

# Atlantic Coastal Fish Habitat Partnership

## Steering Committee Meeting

October 16 – 17, 2017  
Norfolk, Virginia

### Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

October 16<sup>th</sup>

- ❖ **Welcome, Introductions, & Approval of Agenda** (*K. Smith*) 1:00 p.m.
- ❖ **Lake Okeechobee Water Releases and St. Lucie Reef Coral Reef Stress Responses** (*J. Beal*) 1:15 p.m.
- ❖ **Comparison of Restored vs. Natural Oyster Reefs in the Indian River Lagoon** (*J. Beal*) 1:45 p.m.
- ❖ **Final Report on Jamestown Conservation Moorings Project** (*C. Powell*) 2:15 p.m.
- ❖ **Technology Break** 2:45 p.m.
- ❖ **Black Sea Bass Habitat Project Update** (*L. Havel*) 3:00 p.m.
- ❖ **Review Mapping Project Prioritization Status** (*L. Havel*) 3:15 p.m.
  - Variables and Metrics for Southeast Mapping
  - Future plans to move mapping to the Mid-Atlantic
- ❖ **Adjourn for day** 5:00 p.m.

October 17<sup>th</sup>

- ❖ **Recap and Introductions** (*K. Smith*) 8:30 a.m.
- ❖ **Summary of TNC/NOAA Seagrass & Salt Marsh Fishery Productivity Workshop** (*K. Smith*) 8:45 a.m.
- ❖ **NFHP, Coastal FHP, and Whitewater to Bluewater Update** (*L. Havel*) 9:15 a.m.
  - Whitewater to Bluewater Conservation Areas
  - 2018 MSCG update
  - USFWS and NFHP reports
- ❖ **Technology Break** 10:00 a.m.
- ❖ **ACFHP Operations Update** (*P. Campfield*) 10:15 a.m.
- ❖ **FY2018 NFHP Project Rankings** (*L. Havel*) 10:40 a.m.
- ❖ **Lunch** 12:15 p.m.
- ❖ **Discuss Ideas for New ACFHP Website** (*L. Havel*) 1:30 p.m.

The meeting will be held at the Waterside Marriott Hotel, 235 East Main Street, Norfolk VA; 757.627.4200

*Vision: Sustainably Managing Atlantic Coastal Fisheries*

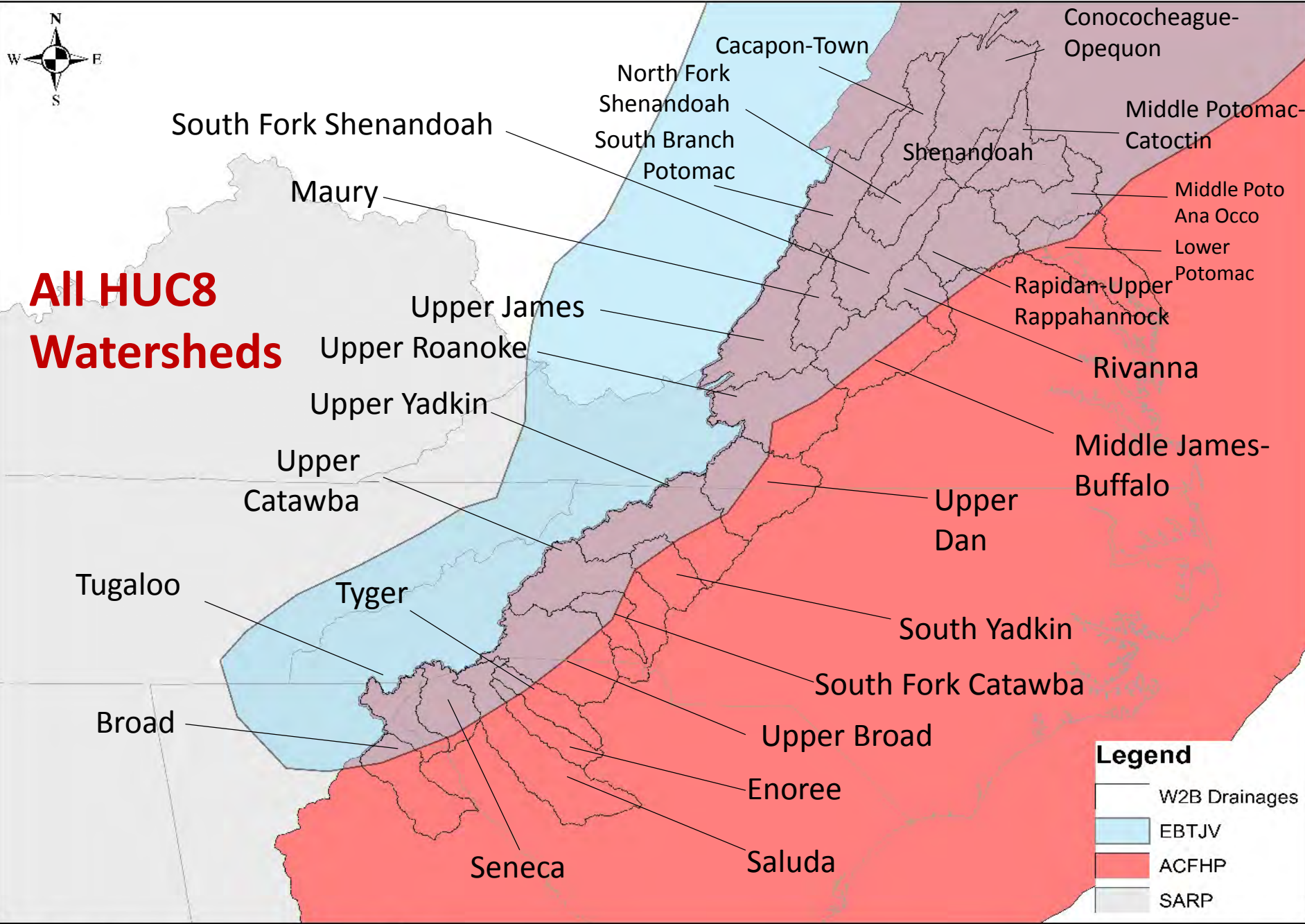
- ❖ **Technology Break** 2:30 p.m.
- ❖ **2017 – 2019 Action Plan Check-In** (*K. Smith*) 2:45 p.m.
- ❖ **Other Business** 3:45 p.m.
  - Next meeting location/time
- ❖ **Meeting Adjourn** 4:00 p.m.

The meeting will be held at the Waterside Marriott Hotel, 235 East Main Street, Norfolk VA; 757.627.4200

*Vision: Sustainably Managing Atlantic Coastal Fisheries*

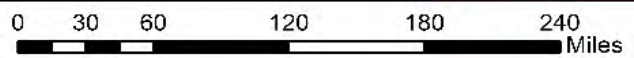


# All HUC8 Watersheds



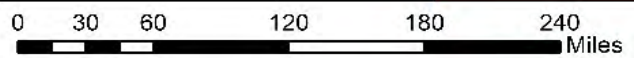
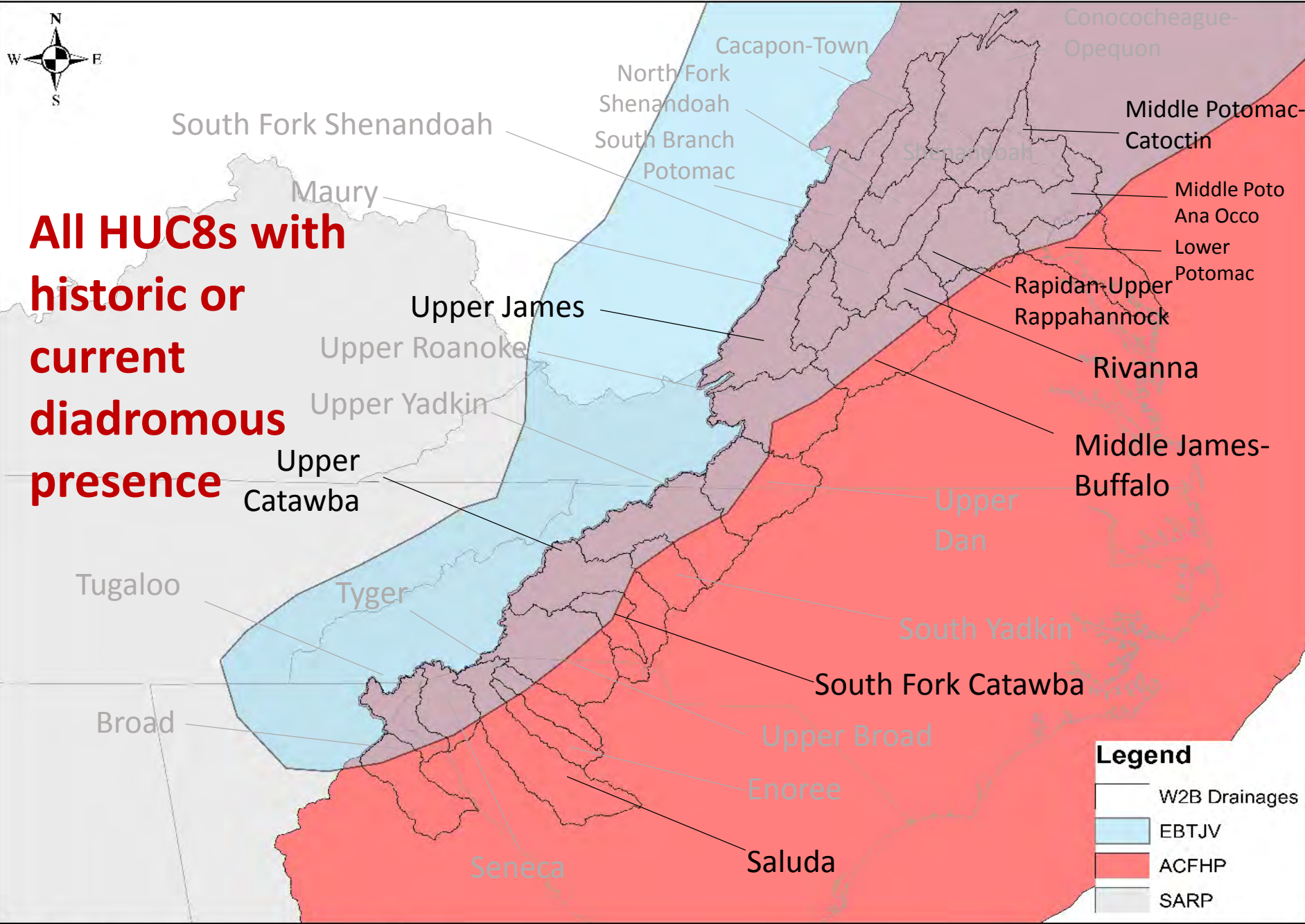
**Legend**

- W2B Drainages
- EBTJV
- ACFHP
- SARP



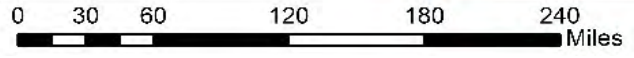
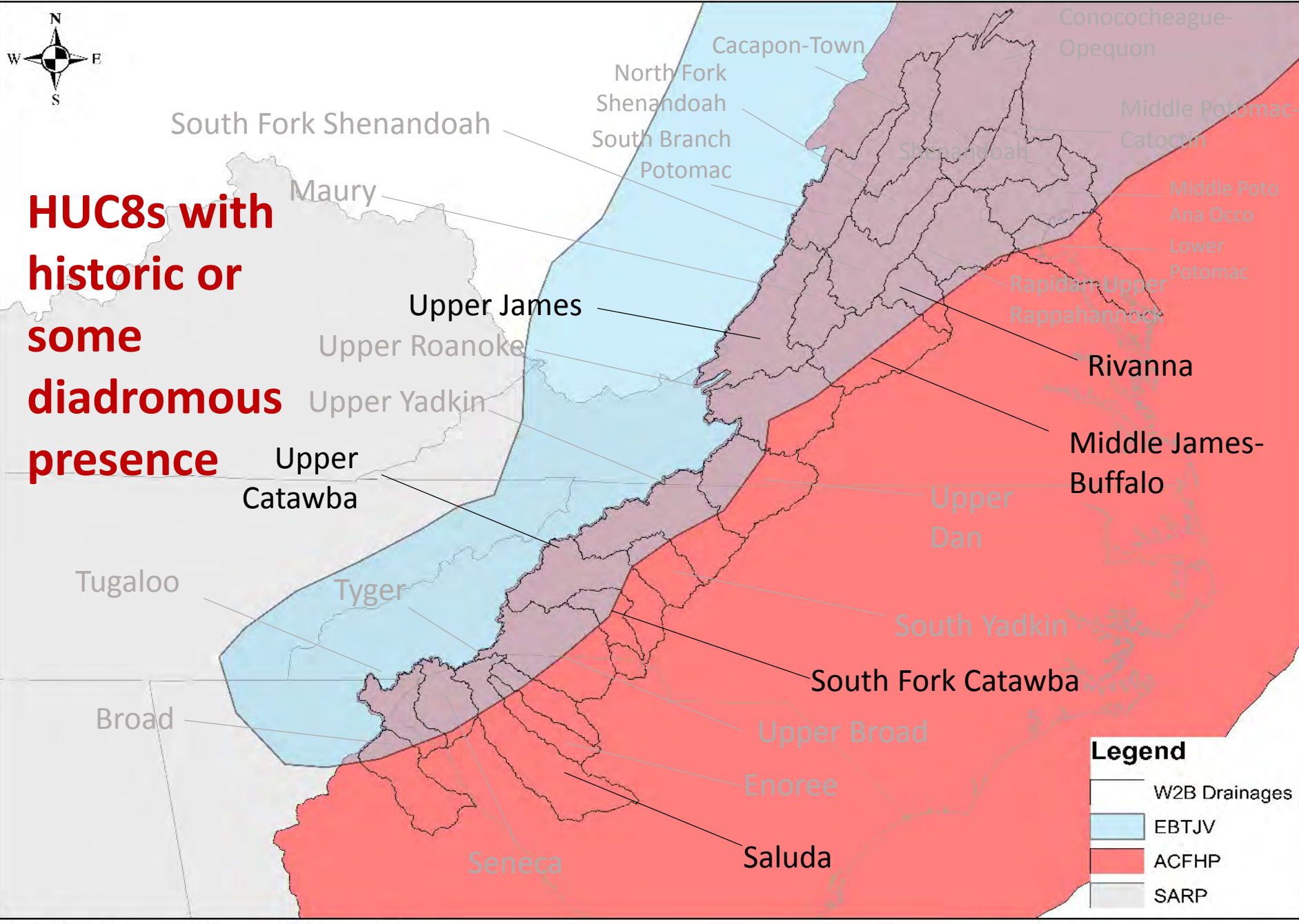


**All HUC8s with  
historic or  
current  
diadromous  
presence**



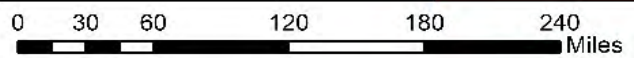
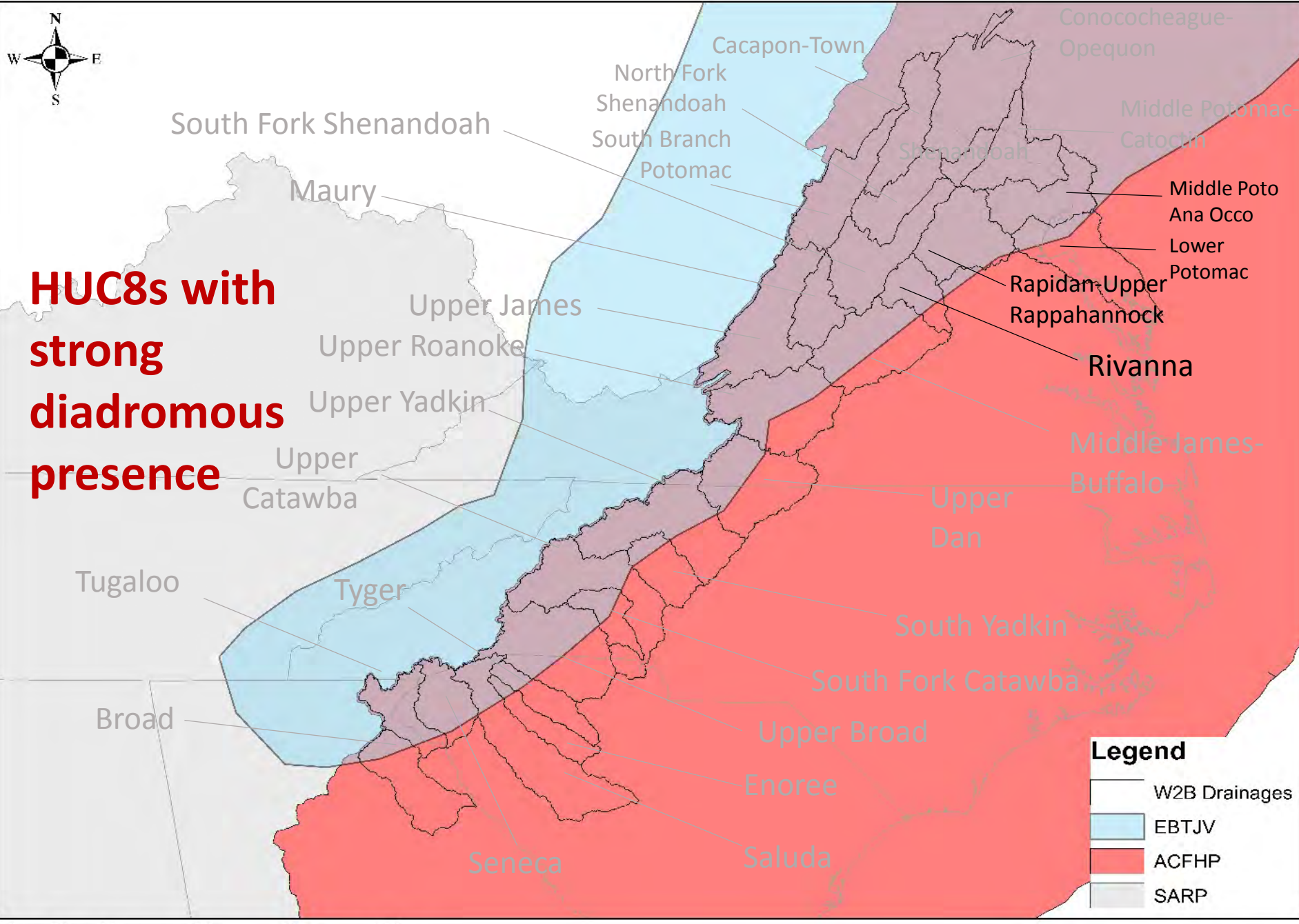


**HUC8s with  
historic or  
some  
diadromous  
presence**





**HUC8s with strong diadromous presence**





# 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.



**Aerial view of the project site**

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

**For more information on the Partnership visit us at: [www.atlanticfishhabitat.org](http://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





# ON-THE-GROUND PROJECTS

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

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 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



Project text and photos provided by The Atlantic Salmon Federation.

**For more information on the Partnership visit us at: [www.atlanticfishhabitat.org](http://www.atlanticfishhabitat.org)**





# Conservation Strategic Plan

2017-2021





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This plan is a product of the Atlantic Coastal Fish Habitat Partnership with funding from the National Fish Habitat Partnership (Award Number F16AC01131) and the Multistate Conservation Grant Program with funds from the Wildlife and Sport Fish Restoration Program of the U.S. Fish and Wildlife Service.

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# Introduction

## Our Mission

*Healthy, thriving habitats of sufficient quantity and quality to support all life stages of Atlantic coastal, estuarine-dependent, and diadromous fishes*

## Our Vision

*To accelerate the conservation, protection, restoration, and enhancement of habitat for native Atlantic coastal, estuarine-dependent, and diadromous fishes through partnerships between federal, tribal, state, local and other entities*

The Atlantic Coastal Fish Habitat Partnership (ACFHP – see Appendix A for all acronyms) is an assembly of public and private entities interested in the conservation of habitat for Atlantic coast diadromous, estuarine-dependent, and coastal fish species (see Appendix B for select definitions). ACFHP was formed in 2006 under the auspices of the [National Fish Habitat Action Plan](#) and operates within the National Fish Habitat Partnership framework. The NFHAP is a non-regulatory, voluntary plan designed to protect, restore, and enhance the nation’s fish and aquatic communities through regional Fish Habitat Partnerships. The NFHAP is a strategy to identify restoration projects and other activities to help maximize the impact of on-the-ground conservation dollars appropriated by Congress to the United States Fish and Wildlife Service.

Every five years the ACFHP Steering Committee and partners re-evaluate and update their Conservation Strategic Plan (CSP), focused on broad coastwide strategies for determining and addressing the threats affecting habitats important for all life stages of Atlantic diadromous, estuarine-dependent, and coastal species. The CSP is used as a guidance document for the ACFHP Steering Committee, the Partnership-At-Large, state and federal agencies, and [restoration practitioners](#). The Plan is designed to address goals, objectives, and strategies that the Partnership will focus on over the next five years to improve the condition of Atlantic coastal fish habitat. When appropriate, our goals and objectives have been aligned with those of our partners. Action Plans will be developed every two years and will include steps towards achieving objectives identified in this CSP.

The issues that ACFHP will address are complex, and tackling them is important for the conservation of Atlantic coastal habitats. This Partnership is designed to bring diverse groups together to identify the causes of habitat declines, implement strategic corrective action, and measure and communicate progress made through its efforts. The end result of ACFHP actions will benefit not only a great number of species, from diadromous to marine, but a large population of resource users as well. Covering a densely populated region in close proximity to some of the country's most productive and unique fish habitats, ACFHP's role in making the connection between headwater and continental shelf habitats; non-governmental organizations (NGOs), state, federal, tribal, and various stakeholders; and people and fish habitat is vital to maintaining healthy fish habitat.

Habitat is the physical space that an organism uses to fulfill its basic requirements for life, such as food, water, oxygen, and shelter. Put simply, habitat is where something lives. Sustainable recreational and commercial fisheries are dependent upon healthy habitat. The ACFHP region has a range of fish habitats that are critical to coastal fisheries. These habitats represent areas where coastal fishery species forage, seek refuge, grow, or spawn. The protection and restoration of these areas is critical to the protection and sustainability of coastwide fishery resources and the ways of life they support.

Habitat loss and degradation impair fish productivity and can impact fishery sustainability and recovery rates, even after management actions have successfully reduced fishing pressures. The relationship between habitat condition and fish populations is

## Accomplishments

2012 – 2016

- Published the [Species-Habitat Matrix](#), a tool for evaluating the relative importance of a specific habitat type to a given life history stage for an individual species
- Coordinated the development of the estuarine and diadromous portions of the [Fish Habitat Decision Support Tool](#), a visualization and ranking tool to assess fish habitat spatially
- Wrote a [paper on river herring habitat restoration needs](#) in six Atlantic coast watersheds
- Welcomed three new partners: Merrimack River Watershed Council, International Federation of Fly Fishers, and North Carolina Coastal Federation
- Opened 75 river miles<sup>1</sup>
- Restored 0.5 acres of riverine spawning habitat, 2.95 acres of oyster reefs, 2.4 acres of salt marsh and mangroves, and 19 acres of seagrass beds<sup>2</sup>
- Increased communication and collaboration among over 60 different federal, state, county, local, academic, tribal, non-profit, private interest, and conservation entities
- Completed the Conservation Mooring Project, using advanced technology to replace traditional boat moorings and conserve surrounding seagrass
- Contributed over \$400,000 directly to conservation projects, leveraging \$4 for each ACFHP restoration dollar
- Added an annual estimated \$41 million in economic value to the Atlantic coast<sup>2</sup>

## Making the Connection

- From the headwaters to the continental shelf
- Among non-governmental, state, federal, tribal, and various stakeholders
- Between people and fish habitat

## The ACFHP region includes:

- Over 25% of the U.S. population (approximately 87 million people)
- Nine of the ten most densely populated states
- The largest city in the U.S. (New York City)
- The most urban estuary in the U.S. (New York Harbor)
- The largest estuary in the world (Chesapeake Bay)
- The only barrier coral reef in the continental U.S. (off of South Florida)
- The largest cruise ship port in the world (Miami, Florida)
- The only U.S. city bordered by two National Parks (Miami: Everglades and Biscayne Bay NPs)
- Fish communities residing in climates ranging from cold temperate to tropical Atlantic
- Four National Marine Sanctuaries and one National Monument
- The largest number of diadromous species in the world (ACFHP's North Atlantic subregion)
- The most marine habitat of any Fish Habitat Partnership
- One of the most rapidly warming areas in the world (Gulf of Maine, warming 3x faster than the global average)

complex. In the past, the decline of a particular fish stock was often attributed to overfishing. Weakfish, river herring, and Atlantic sturgeon are examples of fish species that have not recovered even after having lengthy fishing moratoriums imposed on the stocks. This being said, the status of specific fish species can be an indicator of declining fish habitats and the need to take action to restore and protect the significant habitats to those fish populations.

Thriving, healthy waterways and robust fish populations are vital to the well-being of our society. They provide clean water and sustainable fisheries. They also are essential for less tangible reasons, as anyone who has fished wild waters or canoed a tranquil stream can attest. Unfortunately, in many waters around the country, fish and the habitats on which they depend are in decline. A substantial amount of work has been undertaken to protect, restore, and enhance these aquatic habitats. Although significant gains have been made, they have not kept pace with impacts resulting from population growth and land-use changes. Given the diverse array of federal, state, tribal, local, and private jurisdictions, the need has never been greater for increased action and improved coordination of fisheries conservation measures across boundaries and jurisdictions.<sup>3</sup>

Habitats like seagrass beds, coral reefs, and wetlands of sufficient quantity and quality supporting all life stages are critical for healthy fish communities. However, many of these habitats are being threatened. In fact, the National Fish Habitat Partnership reports that 89% of Mid-Atlantic estuaries are at high or very high risk of habitat degradation, and rank overall as the poorest quality marine habitat in the country.<sup>4</sup>

Seagrasses are one of the most rapidly declining habitats around the world, with up to 7% loss in area annually associated with human activities like sewage discharge, shoreline hardening, coastal development, and deforestation.<sup>5</sup> The 150-mile long Indian River Lagoon estuary in Florida has lost 70% of the system's historic 70,000 acres of seagrass due to prolonged algae blooms attributed in part to nutrient additions to the system.<sup>6</sup>

## Recreational Fishing along the Atlantic Coast [\(NOAA 2015\)](#)

Location	Number of Anglers	Number of Fishing Trips	Value Added Impact	Number of Jobs Created	Durable Goods Expenditures
New England	1.0 million	5.0 million	\$1.2 billion	17,016	\$1.4 billion
Mid-Atlantic	2.0 million	12.4 million	\$2.6 billion	37,170	\$2.8 billion
South Atlantic	2.2 million	16.5 million	\$3.8 billion	58,019	\$4.3 billion
<b>TOTAL</b>	<b>5.2 million</b>	<b>33.9 million</b>	<b>\$7.6 billion</b>	<b>112,205</b>	<b>\$8.5 billion</b>

## Commercial Fishing along the Atlantic Coast [\(NOAA 2015\)](#)

Location	Pounds Landed	Landing Revenue	Value Added Impact	Number of Jobs Created
New England	599 million	\$1.2 billion	\$4.9 billion	139,712
Mid-Atlantic	649 million	\$512 million	\$5.1 billion	100,954
South Atlantic	106 million	\$182 million	\$6.9 billion	101,024
<b>TOTAL</b>	<b>1.354 billion</b>	<b>\$1.894 billion</b>	<b>\$16.9 billion</b>	<b>341,690</b>

The coral reef tract in southeast Florida contributes \$5.7 billion annually to the regional economy and is responsible for supporting over 61,000 full and part-time jobs.<sup>7</sup> Unfortunately, these reefs are dissolving at a faster rate than previously thought.<sup>8</sup>

According to the Status and Trends of Wetlands in the Coastal Watersheds of the Conterminous United States 2004 to 2009, 15.9 million acres

of Atlantic coast watershed is covered by wetlands, but from 2004 to 2009 this region experienced a net wetland loss of 111,960 acres (0.7% loss; though South Carolina, Georgia, and parts of Florida experienced a net gain of coastal wetlands). Overwhelmingly, this loss was freshwater wetlands. Oyster reefs are also on the decline – 85% have been lost globally,<sup>9</sup> and Chesapeake Bay coverage is less than 1% of historic mass.

<sup>1</sup><http://www.atlanticfishhabitat.org/projects/fundedprojects/>, <http://www.atlanticfishhabitat.org/projects/endorsedprojects/>

<sup>2</sup>Calculation based on economic valuations from Charbonneau and Caudill, 2010. Conserving America's Fisheries: An Assessment of Economic Contributions from Fisheries and Aquatic Resource Conservation. U.S. Fish and Wildlife Service. Arlington, VA. <https://www.fws.gov/home/feature/2011/pdf/fisherieseconomicreport.pdf>

<sup>3</sup>Association of Fish and Wildlife Agencies. 2006. National Fish Habitat Action Plan. [http://www.fishhabitat.org/files/uploads/National\\_Fish\\_Habitat\\_Action\\_Plan\\_2006.pdf](http://www.fishhabitat.org/files/uploads/National_Fish_Habitat_Action_Plan_2006.pdf).

<sup>4</sup>Crawford, S., Whelan, G., Infante, D.M., Blackhart, K., Daniel, W.M., Fuller, P. L., Birdsong, T., Wieferrich, D.J., McClees-Funinan, R., Stedman, S. M., Herreman, K., and P. Ruhl. 2016. Through a Fish's Eye: The Status of Fish Habitats in the United States 2015. National Fish Habitat Partnership. <http://assessment.fishhabitat.org/>.

<sup>5</sup>Waycott, M., Duarte, C.M., Carruthers, T.J.B., Orth, R.J., Dennison, W.C., Olyarnik, S., Calladine, A., Fourqurean, J.W., Heck Jr., K.L., Hughes, A.R., Kendrick, G.A., Kenworthy, W.J., Short, F.T., and S.L. Williams. 2009. Accelerating loss of seagrasses across the globe threatens coastal ecosystems. *Proceedings of the National Academy of Sciences of the United States of America* 106(30): 12377-12381.

<sup>6</sup>Charles Jacoby, St. Johns Water Management District, personal communication.

<sup>7</sup>Gilliam, D. 2013. A Quick Guide to SE Florida's Coral Reefs. Southeast Coral Reef Initiative. NOAA. [http://www.dep.state.fl.us/coastal/programs/coral/reports/LBSP/SEFCRI\\_Quick\\_Guide.pdf](http://www.dep.state.fl.us/coastal/programs/coral/reports/LBSP/SEFCRI_Quick_Guide.pdf)

<sup>8</sup>Muehlllehner, N., Langdon, C., Venti, A. and D. Kadko, 2016. Dynamics of carbonate chemistry, production, and calcification of the Florida Reef Tract (2009-2010): evidence for seasonal dissolution. *Global Biogeochemical Cycles* 30: 661-688.

<sup>9</sup><http://www.nature.org/science-in-action/science-features/oyster-reef-interactive-graphic.xml>

# ACFHP Partners

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To address Atlantic coast fish habitat issues, ACFHP created a [Memorandum of Understanding](#). It affirms the commitment of the 33 signatories to develop local, regional, state, tribal, federal, and private partnerships that extend beyond the traditional boundaries of resource management agencies and non-governmental organization responsibilities for the benefit of their shared aquatic resources. The Partnership hopes to bring in additional organizations committed to conserving fish habitat along the Atlantic coast in the future. ACFHP's Charter and By-Laws can be found at: <http://www.atlanticfishhabitat.org/Documents/ACFHP-Charter-and-Bylaws.pdf>

- 📍 [Albemarle-Pamlico National Estuary Partnership](#)
- 📍 [American Littoral Society](#)
- 📍 [American Rivers](#)
- 📍 [Atlantic States Marine Fisheries Commission](#)
- 📍 [Chesapeake Bay Foundation](#)
- 📍 [Connecticut Department of Environmental Protection](#)
- 📍 [Delaware Department of Natural Resources and Environmental Control](#)
- 📍 [Environmental Defense Fund](#)
- 📍 [Florida Fish and Wildlife Conservation Commission](#)
- 📍 [Georgia Department of Natural Resources](#)
- 📍 [Houlton Band of Maliseet Indians](#)
- 📍 [International Federation of Fly Fishers](#)
- 📍 [Maine Department of Marine Resources](#)
- 📍 [Maryland Department of Natural Resources](#)
- 📍 [Massachusetts Division of Marine Fisheries](#)
- 📍 [Merrimack River Watershed Council](#)
- 📍 [National Oceanic and Atmospheric Administration](#)
- 📍 [New Hampshire Fish and Game Department](#)
- 📍 [New Jersey Division of Fish and Wildlife](#)
- 📍 [New York Department of Environmental Conservation](#)
- 📍 [North Carolina Coastal Federation](#)
- 📍 [North Carolina Department of Environmental Quality](#)
- 📍 [Oyster Recovery Partnership](#)
- 📍 [Partnership for the Delaware Estuary](#)
- 📍 [Pennsylvania Fish and Boat Commission](#)
- 📍 [Rhode Island Division of Fish and Wildlife](#)
- 📍 [South Carolina Department of Natural Resources](#)
- 📍 [The Nature Conservancy](#)
- 📍 [United States Fish and Wildlife Service](#)
- 📍 [United States Geological Survey](#)
- 📍 [Vermont Fish and Wildlife Department](#)
- 📍 [Virginia Marine Resources Commission](#)
- 📍 [Wells National Estuarine Research Reserve](#)

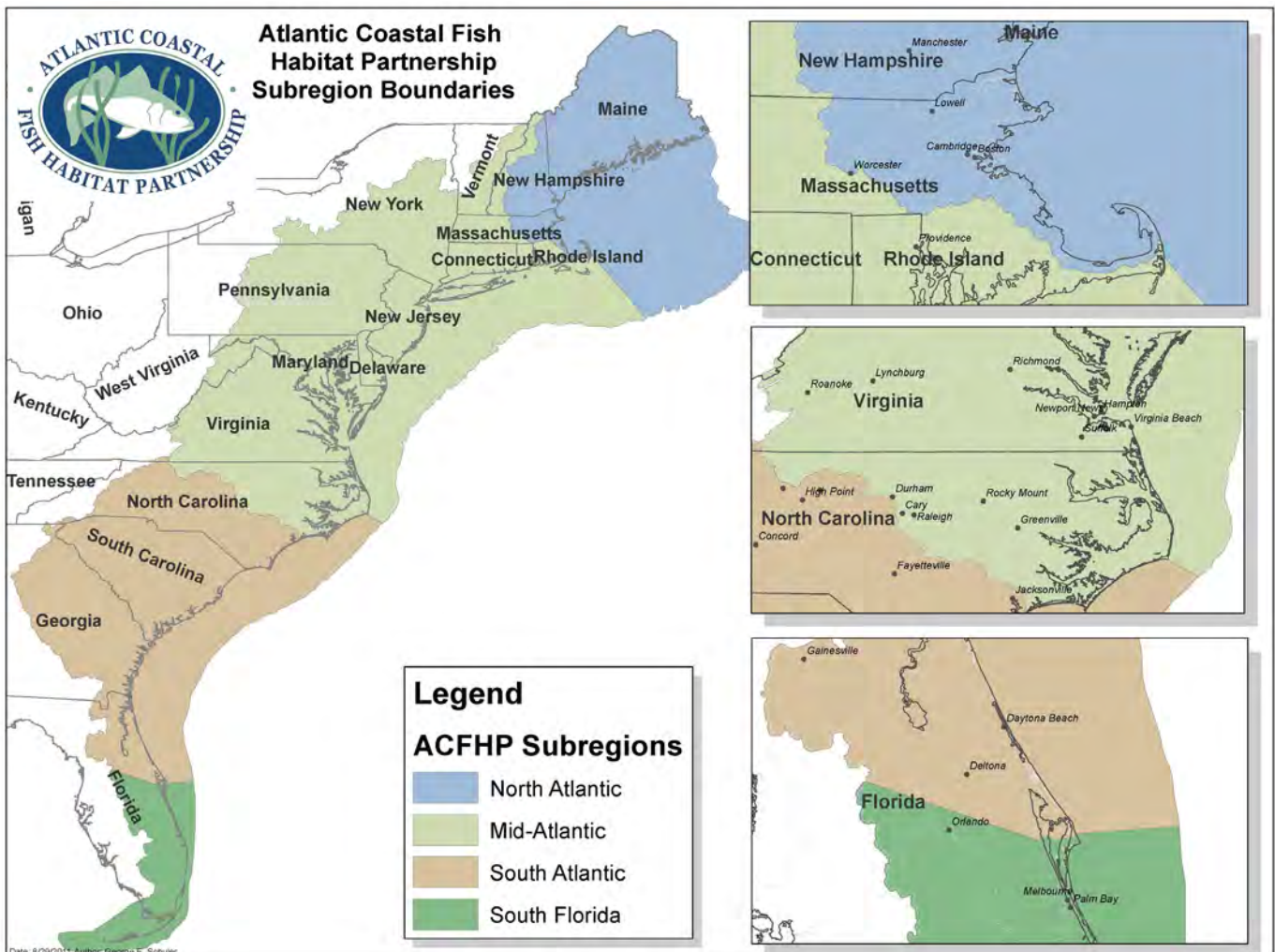


# Scope

ACFHP utilizes subregional boundaries for the purposes of habitat prioritization. These subregions represent ecologically distinct units and were derived from Marine Ecoregions of the World<sup>10</sup> as established by the World Wildlife Fund and The Nature Conservancy. These include the Gulf of Maine, Virginian, Carolinian, and Floridian ecoregions which correspond to

ACFHP subregions North Atlantic, Mid-Atlantic, South Atlantic, and South Florida, respectively.

ACFHP plans to work throughout the defined subregions, however, less emphasis will be placed on upstream headwaters and offshore marine ecosystems and more on the approximately 29,000 miles of shoreline and



coastal waters. ACFHP will seek to ensure contiguous watershed coverage with adjacent Fish Habitat Partnerships while minimizing overlap or duplication of effort. As ACFHP develops on-the-ground projects, it will work with these partnerships to identify where cooperation should occur, as well as new avenues for collaboration. This will ensure that ACFHP is not working in competition, but in concert with existing partnerships towards fish habitat conservation.

In this CSP and our work, ACFHP acknowledges the importance and severity of global and regional climate change effects on fish habitat. The impacts and severity of climate change on fish habitats throughout the ACFHP region will vary. For example, the Gulf of Maine is a climate change hotspot, with temperatures predicted to rise three times more rapidly than the global average.<sup>11</sup> Sea level rise; ocean acidification; increased water temperatures; increased storm frequency and severity; habitat expansion, contraction, and fragmentation; species geographic shifts; and

eutrophication are all factors that will lead to fish habitat modifications in pending climate change effects. The full impacts and timeline of those impacts are uncertain. However, climate change is likely to influence all habitats and species along the Atlantic coast in some way, including people. For instance, sea level rise in south Florida currently causes coastal flooding during peak lunar tides, and may cause marginal wetland habitats (mangroves and fringing seagrass meadows) to be lost by squeezing them against developed shorelines. Climate change has the potential to strongly influence how we plan and execute habitat protection and restoration projects. The ways in which climate change influences projects will likely evolve over time as we learn more about how the atmosphere and oceans are changing. The CSP will not specifically address climate change; however, ACFHP will develop, recommend, and implement restorative and adaptive solutions (e.g. living shorelines) to fish habitat conservation to address this significant threat.

<sup>10</sup><http://www.worldwildlife.org/publications/marine-ecoregions-of-the-world-a-bioregionalization-of-coastal-and-shelf-areas>

<sup>11</sup>Saba, V.S., Griffies, S.M., Anderson, W.G., Winton, M., Alexander, M.A., Delworth, T.L., Hare, J.A., Harrison, M.J., Rosati, A., Vecchi, G.A., and R. Zhang. 2016. Enhanced warming of the northwest Atlantic Ocean under climate change. *Journal of Geophysical Research: Oceans* 121(1): 118-132.



*Shore's Brook (NY) before and after dam removal. Photos courtesy of Great Works Regional Land Trust.*

# Habitats

The full list of ACFHP Habitats to the right has been excerpted from the ACFHP Species-Habitat Matrix. This list should not be considered a comprehensive index of all habitats along the Atlantic coast; however, these habitats were determined to best represent the range of habitats supporting Atlantic coastal, estuarine-dependent, and diadromous fishes at a coast-wide level.

This table illustrates the 25 habitat types organized within seven habitat categories (see Appendix C Habitat Characterizations for more detailed descriptions). The habitat types are examples of particular habitat characterizations that fall within a broader habitat category.

ACFHP Habitats by Category and Type	
Habitat Category	Habitat Type
<b>Marine and Estuarine Shellfish Beds</b>	Oyster aggregations/reef Scallop beds Hard clam beds Shell accumulations
<b>Coral and Live/Hard Bottom</b>	Coral reefs Patch reef, soft corals, or anemones Live rock
<b>Macroalgae</b>	<i>Fucus</i> spp., <i>Laminaria</i> spp., <i>Ulva lactuca</i>
<b>Submerged Aquatic Vegetation</b>	Tidal fresh & oligohaline plant species Mesohaline & polyhaline plant species
<b>Tidal Vegetation</b>	Estuarine emergent marsh Tidal freshwater marsh Mangrove
<b>Unvegetated Coastal Bottom</b>	Loose fine bottom Loose coarse bottom Firm hard bottom Structured sand habitat
<b>Riverine Bottom</b>	Higher gradient headwater tributaries Lower gradient tributaries Higher gradient large mainstem river Lower gradient large mainstem river Low order coastal streams Non-tidal freshwater mussel beds Coastal headwater pond Non-tidal freshwater marsh

# Subregional Priority Habitats

ACFHP has selected three to four priority habitats within each subregion using the results of the Species-Habitat Matrix as a guide, and professional judgment to consider threats facing each habitat. Given limited resources, projects addressing the Priority Habitats appropriate for the given subregion will receive heightened consideration and

ACFHP support and implementation during the next five years (2017-2021). With this in mind, ACFHP will support efforts to accelerate the conservation, protection, restoration, and enhancement of all habitats listed on the previous page. Note that the priority habitats selected for each subregion are not ranked or prioritized within the subregion.

## ACFHP PRIORITY HABITATS BY SUBREGION

### NORTH ATLANTIC

- Riverine Bottom
- Submerged Aquatic Vegetation
- Marine and Estuarine Shellfish Beds

### SOUTH ATLANTIC

- Riverine Bottom
- Submerged Aquatic Vegetation
- Marine and Estuarine Shellfish Beds
- Tidal Vegetation

### MID-ATLANTIC

- Riverine Bottom
- Submerged Aquatic Vegetation
- Marine and Estuarine Shellfish Beds
- Tidal Vegetation

### SOUTH FLORIDA

- Submerged Aquatic Vegetation
- Coral and Live/Hardbottom
- Tidal Vegetation (mangrove)



Partnership for the Delaware Estuary



FL Keys Reef Restoration, FL FWCC

# Priority Threats

Habitat destruction and degradation in the Atlantic coastal drainage systems, which provide critical habitats for diadromous, estuarine-dependent, and coastal fish species, must be reversed. Threats that impact important spawning and nursery habitats are of particular concern. ACFHP has identified Priority Threats that are currently impacting habitats along the Atlantic coast that it has the capacity to address as a Partnership, recognizing the Partnership is limited in its ability to reduce the impact of some threats. Since climate change was addressed earlier in this document, it will not be discussed here. It

is a major threat the Partnership will seek to adaptively manage.

In the first CSP, ACFHP Priority Threats were informed by the results of the Partnership's 2009 [Assessment of Existing Information](#). The Assessment is a database of over 500 documents, datasets, and information portals on Atlantic coastal habitats which were collected and analyzed for indicator, threat, and action information. In 2016, the ACFHP Steering Committee re-evaluated these Priority Threats and supported using those originally identified in 2009.

## LIST OF PRIORITY THREATS IMPACTING ACFHP HABITATS ON A COASTWIDE SCALE

### **Obstructions to Fish Passage/Habitat Connectivity**

*Examples:* Dams; hydropower facilities; hurricane and storm barriers; road crossings and culverts; thermal barriers; reduced stream flow and low flow areas caused by diversions, withdrawals, legacy effects, and reduced base flow; jetties and breakwater; tidal turbines; and beaver dams or debris jams

*Importance:* Hurricane and storm barriers are an emerging concern as new activities to protect coastal populations from storm damage are considered. Dams, culverts, tide gates, sedimentation, and other water quality or flow impediments to fish passage can impact and limit the survivability of fish populations and lead to local extinctions in rivers, streams, and estuaries along the Atlantic coast. Obstructions to fish passage can adversely affect life history stages of diadromous and important estuarine fish populations.

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## Dredging and Coastal Maintenance

*Examples:* Dredging; blasting; port expansion and maintenance; dredge spoil disposal; and beach maintenance (including beach fill, mining of sand, bulldozing, sand bypass, sand bags, and shoreline stabilization)

*Importance:* Human activities around marinas, ports, and residential docks can have major impacts on fish habitat. The direct impacts of this threat are the removal, degradation, or smothering of habitat. Indirect impacts involve the blockage of sunlight or are linked with other threats noted in this section (e.g. water quality degradation and eutrophication). This threat is serious and persistent given its on-going and reoccurring nature. Once habitat is allowed to re-establish in impacted areas, it is often impacted again. The areas of greatest impact are nursery and spawning areas; protection of these areas is vitally important to ensure sustainability of critical life stages of many species.



Doug Clark

## Water Quality Degradation and Eutrophication

*Examples:* Surface water and groundwater quality and quantity; point/non-point source pollution; nutrient loading; atmospheric deposition; and dissolved oxygen concerns

*Importance:* This threat can occur in all aquatic habitats. Water quality decline and eutrophication are among the most common causes of aquatic habitat degradation. For example, nutrients promoting excessive algal blooms, such as nitrogen and phosphorus, can decrease oxygen levels in the water column and cause die-off of fish and other marine species. This threat is one of the most pervasive and difficult to target and reverse. Often the causes of this threat must be addressed in order for habitat restoration to be successful over the long-term.

## Consumptive Water Withdrawal

*Examples:* Withdrawals for industrial, agricultural, residential, and recreational uses, such as irrigation, desalinization, and energy generation; flow concerns; and freshwater withdrawal in the salt front

*Importance:* Consumptive water withdrawal can reduce water quantity or flow for fish and their habitats, degrade water quality, and alter the location of fresh-salt water interfaces. This is a particularly challenging threat to address because of the inherent difficulties of balancing conflicting water needs of fish and humans from a particular water body. Impacts to habitat can result from groundwater as well as surface water removals.

## Sedimentation

*Examples:* Suspended and deposited solids; construction of impervious surfaces in the watershed (e.g. parking lots, roads, buildings); point and non-point source runoff; and development of shorelines and riparian areas

*Importance:* While movement of the natural sediment load is important in aquatic ecosystems; excess, contaminated, or polluted sedimentation is a particularly important threat to consider when dealing with riverine or estuarine habitats. Watersheds with a high percentage of impervious surfaces and erosion often have detrimental sedimentation impacts on aquatic habitats. Sediment runoff can smother fish eggs, impact physiological and behavioral responses in fish, vegetation, shellfish beds, submerged aquatic vegetation (SAV), dislodge plants, decrease light penetration, and increase susceptibility to disease.

## Vessel Operation Impacts

*Examples:* Recreational and commercial vessel operation; prop washing; anchoring; grounding; and discharge

*Importance:* Vessel impacts are most prevalent in shallow water estuarine and marine habitats. Vessel operation can lead to propeller scarring, localized siltation issues, shoreline erosion due to wakes and grounding, and shading from boats and associated docks.



Lisa Havel, ASMFC

## Contamination of Water (ground and surface) and Sediments

*Examples:* Heavy metal accumulation; acid precipitation; pesticides and herbicides; petrochemical spills; and pharmaceuticals

*Importance:* Contamination can degrade the health of both habitats and species, especially for elements that easily bioaccumulate in tissues and sediments. Identifying the sources of and avenues to address contamination issues can be particularly challenging. An emerging concern involves the prevalence of pharmaceuticals in water supplies that affect humans and fish alike. Contamination is a major concern because it can cause lethal and sub-lethal effects, disease, locomotor impairment, abnormal mating and other behaviors, incomplete or abnormal development, inadequate nutrient balance, susceptibility to parasites, and other problems.

## Invasive Species

**Examples:** Introduction of invasive species, including plants, invertebrates, and vertebrates, and lack of invasive species eradication

**Importance:** Demonstrated many times over, invasive species can have a major impact on fish and their habitats. Native habitat types may be outcompeted, smothered, or displaced by invasive plants (such as common reed *Phragmites australis* or water lettuce *Pistia stratiotes*) and animals (such as zebra mussel *Dreissena polymorpha*, mitten crab *Eriocheir sinensis*, and pink barnacle *Tetraclita rubescens*). The best way to address this threat is to try to prevent introductions through public education and encouraging the use of best management practices (BMPs) (e.g. in vessel transport). Once an invasive species is introduced, it is difficult or impossible to eradicate.

## Other Threats

Other threats to Atlantic coast fish habitat were identified. However, those threats were determined not to be as high of a priority for ACFHP, or were of a nature that could not be effectively addressed by ACFHP. Those threats included:

- **Fishing gear impacts** (including hydraulic clamming, bottom-tending gears, and recreational and commercial fishing impacts on habitat)
- **Aquaculture** (including pathogen transfer, entanglement, nutrient issues, and genetic sustainability)
- **Inadequate development and implementation of regulatory systems** (including permitting, zoning, land-use planning, sewage treatment, floodplain management, and fishery management)
- **Physical impacts to fish** (including entrainment, impingement, propeller strikes, prop wash, and turbines)

All of these threats can be cumulative, which can possibly cause irreversible changes to the ecosystem.



Jerry Prezioso, NOAA Fisheries





Kevin Karasz, DE DNREC

### The Major Threats within Each Subregion to ACFHP's Priority Habitats<sup>12</sup>

<b>Submerged Aquatic Vegetation</b>	Dredging and Coastal Maintenance	NA, MA, SA, SF
	Water Quality Degradation and Eutrophication	NA, MA, SA, SF
	Vessel Operation Impacts	NA, MA, SA, SF
	Sedimentation	NA, SA, SF
	Contamination of Water and Sediments	SA, SF
	Invasive Species/Disease	SA, SF
	<b>Riverine Bottom</b>	Obstruction to Fish Passage/Habitat Connectivity
Dredging and Coastal Maintenance		NA, MA, SA
Water Quality Degradation and Eutrophication		NA, MA, SA
Consumptive Water Withdrawal		NA, MA, SA
Sedimentation		NA, MA, SA
Contamination of Water and Sediments		MA, SA
Invasive Species/Disease		MA, SA
<b>Marine and Estuarine Shellfish Beds</b>	Water Quality Degradation and Eutrophication	NA, MA, SA
	Sedimentation	NA, MA, SA
	Dredging and Coastal Maintenance	MA, SA
	Consumptive Water Withdrawal	MA, SA
	Invasive Species/Disease	NA, SA
	Vessel Operation Impacts	SA
	Contamination of Water and Sediments	SA
<b>Tidal Vegetation</b>	Dredging and Coastal Maintenance	MA, SA, SF
	Water Quality Degradation and Eutrophication	MA, SA, SF
	Sedimentation	MA, SA, SF
	Vessel Operation Impacts	MA, SF
	Invasive Species/Disease	MA, SF
	Contamination of Water and Sediments	SA
	<b>Coral and Live/ Hardbottom</b>	Dredging and Coastal Maintenance
Water Quality Degradation and Eutrophication		SF
Vessel Operation Impacts		SF
Contamination of Water and Sediments		SF
Invasive Species/Disease		SF

ACFHP Ecological Subregions: NA = North Atlantic, MA = Mid-Atlantic, SA = South Atlantic, SF = South Florida

<sup>12</sup>Climate change is affecting all habitats in each region to varying degrees and is not included in this table.

# A. Conservation Objectives

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**CONSERVATION OBJECTIVE 1: Work with partners to protect, restore, or maintain resilient Subregional Priority Habitats (using strategies outside of fish passage) to optimize ecosystem functions and services to benefit fish and wildlife.**

- Strategy A.1.1:** Support on-the-ground conservation projects that protect, restore, or maintain Subregional Priority Habitats (outside of fish passage).
- Strategy A.1.2:** Minimize or reduce adverse impacts to Subregional Priority Habitats associated with coastal development and water-dependent uses.
- Strategy A.1.3:** Promote the use of best management practices (BMPs) for protection and restoration of Subregional Priority Habitats.
- Strategy A.1.4:** Work with partners to identify and conserve intact coastal habitats and buffers in need of protection.

**CONSERVATION OBJECTIVE 2: Work with partners to support the maintenance of water quality and hydrology standards for functional priority habitats and improvement of water quality in degraded priority habitat areas.**

- Strategy A.2.1:** Coordinate with partners to assess and identify critical watersheds for water quality improvement that are having a major impact on Subregional Priority Habitats.
- Strategy A.2.2:** Support on-the-ground projects that improve water quality within Subregional Priority Habitats.

**CONSERVATION OBJECTIVE 3: Coordinate with partners to restore, enhance, and maintain adequate and effective fish passage to ensure connectivity within and among required Subregional Priority Habitats.**

- Strategy A.3.1:** Coordinate with partners to identify and prioritize watersheds for conservation where fragmentation of, or barriers to, fish passage are a potentially critical threat to be addressed.
- Strategy A.3.2:** Coordinate with partners to disseminate a “standardized toolbox” of fish passage technologies and guidance to assist the public in the development and implementation of effective fish passage protocols.
- Strategy A.3.3:** Work with partners to increase habitat connectivity within and among Subregional Priority Habitats by directly addressing physical barriers.

# B. Science and Data Objectives

## **SCIENCE AND DATA OBJECTIVE 1: Work to achieve ACFHP Science and Data needs and fulfill science and data responsibilities established by NFHAP.**

- Strategy B.1.1:** Develop an online searchable database of the Species-Habitat Matrix.
- Strategy B.1.2:** Produce a fine scale ACFHP region-wide GIS map, using existing data, that shows areas for priority habitat protection and restoration which can be used to better target our actions.
- Strategy B.1.3:** Develop project tracking capabilities for the purpose of capturing and reporting conservation results to stakeholders.
- Strategy B.1.4:** Analyze monitoring data to assess success of fish habitat restoration projects.

## **SCIENCE AND DATA OBJECTIVE 2: Support ongoing research related to identifying or assessing fish habitat conservation activities and the threats to fish habitats.**

- Strategy B.2.1:** Identify and communicate pertinent challenges affecting fish habitat management and create a prioritized list of data gaps that would help ACFHP achieve its goals (i.e. spatial data for various life stages of priority fish species and/or habitat maps of subregional priority habitats).
- Strategy B.2.2:** Seek funding or endorse applied science/research projects aimed at (1) monitoring the impacts of Priority Threats on ACFHP habitats, (2) evaluating the effectiveness of fish habitat conservation techniques or methodologies, (3) identifying causes of habitat loss and the resulting effects on ACFHP species, and (4) collecting data to fill gaps identified in Science and Data Objective B.2.1.



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# C. Outreach and Communication Objectives

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**OUTREACH AND COMMUNICATION OBJECTIVE 1: Develop new and update current printed and digital content for communicating information that supports ACFHP’s goals to target audiences: scientists, resource managers, state and federal legislatures, non-governmental organizations, stakeholders, media, and others as identified.**

- Strategy C.1.1:** Determine which communications platforms maximize ACFHP’s ability to deliver its messaging to target audiences.
- Strategy C.1.2:** Upgrade and seek improvements to content/organization of the ACFHP website to make better use of available technology and enhance accessibility/usability by target audiences.
- Strategy C.1.3:** Redesign outreach materials for consistency to optimize our messaging.
- Strategy C.1.4:** Disseminate communication materials via social media platforms, the website, and participation at professional conferences/tradeshows to extend our coverage.

**OUTREACH AND COMMUNICATION OBJECTIVE 2: Promote and broadly disseminate information about the products, projects, and services of ACFHP.**

- Strategy C.2.1:** Share the successes of the on-the-ground conservation projects that ACFHP supports with target audiences.
- Strategy C.2.2:** Seek opportunities to expand media coverage of ACFHP products, projects, and services.
- Strategy C.2.3:** Facilitate the dissemination of BMPs and other fish habitat conservation information from partners to our targeted audiences.

**OUTREACH AND COMMUNICATION OBJECTIVE 3: Maintain relations with the National Fish Habitat Partnership Board, fellow Fish Habitat Partnerships, and Beyond the Pond.**

- Strategy C.3.1:** Promote the mission and accomplishments of ACFHP and exchange lessons learned with the National Fish Habitat Partnership Board.
- Strategy C.3.2:** Enhance fish habitat improvement through cooperation with fellow Fish Habitat Partnerships.

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**OUTREACH AND COMMUNICATION OBJECTIVE 4: Seek avenues to promote the activities and products of partners.**

**Strategy C.4.1:** Publicize partners' actions and products via various communication platforms.

**Strategy C.4.2:** Distribute and publicize the Atlantic States Marine Fisheries Commission's (ASMFC) Habitat Committee actions and products, including a link in ACFHP's website to ASMFC's website.



*Partnership for the Delaware Estuary, courtesy of The Milford Beacon*

# D. Finance Objectives

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## **FINANCE OBJECTIVE 1: Maintain infrastructure and mechanisms for managing ACFHP finances.**

**Strategy D.1.1:** Coordinate with ASMFC to maintain ACFHP operations.

**Strategy D.1.2:** Coordinate with Beyond the Pond staff and partners to establish financial capacities for managing grant proposals and awards.

## **FINANCE OBJECTIVE 2: Utilize NFHAP funding to achieve the greatest overall benefits for on the ground conservation and Partnership productivity.**

**Strategy D.2.1:** Solicit and select high quality conservation projects through an annual request for proposals process.

**Strategy D.2.2:** Enhance ACFHP's performance score in the annual NFHAP funding determinations.

**Strategy D.2.3:** Support federal legislation for NFHAP.

## **FINANCE OBJECTIVE 3: Leverage new funding for restoration projects and ACFHP operations.**

**Strategy D.3.1:** Adopt a working Business Plan.

**Strategy D.3.2:** Implement the Business Plan and pursue private donors for funding.

**Strategy D.3.3:** Continue to pursue additional conservation project funding and endorsement opportunities.

**Strategy D.3.4:** Identify and pursue new sources of operational funding.

## **FINANCE OBJECTIVE 4: Fund projects for Science and Data and Outreach and Communications.**

**Strategy D.4.1:** Secure funding or in-kind support to develop Science and Data and Outreach and Communication priority materials and products.

# Appendix A

## ACRONYMS

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ACFHP	Atlantic Coastal Fish Habitat Partnership
ASMFC	Atlantic States Marine Fisheries Commission
BMP	Best management practice
CSP	Conservation Strategic Plan
GIS	Geographic information system
NFHAP	National Fish Habitat Action Plan
NGOs	Non-governmental organizations
NOAA	National Oceanic and Atmospheric Administration
SAV	Submerged aquatic vegetation



# Appendix B

## GLOSSARY

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Bioaccumulate	The concentration of substances within an organism
Coastal resiliency	Building the ability of a community to ‘bounce back’ after hazardous events rather than simply reacting to impacts (modified from National Ocean Service, NOAA)
Cobble	Rocks 64 – 256 mm in diameter
Connectivity	The degree to which streams and rivers facilitate or inhibit movement among resources <sup>13</sup>
Consumptive water withdrawal	The permanent removal of water from its source, through natural or anthropogenic processes
Desalination	Salt and mineral removal from a substance
Diadromous	Fish that spend part of their life cycle in fresh water and part of their life cycle in salt water
Dredge	The removal of sediment, plants, etc. to maintain a desired depth and width within a waterway
Embayment	A bay or conformation resembling a bay
Emergent	Rising above the water
Entrainment	Entrapment
Estuarine-dependent	Fish that reside in the estuary for at least part of their life cycle
Eutrophication	Excessive nutrients in a body of water, causing an increase in primary producers, leading to a decrease in oxygen upon their decay
Fragmentation	When continuous habitat divides into smaller, separated habitats, usually due to habitat loss
Headwaters	The tributaries or streams closest to its source
Hydrology	The science of the distribution, movement, and quality of the water on Earth
Impingement	Collision or violent contact
Intertidal	The area between high and low tide
Lagoon	Shallow water bodies separated from larger water bodies, usually with little tidal or freshwater flow



Locomotor	Influencing the ability of moving from one location to another
Moratorium	Delay or suspension of an activity or law
Primary production	Converting energy into organic substances by organisms (autotrophs)
Riparian	Areas adjacent to rivers and streams
Shoreline hardening	The use of groins, jetties, offshore breakwaters, sea walls, tombolos, or other hardened beach structures on the shore ( <a href="http://www.coastalcare.org">www.coastalcare.org</a> )
Spawn	To deposit eggs or sperm directly into the water
Supratidal	Area above high tide that is regularly splashed with seawater, but is not under water
Spatial data	Data elements with a spatial component i.e. associated with a location
Symbiosis	An interaction between two different organisms in close proximity. Usually the interaction is mutually beneficial.
Threat	A thing likely to cause damage
Unicellular	Consisting of one cell
Vascular	The plant tissue that transports water, sap, and nutrients

<sup>13</sup>Modified from Taylor, P.D., Fahrig, L, Henein, K. and G. Merriam. 1993. Connectivity is a vital element of landscape structures. *Oikos* 68: 571-573.



FL FWCC



ACFHP

# Appendix C

## HABITAT CHARACTERIZATIONS

### MARINE AND ESTUARINE SHELLFISH BEDS

#### **Oyster aggregations/reef**

Structures formed by the Eastern oyster (*Crassostrea virginica*) that provide the dominant structural component of the benthos (bottom), and whose accumulated mass provides significant vertical relief (> 0.5 m).

#### **Scallop beds**

Areas of dense aggregations of scallops on the ocean floor. Common Atlantic coast species include: (1) the large Atlantic sea scallop (*Placopecten magellanicus*), which ranges from Newfoundland to North Carolina; (2) the medium-sized Atlantic calico scallop (*Argopecten gibbus*), which is found in waters south of Delaware; and (3) the bay scallop (*Argopecten irradians*), which occurs from Cape Cod to Florida, as well as in the Gulf of Mexico.

#### **Hard clam beds**

Dense aggregations of the hard clam (*Mercenaria mercenaria*) found in the subtidal regions of bays and estuaries to approximately 15 m in depth. Clams are generally found in mud flats and firm bottom areas consisting of sand or shell fragments.

#### **Shell accumulations**

Shells of dead mollusks sometimes accumulate in sufficient quantities to provide important habitat. Accumulations of Eastern oyster shells are a common feature in the intertidal zone of many southern estuaries.

### CORAL AND LIVE/HARD BOTTOM

#### **Coral reefs**

Reef-building corals are of the order Scleractinia, in the class Anthozoa, of the phylum Cnidaria. Coral accumulations are restricted to warmer water regions, where the average monthly temperature exceeds 18°C (64°F) throughout the year. Through symbiosis with unicellular algae, reef-building corals are the source of primary production in reef communities.

#### **Patch reef, soft corals, or anemones**

A patch reef is an isolated, often circular, coral reef usually found within a lagoon or embayment. Soft corals are species of the anthozoan order Alcyonacea, of the

subclass Octocorallia. In contrast to the hard or stony corals, most soft corals do not possess a massive external skeleton (e.g. sea pens and sea fans). Anemones are cnidarians of the class Anthozoa that possess a flexible cylindrical body and a central mouth surrounded by tentacles found in soft sediments.

### **Live rock**

Calcareous rock that is removed from the vicinity of a coral reef with some of the life forms still living on it. These may include bacteria, coralline algae, sponges, worms, crustaceans, and other invertebrates.

### **Macroalgae**

Large marine multi-cellular macroscopic algae (seaweeds). There are three types of macroalgae: green, brown, and red.

Examples of macroalgae species found along the Atlantic coast include:

Chlorophyta (green algae)

*Ulva lactuca*, sea lettuce

Phaeophyta (brown algae)

*Fucus vesiculosus*, bladderwrack; *Laminaria* spp.; *Sargassum* spp.

Rhodophyta (red algae)

*Chondrus crispus*, Irish moss

## **SUBMERGED AQUATIC VEGETATION (SAV)**

SAV refers to rooted, vascular plants that live below the water surface in large meadows or small patches in coastal and estuarine waters. SAV can be further classified by the range of salinity of the waters in which they are found.

### **Tidal fresh and oligohaline plant species**

Generally found in areas where salinity ranges from 0.5 to 5.0 ppt.

Examples include: *Vallisneria americana*, wild celery

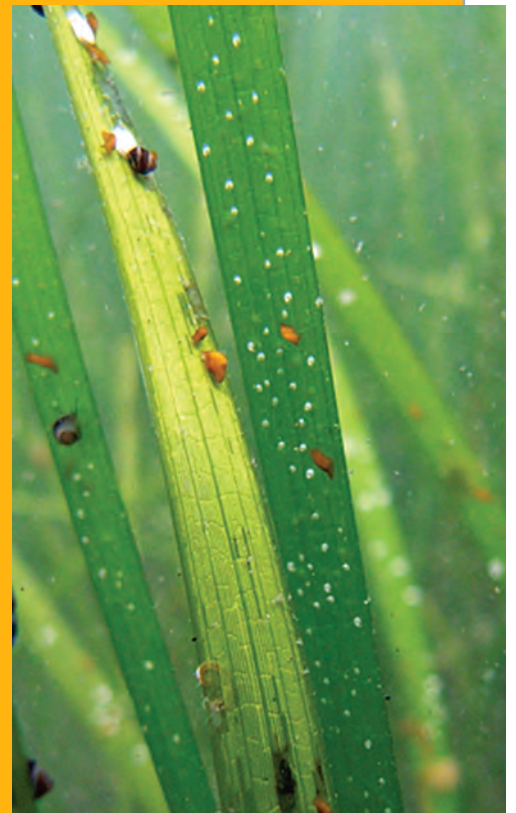
*Ceratophyllum demersum*, coontail

### **Mesohaline and polyhaline plant species**

Generally found in areas where salinity ranges from 5 ppt up to 30 ppt.

Examples include: *Zostera marina*, eelgrass

*Ruppia maritima*, widgeon grass



*Natural eelgrass meadow in the Peconic Estuary, by Kimberly Manzo, Cornell Cooperative Extension Marine Program.*

## TIDAL VEGETATION

### **Estuarine emergent marsh**

Salt marsh is an environment in the coastal intertidal zone between land and brackish water. The low marsh zone floods twice daily, while the high marsh floods only during storms and unusually high tides. Smooth cordgrass (*Spartina alterniflora*) dominates the regularly flooded low marsh along much of the Atlantic coast. In addition, salt meadow cordgrass (*Spartina patens*), saltgrass (*Distichlis spicata*), and needle rush (*Juncus* spp.) species comprise much of the vegetative community of the mid to upper salt marsh and brackish marsh.

### **Tidal freshwater marsh**

Tidal freshwater marsh occurs where the average annual salinity is below 0.5 ppt. It is found along free-flowing coastal rivers, and is influenced twice daily by the incoming tides. Tidal freshwater marsh can be located just upstream of the salt front, where the river essentially backs up as it meets resistance from high tides. Tidal freshwater marsh is characterized by salt intolerant plant species. These include: giant cordgrass (*Spartina cynosuroides*), sawgrass (*Cladium jamaicense*), cattails (*Typha* spp.), arrow arum (*Peltandra virginica*), pickerelweed (*Pontedaria cordata*), blue flag (*Iris virginica*), and soft stem bulrush (*Scirpus validus*).

### **Mangrove**

The mangrove ecological community includes four tree species collectively called mangroves. This swamp system occurs along intertidal and supratidal shorelines in southern Florida. The four species found in Florida mangrove swamps are:

*Rhizophora mangle*, red mangrove  
*Avicennia germinans*, black mangrove

*Laguncularia racemosa*, white mangrove  
*Conocarpus erectus*, buttonwood

## UNVEGETATED COASTAL BOTTOM

### **Loose fine bottom**

Submerged underwater bottom habitat in estuaries and oceans where the dominant sediment type is mud, silt, or sand.

### **Loose coarse bottom**

Submerged underwater bottom habitat in estuaries and oceans where the dominant sediment type ranges from gravel to cobble.

### **Firm hard bottom**

Submerged underwater bottom habitat in estuaries and oceans where embedded rock or boulders are the dominate sediment types.

### **Structured sand habitat**

Linear, narrow sand features that develop where a stream or ocean current promotes deposition of sand.

## RIVERINE BOTTOM

### **Higher gradient headwater tributaries**

Streams in which the dominant substrate is comprised of gravel and cobble. The stream slope is greater than 2%. This characterization includes 1st to 3rd order streams.<sup>14</sup>

### **Lower gradient tributaries**

Streams in which the dominant substrate is comprised of sand, gravel, and small cobble. The stream slope is between 0.51% and 2.0%. This characterization includes 1st to 3rd order streams.

### **Higher gradient large mainstem river**

Rivers in which the dominant substrate is sand, gravel, and cobble. The stream slope is between 0.51% and 2%. This characterization includes 4th order rivers and above.

### **Lower gradient large mainstem river**

Rivers in which the dominant substrate is fine sediments (silt, mud, sand). The stream slope is between 0.51% and 2%. This characterization includes 4th order rivers and above.



Laura Leach, ASMFC

### **Low order coastal streams**

Generally low gradient 0% to 0.05% in slope. This characterization includes 1st to 3rd order streams located along the coast.

### **Non-tidal freshwater mussel beds**

Freshwater mussel beds, located above tidal influence.

### **Coastal headwater pond**

A pond connected to coastal streams and rivers, generally located near the headwaters.

### **Non-tidal freshwater marsh**

A marsh that occurs in the non-tidal section along a river. The main feature of a freshwater marsh is its openness, with only low-growing or “emergent” plants. It may include grasses, rushes, reeds, typhas, sedges, and other herbaceous plants (possibly with low-growing woody plants) in a context of shallow water.

<sup>14</sup>Strahler Stream Order is a hierarchical classification of streams. Headwaters are the first order, and two first order streams combine to form a second order stream. Two second order streams form a third order stream, and so on.

# Appendix D

## WEBSITES AND DOCUMENT LINKS

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- |   |   |   |
|---|---|---|
| 4 | National Fish Habitat Action Plan<br><a href="http://www.fishhabitat.org/files/uploads/National_Fish_Habitat_Action_Plan_2006.pdf">www.fishhabitat.org/files/uploads/National_Fish_Habitat_Action_Plan_2006.pdf</a>   | Atlantic States Marine Fisheries Commission<br><a href="http://www.asmf.org">www.asmf.org</a>   |
| 4 | Restoration practitioners<br><a href="http://www.atlanticfishhabitat.org/wp-content/uploads/2012/10/Aligning-the-ACFHP-Efforts-with-Restoration-Practitioners.pdf">www.atlanticfishhabitat.org/wp-content/uploads/2012/10/Aligning-the-ACFHP-Efforts-with-Restoration-Practitioners.pdf</a>   | Chesapeake Bay Foundation<br><a href="http://www.cbf.org">www.cbf.org</a>   |
| 5 | Species-Habitat Matrix<br><a href="https://academic.oup.com/bioscience/article/66/4/274/2464081/The-Importance-of-Benthic-Habitats-for-Coastal">https://academic.oup.com/bioscience/article/66/4/274/2464081/The-Importance-of-Benthic-Habitats-for-Coastal</a>   | Connecticut Department of Environmental Protection<br><a href="http://www.ct.gov">www.ct.gov</a>  |
| 5 | Fish Habitat Decision Support Tool<br><a href="http://www.fishhabitatool.org">www.fishhabitatool.org</a>  | Delaware Department of Natural Resources and Environmental Control<br><a href="http://www.dnrec.delaware.gov">www.dnrec.delaware.gov</a>  |
| 5 | River Herring Habitat Restoration Needs<br><a href="http://www.atlanticfishhabitat.org/wp-content/uploads/2012/10/RIVER-HERRING-RESTORATION-NEEDS-final-edited.pdf">www.atlanticfishhabitat.org/wp-content/uploads/2012/10/RIVER-HERRING-RESTORATION-NEEDS-final-edited.pdf</a>   | Environmental Defense Fund<br><a href="http://www.edf.org">www.edf.org</a>  |
| 7 | NOAA Fisheries Economics of the United States, 2015<br><a href="http://www.st.nmfs.noaa.gov/economics/publications/feus/fisheries_economics_2015/index">www.st.nmfs.noaa.gov/economics/publications/feus/fisheries_economics_2015/index</a>   | Florida Fish and Wildlife Conservation Commission<br><a href="http://www.myfwc.com">www.myfwc.com</a>   |
| 8 | Memorandum of Understanding<br><a href="http://www.atlanticfishhabitat.org/wp-content/uploads/2012/10/ACFHP-MOU-2015-with-signatures-1.pdf">www.atlanticfishhabitat.org/wp-content/uploads/2012/10/ACFHP-MOU-2015-with-signatures-1.pdf</a>   | Georgia Department of Natural Resources<br><a href="http://www.gadnr.org">www.gadnr.org</a>   |
| 8 | ACFHP Charter and By-Laws<br><a href="http://www.atlanticfishhabitat.org/Documents/ACFHP-Charter-and-Bylaws.pdf">www.atlanticfishhabitat.org/Documents/ACFHP-Charter-and-Bylaws.pdf</a>   | Houlton Band of Maliseet Indians<br><a href="http://www.maliseets.com">www.maliseets.com</a>  |
| 8 | ACFHP Partners<br><i>Albemarle-Pamlico National Estuary Partnership</i><br><a href="http://www.apnep.org/web/apnep">www.apnep.org/web/apnep</a><br><i>American Littoral Society</i><br><a href="http://www.littoralsociety.org">www.littoralsociety.org</a><br><i>American Rivers</i><br><a href="http://www.americanrivers.org">www.americanrivers.org</a> | International Federation of Fly Fishers<br><a href="http://www.flyfishersinternational.org">www.flyfishersinternational.org</a><br>Maine Department of Marine Resources<br><a href="http://www.maine.gov">www.maine.gov</a><br>Maryland Department of Natural Resources<br><a href="http://www.dnr.maryland.gov">www.dnr.maryland.gov</a><br>Massachusetts Division of Marine Fisheries<br><a href="http://www.mass.gov/eea/agencies/dfg/dmf">www.mass.gov/eea/agencies/dfg/dmf</a><br>Merrimack River Watershed Council<br><a href="http://www.merrimack.org">www.merrimack.org</a><br>National Oceanic and Atmospheric Administration<br><a href="http://www.noaa.gov">www.noaa.gov</a><br>New Hampshire Fish and Game Department<br><a href="http://www.wildlife.state.nh.us">www.wildlife.state.nh.us</a><br>New Jersey Division of Fish and Wildlife<br><a href="http://www.state.nj.us">www.state.nj.us</a> |

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New York Department of Environmental  
Conservation

[www.dec.ny.gov](http://www.dec.ny.gov)

North Carolina Coastal Federation

[www.nccoast.org](http://www.nccoast.org)

North Carolina Department of Environmental  
Quality

[www.deq.nc.gov](http://www.deq.nc.gov)

Oyster Recovery Partnership

[www.oysterrecovery.org](http://www.oysterrecovery.org)

Partnership for the Delaware Estuary

[www.delawareestuary.org](http://www.delawareestuary.org)

Pennsylvania Fish and Boat Commission

[www.fish.state.pa.us](http://www.fish.state.pa.us)

Rhode Island Division of Fish and Wildlife

[www.dem.ri.gov](http://www.dem.ri.gov)

South Carolina Department of Natural  
Resources

[www.dnr.sc.gov](http://www.dnr.sc.gov)

The Nature Conservancy

[www.nature.org](http://www.nature.org)

United States Fish and Wildlife Service

[www.fws.gov](http://www.fws.gov)

United States Geological Survey

[www.usgs.gov](http://www.usgs.gov)

Vermont Fish and Wildlife Department

[www.vtfishandwildlife.com](http://www.vtfishandwildlife.com)

Virginia Marine Resources Commission

[www.mrc.state.va.us](http://www.mrc.state.va.us)

Wells National Estuarine Research Reserve

[www.wellsreserve.org](http://www.wellsreserve.org)

- 13 2009 Assessment of Existing Information  
[http://www.atlanticfishhabitat.org/Documents/  
ACFHP%20Assessment%20of%20Existing%20  
Information%20Final%20Report.pdf](http://www.atlanticfishhabitat.org/Documents/ACFHP%20Assessment%20of%20Existing%20Information%20Final%20Report.pdf)



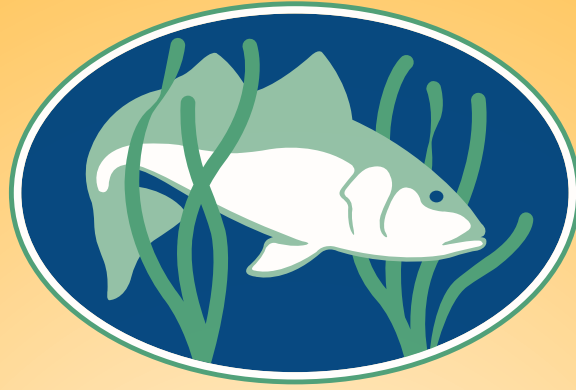




# Conservation Action Plan

2017-2019





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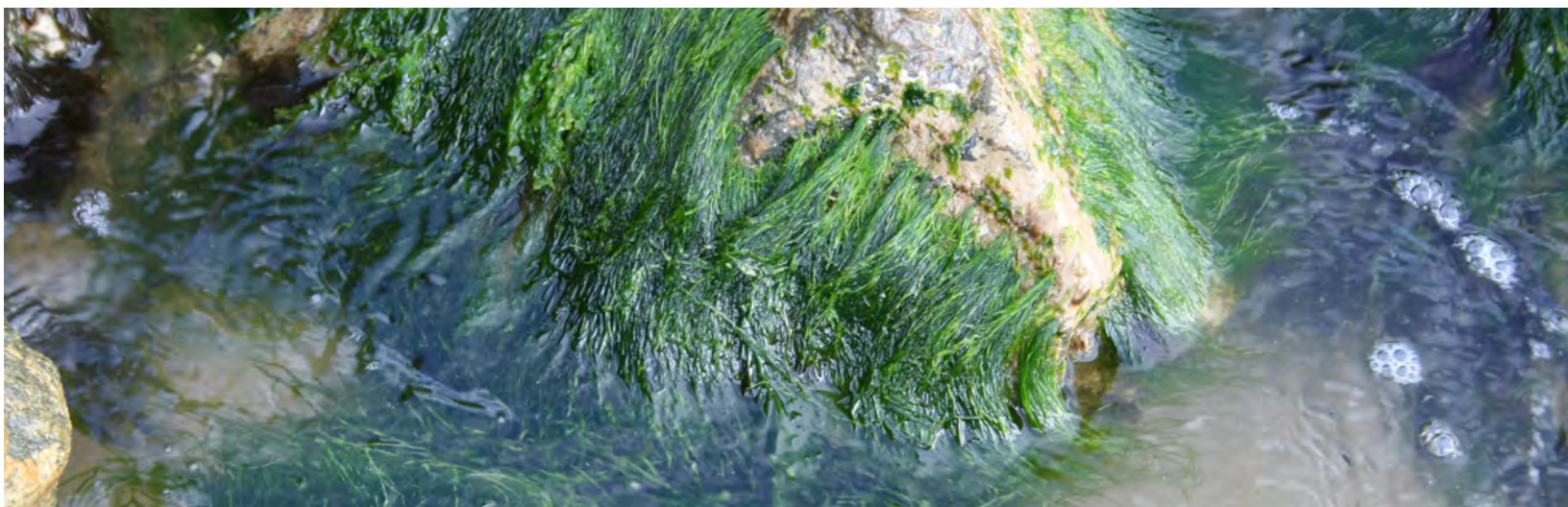


This plan is a product of the Atlantic Coastal Fish Habitat Partnership with funding from the National Fish Habitat Partnership (Award Number F16AC01131) and the Multistate Conservation Grant Program with funds from the Wildlife and Sport Fish Restoration Program of the U.S. Fish and Wildlife Service.

# 2017-2019 Action Plan

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The Atlantic Coastal Fish Habitat Partnership (ACFHP) 2017 – 2019 Action Plan is a subset of the 2017 – 2021 ACFHP Conservation Strategic Plan. It contains a set of objectives, strategies, and related actions that can be accomplished over the course of a two year period. These actions will be carried out by the ACFHP Coordinator or Action Lead, with the help of subgroups as necessary.



# A. Conservation Objectives

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**CONSERVATION OBJECTIVE 1: Work with partners to protect, restore, or maintain resilient Subregional Priority Habitats (using strategies outside of fish passage) to optimize ecosystem functions and services to benefit fish and wildlife.**

**Strategy A.1.1: Support on-the-ground conservation projects that protect, restore, or maintain Subregional Priority Habitats (outside of fish passage).**

**Action 1:** Allocate U.S. Fish and Wildlife Service (Service) funding to annually support a minimum of one project that promotes/supports restoration, protection, and resiliency of Subregional Priority Habitats.

**Action 2:** Submit a minimum of one funding proposal annually outside of Service-National Fish Habitat Action Plan (NFHAP) funding (e.g. National Oceanic and Atmospheric Administration [NOAA]) to support projects that increase the resiliency of Subregional Priority Habitats.

**Action 3:** Support four on-the-ground conservation projects annually through endorsement by ACFHP.

**Strategy A.1.4: Work with partners to identify and conserve intact coastal habitats and buffers in need of protection.**

**Action 1:** Promote the use of the Species-Habitat Matrix and Northeast-Southeast Fish Habitat Mapping Projects to protect high quality fish habitats through at least one webinar or presentation at a professional conference.

**CONSERVATION OBJECTIVE 3: Coordinate with partners to restore, enhance, and maintain adequate and effective fish passage to ensure connectivity within and among required Subregional Priority Habitats.**

**Strategy A.3.3: Work with partners to increase habitat connectivity within and among Subregional Priority Habitats by directly addressing physical barriers.**

**Action 1:** Allocate Service funding to annually support a minimum of one on-the-ground project that aims to remove barriers in areas identified as a priority for fish passage restoration by an ACFHP partner.

## B. Science & Data Objectives

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**SCIENCE AND DATA OBJECTIVE 1: Work to achieve ACFHP Science and Data needs and fulfill science and data responsibilities established by NFHAP.**

**Strategy B.1.1: Develop an online searchable database of the Species-Habitat Matrix.**

**Action 1:** Identify a partner who can develop a searchable database of the Matrix and work with them to publish it online.

**Strategy B.1.2: Produce a fine scale ACFHP region-wide GIS map, using existing data, that shows areas for priority habitat protection and restoration which can be used to better target our actions.**

**Action 1:** Establish a timeline and calculate metrics for the Southeast Fish Habitat Mapping Project initiated by Merrimack River Watershed Council using the data layers provided, and the metrics defined.

**Action 2:** Determine data gaps in the Southeast Fish Habitat Mapping Project.

**Action 3:** Initiate the Northeast Fish Habitat Mapping Project by compiling all of the necessary data layers.

**Strategy B.1.3: Develop project tracking capabilities for the purpose of capturing and reporting conservation results to stakeholders.**

**Action 1:** Develop coordination with the Service Fish and Aquatic Conservation and Wildlife and Sport Fisheries Restoration divisions (which administers Tracking and Reporting Actions for the Conservation of Species [TRACS]) to get all of the NFHAP-funded reports (progress and final) into an online database and/or provide them to ACFHP.

# C. Outreach & Communication Objectives

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**Outreach and Communication Objective 1: Develop new and update current printed and digital content for communicating information that supports ACFHP’s goals to target audiences: scientists, resource managers, state and federal legislatures, non-governmental organizations, stakeholders, media, and others as identified.**

**Strategy C.1.2:** Upgrade and seek improvements to content/organization of the ACFHP website to make better use of available technology and enhance accessibility/usability by target audiences.

*Action 1:* Hire a contractor and complete the ACFHP website redesign within one year.

**Strategy C.1.3:** Redesign outreach materials for consistency to optimize our messaging.

*Action 1:* Develop a PowerPoint presentation that can be used by partners to explain what ACFHP is, what we do, etc.

*Action 2:* Develop a one-page ACFHP fact sheet specifically for primary target audience(s).

**Strategy C.1.4:** Disseminate communication materials via social media platforms, the website, and participation at professional conferences/tradeshows to extend our coverage.

*Action 1:* Update contact information for ACFHP partners and followers outside of the Steering Committee and find out how we can increase their involvement in the Partnership.

*Action 2:* Attend and present a poster or talk at least once per year at a national conference.

**Outreach and Communication Objective 2: Promote and broadly disseminate information about the products, projects, and services of ACFHP.**

**Strategy C.2.1:** Share the successes of the on-the-ground conservation projects that ACFHP supports with target audiences.

*Action 3:* Submit a newsletter article to Rhode Island Marine Trades Association on the benefits of conservation moorings.

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**Strategy C.2.3: Facilitate the dissemination of best management practices (BMPs) and other fish habitat conservation information from partners to our targeted audiences.**

**Action 2:** Provide Science and Data-approved links on ACFHP's website on topics of interest to target audiences, such as water quality parameters needed to maintain a healthy ecosystem, fish passage tools, riparian buffer BMPs, etc.

**Outreach and Communication Objective 3: Maintain relations with the National Fish Habitat Partnership (NFHP) Board, fellow Fish Habitat Partnerships (FHPs), and Beyond the Pond.**

**Strategy C.3.1: Promote the mission and accomplishments of ACFHP and exchange lessons learned with the National Fish Habitat Partnership Board.**

**Action 1:** Participate in at least three NFHP Board meetings per year and present as opportunities allow.

**Action 2:** Participate on the NFHP Partnership Committee and in NFHP workshops as needed, and report highlights to ACFHP Steering Committee annually.

**Strategy C.3.2: Enhance fish habitat improvement through cooperation with fellow FHPs.**

**Action 1:** Produce three quarterly Coastal FHP articles for the newsletter in coordination with other FHPs.

**Action 2:** Work closely with Eastern Brook Trout Joint Venture and Southeast Aquatic Resources Partnership on Whitewater to Bluewater efforts, and report to ACFHP Steering Committee on progress biannually.

# D. Finance Objectives

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## **Finance Objective 1: Maintain infrastructure and mechanisms for managing ACFHP finances.**

**Strategy D.1.1: Work with the Atlantic States Marine Fisheries Commission (ASMFC) to maintain ACFHP operations.**

**Action 1:** Coordinate with the Service and NOAA to establish grant/cooperative agreements with ASMFC for ACFHP operational funding annually.

**Action 2:** Work with ASMFC and NFHP to apply for Multistate Conservation Grant funding annually.

**Action 3:** Work with ASMFC to apply for Wallop Breaux funding annually.

**Strategy D.1.2: Coordinate with Beyond the Pond staff and partners to establish financial capacities for managing grant proposals and awards.**

**Action 1:** Provide assistance and input into the development of Beyond the Pond infrastructure by attending at least 75% of FHP calls and quarterly Board meetings.

## **Finance Objective 2: Utilize NFHAP funding to achieve the greatest overall benefits for on the ground conservation and Partnership productivity.**

**Strategy D.2.1: Solicit and select high quality conservation projects through an annual request for proposals process.**

**Action 1:** Convene the NFHAP project review subcommittee annually to evaluate proposals.

**Action 2:** Evaluate the success of the previous request for proposals cycle and provide the Steering Committee with recommended changes.

**Strategy D.2.2: Enhance ACFHP's performance score in the annual NFHAP funding determinations.**

**Action 1:** Complete the annual report to the Service and develop recommendations to enhance or maintain ACFHP's performance score for the Steering Committee.





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**Finance Objective 3: Leverage new funding for restoration projects and ACFHP operations.**

Strategy D.3.1: Adopt a working Business Plan.

**Action 1:** Present a Business Plan to the Steering Committee for adoption within one year.

**Action 2:** Prioritize actions in the Business Plan in Year 2.

**Finance Objective 4: Fund projects for Science and Data and Outreach and Communication.**

Strategy D.4.1: **Secure funding or in-kind support to develop Science and Data and Outreach and Communication priority materials and products.**

**Action 1:** Secure funding for an online searchable database of the Species-Habitat Matrix if in-kind support is not feasible.

**Action 4:** Secure funding to maintain and update the content and organization of the ACFHP website.

