The Chesapeake Bay Program (CBP) partnerships has concerns about how these PFAS compounds will affect the Chesapeake Bay ecosystem. In March 2023, the USGS released a new CBP's Scientific and Technical Advisory Committee (STAC) report summarizing findings and recommendations from a workshop held in May 2022.

The CBP's Scientific and Technical Advisory Committee (STAC) brought together scientists and resource managers from Chesapeake Bay jurisdictions, federal agencies, and academic institutions from across the nation to coordinate and improve PFAS-related science in the Chesapeake Bay Watershed. The report summarizes the current understanding of sources, occurrence, and fate of PFAS and identifies on-going efforts and approaches to inform the potential effects on fish and wildlife, and their consumption by humans. It also provides overarching guidance for research and monitoring to address science gaps and foster communication and collaboration, to help stakeholders coordinate PFAS research efforts to ensure data comparability across the entire Chesapeake Bay Watershed.

Read the report: https://www.chesapeake.org/stac/wp-content/uploads/2023/03/FINAL_STAC-PFAS-Report-2.pdf

Learn more: <https://www.usgs.gov/centers/chesapeake-bay-activities/science/improving-understanding-and-coordination-science>

PFAS or Per- and polyfluoroalkyl substances, also known as “forever chemicals,” are emerging contaminants of concern that are found in our air, rain, lakes, rivers, groundwater, soils and in products we use everyday. PFAS have been manufactured and used by many industries in the United States since the 1940s. PFAS are ubiquitous and persistent in the environment. Exposure to PFAS has been associated with human and ecosystem health effects. CBP Workshop representatives focused on:

- Summarize current understanding of sources, occurrence, and fate of PFAS,
- Identify current efforts and approaches to inform potential effects on fish and wildlife, and consumption by humans,
- Consider study designs, comparable sampling and analysis methods, for coordinated PFAS science,
- Identify key research needs/ data gaps and actionable recommendations associated with understanding potential effects on fish, wildlife, and their consumption on human health.

Protecting Coral from the Heat

USGS Scientists Shade Corals in Emergency Rescue Effort

By Jason Burton and Ann Tihansky (USGS)

Three USGS scientists traveled to Dry Tortugas National Park in August to erect temporary shade structures in hopes they would lessen the effect of the sun's rays and help the corals survive until the fall, when water temperatures traditionally drop. When experts arrived at the park, they found many of the corals had lost their color: they were bleached.

Coral bleaching occurs when ocean temperatures reach and remain above about 87 degrees Fahrenheit. During bleaching the nutrient-giving microscopic algae that normally live within corals are expelled, and without the symbiotic algae, called zooxanthellae, corals are likely to starve, and may die.

"The shading can help by reducing the sun's rays," said Ilsa Kuffner, a USGS scientist who leads efforts to save corals in Florida in August. "While normally corals need sunlight for their symbionts to photosynthesize, when they are bleached, the sun's energy instead causes a lot of stress." The team spent several days adding nearly 40 temporary shade structures to corals located inside Dry Tortugas National Park. They then moved to Biscayne National Park where two more USGS scientists joined in the effort and the team was able to shade additional corals. In Dry Tortugas National Park, the team took an additional life-saving measure in attempts to feed the corals. Several evenings during the emergency mission, the team added dim lights to the shaded coral in hopes of attracting prey for the coral to feed on.



Three SCUBA divers installing shade structures over experimental Elkhorn corals (*Acropora palmata*) that have become "bleached," that is, lost all their algal symbionts (also called zooxanthellae) because of the summer 2023 ocean-heat wave. The corals are attached to cement blocks as part of the U.S. Geological Survey's Coral Assessment Network (USGS-CAN) that provides data on coral-growth (calcification) rates throughout the western Atlantic. These data document seasonal and spatial patterns in coral growth that correlate with ocean conditions and are used to guide the management and restoration of coral species that have experienced population declines across the region. Pictured here are calcification stations located in Biscayne National Park. The shade structures could help to reduce light stress that is problematic when corals are in a bleached state. Learn more: <https://www.usgs.gov/media/images/coral-shading-experiment-during-a-bleaching-event>

"The catastrophic ocean-heat wave that is occurring in Florida and spreading quickly to the rest of the western Atlantic and Caribbean presents a huge risk to the health and future of coral reef ecosystems," Kuffner said. These changes are being accelerated by the ongoing (2023) coral bleaching event.

"Unfortunately, coral bleaching had become the new normal for many coral reefs, including the reefs in south Florida" said Lauren Toth, USGS scientist. "But what's really troubling about this event is that this year, the water isn't just warmer than any year on record, but also the warming started in July rather than late August, when we typically see coral bleaching. To survive, corals will have to endure a lot more heat stress than they're used to, and many may not make it."

USGS provides science to guide the management and restoration of the threatened Elkhorn coral. Because of coral bleaching, these threatened corals are in jeopardy of complete devastation, which is why the USGS partnered with the National Park Service on this rescue mission.

"While we know we cannot save every coral; we are focusing on individual corals that represent unique genetic lines that are thought only to exist in certain National Parks," Kuffner said. This unprecedented early-season coral bleaching event is not unique to Florida, and there are still many more corals at risk. Kuffner is hopeful that the measures taken can assist the now-shaded corals survive until cooler water temperatures in the fall. Coral death and loss of reef-building corals due to the 2023 heat-related coral bleaching events in Florida and elsewhere in the Caribbean and the Gulf of Mexico will have far-reaching and lasting effects. Beyond the immediate loss to a thriving ecosystem, the loss of living corals degrades the reef structure, leaving coastal communities along reef-lined coasts to face increasing risks from coastal flooding hazards. The USGS and partners have shown that projected coral reef degradation in Florida could increase the coastal flood risk to more than 7,300 people at the cost of \$823.6 million annually.

Learn more: <https://www.usgs.gov/programs/cmhrp/news/coral-bleaching-event-can-increase-flood-risk-economic-losses>

Read the Science Snippet: <https://www.usgs.gov/news/science-snippet/usgs-scientists-shade-corals-emergency-rescue-effort-amidst-unprecedented>

Learn more about Elkhorn coral growing in Dry Tortugas National Park: <https://www.usgs.gov/centers/spcmssc/news/spcmssc-scientists-uncover-why-corals-grow-so-well-dry-tortugas-national-park#news>

To learn more about USGS coral research, visit: <https://www.usgs.gov/programs/cmhrp/news/a-window-opportunity-build-coastal-resilience-how-optimize-coral-restoration>



At left: A colony of fire coral about 5 feet underwater in Dry Tortugas National Park in the Gulf of Mexico shows signs of bleaching from extreme water temperatures. Photo taken July 26, 2023, by Lauren Toth, USGS. At right: By October, corals began bleaching in the US Virgin Islands after more than 17 sustained degree heating weeks (DHW) as documented through NOAA's Coral Reef Watch. Photo credit: Jeff Miller, NPS Visit NOAA's Coral Reef Watch on-line here: <https://coralreefwatch.noaa.gov/index.php>



Above: The Great American Outdoors Act National Strike Force. This supergroup of skilled maintenance workers repaired the Tubby Cove Boardwalk (opposite and below), which stretches approximately 500 feet across the Refuge's healthy marshlands. It is a fantastic spot for birding and watching wildlife. Photo credits: USFWS

The Great American Outdoors Act National Strike Force

By Mason Wheatley and Carina Velazquez-Mondragon (USFWS)

The Great American Outdoors Act is an historic investment in our public lands, making improvements that benefit all. Over 50% of Legacy Restoration Fund projects include Americans with Disabilities Act improvements. For example, this past winter, Eastern Neck National Wildlife Refuge in Maryland welcomed 19 talented USFWS maintenance professionals hailing from all over the U.S. – from Alaska to Oklahoma to New York and Louisiana. This was the first national Great American Outdoors Act Strike Force. Think supergroup, like the Traveling Wilburys ... if the Traveling Wilburys had impact drills and chainsaws rather than guitars. The Maintenance Action Team or MAT, replaced major components of the Tundra Swan and Tubby Cove Boardwalks to increase safety and make the boardwalks fully wheelchair accessible for visitors. Improvements allow visitors to safely hike and to use accessible viewing blinds to watch wildlife.

The repairs also provide increased access to green spaces and outdoor recreation on public lands for underserved communities, urban families, leading to potential improvements in overall health. <https://www.fws.gov/story/maintenance-teams-make-nature-accessible-all>

Read more about The Great American Outdoors Act: <https://www.doi.gov/blog/seven-things-love-about-great-american-outdoors-act>



Eastern Neck Refuge: Improved Public Access and Experience for Birdwatching

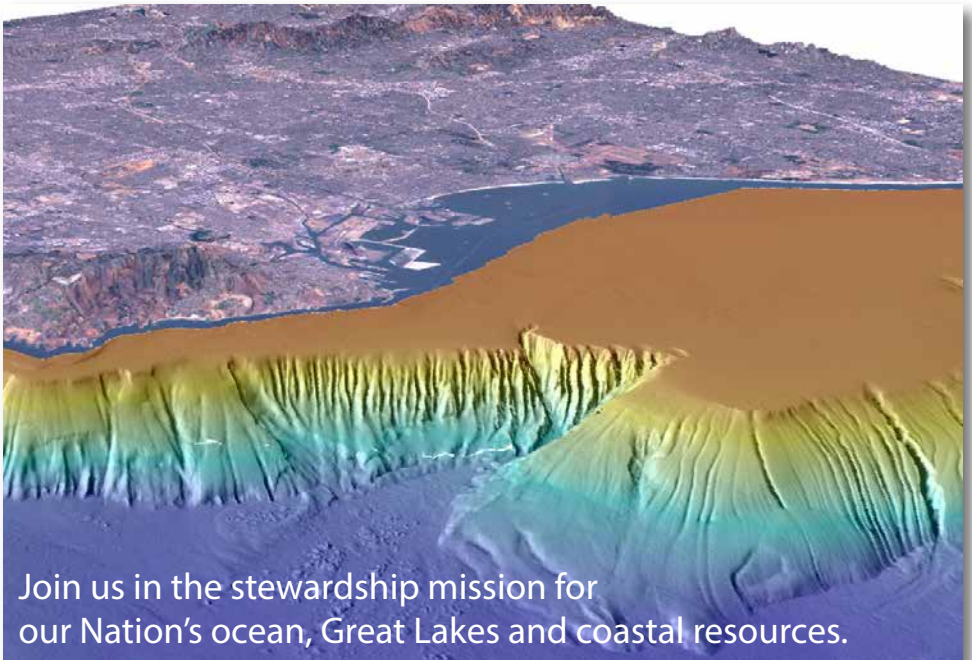
The Eastern Neck National Wildlife Refuge is located at the confluence of the Chester River and the Chesapeake Bay on Maryland's Eastern Shore. This 2,285-acre island refuge is a major feeding and resting place for migrating and wintering waterfowl including the Tundra Swan (*Cygnus columbianus*). More than 100,000 ducks, geese and swans seek sanctuary here each year, as do migrating and breeding songbirds and shorebirds, and bald eagles that thrive at the refuge year-round. Learn more: www.fws.gov/refuge/eastern_neck/

Top: The new boardwalk at Eastern Neck, National Wildlife Refuge, MD is wheelchair accessible. It is a great example of how the Great American Outdoors Act benefits all Americans. Bottom: A tundra swan (*Cygnus columbianus*). Photo credit: Michael Schramm, USFWS At right: A lamentation of tundra swans swimming at Eastern Neck National Wildlife Refuge. Photo credit: Charlie Lister, USFWS



Above: A colony of bleached Elkhorn coral (*Acropora palmata*) is given protective shade in Dry Tortugas National Park, Pulaski Shoal. Photo credit: Ilsa Kuffner, USGS. Learn more: <https://www.usgs.gov/media/images/bleached-elkhorn-coral-under-a-shade-dry-tortugas-national-park-pulaski-shoal>

Below: DOI Bureaus are part of the U.S. Extended Continental Shelf Task Force, an interagency body led by the Department of State that is working to determine the outer limits of the U.S. Learn more: www.state.gov/shelf Image credit: USGS



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