Ecological Restoration Challenges and Opportunities

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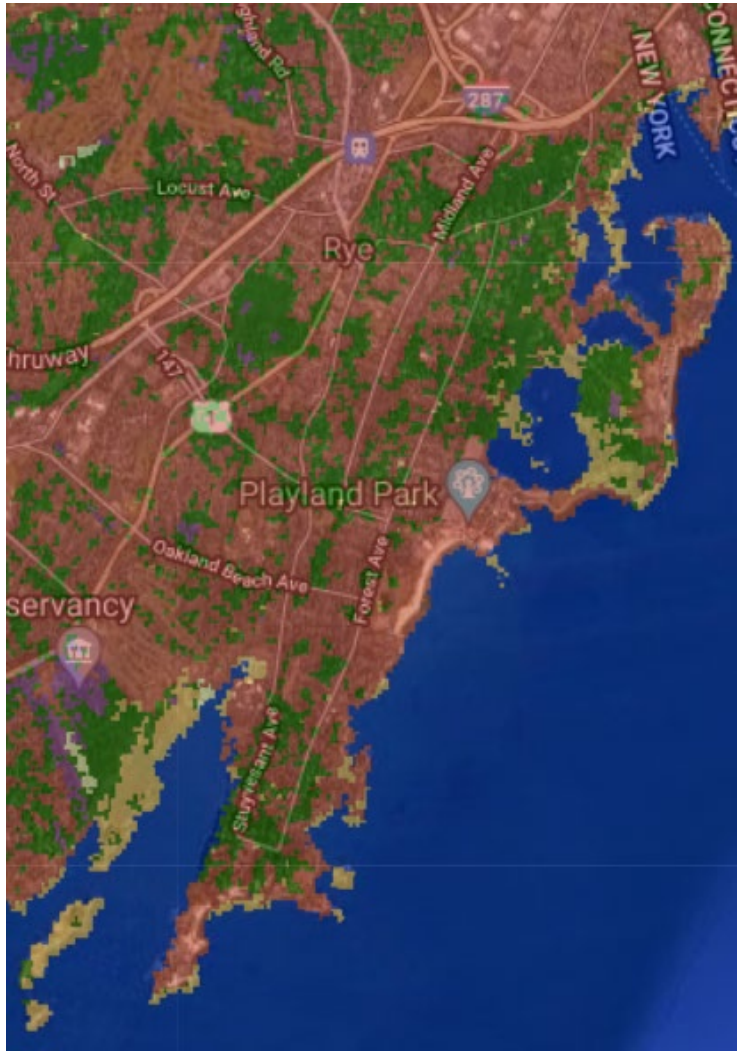
Ecological Restoration Challenges and Opportunities:

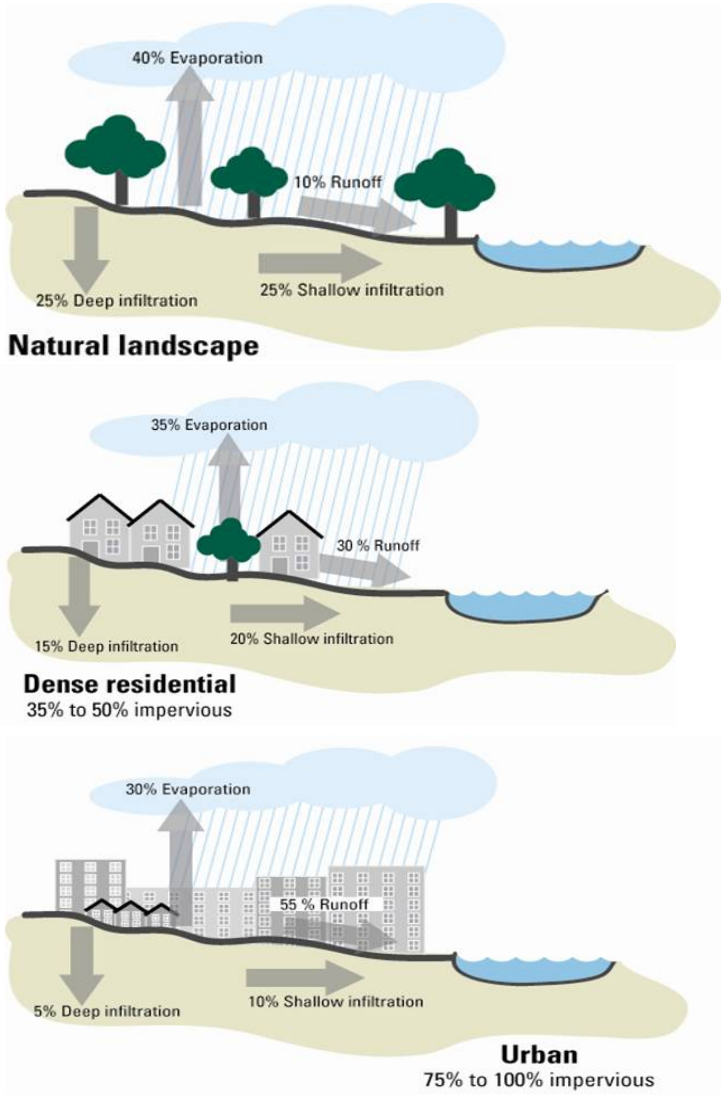
Stormwater Runoff

Challenges: Stormwater Runoff

Contributing factors:

- Land use, zoning, and density of development
- Impervious surface
- Aging or inadequate stormwater infrastructure and regulations
- More frequent heavy rain events





Challenges: Stormwater Runoff

Challenges associated with stormwater runoff:

- ❖ Water pollution
- ❖ Warmer stream temps and nutrient loading
- ❖ Localized flooding
- ❖ Erosion of buffers and stream channels

Opportunities: Green Infrastructure

- Downtown Rye GI / Blind Brook (EBP)
- Rye Playland
- Distributed Green Infrastructure (your street, yard, school, or office!)

Large-scale Green Infrastructure: Sunken Meadow State Park

Large-scale Green Infrastructure Opportunity: Rye Playland

Distributed Green Infrastructure: New Haven

Ecological Restoration Challenges and Opportunities:

Extreme Rain Events and Aging Infrastructure

Challenges: Extreme Rain Events and Aging Infrastructure

Extreme Rain Events

- Precipitation is expected to increase in both frequency and intensity as a result of climate change
- Coupled with sea-level rise, extreme rain events will lead to more frequent and expansive coastal and inland flooding
- The Rye NY Rising Community Reconstruction Plan (NYRCR) recognizes riverine flooding from Blind Brook and Beaver Swamp Brook as "the most critical issue facing Rye today"

Flooding in Rye.
Sources: Rye NY Rising Community Reconstruction Plan (2014); https://patch.com/new-york/rye/flooding-rain-damage-in-rye (2012)

Challenges: Extreme Rain Events and Aging Infrastructure

Aging Infrastructure

- Flood protection infrastructure require operation, maintenance and upgrades

- Stormwater infrastructure (pipes, catch basins, outfalls) require maintenance and may not be designed for present-day conditions

- Derelict dams are a potential downstream hazard, exacerbate upstream nuisance flooding and block the movement of fish & wildlife.

- Undersized culverts at road/stream crossings block connectivity and flood waters, undermining roads and leading to costly repairs.

Clockwise from left: Bowman Flood Control Dam in Rye Brook; Mamaroneck Reservoir Dam in Mamaroneck; Dam Failure in in Clinton, CT; Damage from Irene in Mystic, CT

Opportunities: Extreme Rain Events and Aging Infrastructure

- Dam removal to restore river resiliency
- Culvert assessments and right-sizing at road/stream crossings
- Reducing impervious surface to allow rain water to be absorbed where it falls
- Preserving land in the floodplains of Blind Brook, Beaver Swamp Brook, and coastal areas
- Implementing robust resilience planning that has taken place in the wake of severe storms

Dam Removal: Hyde Pond Dam, Mystic, CT

Dam Removal Opportunity in Rye: Blind Brook

Regional Opportunity: Culvert Assessment and Right-Sizing

North Atlantic Aquatic Connectivity Collaborative
NAACC

Ecological Restoration Challenges and Opportunities:

Coastal Erosion and Marsh Loss

Coastal Erosion and Marsh Loss

Benefits of coastal marshes:

- Land protection from storms through wave attenuation
- Habitat
- Climate change mitigation through carbon sequestration
- Nutrient uptake
- Recreation

Challenges: Coastal Erosion and Marsh Loss

Challenges facing Rye's coastline and marshes:

- Erosion
- Sea-level rise
- Nutrient loading
- Hardened shorelines preventing marsh migration

Challenges: Coastal Erosion and Marsh Loss

- Salt Marsh Conservation Planning for Coastal Long Island Sound in Westchester County, NY. NEIWPCC (2021).

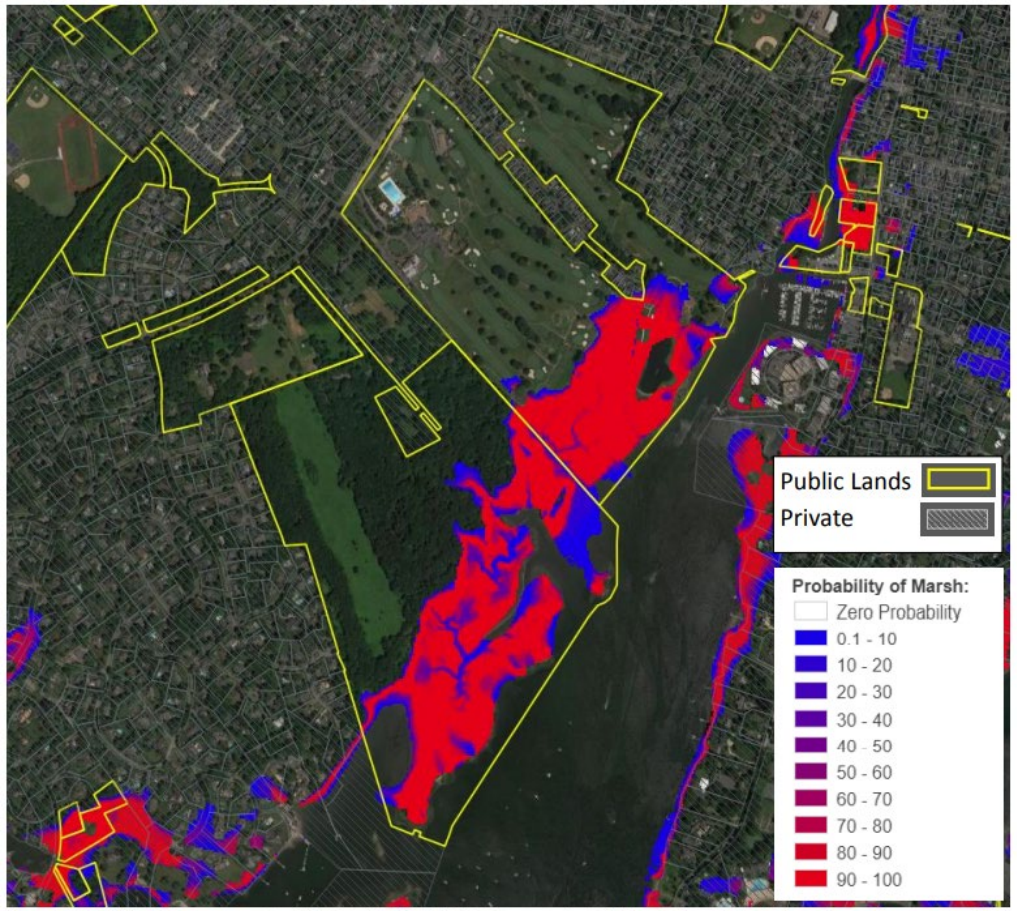


Figure 26. Marshlands Conservancy Possible Marsh Habitat in 2100 Compared to Public vs. Private Lands. Yellow clear polygons are public lands, white hashed polygons are private lands.

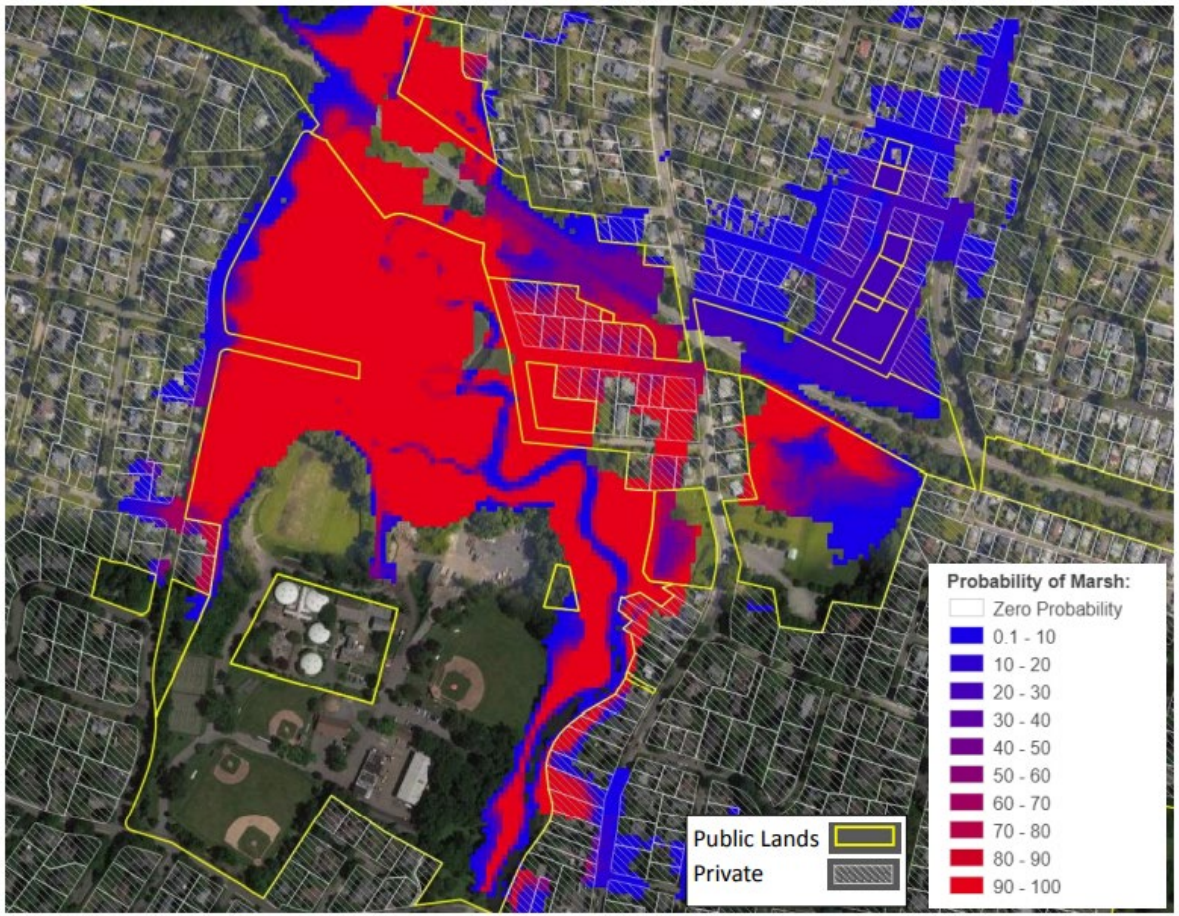


Figure 20. Blind Brook: Possible Marsh Habitat In 2100 Compared to Public vs. Private Lands. Yellow clear polygons are public lands, white hashed polygons are private lands.

Opportunities: Coastal Erosion and Marsh Loss

Potential opportunities for ecological restoration:

- ❖ Marsh restoration
- ❖ Living shorelines
- ❖ Invasive species management
- ❖ Conservation, changes to land-use & acquisition

Marsh Restoration: Sunken Meadow Creek

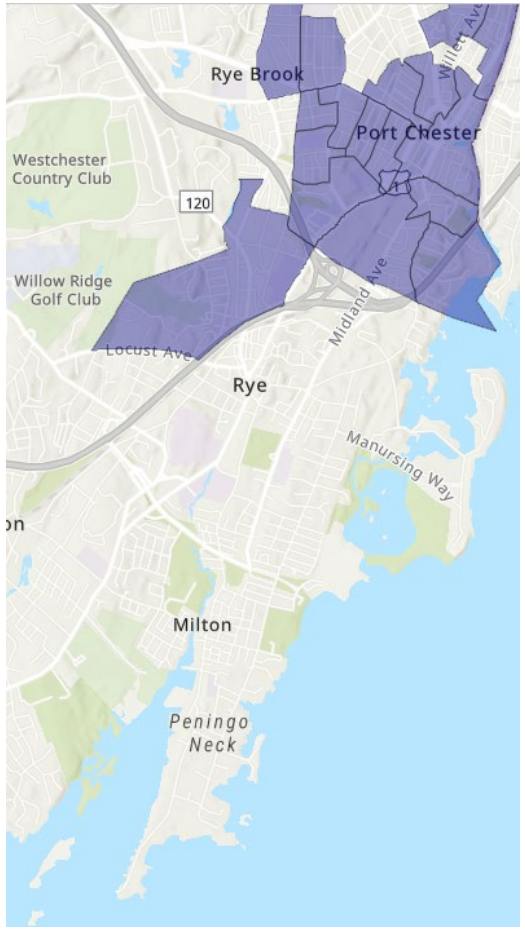
Marsh Restoration Opportunities in Rye

Living Shoreline: Chittenden Park Living Shoreline

Ecological Injustice and Climate Justice

Environmental Injustice & Climate Justice

- The land we know today as Rye is the ancestral home of the Munsee Lenape and Wappinger peoples



- All attempts to restore or regenerate natural systems must acknowledge interconnectedness

How might Rye invest in environmental justice and climate justice for its most vulnerable residents and those of surrounding communities?