Prioritizing Urban Salt Marshes for Restoration and Protection
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Introduction

Salt marshes adjacent to large urban areas are put under great duress as a result of surrounding land use, water quality, and development pressures. In large coastal cities such as New York, the benefits provided by salt marshes, including wave attenuation, impact large numbers of residents whose homes are in low-lying flood zones, making it particularly important to identify which urban marsh areas may be more vulnerable to loss due to erosion, filling, draining, and ditching, eutrophication, and the effects of sea-level rise. The New York City Department of Parks & Recreation, Natural Resources Group, in partnership with the Natural Areas Conservancy of New York City, will take a multi-tier approach to assess the ecological health and sustainability of salt marshes in New York City.

Objectives

- To assess the ecological health and sustainability of NYC salt marshes
- To compare NYC marshes to marshes around the Mid-Atlantic region
- To compare condition of marshes within NYC
- To create a vulnerability index incorporating data from a variety of sources that prioritizes salt marsh complexes within the city for protection and restoration
- To determine the long-term sustainability of salt marshes in NYC
- To identify salt marsh migration zones under various sea-level rise scenarios

NYC Parks and the Natural Areas Conservancy will take a multi-tier approach to assessing salt marsh condition. Those tiers include:

- Tier 1: Landscape Analysis
- Tier 2: Rapid Assessment: Mid-Atlantic Tidal Wetland Rapid Assessment Method (MidTRAM)
- Tier 3: Marshwide Ecological Assessment
- Tier 4: Site-Specific Intensive and Long-Term Monitoring

Methods

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Preliminary Results

Long-term and Intensive Monitoring Plan

Development

Six sites were established for long-term and intensive monitoring.

- Permanent study areas established
- Long-term characterization of vegetation communities
  - Stem density
  - Percent cover
  - Stem height
- Soil shear vane strength at multiple points over time
- Lateral shoreline erosion (erosion pins)
- Pool expansion and coalescence

Marsh-wide Ecological Assessment protocol includes arraying 50 random 5m² plots and assessing vegetation community as well as soil characteristics

- Species richness, density, percent cover, total cover
- Soil shear vane strength
  - Determined for rhizospheres of two dominant species; Spartina alterniflora and Spartina patens
  - Hand vane tester that tests for soil shear vane strength

Figure 1: Twenty-five salt marsh complexes within New York City Parks property were selected for assessment.