Coonamessett River Restoration: Phase 2 Construction

MVP REGION	Southeast
GRANT AWARD	$760,000 (FY19)
MATCH AMOUNT/ SOURCE	$1,130,305
PROJECT TYPE	Construction / Implementation
CORE VALUES EXEMPLIFIED	Employing Nature-Based Solutions / Achieving broad and multiple community benefits
OUTCOMES	Restoration natural, self-sustaining wetlands; Reestablishing floodplain connectivity: Improvement of fisheries
ADDITIONAL RESOURCES	⇒ Coonamessett River Trust: https://www.crivertrust.org/ ⇒ Coonamessett Greenway Heritage Trail: https://300committee.org/conservation-lands-2/coonamessett-greenway-heritage-trail/ ⇒ NOAA Fisheries: https://www.fisheries.noaa.gov/feature-story/herring-benefit-dam-removals-wetland-restoration-coonamessett-river ⇒ US Fish and Wildlife: https://www.fws.gov/hurricane/sandy/projects/CoonamessettRiver.html ⇒ MVP 2021 Nature-Based Solutions Webinar: https://youtu.be/6iIOLcgJnyQ?t=1082 ⇒ Restoring Coonamessett River, Phase 1: https://www.youtube.com/watch?v=NFX03Qx1vn4 ⇒ Restoring Coonamessett River, Phase 2: https://www.youtube.com/watch?v=Vd11Stox_io ⇒ MVP Nature-Based Solutions Toolkit: https://resilientma.org/mvp/

Resilient Restoration

The Coonamessett River is a groundwater-fed coastal river in Falmouth, Massachusetts, that flows approximately three miles from Coonamessett Pond to the Great Pond estuary and further out to the Vineyard Sound. On its course through East Falmouth and Hatchville, the Coonamessett passes through a landscape that has changed as a result of early-Colonial gristmills and woolen mills, agricultural management once-associated with Massachusetts' cranberry industry and recent residential development. In addition, the river encountered three structural barriers on its way to the sea: 1) sand and ditches remaining from agricultural operations; 2) the John Parker Road Culvert; and 3) the Middle Dam.

Taken together, dams and alterations that accumulated over time resulted in the Coonamessett transitioning from a place that was once home to one of Cape Cod's most abundant river herring runs, with annual populations numbering in the millions as recently as the 1900s, to a river with

fewer than 75,000 fish making the annual herring run in 2015. While alterations presented challenges to fish populations, the Town of Falmouth was fortunate insofar as it had been proactive in its efforts to preserve land all along the banks of the Coonamessett River.

John Parker Road stream crossing before and after restoration activities.

Nimble funding through Partnerships and Coalitions

Public and non-profit ownership of conservation land on both sides began in the 1960s and progressed to the establishment of the Coonamessett River Heritage Trail in 2018. It consists of a network of public walking trails, viewing platforms and interpretive signage along the river corridor. The broad network of individuals, groups and agencies committed to the river created conditions that allowed multiple funding sources to come together to implement a bold, ambitious effort to restore the Coonamessett River.

The Restoration project trajectory: Sleep, Creep and Leap

Betsy Gladfelter, a member of the Falmouth Conservation Commission who is also a guest investigator at the Woods Hole Oceanographic Institution, has spent more than a decade coordinating the Coonamessett River Restoration project for the town. In public presentations, Betsy has compared the maturation of ecosystem restoration projects in ways that mirror growth patterns of a Cape Cod garden.

"The first year, something planted on the Cape will *sleep*, the second year it will *creep* and the third year it will leap," she says when describing the multi-decadal process the town underwent when they assembled funding and partnerships necessary to remove dams, convert cranberry bogs back into functioning wetlands, and create a longer, meandering river with a mosaic of habitats, from slow to fast flow, with pools at the bends.

"One of the most important aspects of the project is to develop a connection with—and sense of stewardship of—our natural systems."

- Betsy Gladfelter

During the two decade long "sleeping phase", the Town was fortunate to have two NGOs provide elements critical to the success of the project. The Coonamessett River Trust (CRT) provided biological, physical and

chemical monitoring in 2004 and it continues through the present. The 300 Committee, the town's land trust, strategically purchased land or helped the Town purchase land creating a greenway, so that almost the entire river is buffered by conservation lands. During the "creeping phase", in 2009 the Town first partnered with the Division of Ecological Restoration, which had designated the lower Coonamessett a "priority river." It obtained funding from 2011 through 2015 through a series of grants from FishAmerica Foundation and the MA Environmental Trust; these supported initial planning efforts. The success of these smaller efforts led to the "leaping phase" when the town was successful in obtaining substantial federal and state funding, starting with a 2016 grant from the National Oceanographic and Atmospheric Administration (NOAA) to begin implementation in the following phases:

- ⇒ Phase 1, completed in early 2018, included the removal of Lower Bog dam, installation of a public access boardwalk, reconstruction of the river channel, and restoration of 17 acres of wetlands.
- ⇒ Phase 2, which included funding from MVP, includes the removal of Middle Bog dam, installation of a public access boardwalk and restoration of 39 acres wetlands by removing former commercial cranberry bogs. In addition, the replacement of three failing culverts with a large box culvert will allow migratory fish to access their upstream habitat, including the 158-acre Coonamessett Pond.

Environmental Co-Benefits for People and Natural Systems

During this restoration effort, the Town has pursued strategies that benefit people who live in or visit Falmouth as well as the natural ecosystems that support the fisheries and wetlands that the town is trying to restore. Climate adaptation benefits of the project include restoring a naturalized, self-sustaining wetland and river system that increases biodiversity and resiliency; reconnecting the floodplain that allows for flood storage, helps remove pollutants such as nitrogen, and provides space for migration of salt marsh inland as sea level rise accelerates; and, improving fisheries by providing an unrestricted passage, a mosaic of river habitats, and a mitigation of heat stress on fisheries by connecting the main river stem to strong coldwater springs.

Finally, on top of all the habitat and climate resilience listed above, the Town has created opportunities for people of all ages to get out and make connections with the natural world. School groups participate in field trips and also in the "Adopt-A-Herring" program of the CRT. In addition, there are walking tours of the river for local and regional community organizations, and nature walks led by The 300 Committee Land Trust (T3C).

Image top : Coonamessett River in 2014 prior to Phase 1 restoration, note channelization.

Image bottom: Coonamessett River in 2018 after Phase 1 restoration, note restored wetlands, the side channels, and stream connectivity due to removal of lower dam, replaced by a pedestrian boardwalk.