NJ State Updates

MAWWG 2023

Brittany Wilburn & Joshua Moody

Beneficial use of dredged material to Enhance Salt Marsh Habitat in New Jersey: Monitoring and Project Assessment

Dates: 2018 – 2022

8 years of data on 56 metrics collected by 9 different organizations

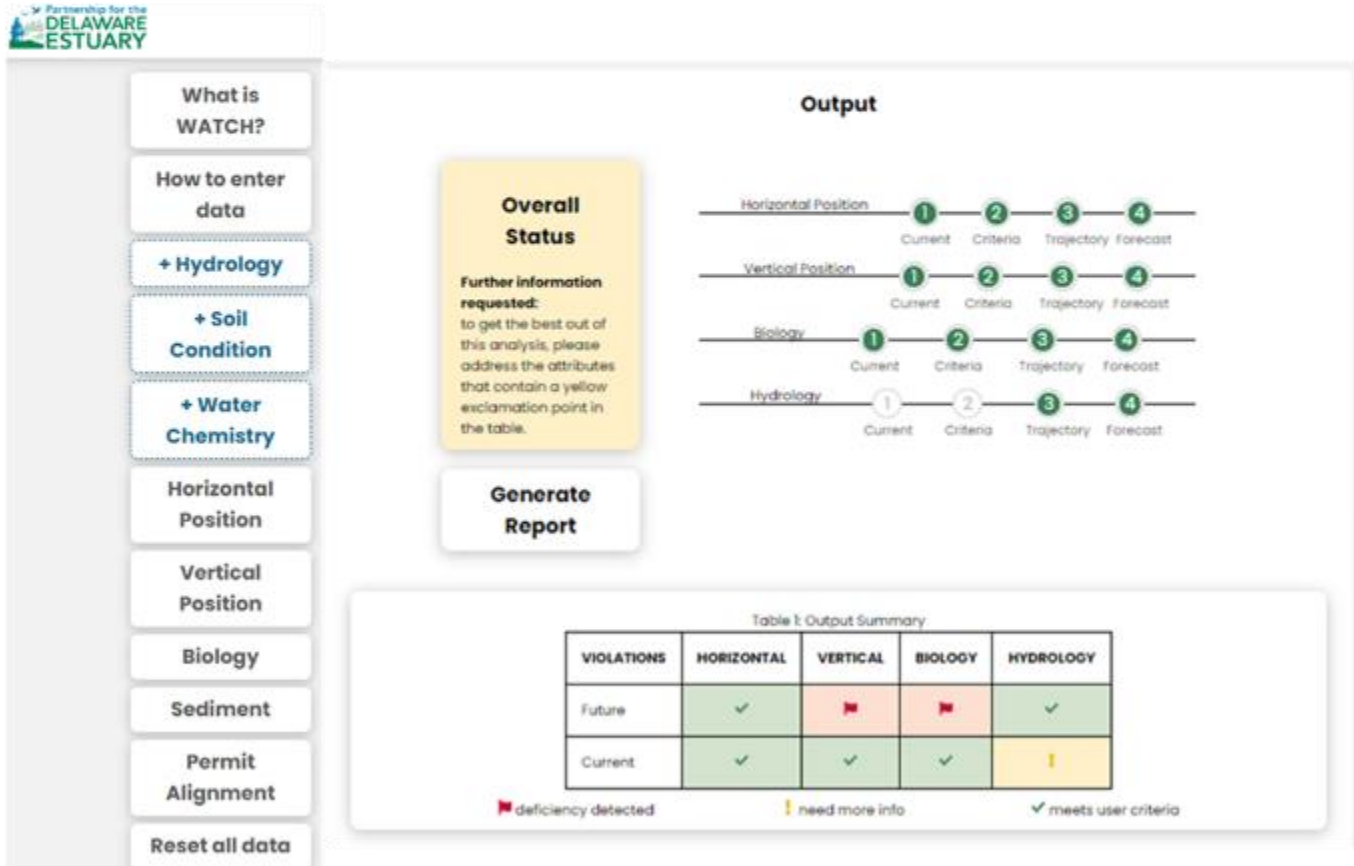
Placement	TNC/ GreenVest
Plant Community	TNC
Benthic Invertebrate Species	Rutgers/ TNC
Avian Use	The Wetlands Institute/ Princeton Hydro
Habitat Change Analyses	BGIS/ Stockton/ TNC
Site Visits	TNC/ DEP F&W/ DEP DSR and Dredging
Surface Elevation Tables	TNC/ DEP DSR
Topographic Surveys	USACE/ GreenVest/ DEP DSR/ DOT
Sediment Characteristics	Rutgers/ DOT/ Princeton Hydro/ DEP/ USACE
Water Level	DEP DSR/ GreenVest/ Princeton Hydro
Nekton	Princeton Hydro
Water Chemistry	The Wetlands Institute/ DEP DSR/ Princeton Hydro

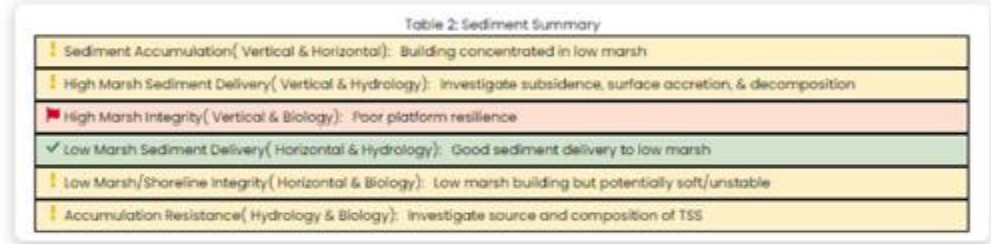
Tools That Support Living Shoreline Efforts

What is the Problem?

Link

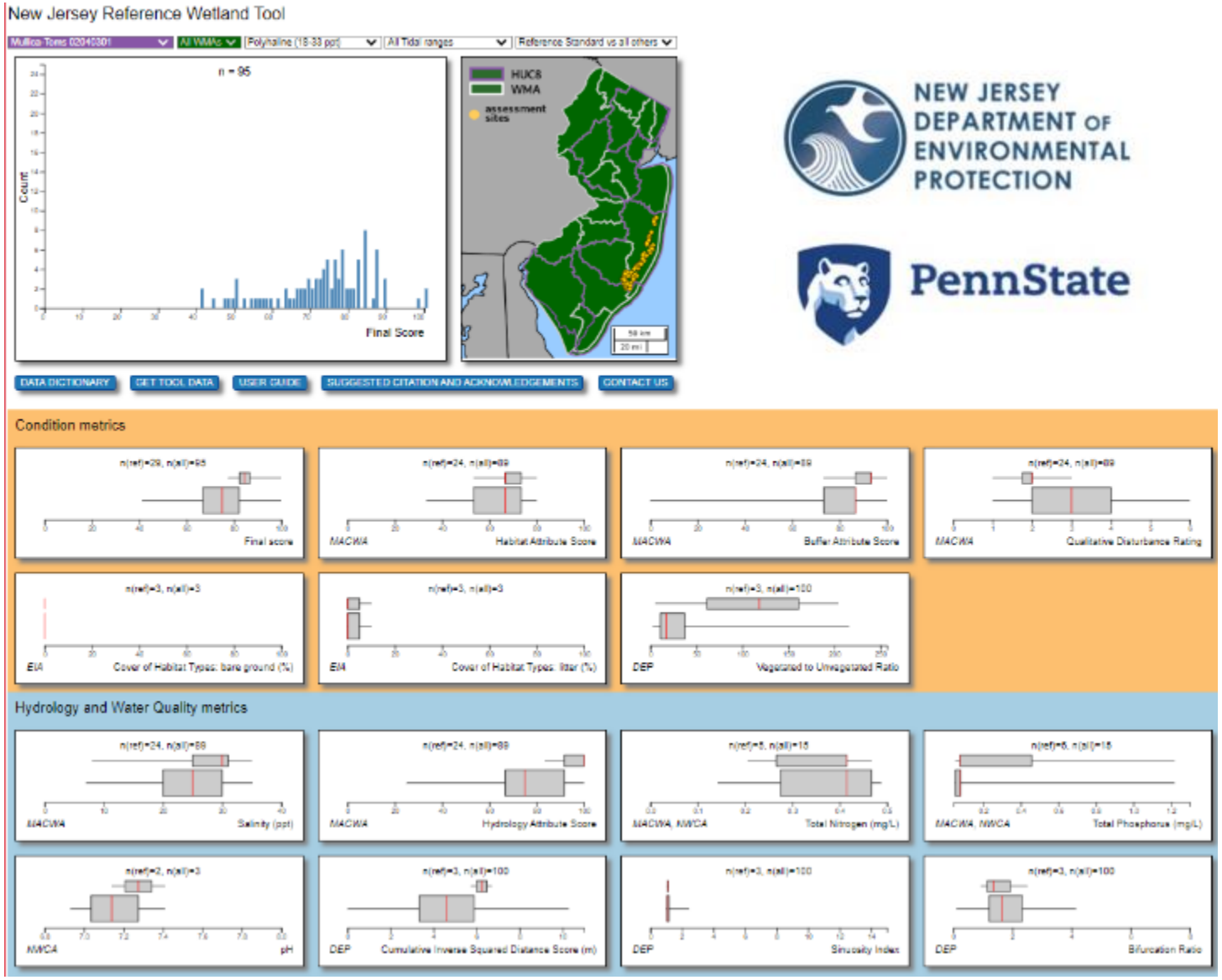
WATCH: Wetlands Assessment Tool for Condition & Health (PDE, NJDEP)





- On-the-ground quantitative data
- Summary output
- Translation
- Requires access to reference data

Adding New Jersey Reference Wetlands to a Regional Interactive Data Base



NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

PennState

Link to New Jersey Reference Wetland Tool:

- https://tools.cei.psu.edu/wetlands/njdep/

Link to User Guide:

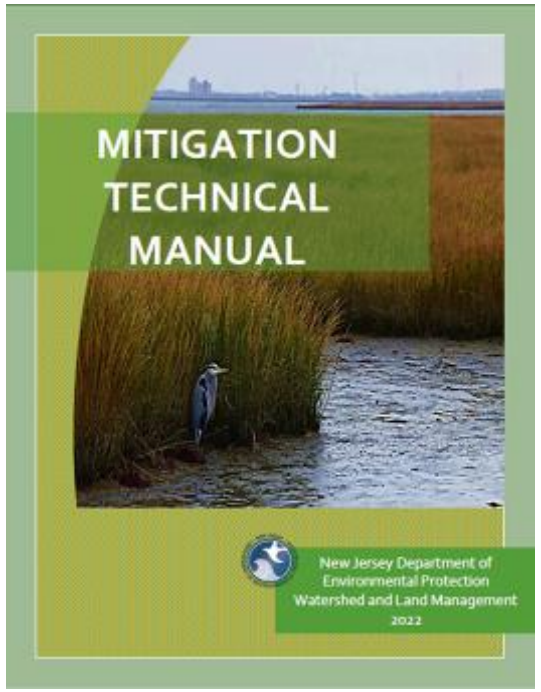
- https://storymaps.arcgis.com/stories/caae4374e6ef48fe965efabec299c47e

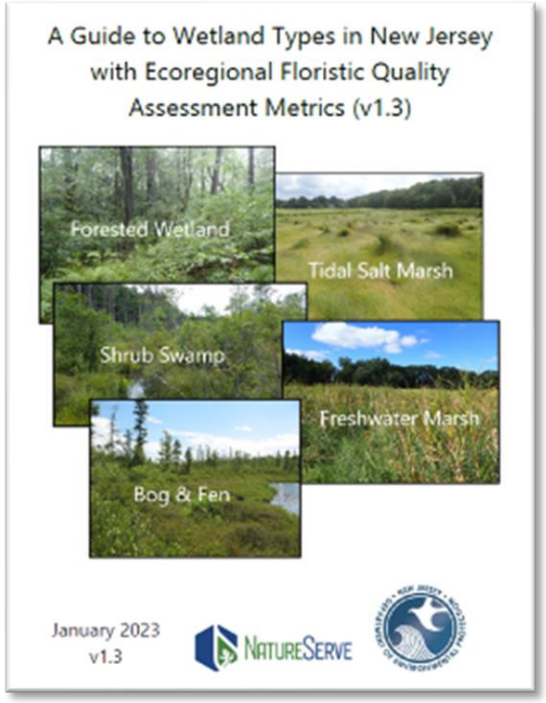
Link to all metrics:

- https://tools.cei.psu.edu/wetlands/njdep/2022_Data_Dictionary.pdf

Peer reviewed!

NJDEP Mitigation Technical Manual with A Guide to Wetland Types in NJ with eFQA Metrics





Coastal Plain Swamp Forest Wetlands

7a. Combinations of willow oak, red maple, sweetgum, characteristic; loblolly pine may be present in the Cape May region ---------- **Coastal Plain Hardwood Basin Swamp (G038)**

7b. Pitch pine or Atlantic white cedar characteristic, on peat, including freshwater tidal swamps ----------

---------- **Northern Coastal Plain Swamp (G039)**

Piedmont, Highlands, Rid

8a. Generally small epheme
vegetation very variable, fr

8b. Canopy trees are rooted

9a. Swamp forests of the n
bedrock (dolomite, limesto
9b. Swamp forests of north

Atlantic White-cedar - Pitch Pine Swamp Group (G039)

Floristic Composition: Species listed by Growth Form and Constancy (percentage of stands that contain the species)

Scientific Name	Common Name	USDA Plants Code	Constancy	Mean % Cover	NJ State CoC
TREE					
Acer rubrum	Red maple	ACRU	**94**	33.5	3
Nyssa sylvatica	Sourgum	NYSY	**50**	8.5	4
Chamaecyparis thyoides	Atlantic white-cedar	CHTH2	**37**	17.9	9
Pinus rigida	Pitch pine	PIRI	**34**		
Pinus strobus	Eastern white pine	PIST	**34**		
Betula alleghaniensis	Yellow birch	BEAL2	**23**		
Tsuga canadensis	Eastern hemlock	TSCA	**23**		
Quercus rubra	Northern red oak	QURU	**21**		
Liquidambar styraciflua	Sweetgum	LIST2	**20**		
SHRUB					
Vaccinium corymbosum	Highbush blueberry	VACO	**83**		
Clethra alnifolia	Sweet pepperbush	CLAL3	**55**		

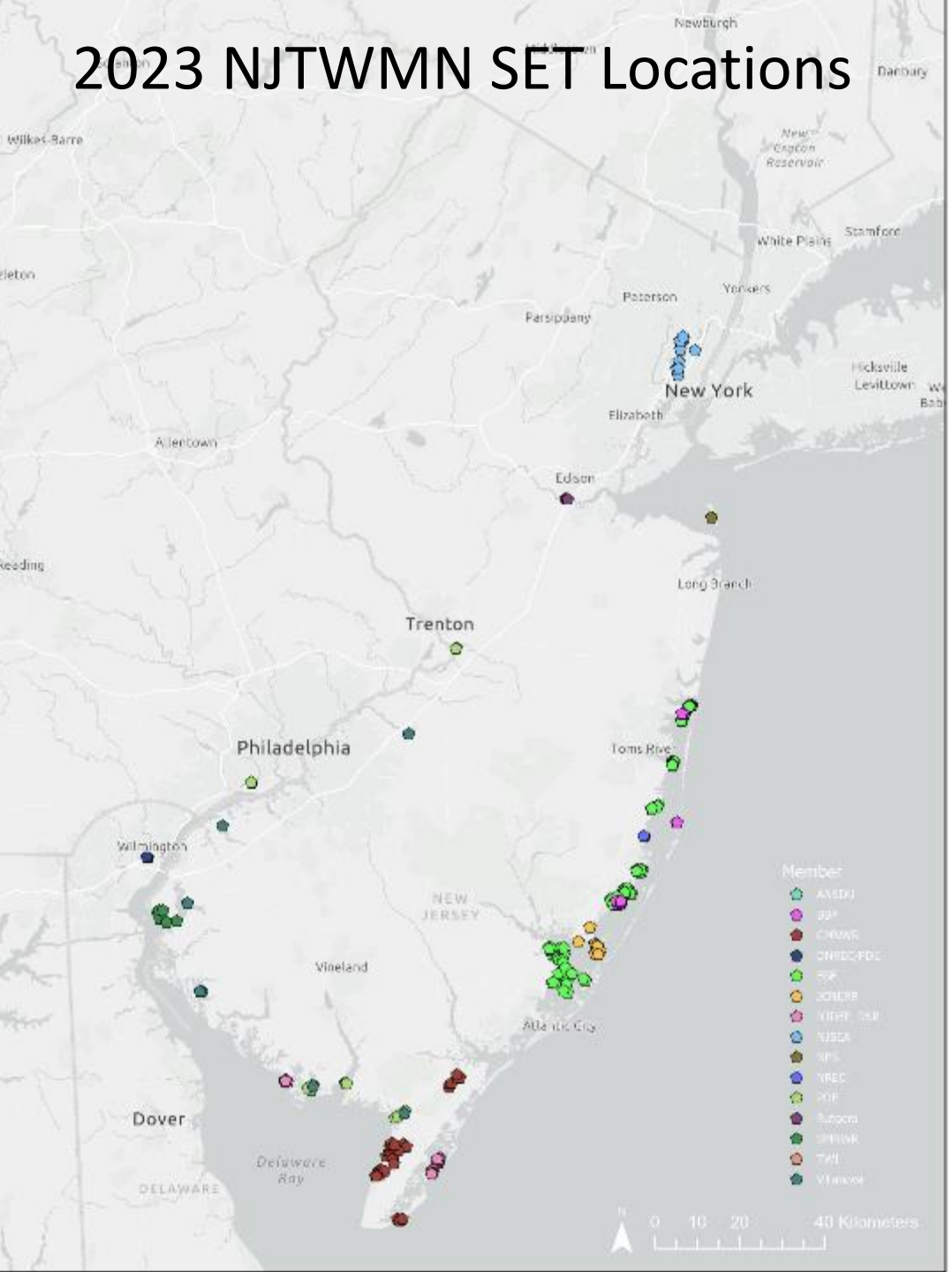
The Role of FQA Metrics in Wetland Monitoring, Mitigation, and Restoration

Our development of thresholds of FQA metric response to the stressor gradient can provide guidance to ongoing monitoring and assessment programs, where knowledge of reference conditions can guide interpretation of the status of wetlands in a watershed, state, or region. Similarly, these thresholds can guide restoration and mitigation efforts by helping set standards for restoration success or, in the case of mitigation, compliance.

FQA Metric Thresholds for Mean C and Cover-weighted Mean C
G039 Northern Coastal Plain Swamp
Atlantic White-cedar - Pitch Pine Swamp Group

FQA Metric	Excellent	Good	Fair	Poor
Mean C	>5.7	5.7-5.0	5.0-4.0	<4.0
Cover-Weighted Mean C	>6.0	6.0-4.7	4.7-2.6	<2.6

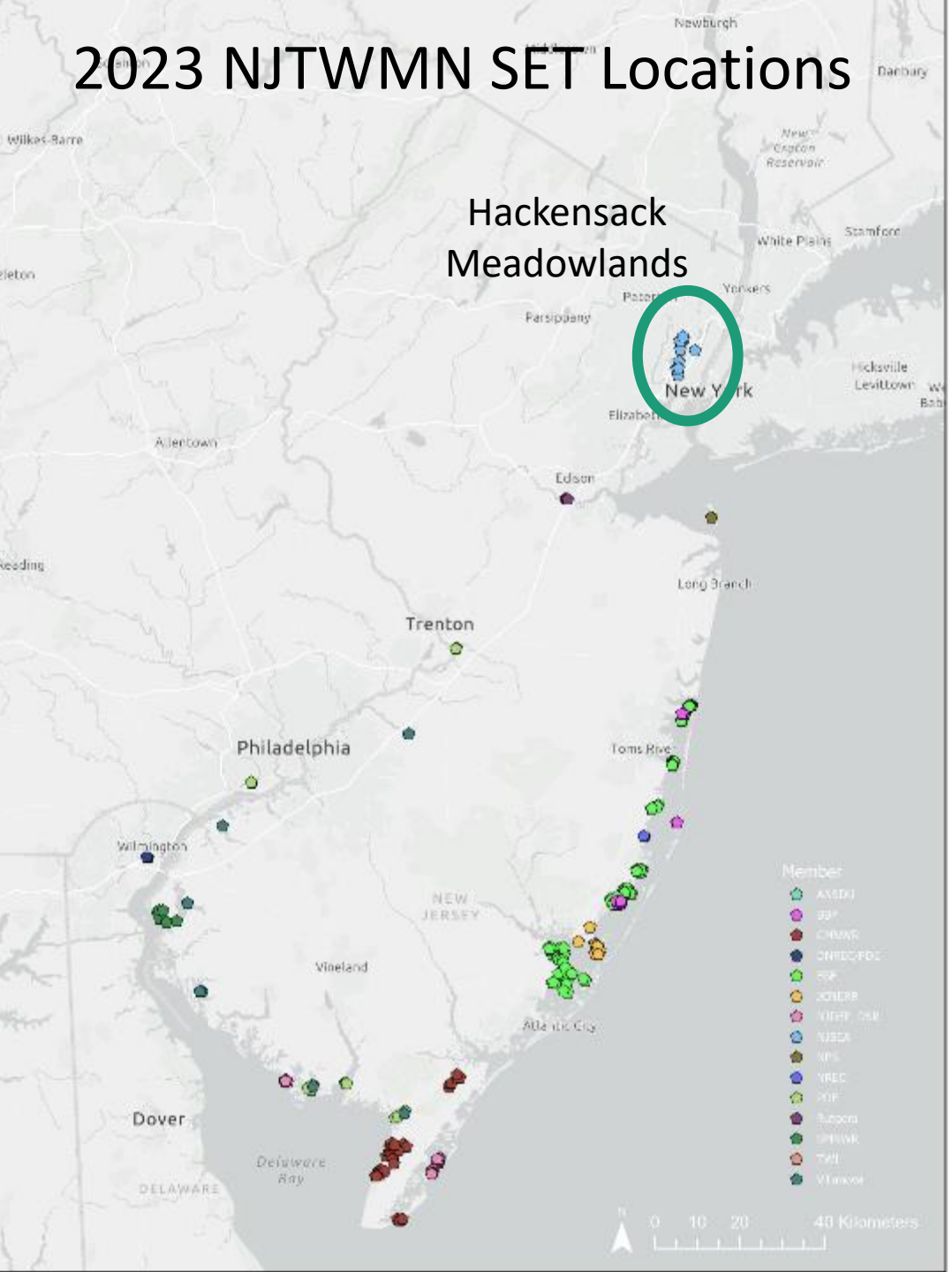
2023 NJTWMN SET Locations



Ongoing Work

- **NJ Tidal Wetland Monitoring Network (NJTWMN)**
  - Framework for statewide database on coastal wetland elevations
  - Website created and will be published fully 2024 with data visualizations
  - CZM funding provided annually for continuous SET monitoring
- **Methodology for Multispectral Drone Mapping in Tidal Wetlands**
  - Intended to speed up arduous vegetation surveying across sensitive habitat
  - Methodology and report will be completed in 2024
- **WatershedNJ**
  - In partnership with Rutgers University CRSSA and Climate Resiliency Office
  - Wetland function mapping based on modified WV RAM for freshwater and tidal wetlands in NJ
  - To characterize watersheds based on current and projected future condition and to focus appropriate types of future restoration, enhancement, or mitigation measures
  - A web-based platform to provide users with a single location for data assistance in the development of watershed plans, water quality permitting, and water quality improvement grant related projects

2023 NJTWMN SET Locations



Ongoing Work

- **Meadowlands Research and Restoration Institute (MRRI) 2021 WPDG:**
  - Obtained Q1 LiDAR data and conducted a tidal datum evaluation to reassess the estuary's hydrology and update the flood risk assessment plan in preparation for future sea level rise
  - Acquired hyperspectral imagery and updated the estuary's saltwater and freshwater wetland mapping in light of recent changes in federally protected waterways
  - 3-year study of potential ecological restoration alternatives for the Sawmill Creek Wildlife Management Area based on baselines ecological evaluations, SET data, and a 2D hydrological and sediment transport model
- **Additional MRRI work:**
  - To enhance on-going long-term monitoring of the wetlands and adjacent areas of the Meadowlands, over the past year MRRI has obtained a number of Acoustic Recoding Units to assist in our monitoring of the wildlife in the area including Atlantic Coast Leopard Frogs, bats, secretive marsh birds and Saltmarsh Sparrows
  - Also using radio telemetry to monitor migrating songbirds and Diamondback Terrapin

Projects Getting Started

- **NJ Carbon Budget Pilot Project**
  - In partnership with Rowan University
  - Determine C pools and carbon flux in freshwater wetlands of NJ by type
  - Using combination of vegetation biomass, NEE, groundwater flux
  - Ultimate goal is to create calculators of carbon exchange based on wetland class
- **2023 NJDEP WPDG applications:**
  - Groundtruthing Wetland Land Use/Land Cover (LULC) Mapping Methods
    - Improve future LULC classifications
    - Testing three different LULC classification models to determine which is most accurate
  - Meadowlands Nutrient and Oxygen Flux Study
    - Quantification of the carbon, nutrient, silicates and dissolved oxygen fluxes between the tidal brackish or oligohaline wetlands of Meadowlands into the Hackensack River over tidal cycles
    - Acoustic Doppler current profiler (ADCP) and water quality sondes

Thank you

Questions?

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Completed Projects

- **Beneficial Reuse of Dredged Material Pilot Projects**
  - Ring Island, Avalon, and Fortescue in southern coastal NJ
  - Beneficial Reuse of Dredged Material DSR Website
- **Wetlands Assessment Tool for Condition and Health (WATCH) v2.0**
  - Online tool to evaluate the condition and trajectory of a tidal wetland site to inform decision-making, restoration project prioritization, and the selection of restoration tactics
  - WATCH 2.0
- **NJ Wetland Reference Tool**
  - Online tool to compare common coastal wetland metrics of selected wetland(s) to reference wetlands to determine relative condition
  - NJ Wetland Reference Tool
- **Mitigation Technical Manual & A Guide to Wetland Types in NJ with eFQA Metrics**
  - Provide descriptions of wetland types using NVC groups, classifications and a way to evaluate their condition using an ecoregional floristic quality assessment condition threshold scoring system
  - Mitigation Technical Manual
  - A Guide to Wetland Types in NJ with eFQA Metrics