

Cold Brook Eco-Restoration Partnership: Re-wilding Through Compromise & Consensus

Presentation by Michael Lach, Executive Director, Harwich Conservation Trust

Cranberry Bog Restoration Workshop: Case Studies and Opportunities to Maximize Ecological Benefits

Sponsored by

Southeast New England Program (SNEP), U.S. EPA Region 1 (New England) at the Waquoit Bay National Estuarine Research Reserve September 12, 2024

Harwich Conservation Trust (HCT) Robert F. Smith Cold Brook Preserve:

- 66-acres total area
- Wetlands and uplands
- Purchased in 2001 by HCT
- Cranberry farming since late 1800s
- 55± acre project envelope
- Downstream end tidally influenced





Timeline for the Cold Brook Ecological Restoration Project

- 2001: HCT purchases 66 acres comprised of retired bog and associated uplands from Crowell family
- 2009: Discussion starts with MA Division of Ecological Restoration (DER) about eco-restoration potential
- 2011: HCT applies for Priority Project status with DER; DER approves
- 2012-2014: Preliminary data collection
- 2014: Carding Mill Dam downstream of site is removed under emergency order
- 2015: Conceptual design process completed
- 2016-2019: Preliminary design; HCT acquires approx. 8-acre retired bog to south & 100% water rights to Cold Brook
- 2020-2022: Final design; HCT jointly acquires approx. 2 acres for shared parking with nonprofit Harwich Fire Association
- 2022-2023: Permitting, construction bidding
- 2023-2024: Eco-restoration construction (approx. 9 months); trails to open fall 2024
- 2024-2027: Post-construction monitoring and nitrogen monitoring by Town of Harwich

Project Partners









Eco-Restoration Design Team

- Harwich Conservation Trust (HCT) [consultant: Inter Fluve]
- Town of Harwich [consultants: CDM Smith with TMDL Solutions and UMass Dartmouth School of Marine Science and Technology (SMAST)]
- Massachusetts Department of Fish and Game, Division of Ecological Restoration (DER)
- U.S. Fish & Wildlife Service

Harwich Conservation Trust Goals:

- Ecosystem restoration/recovery
- Improve water flow; improve water quality via natural nitrogen attenuation
- Enhance the visitor experience and make wheelchair accessible with All Persons Trail

Town's Goal:

 Increase nitrogen removal in the Saquatucket Harbor watershed system via natural denitrification in a series of open water ponds and nitrogen uptake in a naturally transitioning marshland system.

Saquatucket Harbor Watershed Cold Brook – Natural Nitrogen Removal







Conceptual Consensus Design Cold Brook Eco-Restoration Project, Harwich Port

March 25, 2020; Revised April 7, 2020

All project elements were approximate and subject to change. Design depicts only critical elements related to the discussion of denitrification functions/water quality and site succession. Other project elements (e.g., pedestrian circulation) were incorporated at a later date. Channel Widening/Deepening (typ.)

Community Type Acreage

Salt Marsh: 9.5± ac

Shallow Pond: 2.2± ac

Deep Emergent Marsh: 3.2± ac

Shallow Emergent Marsh/Shrub Swamp: **3.5± ac**

Shrub Swamp/Forested Wetland/Upland: **15± ac**

Realigned Stream: 2,700± If





Division of Ecological Restoration







Proposed Community Types

	2020 Concepts	2022 Preliminary Designs
Salt Marsh (acres)	9.5	9.5
Shallow Pond (acres)	2.2	2.2
Deep Emergent Marsh (acres)	3.2	3.2
Shallow Emergent Marsh (acres)	3.5	3.7
Shrub Swamp/Forested Wetland/Upland (acres)	15	19.7
Realigned Stream (linear feet)	2,700	4,700

Community Type Definitions and Visuals: *Salt Marsh*

- Limited manipulation of bog surface to preserve elevation capital.
- Self starting: no planting of *Spartina* spp. (provided existing populations are present).
- Use of existing lateral ditching as starter channels.
- Preserve mainstem of Cold Brook; add overwidened areas along channel for refugia.
- Salt marsh will generally be allowed to progress naturally as sea level rises. Depiction on the concept plan is estimated maximum current extent which will be clarified as tidal elevation information is reviewed. Projections of future extent will be developed based on a range of potential sea level rise scenarios.



Community Type Definitions and Visuals: *Shallow Pond*

- Open water area.
- 2 meter maximum depth.
- Flow through (i.e., Cold Brook mainstem flows into and out of pond).
- Pond perimeter generally surrounded by deep emergent marsh.
- Will require sand and/or peat removal



Community Type Definitions and Visuals: *Deep Emergent Marsh*

- Permanently/semi-permanently. inundated
- 1-3 foot depth of water.
- Along margins of Shallow Pond.
- Tall graminoids and limited (<25% cover) woody plants.
- Sand removal required, and possible over excavation (amount dependent on water table elevations).



Community Type Definitions and Visuals: *Shallow Emergent Marsh/Shrub Swamp*

- Shallow Emergent Marsh/Shrub Swamp:
 - 50/50 mix of two community types.
 - Mix of grasses, sedges, rushes and forbs, with other areas containing woody plants, and shrub communities.
 - Seasonal to semi-permanent inundation.
 - Due to presence of peat, shrub communities may be considered Acidic Shrub Fen.
 - This equates to "heavy microtopography" methods used by DER.



Photos: Before, During, After Eco-Restoration



Cold Brook Eco-Restoration Partnership



Key Learnings

• Communicate along the path to consensus:

In addition to project design team meetings, project partners also kept key stakeholders informed including HCT Board of Trustees, Town Conservation Commission and Select Board

• Be flexible and open to compromise:

The design evolved thanks to the expertise and patience of many experienced practitioners and open-minded newcomers.

• Funding:

Funding was provided primarily by Town of Harwich (nitrogen attenuation related restoration & public access); USFW (habitat restoration & public access); MA DER (habitat restoration & educational signage); HCT donors Estimated total eco-restoration funding = \$3m; estimated total public access infrastructure funding = \$1m

• Site visits:

Visits included Eel River, Tidmarsh, Coonamessett River and other sites to learn about opportunities and challenges. Harwich Conservation Trust offers guided tours of the Cold Brook Preserve to help others learn what is possible.

• Share: presentations, guided walks, helpful documents (nitrogen attenuation study; Town Mtg. article; order of conditions)









NEXT: Hinckleys Pond-Herring River Headwaters Eco-Restoration Project

