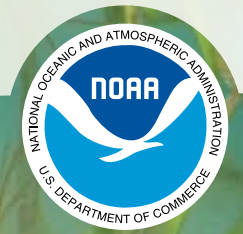


National Oceanic and Atmospheric Administration
NOAA Restoration Center



Restoring
Coastal and Marine Habitats

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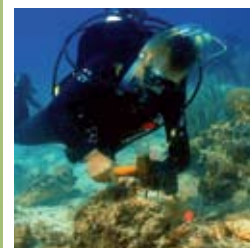


Restoring Habitats to Benefit Coastal and Marine Resources

In the Kah Sheets River in southeast Alaska, sockeye salmon leap over a natural cascade. But in other areas of Alaska and across the United States, over 2.5 million dams block fish from upstream spawning areas. Many of these dams provide clean energy, but countless others sit abandoned and decrepit. NOAA works with a variety of partners to remove idle dams and failing culverts, and to install fish ladders to help fish pass over structures that block migration. These restoration projects support healthy habitats and benefit fish, such as salmon, shad, striped bass, herring, and eels that contribute to a productive fishing industry and a healthy economy.

Why Restore Coastal and Marine Habitats?

- *Rebuild fishery habitat* lost to impacts such as natural disasters, development, erosion, and neglect.
- *Sustain fisheries* that provide more than 28 million jobs and contribute over \$61 billion to the U.S. economy each year.
- *Enhance shorelines* that provide a buffer against the forces of nature, reducing the devastating effects of wind, waves, and flooding.
- *Rehabilitate areas* damaged by oil spills, ship groundings, toxic chemical releases, and other coastal disasters.
- *Maintain recreational opportunities* and the commercial livelihood of many Americans living along the coastline.
- *Provide natural learning environments* and recreational areas for all to explore, discover, and enjoy.



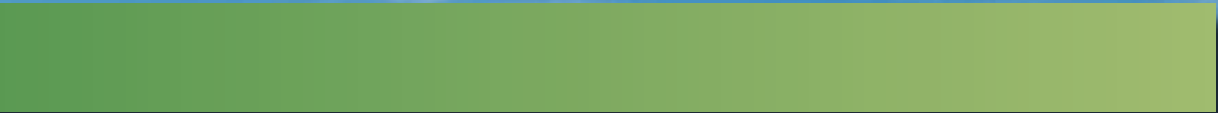
What Is the NOAA Restoration Center?

Created in 1991, the Restoration Center is the only office within the National Oceanic and Atmospheric Administration (NOAA) solely devoted to restoring the nation's coastal, marine, and migratory fish habitats. The Restoration Center works with a wide array of partners to restore mangrove, salt marsh, seagrass, oyster, coral reef, kelp forest, and river habitats.

The NOAA Restoration Center ...

- Funds and implements quality restoration projects to ensure healthy and sustainable fishery resources.
- Employs technical staff to help improve project design, ensure environmental compliance, and advance restoration techniques.
- Engages the local community and encourages stewardship of our nation's coastal and riverine habitats.
- Collaborates with public, private, and agency partners to prioritize projects and leverage resources.
- Uses scientific monitoring to evaluate restoration project success and ensure the efficient use of tax dollars.





Taking the Lead in Marine Habitat Restoration

In Fairhaven, Massachusetts, a helicopter airlifted sediment excavated from blocked channels in a salt marsh. The modifications improved natural tidal flow and enhanced the marsh's ability to support fish. The NOAA Restoration Center provides project funding and technical assistance to coastal and marine restoration projects across the United States. Projects range from locally driven oyster reef restoration to large-scale dam removals.



Providing Technical Expertise for Project Partners

At the site of the Chalk Point oil spill in Maryland, NOAA technical staff work closely with the project designer and construction crew to ensure that this marsh restoration project achieves its goals. NOAA technical staff around the country have a wide variety of expertise in areas such as engineering, hydrology, restoration ecology, project management, and environmental compliance.

NOAA Restoration Center Programs and Priorities

The Restoration Center, located in NOAA's National Marine Fisheries Service, Office of Habitat Conservation, focuses on four major priorities:

- The *Community-based Restoration Program* provides funding and technical assistance for habitat restoration projects and instills strong conservation values by actively engaging citizens in on-the-ground restoration projects.
- NOAA's *Damage Assessment, Remediation, and Restoration Program* restores natural resources after oil spills, toxic releases, and physical impacts such as ship groundings.
- *Large-scale regional restoration programs* take an ecosystem approach to restoration, carrying out large-scale projects through the Coastal Wetlands Planning, Protection, and Restoration Act and other initiatives.
- *Restoration science* provides a foundation for all Restoration Center programs and improves restoration success across the United States.



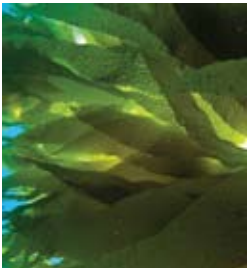
Community-based Restoration Program

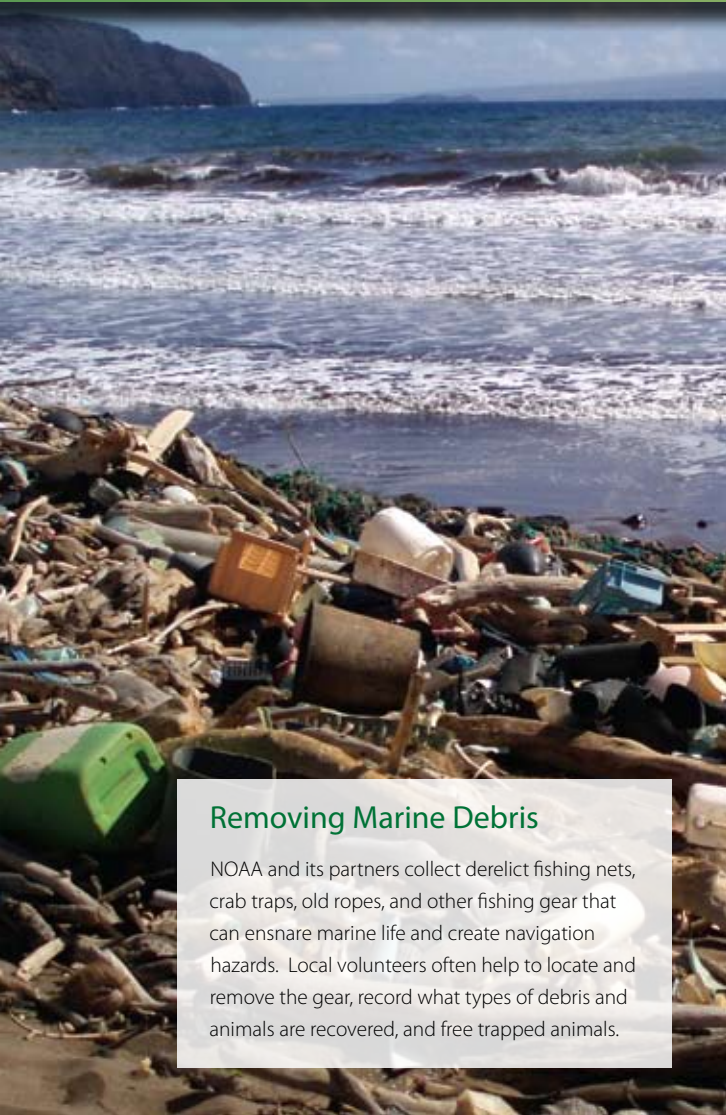
The Community-based Restoration Program conducts meaningful habitat restoration and promotes hands-on community participation to encourage local stewardship of our nation's coastal resources. Through the program, NOAA awards millions of dollars to national and regional partners and local grassroots organizations every year to restore coastal, marine, and migratory fish habitat.

In the past decade, more than \$50 million in NOAA funds have generated 3 to 5 times that amount in cash and in-kind contributions from partners, helping to expand on-the-ground projects. Special initiatives under this program include efforts to remove debris from our oceans and coasts and projects to open historic river habitat to migratory fish.

The Community-based Restoration Program ...

- Awards and leverages funds for habitat restoration projects.
- Provides technical advice on restoration techniques, environmental compliance, and scientific monitoring.
- Builds partnerships to identify local priorities and share resources.
- Promotes community involvement and stewardship of local projects.





Removing Marine Debris

NOAA and its partners collect derelict fishing nets, crab traps, old ropes, and other fishing gear that can ensnare marine life and create navigation hazards. Local volunteers often help to locate and remove the gear, record what types of debris and animals are recovered, and free trapped animals.



Restoring our Nation's Rivers

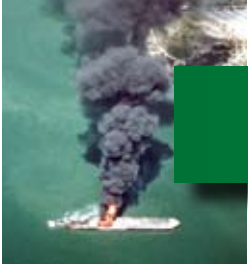
Through the Open Rivers Initiative, NOAA supports a variety of projects that open historic river habitat to migratory fish species that move between coastal and upstream areas. Projects include removing derelict dams, culverts, and other river barriers.

Damage Assessment, Remediation, and Restoration Program

Under the Damage Assessment, Remediation, and Restoration Program, NOAA acts on behalf of the public to manage, protect, remediate, and restore coastal and marine resources injured by oil spills, hazardous substance releases, and physical impacts such as ship groundings. In its 15-year history, the program and its partners have collected nearly \$450 million for restoration projects such as removing river blockages, creating oyster reefs, restoring oiled wetlands, and reattaching broken coral.

The Damage Assessment, Remediation, and Restoration Program ...

- Stops the spread of contaminants at hazardous waste sites and oil spills.
- Evaluates natural resource injuries and identifies restoration options.
- Recovers settlement funds from responsible parties.
- Restores injured natural resources on behalf of the public.
- Monitors restoration activities to ensure project success.
- Utilizes a multidisciplinary team from NOAA's Restoration Center, Office of Response and Restoration, and Office of General Counsel for Natural Resources.





Rehabilitating Habitat After Injury

In 1990, an oil spill released more than 550,000 gallons of fuel into the Arthur Kill, a channel between New Jersey and Staten Island. Over 100 acres of Arthur Kill salt marshes were oiled, killing native vegetation, fish, and an estimated 700 birds. To compensate for natural resource injuries, NOAA and its co-trustees used settlement funds to purchase 200 acres of coastal habitat, and restored 54 acres of intertidal marsh. Another 77 acres of wetland are slated for future restoration.

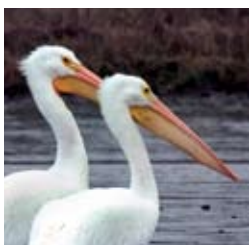
Large-Scale Regional Restoration

NOAA's Restoration Center conducts large-scale regional restoration in areas such as Puget Sound, the Great Lakes, Gulf of Maine, and coastal Louisiana. This restoration takes into account a wide range of ecological processes and has benefits at a broad watershed scale.

Through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA), NOAA designs and builds large-scale habitat restoration projects to combat Louisiana's land loss crisis. These projects are significant at the local and national scale for their role in improving marine fisheries, and their ability to protect communities and vital oil and gas infrastructure from storm damage.

Large-scale regional restoration programs ...

- Utilize public input to plan for and prioritize restoration projects.
- Provide technical and project management expertise to ensure the success of large projects.
- Address resource issues on an ecosystem scale.
- Restore some of the most economically and environmentally important habitats in the United States.





Preserving the First Line of Defense Against Storms

Dredge pipes carry sediment from offshore onto Chaland Island to create crucial beach and marsh habitat. This 800-acre NOAA-led project will help protect Louisiana's coastal communities and infrastructure from the devastating effects of wind, waves, and flooding, and will re-establish vital fish and migratory waterfowl habitat.

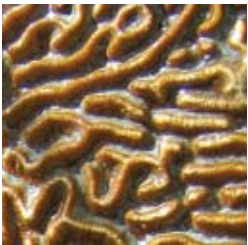
Restoration Science and Evaluation

Restoration science increases the success of NOAA's coastal and riverine habitat restoration projects. Through innovative fieldwork and research partnerships with leading universities and science centers, the Restoration Center uses research results to guide sound and cost-effective restoration.

The Restoration Center's involvement in a project does not end when the project is constructed. Through scientific monitoring, we can continue to evaluate a site's trajectory toward a fully functioning habitat and make changes when necessary.

Restoration science at NOAA's Restoration Center ...

- Increases the effectiveness of habitat restoration.
- Tests innovative restoration techniques and methods.
- Promotes science-based monitoring of restoration projects.
- Disseminates research results to other practitioners.





Sound Research for Successful Restoration

NOAA scientists deploy a monitoring device that will measure changes in water quality following a restoration project in Tampa Bay, Florida. As part of the project, a new bridge replaced a section of causeway between two lagoon systems to improve natural water circulation. Monitoring at the site allows NOAA to evaluate the effectiveness of the project and improve similar efforts in the future.



Get Involved!

Restoring and protecting our coastal and marine habitats depends on the support and dedication of individual citizens. You can become an active player in restoring our valuable natural resources in several ways:

- *Contact the NOAA Restoration Center* or one of the six National Marine Fisheries Service regional offices.
- *Attend public meetings* and become involved with local planning boards, advisory committees, or other planning entities.
- *Find out* how your school can get involved in projects in your neighborhood.
- *Volunteer* to assist in restoration projects in your community.
- *Visit our website* at www.nmfs.noaa.gov/habitat/restoration for a list of funding opportunities in your area.
- *Share your experiences* with others in your community!





Engaging Citizens in Local Restoration

Community volunteers sort through invasive marine algae that threatens native coral reefs in Hawaii. Trained divers retrieve the algae from the sea bottom, and shore-based volunteers sort out and return any native species that were inadvertently gathered. The collected algae is used as fertilizer by local taro farmers. To date, thousands of volunteers have helped remove over 100 tons of this invasive algae.





Mission

The NOAA Restoration Center restores habitats for the nation's living marine resources. Through partnerships, the Restoration Center restores degraded habitats; advances the science of coastal habitat restoration; shares restoration techniques; and fosters long-term stewardship of marine and coastal habitats.

History

The Restoration Center is the focal point for habitat restoration within NOAA. Housed in NOAA's National Marine Fisheries Service, the Restoration Center promotes habitat conservation and performs restoration pursuant to federal mandates. To meet its goals, the Restoration Center focuses on four major priorities: the Community-based Restoration Program; the Damage Assessment, Remediation, and Restoration Program; Large-Scale Regional Restoration Programs; and Restoration Science.

For more information on NOAA habitat programs, visit www.habitat.noaa.gov

Photo Credits

Cover: K. Petersen (lady crab); Why Restore Coastal and Marine Resources?: NOAA professional photography / T. Dunklin (salmon); NOAA staff photography (marsh, trawler, diver, mangrove); T. Kane (riparian landscape); What is the Restoration Center?: NOAA staff photography (marsh restoration, planting); NOAA professional photography / J. Shadle (boat); M. Nishimoto (bocaccio); NOAA professional photography / B. Stovink (meeting); NOAA professional photography / D. Pitkin (oyster); Restoration Center Programs: NOAA professional photography / D. Harp (NOAA technical staff); NOAA staff photography (PAH sampling); NOAA professional photography / B. Knapp (marsh terracing); NOAA professional photography / D. Pitkin (coastal monitoring); T. Watts (alewife); Anacostia Watershed Society (girl with plant); Community-based Restoration Program: NOAA Marine Debris Program (trash on the beach); NOAA professional photography / K. Plummer (dam removal); T. Watts (alewife); M. Hoeschler (diver removing tires); C. Robertson (planting); M. Dudley (volunteers planting); California Coastkeeper (kelp); Damage Assessment, Restoration, and Remediation: NOAA professional photography / B. Stovink (Exxon Bayway); U.S. Coast Guard (burning ship); NOAA staff photography (monitoring, oiled bird, fisherman); NOAA professional photography / J. Shadle (beach); Large-Scale Regional Restoration: NOAA professional photography / B. Knapp (all); Restoration Science and Evaluation: NOAA professional photography / J. Shadle (NOAA boat); NOAA professional photography / D. Harp (NOAA technical staff); NOAA staff photography (spiny lobster, volunteers, coral); NOAA professional photography / K. Evans (kid volunteer); Get Involved: Hawaii Marine Algae Group (alien algae); NOAA staff photography (kayaker, volunteer); T. Watts (alewife); P. Bergstrom (blue crab); Anacostia Watershed Society (kid with trash); Collage: Istockphoto.com (Salmon); NOAA staff photography (diver, monitoring, surfperch); NOAA professional photography / C. Robertson (machinery); NOAA professional photography / J. Shadle (kayaker, avocet); NOAA professional photography / B. Knapp (marsh terracing); NOAA professional photography / K. Evans (oyster restoration); M. Dudley (volunteer).

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<http://www.nmfs.noaa.gov/habitat/restoration>