



Working towards healthy, thriving habitats of sufficient quality to support all life stages of Atlantic coastal, estuarine-dependent, and diadromous fishes.

Who We Are

A coast-wide partnership of fish habitat resource managers, scientists, and communications professionals from 33 different state, federal, tribal, recreational, and non-governmental entities.

What We Do

Develop goals, objectives, action strategies and priorities to guide conservation efforts directed towards fish habitat conservation on the Atlantic coast.

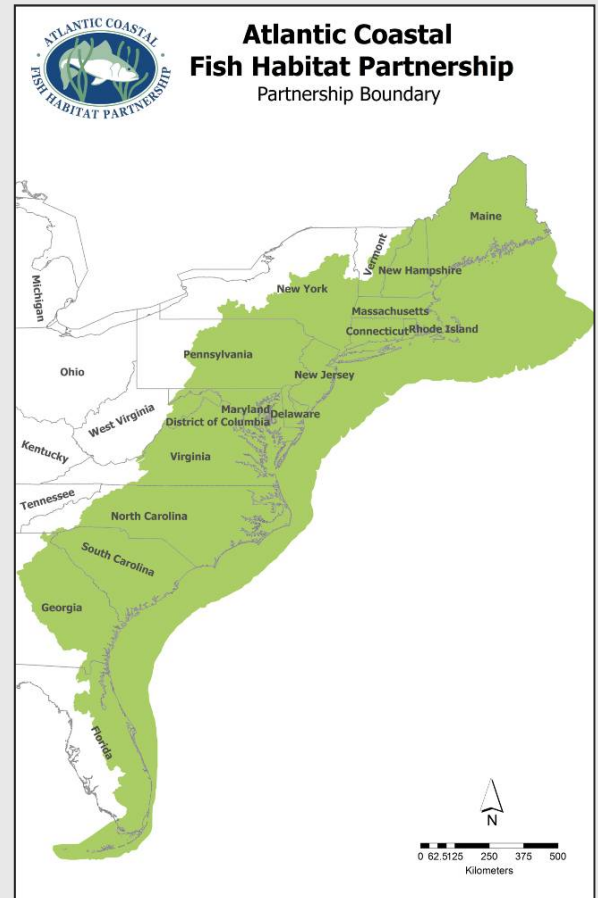
Secure, leverage, and distribute resources for on-the-ground fish habitat conservation projects.

Coordinate the implementation of fish habitat conservation projects on a coast-wide, regional, and local scale.

Develop coast-wide scientific projects whose outcomes serve as decision support tools for our partners and other entities working to conserve aquatic habitat.

Our Goals

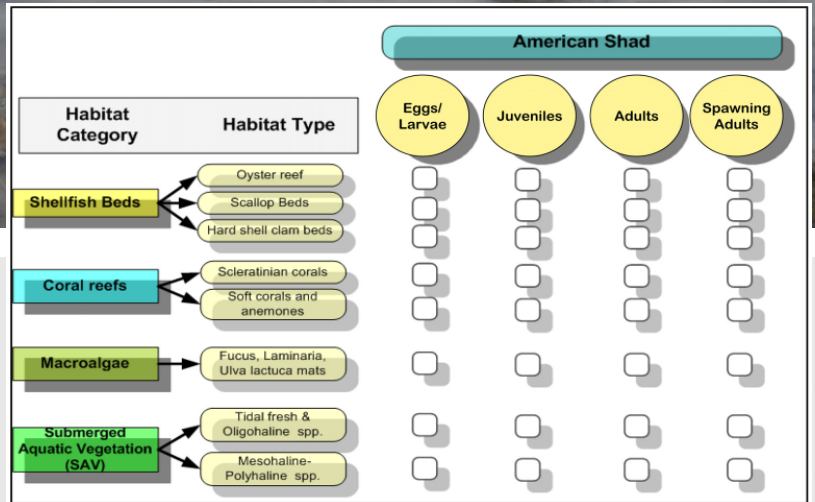
Support projects that protect and maintain healthy aquatic systems, prevent further degradation, or restore degraded aquatic habitats.



Where We Work

From the headwaters of coastally draining rivers to the edge of the continental shelf, from Maine to the Florida Keys, with a focus in estuarine environments.





Illustrative Snap Shot of the Species-Habitat Matrix

Science Projects

Our **Species-Habitat Matrix** and **Assessment of Existing Habitat Information** projects were completed to inform or verify the development of conservation objectives and priorities.

The **Species-Habitat Matrix** evaluates the relative importance of coastal, estuarine, and freshwater habitat types in terms of their value to the major life stages of over 100 fish species.

The development, review, and analysis of the Species-Habitat Matrix represents a truly coast-wide cooperative effort to which scientists from state, federal, NGO, and academic entities contributed.

The **Assessment of Existing Habitat Information** was conducted through a contract with the NOAA National Ocean Service. It is a database of documents, datasets, and information portals on Atlantic coastal fish species and habitats which were collected and analyzed for indicator, threat, and action information. The Assessment is web-based, enabling all resource managers to access this information at: <http://www8.nos.noaa.gov/bhv/spatbibindex.html>.

| Habitat Type | Region | State | Zone | Waterbody | Information Type |
|-------------------------|----------------|------------|-----------|-------------------|--------------------------|
| All Types | All Regions | All States | All Zones | All Waterbodies | All Items |
| Coastal Inlet Substrate | Mid-Atlantic | CT | CDA | Barnegat Bay | Conservation Plan |
| Estuarine Waters | North Atlantic | DC | EDA | Barnegat Bay, EDA | Habitat Assessment |
| Macroalgae | South Atlantic | DE | Estuarine | Buzzards Bay | Habitat Characterization |

Grid Output Excel Download

Because any document may refer to multiple habitat types, these documents can appear in the output multiple times. Additionally, numerous habitat types occur in documents referencing a specific waterbody or waterbodies. However, in actuality, these habitat types are not necessarily found in these waterbodies.

| Title | Year | Authors | Organization | Publication Info | Species | Habitat Type | Information Type | Web Location |
|--|------|---|--|---------------------------------------|---|------------------|-------------------|----------------------------|
| Atlantic coast diadromous fish habitat: A review of utilization, threats, recommendations for conservation, and research needs | 2009 | Greene, K.E., J.L. Zimmerman, R.W. Laney, and J.C. Thomas-Blate | Atlantic States Marine Fisheries Commission, Washington DC | ASMFC Habitat Management Series No. 9 | Alewife, American eel, American shad, Atlantic sturgeon, Hickory shad, Striped bass, Blueback herring | Estuarine Waters | Conservation Plan | Click Here |

Snap Shot of the Assessment of Existing Habitat Information

How You Can Get Involved

You can help the Partnership develop, refine, or achieve the following:

- Conservation strategies
- Long-term funding strategies
- Partners from the national, regional, and local levels

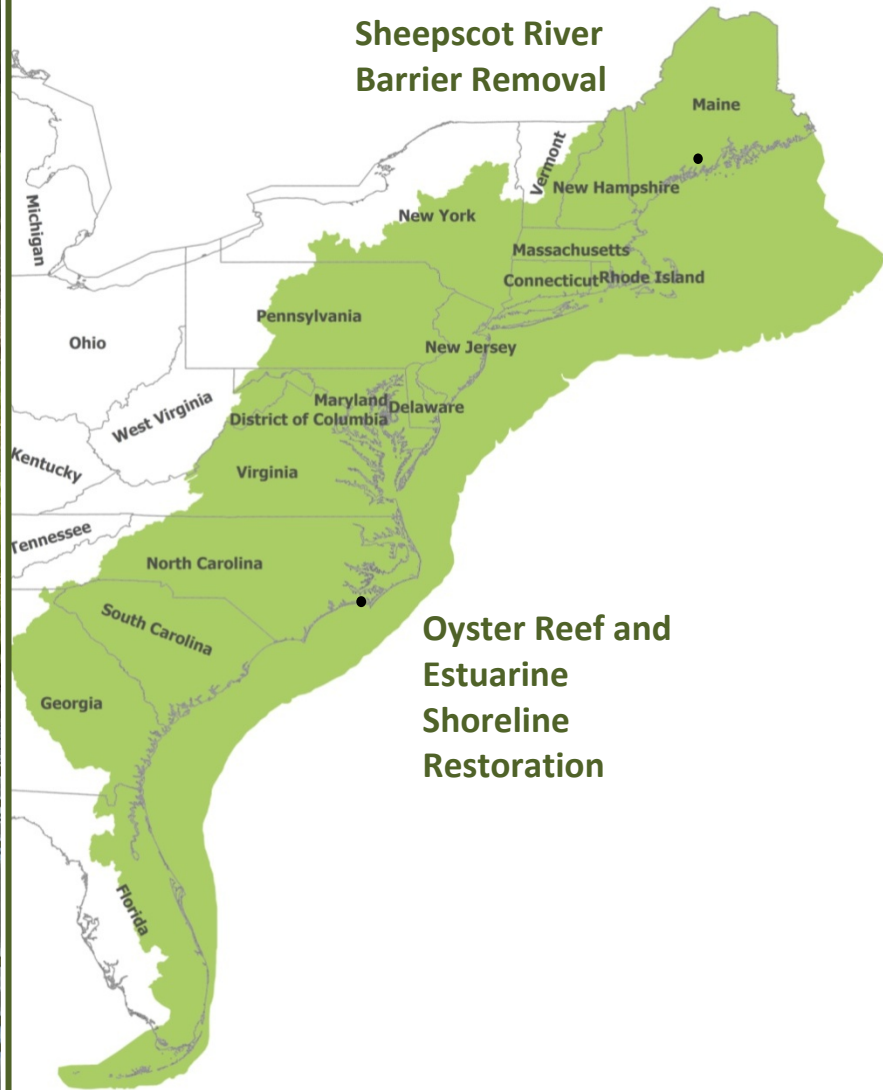
For more information on the Partnership visit us at: www.atlanticfishhabitat.org

Or contact Lisa Havel, Atlantic Coastal Fish Habitat Partnership Coordinator at: 703.842.0740 or LHavel@asmfc.org





FY17 On-The-Ground Fish Habitat Projects



**Sheepscoot River
Barrier Removal**

**Oyster Reef and
Estuarine
Shoreline
Restoration**



ON-THE-GROUND PROJECTS

Spotlight on The Sheepscot River Barrier Removal, Whitefield and Alna, Maine

Project Partners

Atlantic Salmon Federation

Maine DMR/DEP

Farnsworth Foundation

NOAA Fisheries

Midcoast Conservancy

National Fish and Wildlife Foundation

Elmina B. Sewall Foundation

Davis Conservation Fund

The Nature Conservancy

Patagonia

Horizon Foundation

Trout and Salmon Federation

US Fish and Wildlife Service

Atlantic Coastal Fish Habitat Partnership

The Head Tide and Coopers Mills dams supported numerous mills on the Sheepscot River, Lincoln County, Maine, from the early 1800s to 1940, and were instrumental in the settling of the Sheepscot Valley region. Currently, the Sheepscot River is the southernmost river supporting wild Atlantic salmon. It was designated critical habitat in 2009, with dams as the greatest threat to the continued existence of the species according to both the U.S. Fish and Wildlife Service's draft recovery plan and the National Oceanic and Atmospheric Administration's Species in the Spotlight Initiative.

The Atlantic Salmon Federation is working with partners to reconnect 71 miles on the river through the removal of the Coopers Mills Dam and partial removal of the Head Tide Dam. The project includes public safety, historic preservation, and increased recreational opportunities for the local communities.



Coopers Mills Dam, Sheepscot River

As the two remaining mainstem dams on the Sheepscot River, the Coopers Mills and Head Tide dams are the sole barriers between salmon, alewives, blueback herring, American shad, and other migratory species and their spawning habitat. The Coopers Mills Dam will be removed and three new dry hydrants will be constructed to replace the loss of fire protection water from the impoundment. At the Head Tide Dam, a 23 foot section of the dam will be removed along with a concrete sill and ledge. A new viewing platform and canoe portage trail with safety railing will be constructed at each site along with historic interpretive signage.

The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to partially fund the design finalization and deconstruction and removal of the dams. Pre- and post-project monitoring will take place over a three year period to quantify fish presence, passability, and performance of the dry hydrants.



Project text and photos provided by The Atlantic Salmon Federation.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org



ON-THE-GROUND PROJECTS

Spotlight on Oyster Reef and Estuarine Shoreline Restoration, Bogue Sound, Pine Knoll Shores, North Carolina

The North Carolina Aquarium at Pine Knoll Shores is an ideal place to learn about coastal habitats and the plants and animals that live there. However, it is also one of the many places along the coast of North Carolina experiencing shoreline erosion from sea level rise, storms, and high wave activity. In 2001, the North Carolina Coastal Federation previously stabilized a portion of the shoreline with a stone sill and landward salt marsh grass plantings. Despite this successful restoration project, erosion continues to occur along the shoreline of the aquarium at locations that have not yet been protected with living shorelines. For this project, the federation will restore 300 linear feet of oyster reef and estuarine shoreline to further protect these important resources.

The oyster reef and salt marsh will provide valuable nursery and feeding habitat for red drum, summer flounder, three species of shrimp and a minimum of 22 other fish species. These waters are also designated Essential Fish Habitat for black sea bass.

For this project, an oyster marsh toe revetment will hold sediment in place and absorb wave energy. An oyster sill will also absorb wave energy and allow sediment to accumulate and promote salt marsh growth. Salt marsh plants will be planted landward of the sill in the spring following deployment of the oyster reef materials.

Two hundred and fifty community and student volunteers will learn about the importance of fish habitat and living shorelines through hands-on restoration activities that include oyster reef construction, salt marsh grass plantings and project monitoring.

The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to partially fund the construction, monitoring and outreach portions of the restoration. Pre- and post-project monitoring will assess oyster recruitment, vegetation cover, and sediment accretion.

Project text and photos provided by the North Carolina Coastal Federation.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org

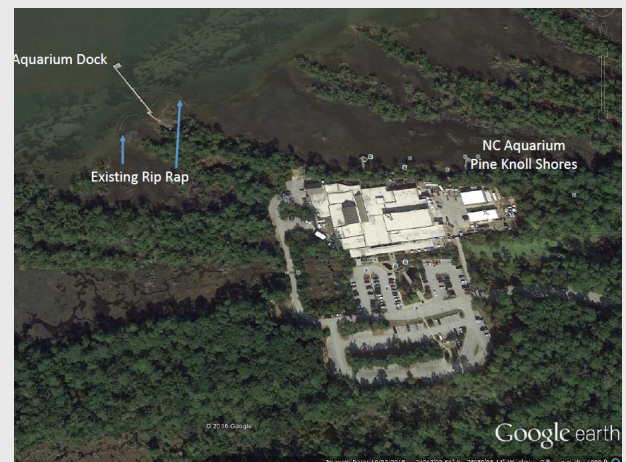
Project Partners

North Carolina Coastal Federation

North Carolina Aquarium at Pine Knoll Shores

US Fish and Wildlife Service

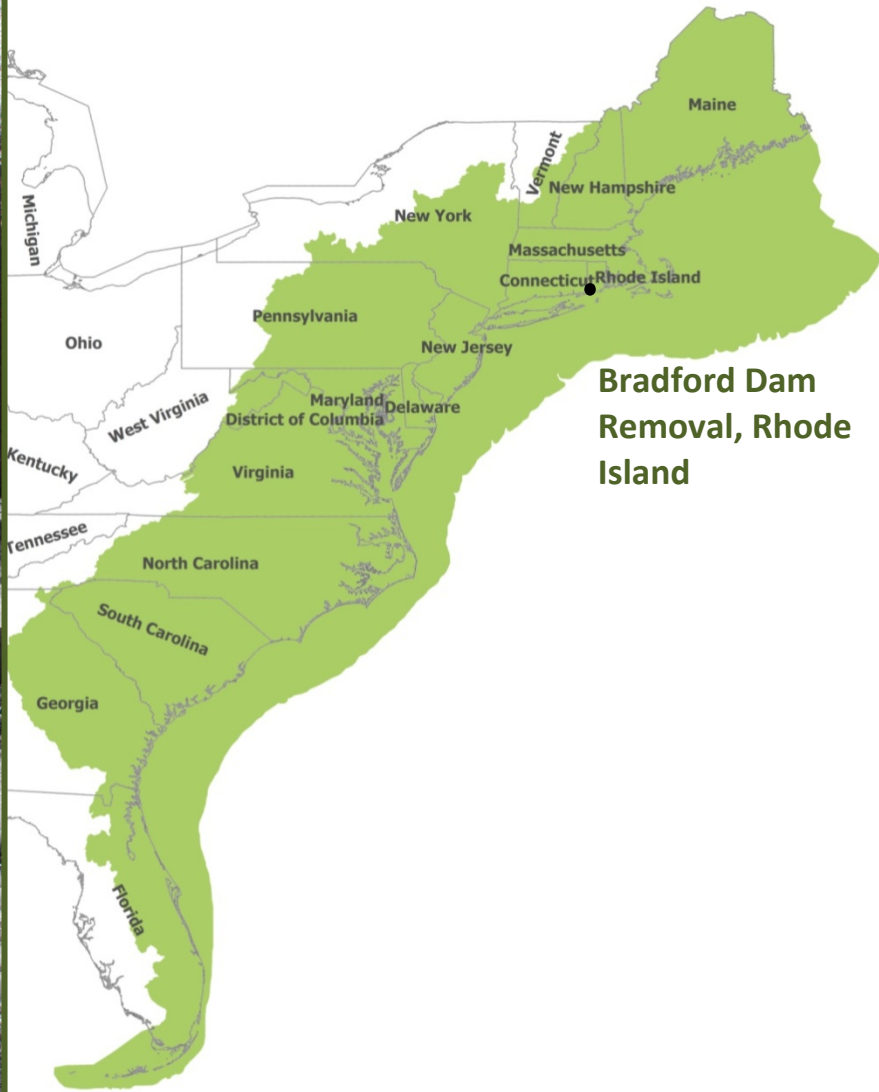
Atlantic Coastal Fish Habitat Partnership



Aerial view of the project site



FY16 On-The-Ground Fish Habitat Projects





ON-THE-GROUND PROJECTS

Spotlight on The Bradford Dam Removal, Pawcatuck River,
Westerly, Rhode Island

Project Partners

The Nature Conservancy in Rhode Island

Rhode Island Department of Environmental Management

Army Corps of Engineers

US Fish and Wildlife Service

Atlantic Coastal Fish Habitat Partnership

The Wood-Pawcatuck River Watershed is one of the most important coastal watersheds in southeastern New England, and one of the most undeveloped intact areas between New York City and Boston. This watershed is of significant regional importance to diadromous fish populations including alewife, blueback herring, American shad, and American eel. All four of these species are not only Federal trust species, but are managed by the Atlantic States Marine Fisheries Commission and were listed as Species of Greatest Conservation Need in the 2015 Rhode Island Wildlife Action Plan. While water quality is suitable to support self-sustaining populations of resident fish in this watershed, these migratory (diadromous) populations are threatened by degraded habitat caused by dams, which have obstructed fish passage and caused river fragmentation.

Dams were first built on the river to provide water power to mills in the 1600's. By the early 1900's there were ten significant dams located along the 32 mile main stem of the Pawcatuck River. Populations of diadromous fish could no longer reach their natal spawning grounds, and were completely eliminated from the watershed.



Bradford Dam, Westerly, Rhode Island

Some of these dams have been washed out, breached, or removed, and others have been fitted with functional fish ladders. This project will replace the Bradford Dam with a step-pool nature-like fishway. It will open 32 river miles and providing access from the estuary to spawning and nursery habitat in the headwaters of Worden Pond. The dam is currently fitted with a 40 year old obsolete fish ladder, which is functional only over a narrow range of flows. Removal will not only improve fish passage, but will improve flood resiliency by eliminating the risk of destructive flooding as a result of dam failure.

The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to partially fund the deconstruction and removal of the dam. Pre- and post-removal monitoring will yield quantifiable measures of success, and outreach to local stakeholders and legislatures will keep the community informed of the project progress.

Project text and photos provided by The Nature Conservancy in Rhode Island.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org





FY15 On-The-Ground Fish Habitat Projects





ON-THE-GROUND PROJECTS

Spotlight on Renewing Diadromous Fish Passage in Patten Stream

The Upper Patten Stream Watershed, located in Surry, Maine, historically supported a thriving commercial alewife fishery and was frequented by many diadromous fish species. While many factors have led to the decline of these populations, the physical barrier of the Route 172 road crossing has had a significant influence on fish movement in the area. Route 172 is the sole barrier between Patten Bay and the upper drainage and is located just upstream of tidewater. The crossing is only slightly undersized, but covers a channel in the bedrock that was historically used for migrations. As a result, Patten Stream's alewife are nearly extirpated, surviving mainly due to volunteers who carry fish over the barriers in nets so they may reach spawning habitat.



The Route 172 barrier on Patten Stream (facing upstream), with temporary fish ladder in place.

This project will restore access to 20 stream miles and 1,200 alewife spawning acres in Patten Stream through the installation of a nature-like rock weir fishway. The spacing, orientation, elevations, and overall configuration of the rock weirs are designed to adequately dissipate energy associated with higher flows that may become more common with shifting climatic conditions. Primary and secondary notches are provided to facilitate passage under a range of flows, and the modular design of the weirs facilitates cost-effective adjustments in notch elevation if warranted.

Species such as blueback herring, American eel, sea run brook trout, and endangered Atlantic salmon will also benefit from this project, able to use the fishway to move up and downstream freely.

The U.S. Fish and Wildlife Service has provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to fund numerous components of the project, including supplies for construction materials, labor, and onsite engineering. Community events, school trips, and a volunteer alewife monitoring program are all planned during the course of this project as well.

Project Partners

Town of Surry

Blue Hill Heritage Trust

Maine Department of Transportation

Maine Coastal Program

Maine Department of Natural Resources

National Oceanic and Atmospheric Administration

Gulf of Maine Council

US Fish and Wildlife Service

Atlantic Coastal Fish Habitat Partnership



Project text provided by the Town of Surry.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org



ON-THE-GROUND PROJECTS

Spotlight on Cotton Gin Mill Dam Removal and Fish Passage Project

Project Partners

The Nature Conservancy

Massachusetts Division
of Ecological
Restoration

US Fish and Wildlife
Service

Atlantic Coastal Fish
Habitat Partnership

The Cotton Gin Mill Dam in East Bridgewater, Massachusetts was built in the mid-1800's, and since then has blocked flow of the Satucket River. The dam has hindered natural river processes, such as sediment transport and temperature regulation. It also acts as a barrier to passage for diadromous fishes including river herring (*Alosa pseudoharengus*, *A. aestivalis*) and American eel (*Anguilla rostrata*).

The Nature Conservancy will work with partners to remove the dam, allowing fish access to 124 acres of spawning habitat, with potential for 528 more acres. It will also restore 4.4 river miles upstream. The dam currently blocks passage from Narragansett Bay to the river upstream and Robbins pond, both of which provide suitable nursery habitat for river herring.



Cotton Gin Mill Dam, looking upstream.

The effectiveness of this project in restoring migratory fish passage will be measured in the short term through changes in the length of connected river network and in characteristics of physical habitat. Fish counts will be conducted for at least five years following removal, and the project team is collaborating with the Massachusetts Division of Marine Fisheries to conduct fish monitoring at other dam removal sites in the watershed.

Removing the Cotton Gin Mill Dam, restoring river processes in the Satucket River, and restoring riparian habitat will improve system health and resilience to stresses such as increased temperature and more intense storm events due to climate change. Increased habitat available to migratory fish will minimize the chance that stochastic events will wipe out all spawning or juvenile survival in a given year.

The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to fund a portion of the dam removal.

Project text and photo provided by The Nature Conservancy. Photos by Cathy Bozek.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org





ON-THE-GROUND PROJECTS

Spotlight on Cape Fear River Fisheries Enhancement Project

Project Partners

Cape Fear River
Watch

National Atmospheric
and Oceanic
Administration

Southeast Aquatic
Resources Partnership

Martin Marietta
Aggregates

Dial Cordy and
Associates

US Fish and Wildlife
Service

Atlantic Coastal Fish
Habitat Partnership

The Cape Fear River was one of the most productive rivers for sturgeon and American shad in North Carolina at the beginning of the 20th century, but current commercial landings are 87% lower than historic estimates. Population declines and reduced access to spawning habitat have been caused by three lock and dam structures located between Wilmington and Fayetteville. Lock and Dam 1 has a completed rock arch ramp, allowing volitional fish passage to Lock and Dam 2.

However, 70% of fish are unable to pass the Lock and Dam 2 barrier, and until fish passage is improved, habitat restoration downstream of the dam remains the priority. Clean, hardbottom habitats with interstitial spaces are preferred spawning habitat for many riverine and diadromous fish species. Unfortunately, much of this preferred habitat in the Cape Fear river is inaccessible and is buried under sediment from numerous natural and anthropogenic sources.



Lock and Dam 2. Native rock substrate was placed approximately 800 feet downstream.

This project restored 0.5 acres of preferential spawning habitat for American shad and sturgeon downstream of Lock and Dam 2, facilitating 32 miles of larval rearing habitat between Lock and Dams 1 and 2. To compensate for reduced access to historical spawning habitat due to fish passage barriers, 1,000 tons of mixed native rock were placed in the river, and monitored for spawning success for two years. Thirty volunteers directly assisted in the restoration efforts by handling the beginning and final substrate placements, which will directly benefit American shad and Atlantic and shortnose sturgeon, and indirectly provide potential spawning habitat for striped bass and river herring.

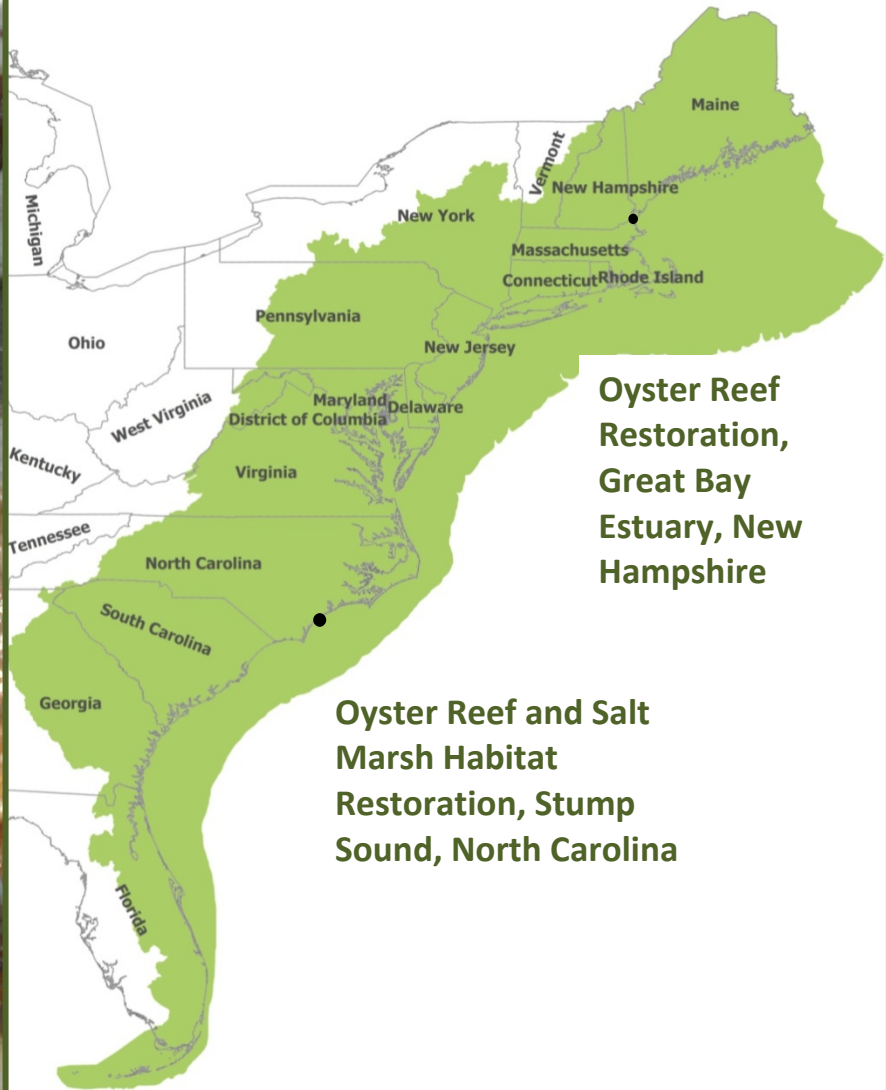
The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to fund the third season of biological monitoring as well as a side-scan sonar survey to ensure the habitat is stable. Both efforts are essential for ensuring the success of the enhancement project.

Project text and photos provided by Cape Fear River Watch. Lock and Dam 2 photo taken by Mike Wicker, USFWS.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org



FY14 On-The-Ground Fish Habitat Projects



**Oyster Reef
Restoration,
Great Bay
Estuary, New
Hampshire**

**Oyster Reef and Salt
Marsh Habitat
Restoration, Stump
Sound, North Carolina**



ON-THE-GROUND PROJECTS

Spotlight on Oyster Reef Restoration in Great Bay Estuary, New Hampshire

As ecosystem engineers, oysters play a significant role in maintaining a healthy and stable environment by anchoring sediments, providing nursery habitat



Restored oyster reef in NH

for estuarine-dependent and migratory fishes, buffering against ocean acidification, and filtering the surrounding water column. Like many coastal regions around the world, Great Bay Estuary, located in Rockingham County, New Hampshire, has experienced a recent reduction in adult oyster populations. In fact, there has been a 90% decline in oyster standing stock since 1970 due to overharvesting, reduced spawning activity, sediment pollution, and disease.

This project will help mitigate these losses by adding 400,000 oysters near the mouth of the Lamprey River, Great Bay Estuary, in a two-stage process. First, 200 tons (about 200 yd²) of surf clam (*Spisula solidissima*) will be planted in the estuary as a solid foundation for the living reef. Second, Eastern oyster (*Crassostrea virginica*) larvae will be set on shells in the laboratory, and transferred to volunteer homes and nursery rafts for grow out. These spat, over 350,000, will then be hand planted onto the surf clam reef for permanent establishment. At completion, two acres of oyster reef will be restored to the estuary, with a target density of 50 spat/m². Oyster restoration is considered a “highest priority” strategy in the 2010 Piscataqua Region Estuaries Partnership Comprehensive Conservation Management Plan, and if successful will support species including river herring (*Alosa pseudoharengus* and *Alosa aestivalis*), winter flounder (*Pseudopleuronectes americanus*), and striped bass (*Morone saxatilis*).

Following a competitive selection process, the Atlantic Coastal Fish Habitat Partnership recommended this project to receive conservation funding from the U.S. Fish and Wildlife Service to support the construction, monitoring, and outreach components of this project. These restoration efforts also rely heavily on community volunteers in the New Hampshire Oyster Conservationist program to lend their time and private docks to growing oyster spat over a ten week program.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org

Project Partners

NOAA New Hampshire Coastal Program

The Nature Conservancy

US Fish and Wildlife Service

Atlantic Coastal Fish Habitat Partnership





ON-THE-GROUND PROJECTS

Spotlight on Oyster Reef and Salt Marsh Restoration in Stump Sound, North Carolina

Project Partners

North Carolina Coastal Federation

Atlantic Coastal Fish Habitat Partnership

Atlantic States Marine Fisheries Commission

National Oceanic and Atmospheric Administration – Restoration Center

Z. Smith Reynolds Foundation

North Carolina Division of Marine Fisheries

US Fish and Wildlife Service

The shoreline in Stump Sound, Holly Ridge, North Carolina, has been experiencing erosion from boat wakes and storms, as well as degradation due to dredging, shoreline hardening, and high harvest pressure on natural oyster reefs, which in turn has led to a reduction in available habitat for estuarine-dependent species. This project will protect 200 ft. of estuarine shoreline in the sound by restoring 0.05 acres of fringing oyster (*Crassostrea virginica*) reef and 0.07 acres of tidal salt marsh (*Spartina alterniflora*) habitat. The restored oyster reefs and salt marshes will directly benefit a number of species including red drum, sheepshead, spotted seatrout, weakfish, spot, Atlantic croaker and penaeid shrimp.

Approximately 3,000 bushels of oyster shells will be added to Stump Sound to create a 200' x 12' x 1.5' (L x W x H) reef waterward of the 3,000 salt marsh seedlings that will be planted along the shoreline.

The loose shell will be colonized

by oyster larvae, and will transform it into a

living reef almost immediately. The living reef will protect the adjacent salt marsh, allowing for the *S. alterniflora* seedlings to take root and trap sediments for marsh accretion and increased stabilization.

Through a competitive selection process, the Atlantic Coastal Fish Habitat Partnership chose the N.C. Coastal Federation's project to receive U.S. Fish and Wildlife Service funding. This restoration is possible due to a collaborative effort between these organizations and the Z. Smith Reynolds Foundation, the N.C. Division of Marine Fisheries, the NO.AA Restoration Center, the Atlantic States Marine Fisheries Commission, and 100 volunteers.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org

Project text and photos courtesy of North Carolina Coastal Federation



Restoration Project Area



FY13 On-The-Ground Fish Habitat Projects



**Expanding
Marine Meadow
Habitat in the
Peconic Estuary,
New York**

**Restoring Coastal Fish
Habitat Using Oysters,
Mussels, and Marsh
Grass, Guana Peninsula,
Florida**



ON-THE-GROUND PROJECTS

Spotlight on Expanding Marine Meadow Habitat in the Peconic Estuary

Marine meadows play an important role in providing ecosystem services while serving as preferred or essential habitat for a wide array of native fish species. However, eelgrass populations have been declining globally in recent decades. In New York waters, it is estimated that over 80% of eelgrass habitat has been lost since the 1930's due to natural and anthropogenic causes. To address the need to re-establish submerged aquatic vegetation in the Peconic Estuary, the Cornell Cooperative Extension (CCE) used a multi-pronged approach to bringing back this important underwater habitat.

CCE staff conducted restoration planting at sites in the eastern portions of the estuary, where water quality conditions are suitable to eelgrass (*Zostera marina*). Additionally, they conducted pre- and post-monitoring to ensure restoration sites are suitable and to track the progress of the plantings.



Representative photo of assembled planting units for restoration.

The public had opportunities to take part in these restoration efforts through participation in two land-based workshops, during which they will have an opportunity to help assemble planting units, in addition to learning about the importance of marine habitat and what they can do to help preserve and restore local seagrass species.

The project creates important habitat for cunner, tautaug, winter and summer flounder, porgies, seahorses, squid (eggs), striped bass, black sea bass, bluefish, menhaden, hard clam and bay scallop.

The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to fund numerous components of the project, including staff support, boat time, and workshop materials. On-the-ground, local level efforts, such as the Expanding Marine Meadow Habitat in the Peconic Estuary project, helped to address regional habitat priorities and coastwide conservation objectives identified by the Atlantic Coastal Fish Habitat Partnership.

Project text and photo provided by Cornell Cooperative Extension of Suffolk County.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org

Project Partners

Cornell Cooperative
Extension of Suffolk
County

Moore Charitable Trust

Suffolk County

Town of East Hampton

Peconic Estuary
Program

US Fish and Wildlife
Service

Atlantic Coastal Fish
Habitat Partnership





ON-THE-GROUND PROJECTS

Spotlight on Restoring Coastal Fish Habitat Using Oysters, Mussels, and Marsh Grass at Guana Peninsula

Project Partners

Friends of the Guana
Tolomato Matanzas
Reserve

Guana Tolomato
Matanzas National
Estuarine Research
Reserve

University of North
Florida

US Fish and Wildlife
Service

Atlantic Coastal Fish
Habitat Partnership

The Tolomato River (Intracoastal Waterway) on the Guana Peninsula in northeast Florida was once home to oyster reefs, which provided important habitat for a number of resident and transient finfish species, and emergent vegetation such as *Spartina alterniflora*, which lent valuable feeding habitat to juvenile fishes, and improved water quality. Over time however, the area has been impacted by over-harvesting, expanded human occupancy near the waterway, water pollution, increasing wave action as a result of river traffic and channel dredging, climate change, and sea level rise. The resulting disappearance of oyster reef and *Spartina alterniflora* salt marsh has reduced habitat for important fish and associated species. This project aimed to reduce shoreline erosion, preserve damaged salt marsh environment and accelerate *Spartina* growth.

This project, located specifically at Wright's Landing, in the Guana Tolomato Matanzas National Estuarine Research Reserve, aimed to restore and enhance fish habitat by preventing shoreline erosion and promoting shoreline accretion using a combination of mussel and oyster-based living shorelines. Combined with *Spartina alterniflora* planting, living shorelines have stopped or reversed erosion and provided critical habitats for plants, fishes, and invertebrates. Specifically, restored marsh and reef provide nursery and feeding habitat for forage fishes (mummichog, silversides) that utilize emergent salt marsh habitats, as well as juvenile commercial and recreational species (drum, shrimp) that utilize oyster reef and shallow nearshore habitats.



Southern portion of the proposed restoration site.

Created oyster shell reefs, and coir fiber logs with ribbed mussels were established separately and in combined fashion to examine their relative effectiveness on erosion reduction, sediment capture and enhancement of success of *Spartina* plantings. Marsh accretion, fish and invertebrate habitat usage, and *Spartina* seedling success were monitored by researchers and volunteers.

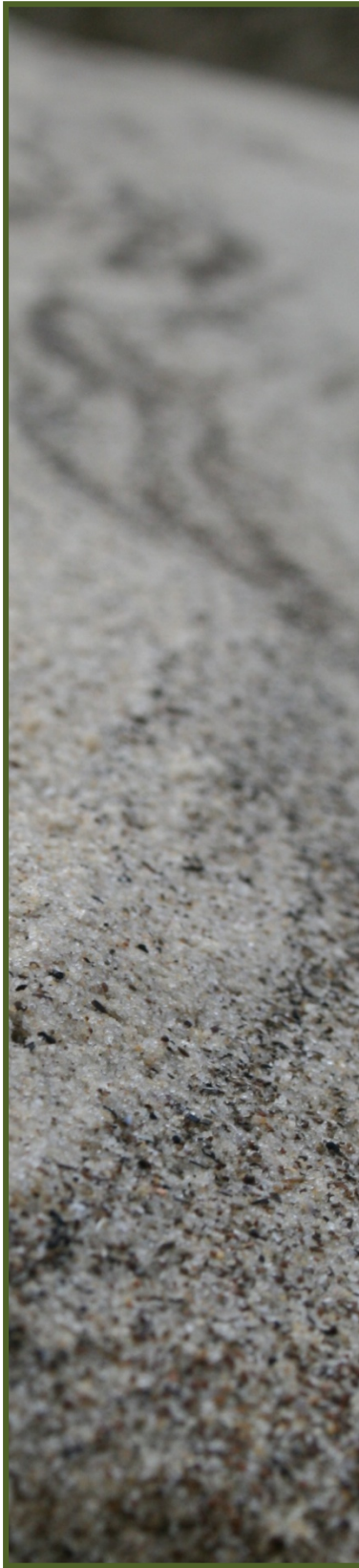
The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to fund numerous components of the project, including supplies for restoration, monitoring, and personal safety, in addition to travel and contracted services. On-the-ground, local level efforts, such as the Restoring Coastal Fish Habitat Using Oysters, Mussels, and Marsh Grass at Guana Peninsula project, helped to address regional habitat priorities and coastwide conservation objectives identified by the Atlantic Coastal Fish Habitat Partnership.

Project text provided by Guana Tolomato Matanzas National Estuarine Research Reserve. Photo provided by Matt Kimball.

For more information on the Partnership visit us at: www.atlanticfishhabitat.org



FY12 On-The-Ground Fish Habitat Projects





ON-THE-GROUND PROJECTS

Spotlight on Eelgrass restoration with Conservation Moorings in Buzzards Bay

Project Partners

Massachusetts Division
of Marine Fisheries

Town of Falmouth

Light Hawk Aerial
Photography

US Fish and Wildlife
Service

Atlantic Coastal Fish
Habitat Partnership

Eelgrass (*Zostera marina*) meadows support complex trophic food webs and provide habitat for the forage, shelter and juvenile development of fisheries species. However, this habitat is declining in part due to damage from boating infrastructure. Traditional mooring chains drag on the seafloor, causing direct scour of eelgrass plants and degradation to the quality and function of eelgrass beds through increased turbidity. The project restored eelgrass (*Zostera marina*), by replacing traditional moorings with elastic conservation moorings that minimize impacts to the seafloor by preventing chain drag.

The project site is located in West Falmouth, Massachusetts. Through the replacement of traditional moorings with conservation moorings (that include flexible rodes and helical anchors) in concert with direct eelgrass planting, eelgrass was restored in 7 mooring scars, totaling 0.2 acres of impact. This project provided needed data for identifying a long-term solution to mooring impacts to eelgrass. Within two weeks of the mooring replacement, eelgrass seedlings were growing in the scar zone.

The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to fund numerous components of the project, including coordination, equipment, monitoring, and permitting. On-the-ground, local level efforts, like the Eelgrass Restoration with Conservation Moorings in Buzzards Bay project, helped to address regional habitat priorities and coastwide conservation objectives identified by the Atlantic Coastal Fish Habitat Partnership.

Please note, the mooring of boats and the establishment of mooring fields in seagrass beds is generally recognized as a significant source of damage to these important ecological communities across their range. As such, the Atlantic Coastal Fish Habitat Partnership only provided support to specific remediation actions at this and other designated project sites, which address historic damage caused by the scouring effects of traditional chain and block-anchor mooring systems.



**Traditional mooring chain drag
creating a scar**

Majority of project text provided by Massachusetts Division of Marine Fisheries and USFWS. Photo credit: T. Evans, 2010.



For more information on the Partnership visit us at:
www.atlanticfishhabitat.org



ON-THE-GROUND PROJECTS

Spotlight on James River Atlantic Sturgeon Habitat Restoration

A lack of clean, hard substrate has been noted as a limiting factor for the restoration of many anadromous species in the James River. The loss of this ideal spawning habitat is due to dredging and excess sediment entering the river from erosion. This project promoted the population of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and other anadromous fishes of the Chesapeake Bay through the restoration of spawning and nursery habitat.

The project site is located in a tidal freshwater section of the James River where the dominate substrate is currently a fine sediment and where there is sufficient current to prevent excessive siltation. Many anadromous species, including Atlantic sturgeon, American shad, herring, and striped bass frequent this area.



James River Project Site

A 70' x 300' x 2' high artificial spawning reef was constructed using approximately 2,500 tons of broken granite. Following construction, the site was extensively monitored for spawning activity and outreach was conducted via education signs, brochures, and sturgeon-watching trips.

The objective of the project was to increase the spawning activity of Atlantic sturgeon and other anadromous fish in the James River by providing suitable clean hard spawning habitat. This project also highlights the need to reduce sediment entering the river from soil erosion.

The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to fund numerous components of the project, including reef construction, monitoring, and outreach. On-the-ground, local level efforts, like the James River Atlantic Sturgeon Habitat Restoration project, are helping to address regional habitat priorities and coastwide conservation objectives identified by the Atlantic Coastal Fish Habitat Partnership.

Project text and photo provided by James River Association.

Project Partners

James River Association

Virginia Commonwealth University

The Nature Conservancy

National Oceanic and Atmospheric Administration

US Fish and Wildlife Service

Luck Stone Corporation

Mary Anderson Harrison Foundation

Chesapeake Scientific

Virginia Institute of Marine Science

USGA

Atlantic Coastal Fish Habitat Partnership



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ON-THE-GROUND PROJECTS

Spotlight on Restoring the Mangroves of the Indian River Lagoon

The Indian River Lagoon is a 251-km bar-built coastal estuary that covers an area of approximately 3,575 square kilometers. It supports coastal mangrove wetlands, salt marshes, intertidal and subtidal flats, and riparian wetlands and floodplains, which provide important habitat to numerous fish species. Unfortunately, the rate of shoreline and wetland destruction has increased, due to decades of urbanization and the spread of invasive plant species. This project restored over 10 acres of coastal habitat wetlands to the Lagoon.

The project sites are located in the Pelican Island National Wildlife Refuge and adjacent public lands and involved removing 10 acres of invasive plants and planting over 8,500 linear feet of shoreline with wetland species such as mangroves and *Spartina* grass to create new fish nursery habitat. Volunteers helped remove invasives, plant natives, and removed trash and monofilament line for recycling.



Pelican Island National Wildlife Refuge

A unique aspect of this project is the restoration of mangrove forests, which in addition to providing nursery habitat for commercial and game fish species, are critical to maintaining the overall health of the coastal ecosystem by helping to trap and cycle organic materials, chemical elements, and nutrients. Nearly 80% of mangrove forests have been destroyed or isolated from the Indian River Lagoon, which is significant considering that mangrove forests found in the Lagoon constitute about 20% of the total amount of mangroves found in the eastern United States.

The U.S. Fish and Wildlife Service provided the Atlantic Coastal Fish Habitat Partnership with conservation dollars to fund numerous components of the project, including the removal of invasives and the purchase and installation of plants. On-the-ground, local level efforts, such as the Restoring the Mangroves of the Indian River Lagoon project, helped to address regional habitat priorities and coastwide conservation objectives identified by the Atlantic Coastal Fish Habitat Partnership.

Project text and photo provided by Marine Resources Council of East Florida.

Project Partners

Marine Resources
Council of East Florida

US Fish and Wildlife
Service

Atlantic Coastal Fish
Habitat Partnership



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FY11 On-The-Ground Fish Habitat Projects





ON-THE-GROUND PROJECTS

Spotlight on Shoreys Brook Diadromous Fish Passage and Habitat Restoration

Project Partners

National Oceanic and Atmospheric Administration/ Conservation Law Foundation

US Fish and Wildlife Service

Coastal Conservation Association – New Hampshire

Great Bay Trout Unlimited

Piscataqua Region Estuaries Partnership

Local Wetland Scientist

Stantec – Consulting Engineer

Great Works Regional Land Trust

Atlantic Coastal Fish Habitat Partnership

Gulf of Maine Council

American Rivers

Maine Corporate Wetland Restoration Partnership

Maine Department of Transportation

Located in South Berwick, ME this project restored approximately 800 feet of habitat for diadromous fish species and enhanced approximately 4.3 miles of habitat in Shoreys Brook. The Great Works Regional Land Trust completely removed a partially-breached dam and restored the streambed to its approximate original condition in 2011, and coordinated with the Maine Department of Transportation to replace a failing perched culvert with an open-arch culvert in the summer of 2014. The project was identified as a priority by the Atlantic Coastal Fish Habitat Partnership.

The former dam was located at head-of-tide on Shoreys Brook, approximately 1,500 feet upstream from its confluence with the Salmon Falls River. The culvert was located upstream of the dam. Shoreys Brook is a small, second-order stream surrounded by upland forest. The multi-habitat property, through which the brook runs, is managed to promote wildlife and biodiversity and the greater watershed includes upland forest, forested wetland, and open marsh.

The dam and the failing culvert together rendered Shoreys Brook impassable to diadromous fish species. Additionally, significant erosion had a negative impact on Shoreys Brook and the Salmon Falls River, and the eroded stream bank presented a significant public safety hazard. Dam removal and culvert replacement should allow resumption of normal in-stream flows that, over time and assisted by stream restoration efforts, will provide access to suitable diadromous fish habitat. The project should also eliminate the ongoing source of sedimentation discharging into the Salmon Falls River, eliminate the potential for Shoreys Brook to create a new channel due to erosion, and eliminate a significant public safety hazard.

With the assistance of US Fish and Wildlife Service funds, Great Works Regional Land Trust contracted with a local vendor to remove the partially-breached dam. Many additional partners (federal, state, private, and non-governmental organizations) have contributed to various components of the project.

In 2012, the project was expanded to include the replacement of a failing bridge located upstream of the original project site.



Former dam on Shoreys Brook

Project text and photo provided by Great Works Regional Land Trust.



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ON-THE-GROUND PROJECTS

Spotlight on Shoreline and *Spartina* Marsh Stabilization along the Atlantic Intracoastal Waterway

This project rehabilitated tidal marsh areas experiencing degradation from boat traffic along the Intracoastal Waterway (AIWW), by constructing natural breakwaters using oyster reefs. The project engaged over 1,000 community volunteers in shoreline habitat restoration; constructing approximately 0.08 acres of oyster habitat to protect 150 meters of shoreline; and over time creating approximately 0.3 acres of adjacent tidal marsh. Results over time include: increased fish habitat (oyster reef, tidal salt marsh), stabilized shoreline, and improved water quality. The project was identified as a priority by the Atlantic Coastal Fish Habitat Partnership.

In South Carolina, shorelines adjacent to the AIWW are subject to severe erosion due to heavy boat traffic and artificial channelization, which disrupts natural shoreline processes. This erosion destroys or threatens oyster reef and salt marsh habitats. Bagged oyster shells provide a stable substrate for oyster recruitment and create self-sustaining reefs which stabilize the shoreline, promote sediment accretion, and foster salt marsh expansion.



The project is located within the ACE Basin National Estuarine Research Reserve (NERR) along the AIWW, between Rock Creek and Ashepoo River, and drains into St. Helena Sound. The project expanded on a successful demonstration site that was constructed from 2007-09 with state revenue funds.

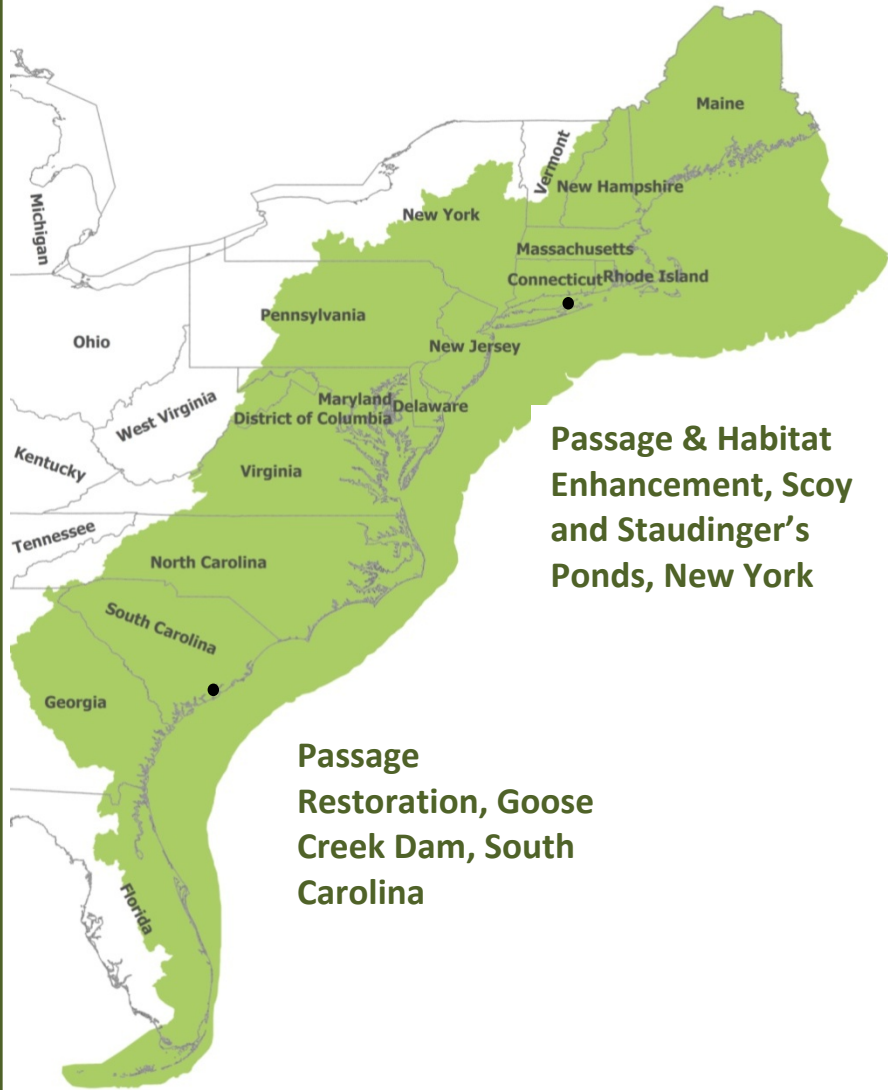
Recycled oyster shells were bagged and deployed along the AIWW in the Ace Basin NERR by volunteers in conjunction with the South Carolina Department of Natural Resources' (SCDNR) community-based oyster restoration program (SCORE). US Fish and Wildlife Service funds were used to pay for a portion of SCDNR employee salaries and use of SCDNR vessels to transport volunteers, shell, fuel, and supplies. The Coastal Conservation Association is also a partner to the project.

Project text and photo provided by SCDNR.



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FY10 On-The-Ground Fish Habitat Projects





ON-THE-GROUND PROJECTS

Spotlight on Scoy Pond and Staudinger's Pond Alewife Access and Habitat Enhancement

This project, located in the Town of East Hampton, New York is situated within the Peconic Estuary, an "Estuary of National Significance" on the easternmost tip of Long Island. Access to diadromous fish habitat in two creeks leading to Northwest Harbor have long been cut off by undersized and collapsed culverts. Insufficient tidal flushing through those culverts allowed for an overgrowth of invasive *Phragmites* and other vegetation to degrade the surrounding fish habitat that remains.

In Northwest Creek, a channel was constructed and an overflow pipe was replaced with a weir to allow fish passage into Staudinger's Pond. In Alewife Brook, an undersized culvert was replaced and stream debris were removed to allow fish passage into Scoy Pond and to improve tidal flow. Additionally in Alewife Brook, invasive *Phragmites* was removed and the surrounding habitat was enhanced. This project ultimately restored access to approximately 18 acres of diadromous fish spawning and maturation habitat and enhanced the ecologic function of nearly 1,000 acres of estuarine habitat.

This project was a cooperative undertaking between the Peconic Estuary Program, New York State Department of Environmental Conservation, the Town of East Hampton Department of Natural Resources, and volunteers.



Cleared Northwest Creek
(temporary sandbags in place).



Constructed Weir in
Northwest Creek.

Photos Courtesy of NYSDEC/PEP



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ON-THE-GROUND PROJECTS

Spotlight on Goose Creek Dam Eel Passage Restoration

The 2400-foot Goose Creek Dam was constructed in 1906 to provide a water supply reservoir for the City of Charleston, South Carolina, thereby blocking diadromous fish migrations in Goose Creek, a major tributary of the Cooper River, and from the Charleston Harbor estuary.

An eel passage facility was constructed at the Goose Creek Dam, which included two eel ladders. These ladders restored eel passage to the entire Goose Creek watershed, including over 40 stream miles and adjacent freshwater wetlands--important eel maturation habitat.

The South Carolina Department of Natural Resources, in cooperation with the Charleston Water System (dam owner), oversaw the construction, operation and maintenance of the facility with assistance from the US Fish and Wildlife Service and the National Marine Fisheries Service.



Goose Creek Dam



Installation of the middle ladder



Elver catches

Photos Courtesy of P. Brownell, NMFS



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