NEW JERSEY BAY ISLANDS RESTORATION PLANNER

New Jersey Bay Islands Restoration Planner



Kim McKenna

Associate Director Stockton Coastal Research Center



Bill Shadel

Coastal Projects Manager



MEMBERS & PROJECT HISTORY

NEW JERSEY BAY ISLANDS INITIATIVE (NJBII)

MEMBER ORGANIZATIONS

Chair: Virginia Rettig (virginia_rettig@fws.gov)

FEDERAL

- National Marine Fisheries Service
- U.S. Army Corps of Engineers Philadelphia District
- U.S. Environmental Protection Agency Region 2
- U.S. Fish and Wildlife Service Edwin B. Forsythe National Wildlife Refuge
- U.S. Fish and Wildlife Service NJ Field Office

STATE

- NJ Dept of Environmental Protection
- NJ Dept of Transportation Office of Maritime Resources COUNTY
- Ocean County Planning
- Ocean County Soil Conservation District

MUNICIPAL

Long Beach Township

ACADEMIC

- Jacques Cousteau National Estuarine Research Reserve
- Monmouth University Urban Coast Institute
- Stockton University Coastal Research Center

NGO

- Barnegat Bay Partnership
- Save Barnegat Bay
- The Mordecai Land Trust
- The Nature Conservancy

ISLAND RESTORATION IS KEY TO ENSURING RESILIENCE OF THE COMMUNITIES AND NATURAL HABITATS OF BARNEGAT BAY

- 2019 TNC Living Shorelines Grant
- 2020 Charter Establishing BBIWG (now NJBII)
 - Goal to Manage Bay Islands as a System
- 2020 Need for Decision-Support Tool to Prioritize Island Restoration
- 2020 Identify islands & Mid-TRAM data collection

COMPILING & VISUALIZING DATA

Data Categories

The data in these lists are those Stockton is creating/assembling for the decision-support tool. The Data Sub-group organized them into these 2 categories: 1) those than inform the condition (i.e., restoration need) of an island and 2) those than inform project planning.

| Island Condition | Project Planning |
|---------------------------|--------------------------|
| Island acreage loss | Bay bottom substrate |
| DM placement / island | Locations of federal and |
| ditching / OMWM | state channels |
| RAM marsh condition score | Bathymetry |
| Bearing capacity (from | Locations of potential |
| RAM) | dredging projects |
| | 1- & 3-mi buffers around |
| Shoreline change | ea. island |
| Acreage of island | |
| above/below the MHW tidal | Nesting utilization |
| datum | |
| | Island ownership |
| | SAV |
| | Tidal range |
| | High marsh * |
| | Low marsh * |
| | Upland * |
| | Phragmites * |
| | Open water - natural * |
| | |
| | Open water - manmade * |
| | Mudflat * |

NJBII Data Sub-Group

Identified 28 features that could help with island prioritization

Organized by Island Condition or Project Planning

- Beta Tested Adjusted to clarify data
- Tool named:

New Jersey Bay Islands Restoration Planner (NJBIRP or Restoration Planner)

> GIS Geodatabase funded by USFWS & TNC

EXAMPLE DATASETS



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| | |
| | Open water - manmade ' |
| | Mudflat * |

Rapid Assessment Method (RAM)

Mid-TRAM

Baseline data collection of metrics to determine wetland condition

- > 54 islands visited in 2020
- Islands ranked 0 to 100
- 0 (not assessed); 1 (stressed marsh) to 100 (healthy marsh)

EXAMPLE DATASETS

ISLAND SHORELINE CHANGE (1977-2015)

Net shoreline movement

- ➢ 67 islands near LBI/Forsythe
- Average change/island
- -9.999 (not assessed); -82 to -1 (erosion); +1 to +100 (accretion)



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| | Open water - manmade * | |
| | Mudflat * | |



NJBIRP

https://dev-maps.coastalresilience.org/nj-bay-islands/

New Jersey Bay Islands Restoration Planner

Welcome to the beta (draft) version of the New Jersey Bay Islands Explorer – a decision-support tool for managing NJ's bay islands from Metedeconk River south to Beach Haven / Little Egg Inlet.

This tool allows the user to select (filter) islands based on restoration need (ISLAND CONDITION) and to plan an ecological restoration project (PROJECT PLANNING). Show more

| Filter Islands | | 5 |
|--|---|------|
| Island Condition | 0 40 400 9/ | G |
| Island above MHW | 0 10 100 % | • |
| Island Edge Erosion 1977- 2015 | 0 to 20 acres | (i |
| Tidal marsh Substrate Bearing Capacity | 0 to 10 | (i |
| Tidal marsh ditching | 0 to > 5,000 linear fee | et (|
| Mid-Atlantic Tidal Wetlands Rapid Assessment Method Score (Mid-TRAM) | 1 to 100 | • |
| Shoreline change 1977 - 2015 | -82 to > 100 feet | • |
| Open marsh water management | 0 to > 6.4 acres | • |
| Project Planning | | |
| Bird utilization | Present OAbsent | (i |
| Sland Ownership | Municipal Government NGO Private State of New Jersey USFWS Unknown | (|
| Proximity to New Jersey waterways | 0 to > 1 miles | • |
| | | |



92 islands (3,050 acres)

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- 6.7% land loss (1977-2015)
- 13 islands submerged (1931-1977)
- NJBIRP used to identify 5
 islands for restoration in
 NFWF National Coastal
 Resilience Fund 2021 *"Restoring Bay Islands for Community Resiliency, Long Beach Township NJ"*



Earthstar Geographics | New Jersey Office of GIS, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NP

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- 1. To start, all islands are selected (all data/attribute ranges are "on").
- LEFT MENU: Use the menu on the left to narrow the islands selected by turning on or off the data (island attributes) of your choosing.
- CENTER TOP MENU: Click to view supporting layers waterways, subaqueous soils, marsh vegetation classification, and bathymetry. The opacity of each can be changed there too.
- RIGHT TOP MENU: Select the underlying imagery (base layer).
- Click on any island to reveal its list of data (attributes) and a 1-mile and 3-mile buffer/circumference from its shoreline.

This tool was created by Barnegat Bay Partnership, Stockton University Coastal Research Center, The Nature Conservancy, and USFWS-E.B. Forsythe National Wildlife Refuge, which are members of the <u>NJ Bay Islands Initiative</u>. Show Less

| Filter Islands | | | 5 |
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| ✓ Island Condition | | | |
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| Island Edge Erosion 1977-2015 | 0 | 0 to 20 acres | (i |
| Tidal marsh Substrate Bearing Capacity | 0 | 0 to 10 | (į |
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Esri, DeLorme, NaturalVue | NOAA OCS, Esri, DeLorme

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Filter Islands

> Island Condition

> Project Planning



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둴 0-0 m Lakewood ∿\$7 Point Pleasant New Egypt Ridgeway Branch P.\$ Joint Base McGuire-Dix-Lakehurst Browns Mills Toms River Cedar Brendan T. Ocean Byrne State Forest 212 ft Forked River Barnegat Manahawkin Tuckerton Egg Harbor City Pomona NJ Bay Islands Islands Brigantine 10 km Pleasantville (i Municipal Government 6 mi \checkmark Atlantic City Esri, CGIAR, USGS I New Jersey Office of GIS, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, Powered by Esri

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| Tidal marsh Substrate Bearing Capacity | 0 to 10 | i | |
| Tidal marsh ditching The Marsh Ditching dataset was compiled from state and academic sources. This layer visually shows locations where bay islands have been ditched and provides linear feet of ditching per island. Note: this data layer does not fully delineate man-made ditching and should be used as a reference only. For more detail, a desktop analysis or an on the ground survey should be conducted. <u>USGS NHD University of Mass. Amherst</u> Open marsh water 0 to > 6.4 acres | | | |
| ✓ Project Planning | | | |
| Bird utilization | Present OAbsent | ĺ | |
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1977-2015

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Filter Islands

1977-2015

Bearing Capacity

Score (Mid-TRAM)

management

✓ Project Planning

Bird utilization

Island Condition

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| ✓ Island Condition | | | |
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| Tidal marsh Substrate Bearing Capacity | 0 | 0 to 10 | í |
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| Mid-Atlantic Tidal Wetlands Rapid Assessment Method Score (Mid-TRAM) | 0 | 1 to 75 | ĺ |
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| Open marsh water management | 0 | 0 to > 6.4 acres | í |
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Selected Island

Island Buffers: Show OHide

<u>Middle Sedge Island</u> Island Acreage: 64.72 Edge Erosion 1977-2015 (acres): 4.31

Marsh Tidal Ditching (feet): 5,542 Source Delineation: NJDEP 2015 LULC Marsh Substrate Bearing Capacity: 3

MIDTRAM-Score: 59

Island Ownership Combine: Private, State of New Jersey Tidal Range (feet): 0.71 Closest Waterway Type: State Channel Closest Waterway (miles): 0.02 Acreage Above MHW: 54.05 Percent Above MHW: 83.5% High Marsh (acres): 55.75 High Marsh (percent): 86.1% Low Marsh (acres): 0.14 Low Marsh (percent): 0.2% Mud Flat (acres): 4.45 Mud Flat (percent): 6.9% Pools and Pannes (acres): 3.77 Pools and Pannes (percent): 5.8% Phragmites (acres): 0.12 Phragmites (percent): 0.2% Terrestrial Border (acres): 0.30 Terrestrial Border (percent): 0.5% Upland (acres): 0.00 Upland (percent): 0.0% Open Water (acres): 0.19 Open Water (percent): 0.3% SAV Distance (feet): 0 Closest Years SAV: 68, 79, 85-87, 96-99, 2009 SAV 1968 - Distance (feet): 0 SAV 1979 - Distance (feet): 0 SAV 1985-87 - Distance (feet): 0 00 2001 1000



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Selected Island

Island Buffers: Show OHide

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Rd Selected Island \otimes 뒅 Ī 616 Island Buffers: Show OHide ~\$⊅ Middle Sedge Island Brick Blud Island Acreage: 64.72 P3 Edge Erosion 1977-2015 (acres): 4.31 Marsh Tidal Ditching (feet): 5,542 Source Delineation: NJDEP 2015 LULC Marsh Substrate Bearing Capacity: 3 Leisure Village East MIDTRAM-Score: 59 Island Ownership Combine: Private, State of New Jersey Tidal Range (feet): 0.71 Closest Waterway Type: State Channel Church Rd Rd Closest Waterway (miles): 0.02 Acreage Above MHW: 54.05 Hooper Ave Percent Above MHW: 83.5% High Marsh (acres): 55.75 High Marsh (percent): 86.1% C O N Low Marsh (acres): 0.14 Low Marsh (percent): 0.2% Sky View Manor Mud Flat (acres): 4.45 R O L S Mud Flat (percent): 6.9% Pools and Pannes (acres): 3.77 Pools and Pannes (percent): 5.8% Phragmites (acres): 0.12 s River Gilford Park Phragmites (percent): 0.2% Terrestrial Border (acres): 0.30 oms Terrestrial Border (percent): 0.5% Upland (acres): 0.00 Upland (percent): 0.0% Open Water (acres): 0.19 Open Water (percent): 0.3% SAV Distance (feet): 0 Bayville Closest Years SAV: 68, 79, 85-87, 96-99, 2009 SAV 1968 - Distance (feet): 0 2 km SAV 1979 - Distance (feet): 0 2 mi SAV 1985-87 - Distance (feet): 0 Pinewald V 4000.00 >



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| ◯ Island Edge Erosion 1977-2015 | 0 to 20 acres | (1 |
| Tidal marsh Substrate Bearing Capacity | 0 to 10 | (1 |
| Tidal marsh ditching | 0 to > 5,000 linear feet | (1 |
| Mid-Atlantic Tidal Wetlands Rapid Assessment Method Score (Mid-TRAM) | 1 to 100 | (1 |
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| Project Planning | | |
| Bird utilization | Present OAbsent | (1 |
| | Municipal Government NGO Private | (1 |
| | | > |



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