Evaluating Methods to Establish Vegetation for Salt Marsh Island Restoration in Jamaica Bay, New York

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Jamaica Bay Marsh Island Restoration Planning, Monitoring & Adaptive Management Team
Marsh Restoration Monitoring Goals

- Determine factors contributing to the success or failure of the restoration
- Evaluate various techniques to establish vegetation
- Identify problems requiring remedial action
- Inform future restoration efforts
- Better understand factors contributing to salt marsh loss
Jamaica Bay Marsh Island Restoration Project Sites

- Elders West 2010
- Elders East 2006
- Yellow Bar 2008
- JoCo (reference)
Elders East Marsh Restoration

Construction: 2006
Area: 16 ha (10 ha)
Planting Method: Planted with Plugs and Perimeter Quart Pots
Monitoring: 2005-2012
Elders East Marsh Restoration

Planting Method:
Planted plugs and Quart pots
Elders East

September, 2103

EXPERIENCE YOUR AMERICA
Mean Live Canopy Cover

![Graph showing Mean Live Canopy Cover from 2005 to 2013 for Reference (JoCo) and Restoration (Elders East). The graph includes data on percentage live canopy cover for different years, with reference to species such as Sympyotrichum tenuifolium, Limonium carolinianum, Distichlis spicata, Spartina patens, and Salicornia maritima. The x-axis represents the year, while the y-axis represents the percentage live canopy cover.](image-url)
Elders West Marsh Restoration

Construction: 2010
Area: 16 ha
Planting Methods: Hummock Transplants
Planted Plugs (high marsh)
Natural Recruitment
Monitoring: 2005 and 2010-2014
Elders Point West Marsh Restoration

Hummock Transplants:

• Conserve Existing Vegetation
• Vegetative Propagation
• Conserve Benthic Community
Elders West, September 2013

Elevation (m)
- 1.001 - 1.086
- 0.7501 - 1.0
- 0.5001 - 0.75
- 0.2501 - 0.50
- 0.213 - 0.25
Yellow Bar Marsh Restoration

Construction: 2012
Area: 18 ha
Planting Methods: Hummock Transplants, Planted Plugs (high marsh), Seeding
Monitoring: 2011-2016
Yellow Bar Marsh Restoration

Planting Methods:

• Seed Drill
• Hummock Transplants
• Planted Plugs (high marsh)
Yellow Bar
September, 2013
Mean Live Canopy Cover

- Reference High Marsh (JoCo)
- Hummock Seeded Restoration (Yellow Bar)

% Live Canopy Cover:
- BARE
- Symplytichium tenuifolium
- Limonium carolinianum
- Distichlis spicata
- Spartina patens
- Salicornia maritima
- Spartina alterniflora
Funding and Project Support:

US Army Corps of Engineers, New York District
Port Authority of New York and New Jersey
New York State Department of Environmental Conservation
New York City Department of Environmental Protection
National Park Service, Gateway National Recreation Area
National Park Service, Northeast Region
Project Staff, Volunteers and Interns

2005
Katie Hietala
Jon Fradua
Jessica Browning
Ajoa Perkins
Lara Peterson
Rita Papagian
Kilian Stehfest
Jolene Willis
Nicholas VanVoorthuysen
Becca Bannon

2006
Katie Hietala
Sarah Maler
Katy Brown
Tim Chu
Kathryn Seaver
Damien O'leary
Emily Voigt
Catherine Donohue

2007
Jolene Willis
Tim Heams
Eileen Jones
Dan Kleinman
Susan McCormick

2008
Jolene Willis
Dawn Sierer
Mark Peterson
Kathryn Bradley
Brian Tate

2009
Dan Landgrebe
Leah Wilson
Anthony Locatelli
Danielle Iuliucci
Sarah Lumbar Tobing
Erik Wood

2010
Scott Breeman
Tom Clifford
Ian Hartzler
Jennifer Pali
Mike Demasi
Oceane Pfeffer-Smadja
Madeline Cuting
Danielle Regis

2011
Josh Rudder
Mike Tanis
Alecio Lopez
Guthrie Bridge
Jenny Li
Dan Parker
Martin Angelo
Sarah Parkin
Ross Diamond
Nicholas Medina
Pierpaolo Bellachioma
Sonia Kumar
Isabelle Stinnette

2012
Jolene Willis
Jacob Plotnick
Susan Robinson
Josh Rudder
Guthrie Bridge
Farahad Shafei
Brooke Costanza
Katharine Perry
Andrew Ferreira
Olivia Richter

2013
Jolene Willis
Megan Dethloff
Sarah Uihlein
Jose Alvarez
Ashley Bruno

2014
Jolene Willis
Barry Udelson
Scott Quigley
Joshua Helms
Evan Kwityn
Michael Henkin
Rachael Dye
Summary – Jamaica Bay

Reference and restored marshes are more resilient to sea level rise when compared to control marshes.

Live vegetated cover and aboveground biomass have increased annually at the restored marsh.

Total live vegetated canopy cover, aboveground biomass, and belowground productivity do not differ between the restored and reference marsh.

Low root:shoot ratios could indicate allocation of resources to aboveground annual tissue which could limit sediment organic accumulation.