



2023

Accomplishments Report

October 2022 - September 2023

MARINE DEBRIS PROGRAM

Office of Response and Restoration
National Oceanic and Atmospheric Administration

A background image showing a large pile of discarded plastic waste, including bottle caps, fragments of containers, and other plastic debris in various colors like blue, white, yellow, and red. The waste is piled together, creating a textured and somewhat chaotic appearance.

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Letter from the Director

Fiscal year 2023 was another very active year for the marine debris community in the United States and around the world. As debris continues to pose a threat to wildlife, habitats, and communities, the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program is proud to be playing a leading role to combat this global issue.

We are pleased to present this 2023 Accomplishments Report, outlining our continued efforts to address marine debris through our program pillars - **prevention, removal, research, monitoring and detection, response, and coordination**. Notably, through funding provided under the Bipartisan Infrastructure Law, and with leveraged funds from the Inflation Reduction Act, we furthered these goals and expanded our impact across the United States and territories. This year, the NOAA Marine Debris Program provided over \$69 million to 14 projects around the country to remove marine debris, as well as supporting an additional marine debris removal project in the Papahānaumokuākea Marine National Monument through a five-year, \$5.8 million award. Through these efforts, we are helping restore the resiliency of marine habitats by removing some of the most threatening forms of large marine debris, and preventing its future accumulation in the environment.

In fiscal year 2023, our efforts and collaboration did not stop within the United States. The NOAA Marine Debris Program has been an active participant in the United Nations' Intergovernmental Negotiating Committee (INC) for a Global Treaty to End Plastic Pollution, in partnership with the United States Department of State and other federal agencies. Members of our team attended two negotiating committee sessions in Paris, France and Nairobi, Kenya in 2023, with final terms of the agreement expected to be complete by the end of 2024.

Although NOAA is proud to continually work towards national and global solutions to the issue of marine debris, we are also able to make a tangible difference on a regional and local level with contributions from our many dedicated partners. With the help of these partners, we have conducted projects to address the impacts of marine debris, workshops to coordinate action across regions, and developed 3 new emergency response guides to better equip us for future marine debris disasters. We are pleased to present this 2023 Accomplishments Report, detailing the outcomes of our work, including a selection of example projects and accomplishments across our program pillars. We look forward to furthering our efforts in the coming years.

Nancy Wallace
Director, NOAA Marine Debris Program

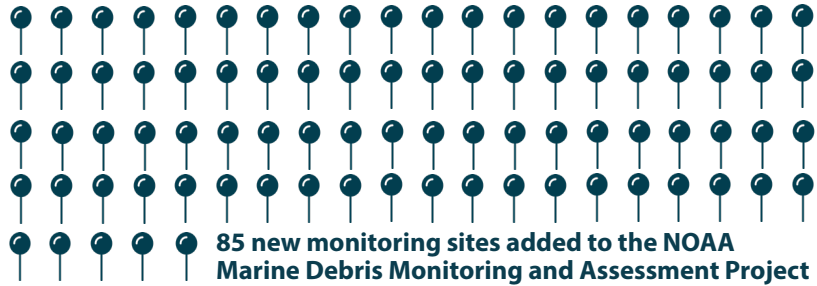
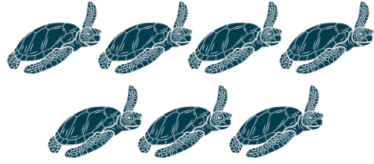
Nancy Wallace

2023 By-the-Numbers



9 metric tons of debris removed during 2 missions in the Papahānaumokuākea Marine National Monument

7 sea turtles disentangled from ghost fishing nets in the Papahānaumokuākea Marine National Monument



85 new monitoring sites added to the NOAA Marine Debris Monitoring and Assessment Project

6 Disaster Responses:



Hurricanes



Typhoon Mawar



Maui wildfires



2 funding opportunities for removal and interception technologies

\$70+ Million

provided in Bipartisan Infrastructure Law and Inflation Reduction Act funding

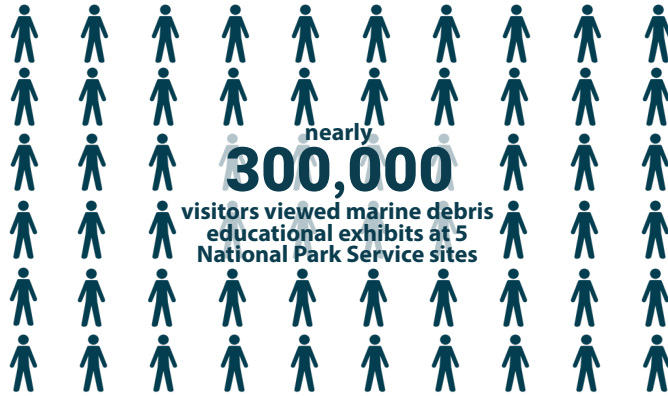


15

removal projects awarded



5 products translated into Spanish



nearly **300,000** visitors viewed marine debris educational exhibits at 5 National Park Service sites

6 publications

used NOAA marine debris monitoring data



1,861 waste items diverted from the landfill at NOAA Marine Debris Program meetings



3 new marine debris emergency response guides for Puerto Rico, New York, and the Commonwealth of the Northern Mariana Islands

\$8.7 Million

grant funds awarded to projects that benefit American Indian and Alaska Native tribal governments



2 new marine debris videos developed for Science on a Sphere



80+

abandoned and derelict vessels removed from the 2017 hurricane season



16 Projects

used sonar and uncrewed aerial systems to detect marine debris

Bipartisan Infrastructure Law

The NOAA Marine Debris Program received the opportunity to expand our work in the United States through the Bipartisan Infrastructure Law. **This law provided \$150 million to NOAA for marine debris assessment, prevention, mitigation, and removal for fiscal years 2022-2026.** Through this funding, the Marine Debris Program is supporting projects that remove large and damaging marine debris, use proven interception technologies to capture marine debris, and address derelict fishing gear that accumulates in the Papahānaumokuākea Marine National Monument.

Supporting Transformational Marine Debris Removal Projects

In 2022 and 2023, the NOAA Marine Debris Program provided over **\$69 million in federal funds to 14 transformational projects** to remove marine debris. Funding for these projects was provided through the [Bipartisan Infrastructure Law](#) and leveraged funds from the Inflation Reduction Act. These high-impact projects will increase resilience and restore habitat by removing the largest and most damaging debris and preventing its reaccumulation in the environment. All projects will support the principles of justice, equity, diversity, and inclusion when performing their work, including working with tribal, environmental justice, and fishing communities that traditionally have been underserved.



A juvenile Brown Noddy among plastic debris on a shoreline in the Papahānaumokuākea Marine National Monument (Photo: Papahānaumokuākea Marine Debris Project; Permit number PMNM-2023-005).



96+ metric tons of marine debris removed

A mass of derelict fishing gear is removed from the Papahānaumokuākea Marine National Monument (Photo: Papahānaumokuākea Marine Debris Project).

The NOAA Marine Debris Program is supporting an additional marine debris removal project in the **Papahānaumokuākea Marine National Monument through a five-year, \$5.8 million award through the Bipartisan Infrastructure Law to the National Fish and Wildlife Foundation.** This work allows the subgrantee, the **Papahānaumokuākea Marine Debris Project**, to continue and scale up NOAA's legacy of marine debris removal in the monument and build capacity.

During **two missions** in 2023, Papahānaumokuākea Marine Debris Project removed over **96 metric tons of marine debris** from shallow coral reefs and shorelines of the islands and atolls within the monument.

Diversity, Equity, Inclusion, Justice, and Accessibility

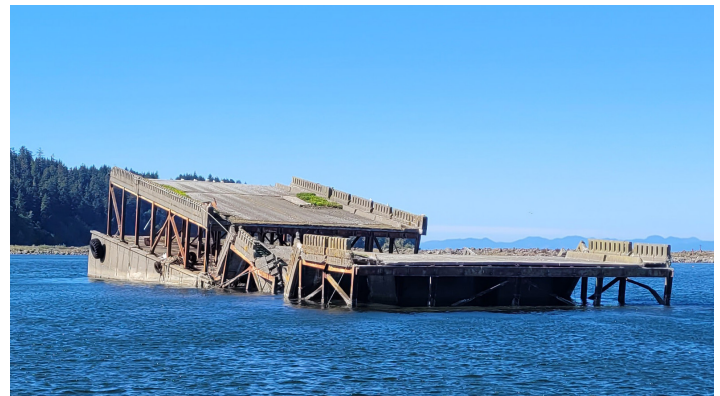
In fiscal year 2023, the NOAA Marine Debris Program continued evaluating and implementing feedback on our grant programs. We updated and refined our library of resources to help new and returning grant applicants better access our funding opportunities. Many projects newly funded this year include support for diverse audiences, including significant investments in tribal communities. The notices of funding opportunity we released in fiscal year 2023 also incorporated criteria for justice, equity, diversity, and inclusion, and will track meaningful engagement with underserved communities as part of proposed activities. The NOAA Marine Debris Program also worked to provide new opportunities and increased access to diverse audiences in fiscal year 2023. This included translation of outreach materials into non-English languages and supported a new funding opportunity through the Ocean Odyssey Grants: Marine Debris Awards for Diversity, Equity, Inclusion, Justice, and Accessibility, in partnership with the National Marine Sanctuary Foundation. Through this work, we hope to continue reaching new audiences and supporting projects to address the global challenge of marine debris. The projects below are examples of our funded marine debris projects with projects across the United States that incorporate justice, equity, diversity, and inclusion.

Supporting Marine Debris Removal in Tribal Communities

The NOAA Marine Debris Program **awarded \$8.7 million through the Bipartisan Infrastructure Law** in fiscal year 2023 to projects that will directly benefit American Indian and Alaska Native tribal governments, through subawards to tribes and marine debris removal in tribal waters and lands. These projects included support for native communities across the country.



Stacks of crab traps and derelict fishing nets in Dutch Harbor, Alaska (Photo: NOAA).



A section of the I-90 interstate bridge that is set to be removed from the Olympic Coast National Marine Sanctuary (Photo: NOAA).

In Alaska, **the Aleut Community of St. Paul Island** will conduct sonar surveys to identify and quantify legacy derelict crab pots, the **Douglas Indian Association** will tag and remove derelict crab pots from Gastineau Channel, and the **Native Village of Port Heiden** will serve as a critical hub to process and ship previously collected debris through the Center for Marine Debris based in Kodiak. In Washington State, the **National Marine Sanctuary Foundation** will remove abandoned vessels and other large derelict structures from Olympic Coast National Marine Sanctuary and Neah Bay in partnership with the **Makah Tribe** and **Quileute Tribe**.

Prevention

Prevention is key to solving the marine debris problem. The NOAA Marine Debris Program works with communities to keep marine debris from reaching our ocean and Great Lakes by increasing knowledge of the issue, reducing barriers to preventing marine debris, and intercepting debris upstream. Our dedicated partners work across sectors to create educational resources, provide hands-on outreach to diverse audiences, and increase access to marine debris solutions. The NOAA Marine Debris Program funded projects devoted to the creative prevention of marine debris, including projects that supported youth ambassadors to reduce single-use plastics in Miami, replaced plastic materials with culturally relevant options in American Samoa and Alaska, and increased access to marine debris education across North America. By preventing marine debris from entering the environment to begin with, we can help keep the global ocean and its coasts free from the impacts of marine debris. The projects below are a snapshot of our funded projects that aim to prevent marine debris.

Coordinating Across Boundaries to Prevent Debris

The Tijuana River Watershed, which spans across San Diego, California and Tijuana, Mexico, is home to vulnerable communities that are often affected by marine debris. Through funding provided by the United States-Mexico-Canada Agreement Implementation Act, the Marine Debris Program supported two efforts working to address this transboundary marine debris problem.



WILDCOAST is supporting the Tijuana River Watershed and local communities by intercepting and recycling and disposing of marine debris in alternative ways and increasing marine debris education through community art displays and other efforts. In fiscal year 2023, WILDCOAST and partners removed, recycled, and repurposed over **53.7 metric tons of debris**.

The project team also engaged **12 local communities** through a plastic recycling contest, which led to the recovery of nearly 4.5 metric tons of plastic in just four months.

In order to increase collaboration and discussion around marine debris solutions in the Tijuana River Watershed, the **Southwest Wetlands Interpretive Association, Tijuana River National Estuarine Research Reserve, and California State Parks** formed a cross-border Marine Debris Leadership Academy.

The program brought together **over 100 local leaders representing 40 organizations** from the United States and Mexico for an eight week program that addressed marine debris and solid waste management in the watershed. The academy included sessions focused on multicultural leadership and conflict resolution training, experiential learning, field experiences, technical studies, and binational relationship building.



Removal

Removing marine debris from our ocean and Great Lakes prevents further damage to critical habitats and wildlife. Throughout the country, abandoned and derelict vessels, derelict fishing gear, and other types of marine debris are removed from our shorelines and waterways through NOAA Marine Debris Program grants. Since 2006, the NOAA Marine Debris Program has funded more than 186 removal projects. Throughout the program's history, these projects have removed more than 36,000 metric tons of debris. The highlights below are examples of projects supported by the NOAA Marine Debris Program that remove marine debris from coastal area and waterways.

Removing Large-Scale Disaster Debris from the 2017 Hurricane Season

In fiscal year 2023, the Marine Debris Program celebrated the completion of seven large-scale disaster debris removal projects stemming from the 2017 hurricane season. Hurricanes Harvey, Irma, and Maria inflicted severe damage to communities and coastal resources over large areas of the Caribbean, the Southeast and Gulf of Mexico, leaving a swath of destruction and large amounts of debris in the coastal zone of the affected states and territories.



Large steel barges were removed from St. Thomas' Krum Bay after being in the area for 40 years (Photo: NOAA).

The NOAA Marine Debris Program received **\$18 million in disaster aid funding** as part of the Bipartisan Budget Act of 2018 to support disaster debris assessment, removal, and disposal efforts in the affected states and territories. Through seven projects in Georgia, South Carolina, Florida, Texas, Puerto Rico, and the U.S. Virgin Islands, more than **11,500 metric tons of hurricane debris was removed, including over 80 vessels**, resulting in immediate benefits to coastal communities as well as sensitive habitats such as near-shore reefs, mangroves, and protected areas.



Contractors work to remove several hundred feet of wooden dock debris from the marsh in Glynn County, Georgia (Photo: NOAA).



An abandoned and derelict vessel from the 2017 hurricane season that was removed off the coast of St. Croix, U.S. Virgin Islands (Photo: NOAA).

Research

Marine debris is a continually growing field of research that requires multidisciplinary approaches to address complex questions. The NOAA Marine Debris Program supports research projects that advance our understanding of marine debris. These projects are carried out by partner organizations that help us better understand where marine debris comes from and how it breaks down as it moves through our ocean, waterways, and Great Lakes. In fiscal year 2023, our team also supported the scientific application of marine debris science by acting as reviewers and editors for scientific journals, giving presentations on marine debris research topics, and providing expertise to national and international working groups on plastic pollution. The highlight below is an example of a marine debris research project from a NOAA Marine Debris Program funded partner.

Understanding the Impacts of Microplastics on Rainbow Trout

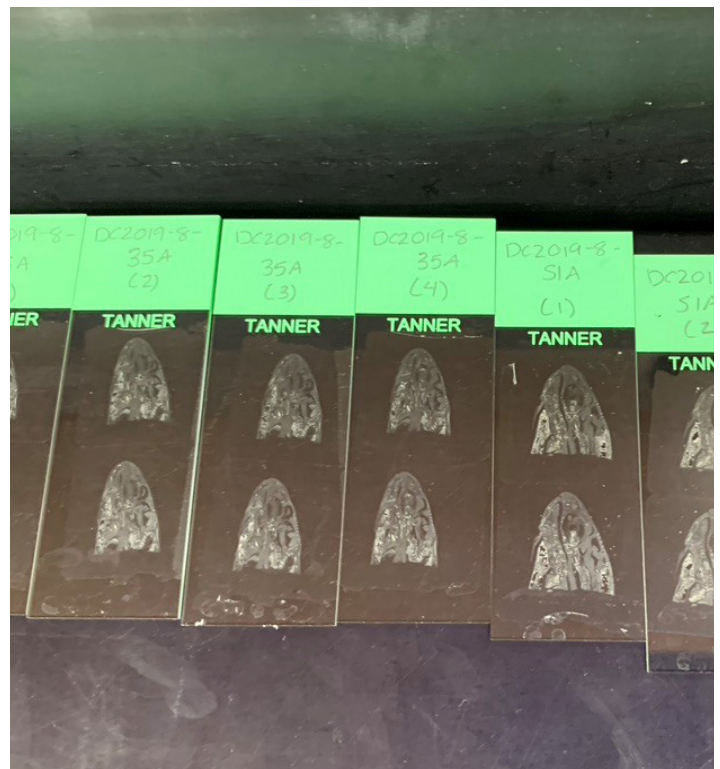
Microplastics, or plastics 5 millimeters or smaller in size, are found throughout the ocean. The small size of these plastics and ready availability makes them an easy mouthful for wildlife looking for food, including the species we eat.

With support from the NOAA Marine Debris Program, researchers from the **Virginia Institute of Marine Science** carried out a study to understand how ingesting microplastics and natural debris may further stress the immune system of rainbow trout.

The researchers found that microplastics on their own had little impact on the fish. However, **fish mortality increased significantly when they were exposed to both disease and microplastics**. The results of this study show that microplastics, especially microfibers, can have a significant effect on the health of fish populations when they also encounter disease, pollution, or other stressors.



A juvenile rainbow trout in the lab that is exposed to microplastics (Photo: Virginia Institute of Marine Science).



Thin sections of fish exposed to microplastics (Photo: Virginia Institute of Marine Science).

Monitoring and Detection

On shorelines around the world, the amount and type of marine debris can greatly vary. Efforts to continually measure and identify marine debris help improve our understanding of the size of the problem, where marine debris comes from, and how it is changing over time. The NOAA Marine Debris Program supports and provides guidance for efforts to monitor marine debris on shorelines and detect it in the environment. These efforts generate data that can inform management practices and prevention, and utilize new and emerging technologies to locate and identify marine debris in difficult to reach locations. In fiscal year 2023, the NOAA Marine Debris Program began designing a new nationwide monitoring survey and supported the release of a [report](#) on marine debris on the shoreline of the Monterey Bay National Marine Sanctuary. The highlight below is a snapshot of the NOAA Marine Debris Program's efforts to expand and improve our marine debris monitoring efforts on shorelines around the world.

New Tools for Collecting and Exploring Marine Debris Data

The Marine Debris Monitoring and Assessment Project (MDMAP) is NOAA's flagship initiative that engages partner organizations and volunteers across the nation and around the world to survey and record the amount and types of marine debris on shorelines.



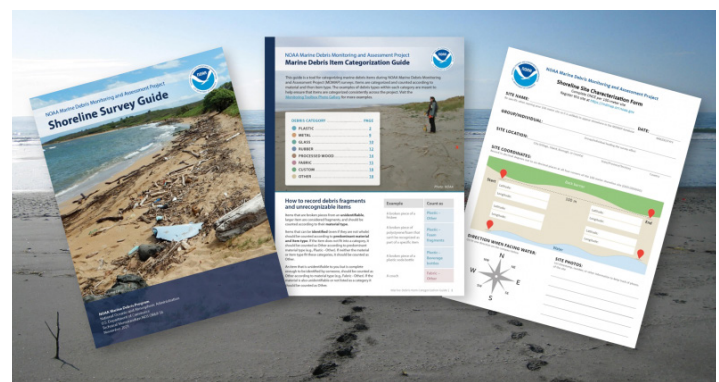
A NOAA Marine Debris Program team member sets up a survey site (Photo: NOAA).

In fiscal year 2023, the NOAA Marine Debris Program released an [updated toolbox](#) of resources to support volunteers, including training videos and resources, data sheets, item categorization guide for identifying debris items, and P-12 education materials to incorporate monitoring in formal and informal education.

The NOAA Marine Debris Program also updated the MDMAP Database to allow for **new interactive data visualizations** to explore results and see the amounts and kinds of debris reported. MDMAP is a widely applicable, simple, and inexpensive protocol to monitor for marine debris in the field, and these expanded and updated resources increase its usability, helping participants work together to answer questions about marine debris.



An MDMAP participant categorizes marine debris (Photo: Eco Maniac Company).



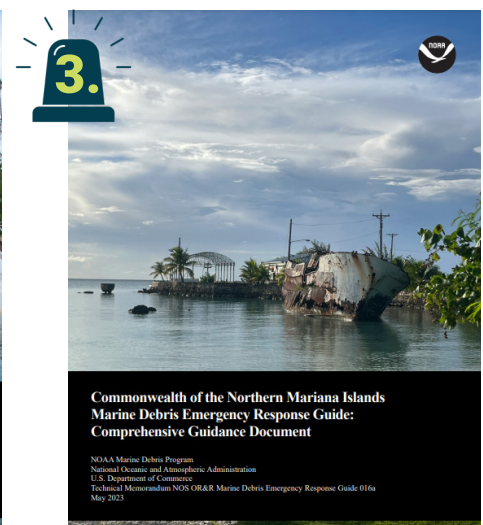
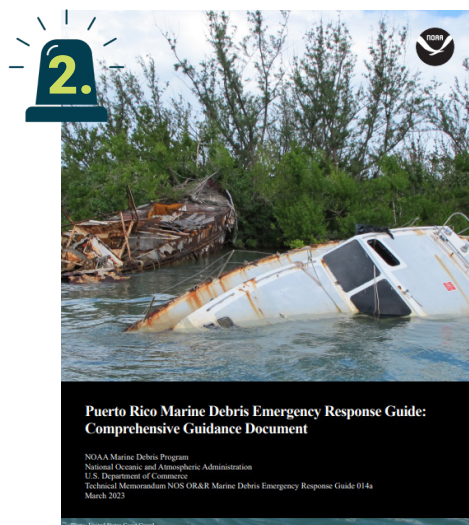
Marine Debris Monitoring and Assessment Project materials (Photo: NOAA).

Response

During disasters, large amounts of debris can enter waterways all at once. Disaster-related debris can include abandoned and derelict vessels, construction debris, and household wastes. It can be a danger to boat traffic, damage habitat, and can be hazardous to people. The NOAA Marine Debris Program works with partners nationwide to prepare for and respond to disaster debris and collaborate with communities at risk of and recovering from severe storms. Throughout fiscal year 2023, the NOAA Marine Debris Program responded to six disasters that resulted in large-scale marine debris, including Hurricane Ian, Typhoon Mawar, Hurricane Hilary, Maui wildfires, Hurricane Idalia, and Hurricane Lee. The highlight below is an example of how the NOAA Marine Debris Program collaborates with communities at risk for severe storms and other disasters.

Expanding Storm Preparedness Across U.S. States and Territories

The NOAA Marine Debris Program works with coastal states and territories to prepare emergency response guides to improve preparedness for responding to marine debris after disasters. These guides outline existing response structures at the local, state, territorial, and federal levels and include an overview of permitting and compliance requirements to facilitate a coordinated and timely response.



In fiscal year 2023, the NOAA Marine Debris Program published **three new emergency response guides** for New York, Puerto Rico (in English and Spanish), and the Commonwealth of the Northern Mariana Islands.

The Commonwealth of the Northern Mariana Islands guide is the first guide created for the Pacific Region and was developed with an unprecedented level of community participation. The NOAA Marine Debris Program also held a hands-on tabletop exercise in Puerto Rico to familiarize local first responders with the guide and its tools.



Puerto Rico Marine Debris Emergency Response Guide tabletop exercise (Photo: NOAA).

Coordination

Marine debris is a problem that extends across the United States and throughout the world. The NOAA Marine Debris Program is committed to participating in international, national, regional, and local solutions through collaboration and information sharing. Coordination among international working groups, federal agencies, and stakeholders in [11 regions](#) is critical to address the immensity of the marine debris problem. In fiscal year 2023, the NOAA Marine Debris Program presented in 15 international fora and engaged with representatives from 26 foreign governments. We also worked with hundreds of regional community members to develop, implement, and track 14 Marine Debris Action Plans. The projects below are examples of the NOAA Marine Debris Program's collaboration and coordination efforts with funded partners.

Increasing Stewardship Through Education and Outreach

In fiscal year 2023, the NOAA Marine Debris Program expanded marine debris education and outreach and promoted environmental stewardship through collaboration with other federal agencies and academia.

Through a five-year partnership with the **National Park Service**, the NOAA Marine Debris Program is working with coastal parks to design and install educational displays. Each display is tailored to the park's unique environment and encourages marine debris prevention among park visitors. This year, four new educational displays were completed at Cape Cod National Seashore in Massachusetts; Fire Island National Seashore in New York; Kaloko-Honokōhau National Historic Park in Hawai'i; and Kenai Fjords National Park in Alaska. In fiscal year 2023, **over 295,000 visitors** viewed marine debris educational exhibits at five National Park Service sites, including Bering Land Bridge National Preserve in Alaska, Biscayne National Park in Florida, Cape Lookout National Seashore in North Carolina, Perry's Victory and International Peace Memorial in Ohio, and Kenai Fjords National Park in Alaska.



Photo: National Park Service



Photo: National Park Service

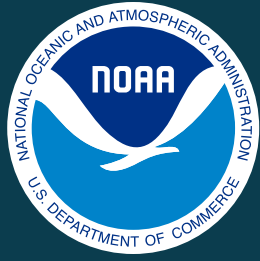


Photo: NOAA



Photo: National Park Service

In partnership with **Florida State University**, the NOAA Marine Debris Program developed a **new dataset on marine debris for NOAA's Science on a Sphere**, a program that uses a six-foot globe to display science and data visualizations. The new marine debris dataset and accompanying videos demonstrate the Global Marine Debris Model developed by Florida State University, showing the path of marine debris from where it enters the ocean to where it is likely to end up and emphasizing the power of our choices to prevent this global problem.



NOAA Marine Debris Program

Office of Response and Restoration

National Ocean Service

January 2024

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