

# Climate-driven Adaptation at Edwin B. Forsythe NWR



Refuge Manager Virginia Rettig



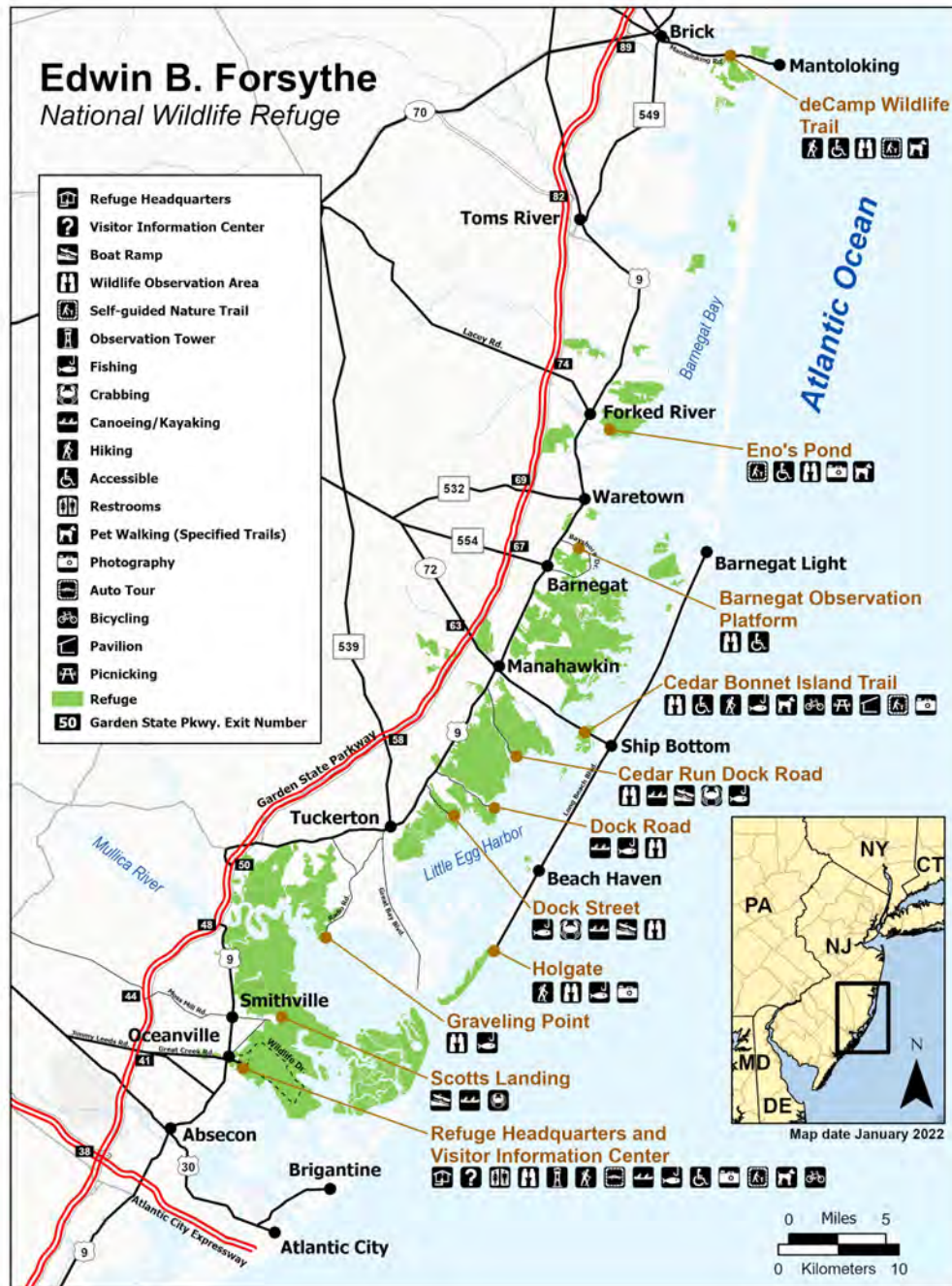
# Mission of the National Wildlife Refuge System

“Administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”



# Edwin B. Forsythe National Wildlife Refuge

- Refuge Headquarters
- Visitor Information Center
- Boat Ramp
- Wildlife Observation Area
- Self-guided Nature Trail
- Observation Tower
- Fishing
- Crabbing
- Canoeing/Kayaking
- Hiking
- Accessible
- Restrooms
- Pet Walking (Specified Trails)
- Photography
- Auto Tour
- Bicycling
- Pavilion
- Picnicking
- Refuge
- 50 Garden State Pkwy. Exit Number



# The two Refuges merge...

- In 1984, Edwin B. Forsythe NWR was created
- Over 48,000 acres
- About 50 miles between Brick and Galloway
- Over 330,000 visitors/year



# Edwin B. Forsythe NWR

- Salt Marsh - 78%
- Forested - 17%
- Grasslands - 3%
- Barrier Island Beaches and Coastal Dunes - 2%

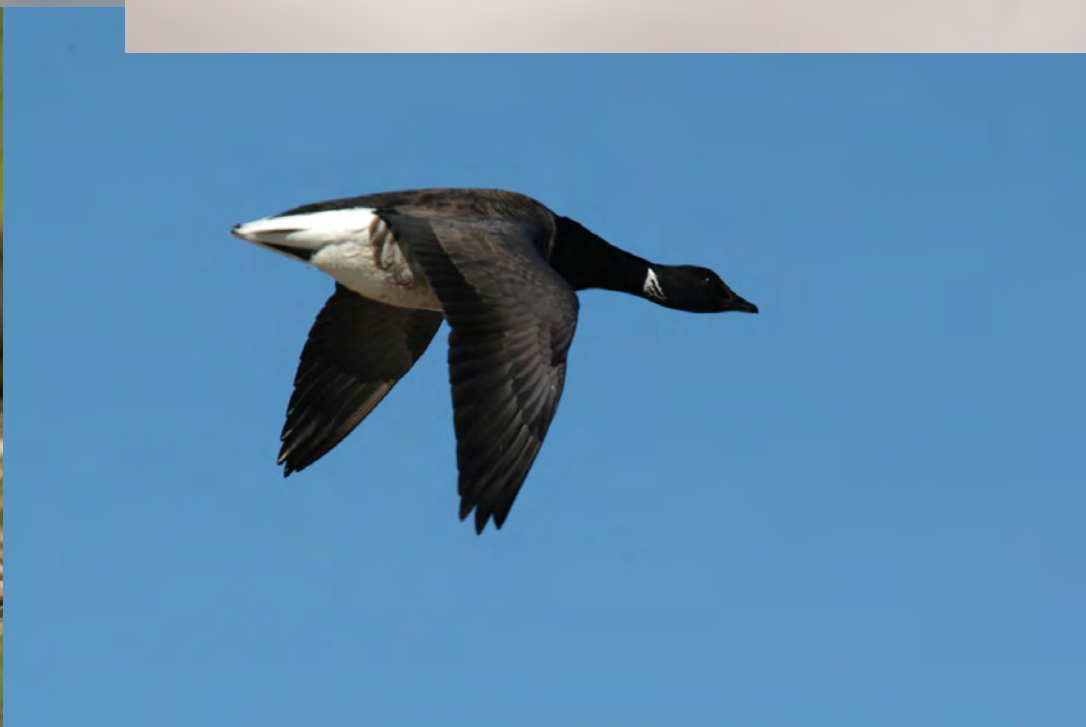


# Edwin B. Forsythe NWR

- Piping plovers & beach-nesting birds
- Saltmarsh sparrows and Eastern black rails
- Visitation and Wildlife Drive





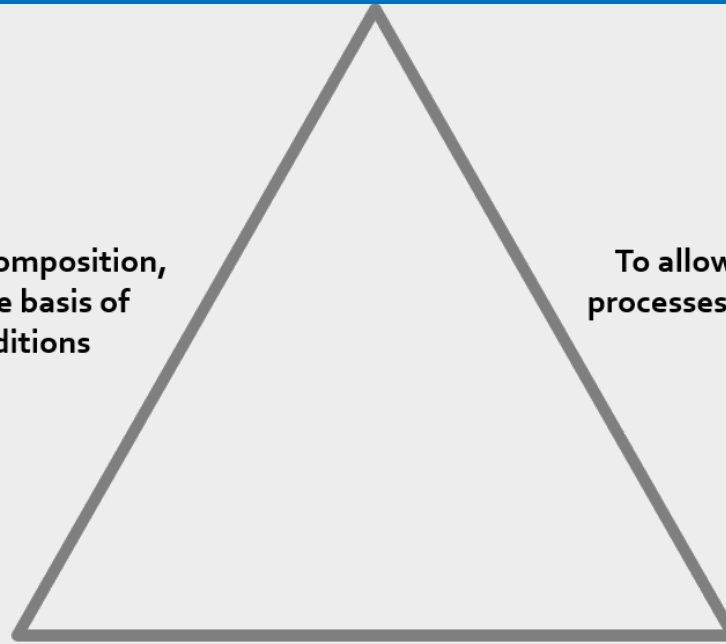


## Resist

Work to maintain or restore ecosystem composition, structure, processes, or function on the basis of historical or acceptable current conditions

## Accept

To allow ecosystem composition, structure, processes, or function to change autonomously



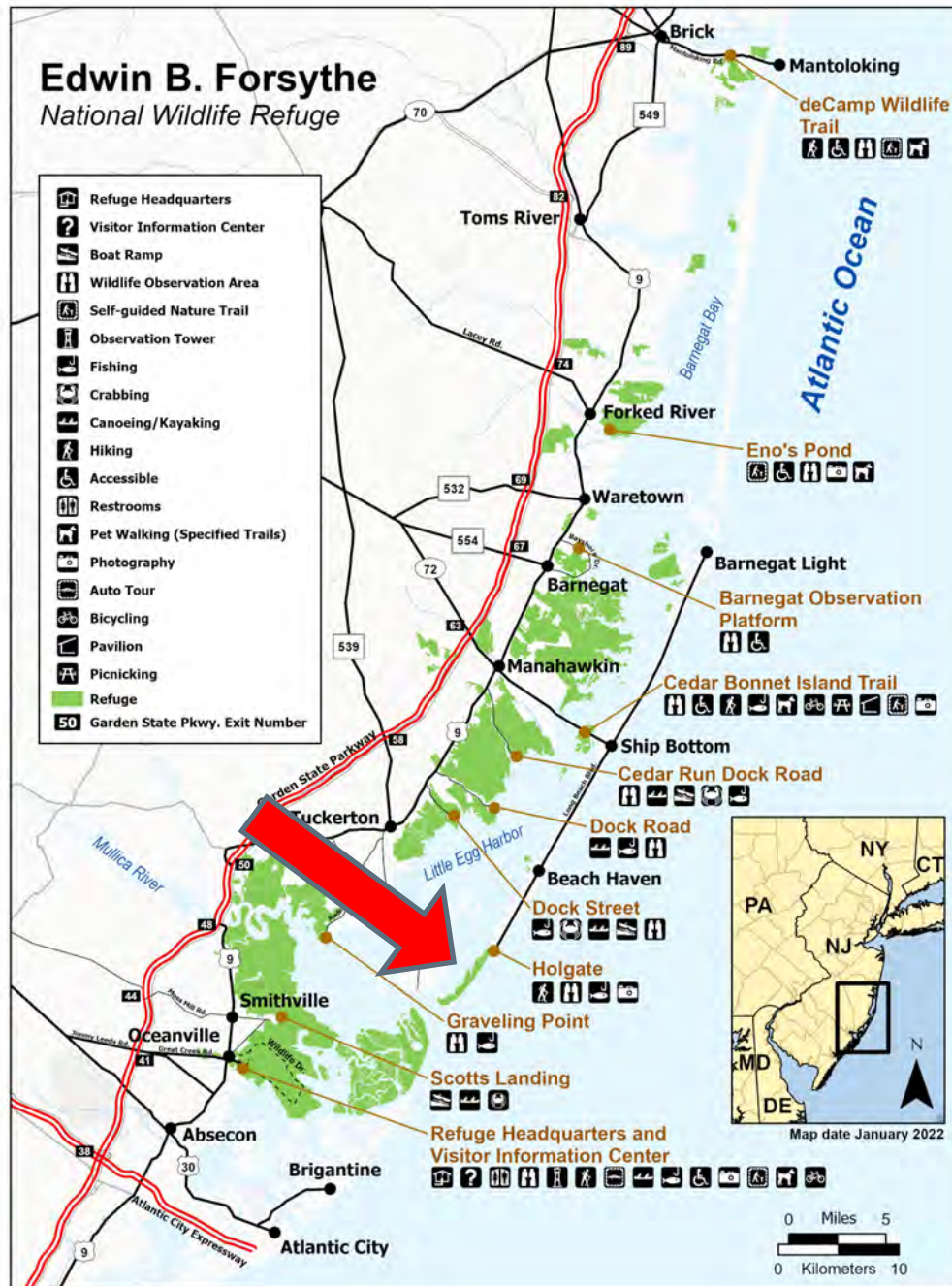
## Direct

Actively shape change in ecosystem composition, structure, processes, or function toward preferred new conditions

function toward preferred new conditions  
composition, structure, processes, or  
Actively shape change in ecosystem



# Edwin B. Forsythe National Wildlife Refuge



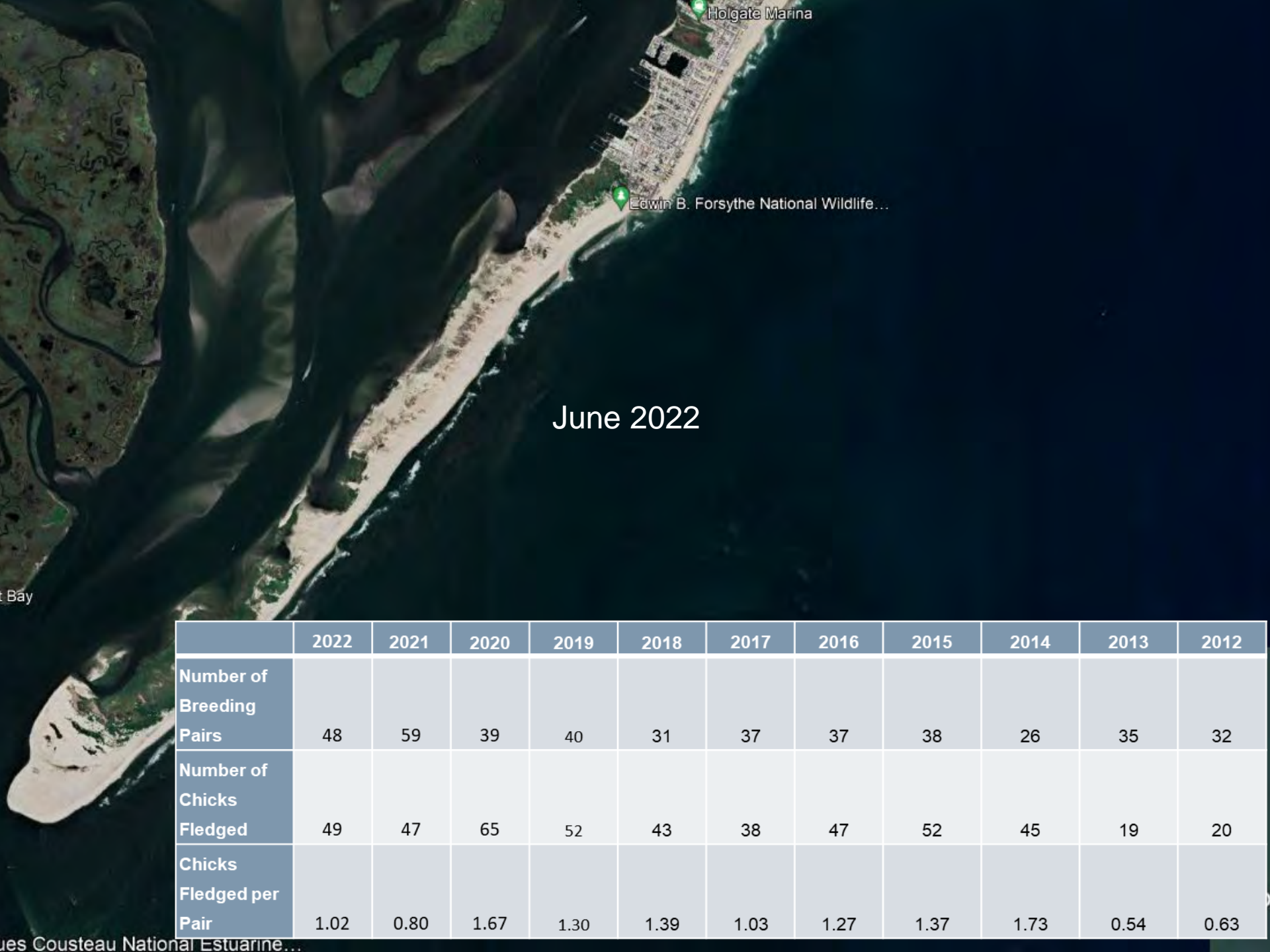
Accept





07/30/2010





	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Number of Breeding Pairs	48	59	39	40	31	37	37	38	26	35	32
Number of Chicks Fledged	49	47	65	52	43	38	47	52	45	19	20
Chicks Fledged per Pair	1.02	0.80	1.67	1.30	1.39	1.03	1.27	1.37	1.73	0.54	0.63

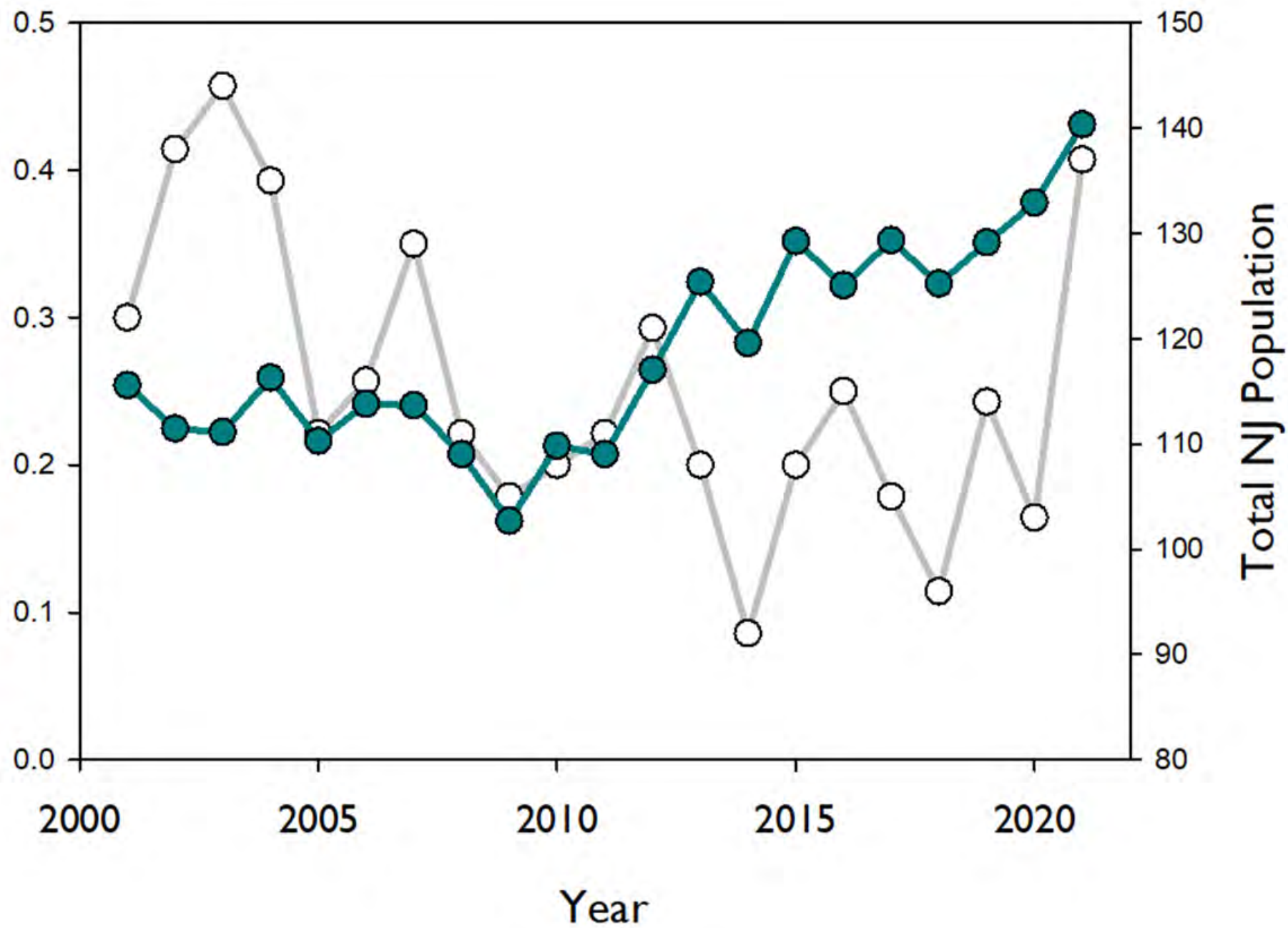




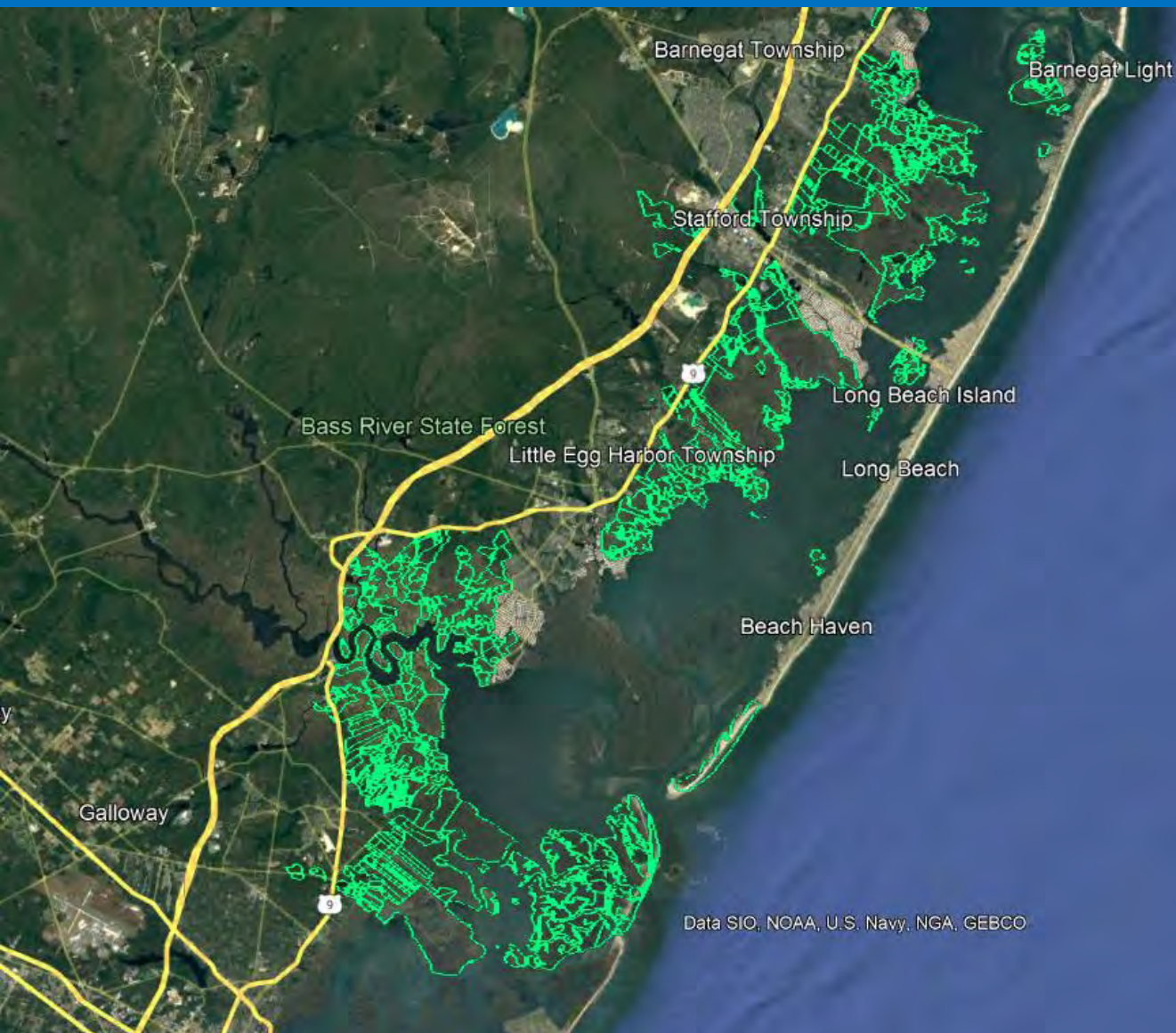




Forsythe % of NJ plover population



# Resist



Salt Marsh -  
78%

Google Earth

# Migration?







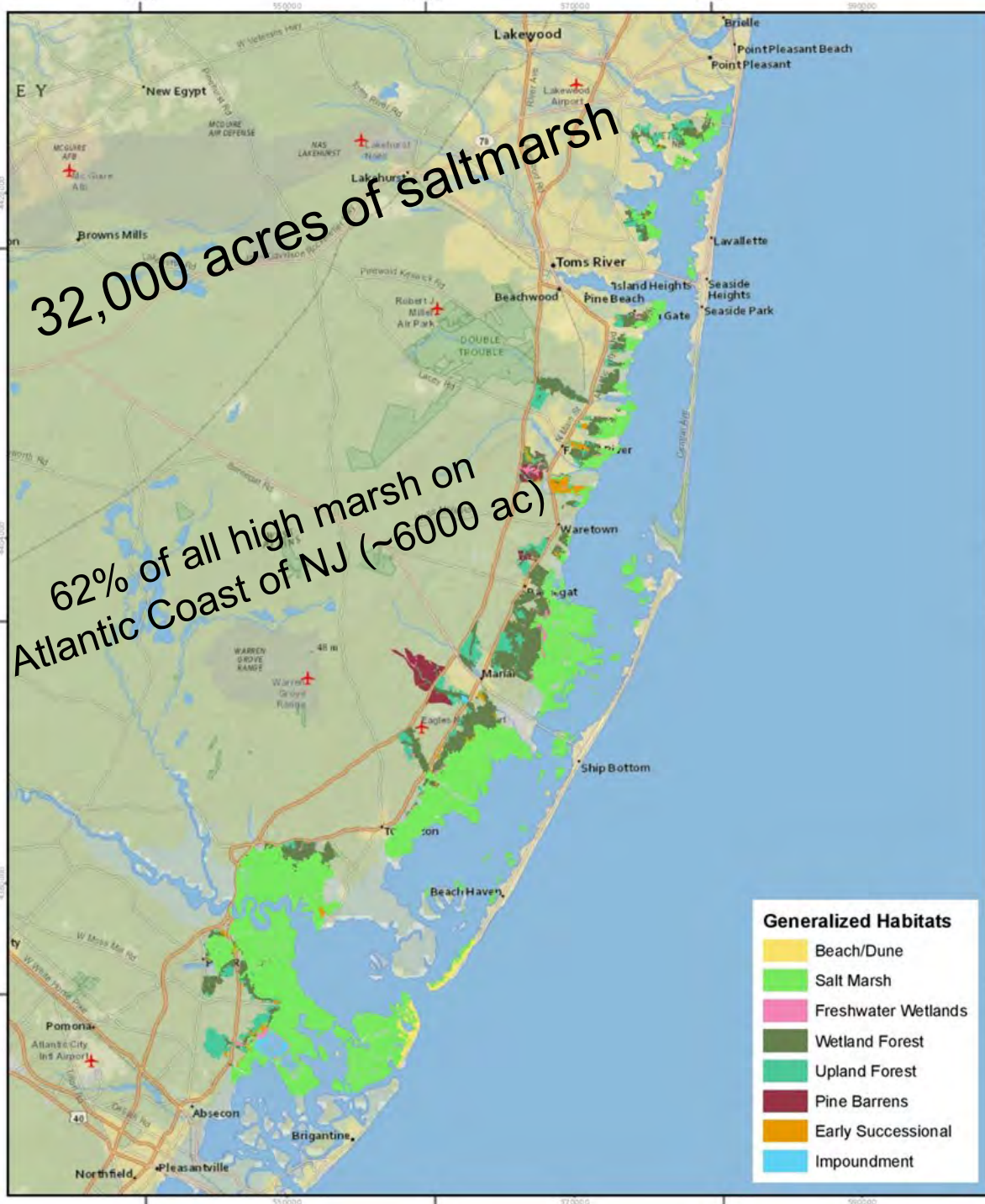


# Salt Marsh Habitats



37% of the total global Saltmarsh Sparrow breeding population is in NJ







During – December 2020



After – July 2021









2022







Princeton Ave

Mantoloking Rd

Mantoloking Road Alehouse

Mantoloking Rd

Grab Shack

Mantoloking Bridge County Park

Mantoloking

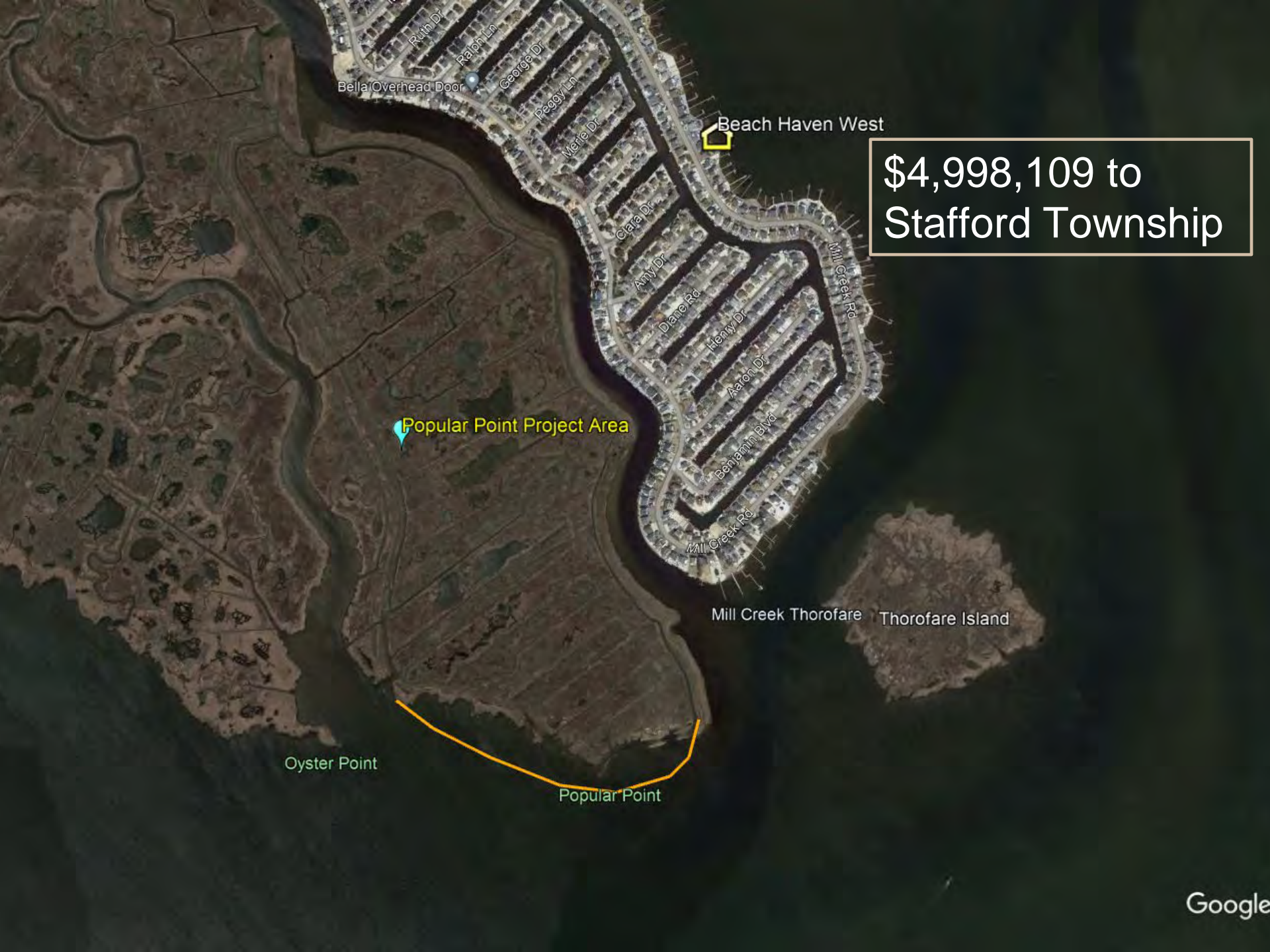
Swan Point State Natural Area

\$4,997,124 to  
Brick Township

Image © 2023 TerraMetrics  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google Earth





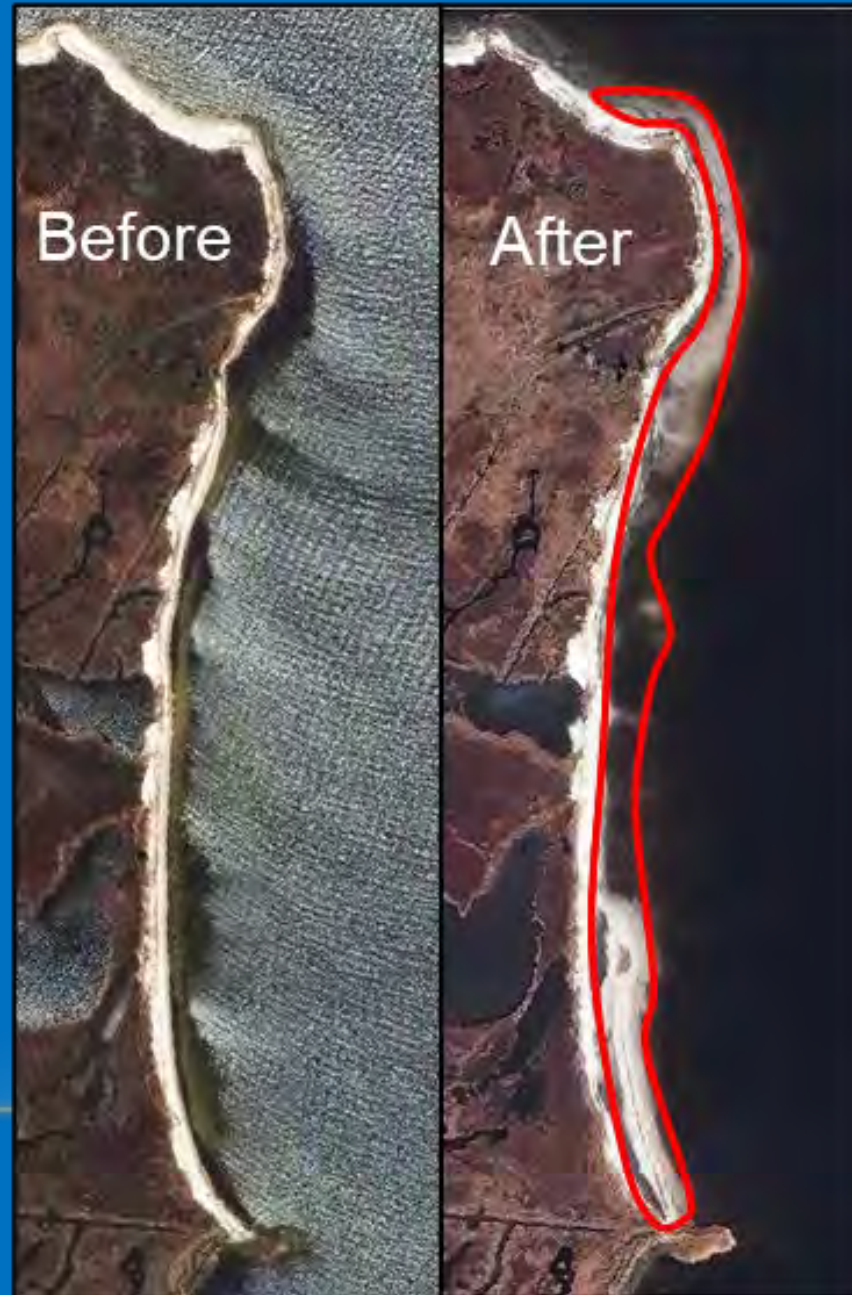
\$4,998,109 to  
Stafford Township



# December 2020

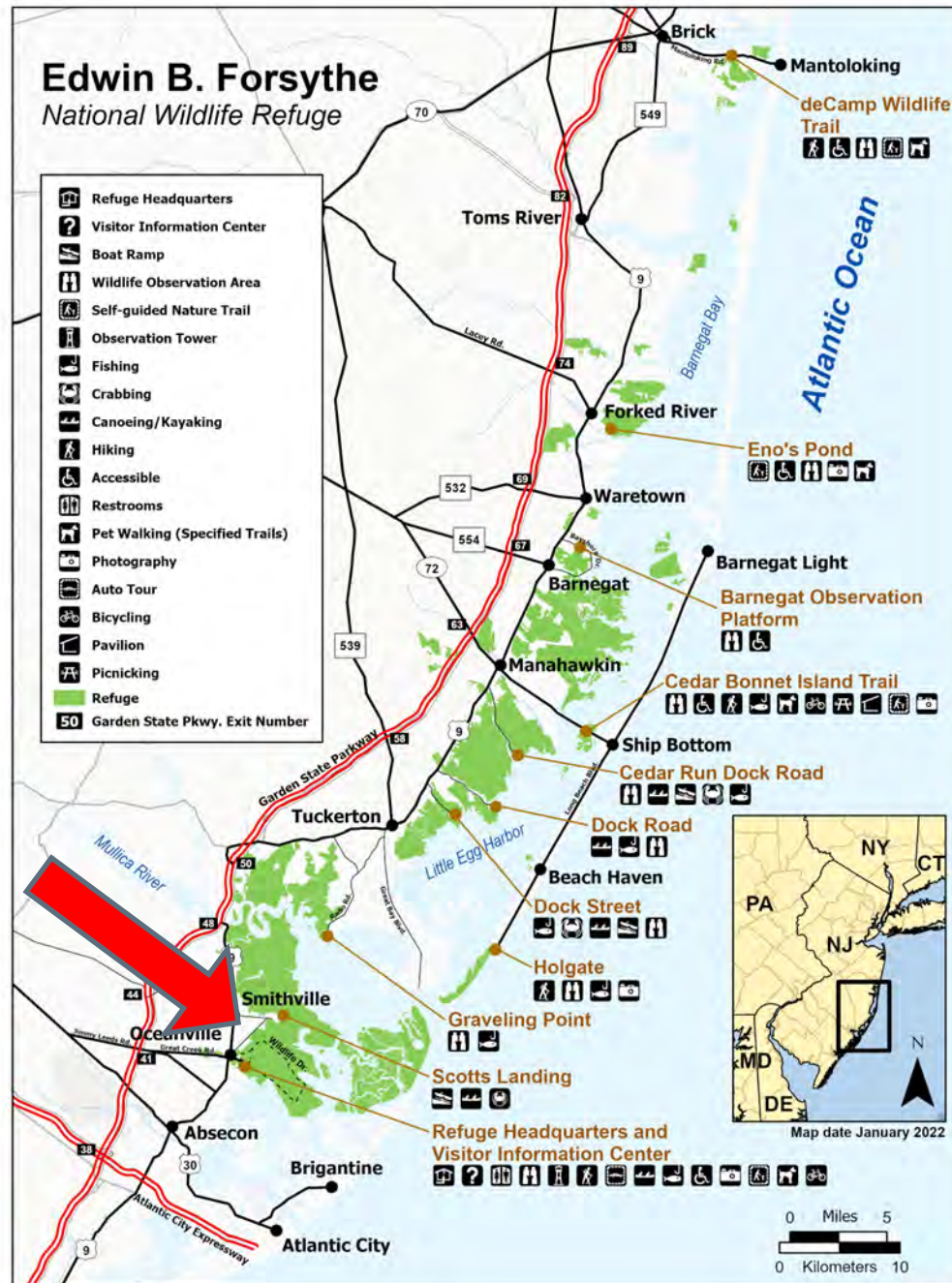


# Shoreline Sand Nourishment

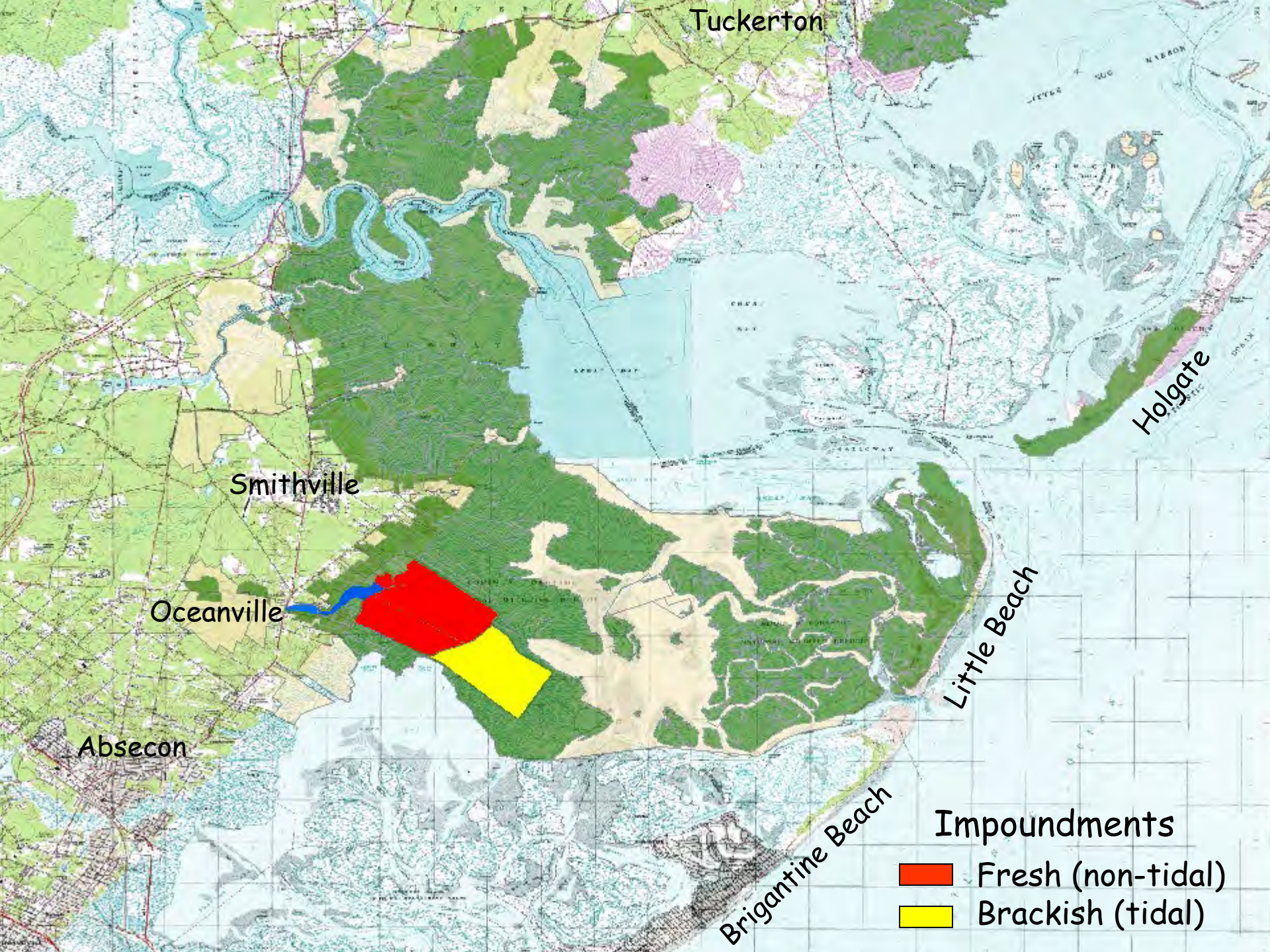




Direct







Tuckerton

Smithville

Oceanville

Absecon

Holgate

Little Beach

Brigantine Beach

Impoundments

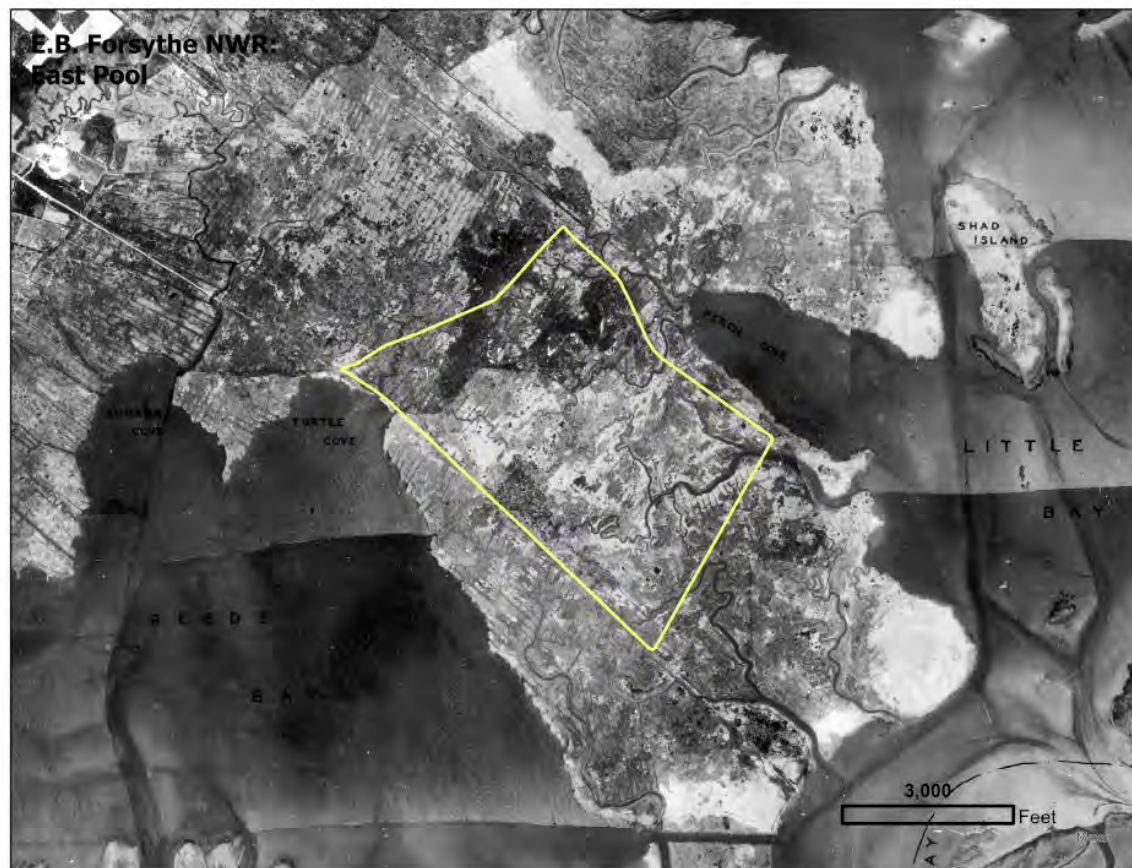
- Fresh (non-tidal)
- Brackish (tidal)







## East Pool 1931 Air Photo



## East Pool 2021 Satellite Imagery



## **Impoundment Vulnerability Assessment Questions**

1. What is the probability the impoundment will breach, now (2022) and in the future?
2. If impoundment is breached how much will be below sea level?
3. When will impoundment infrastructure be compromised by sea level rise?

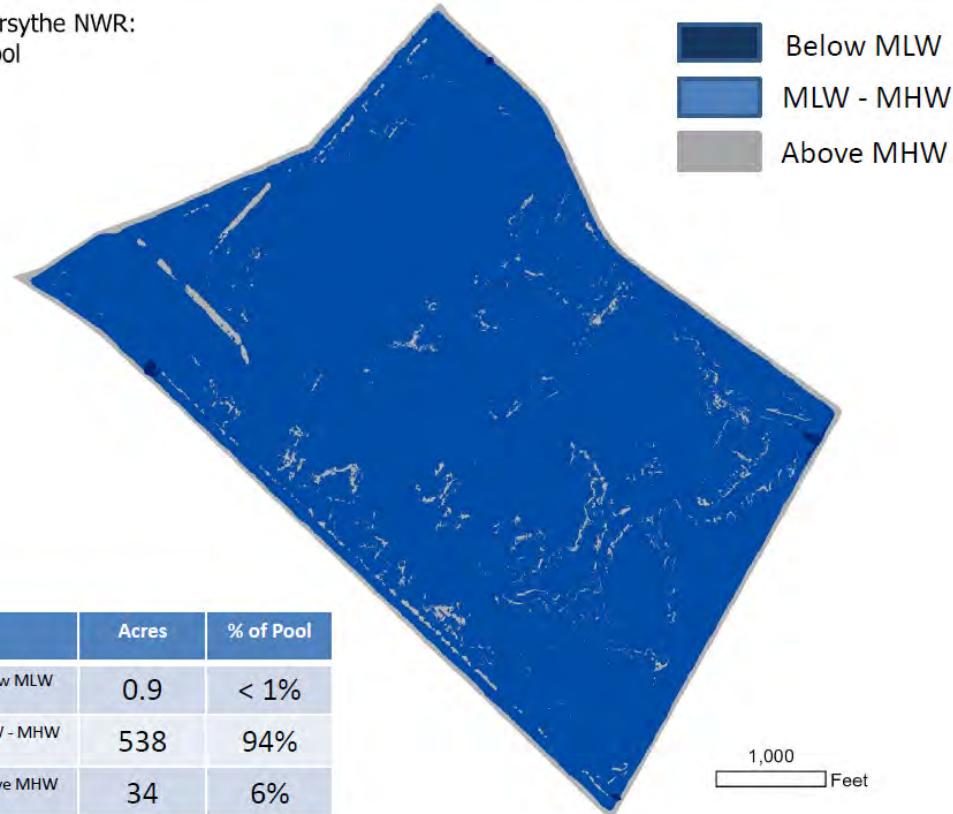




## Results: In the event of a complete breach in 2022

- 94% of East Pool is between Mean Low Water (MLW) and Mean High Water (MHW)

E.B. Forsythe NWR:  
East Pool



	Acres	% of Pool
Below MLW	0.9	< 1%
MLW - MHW	538	94%
Above MHW	34	6%

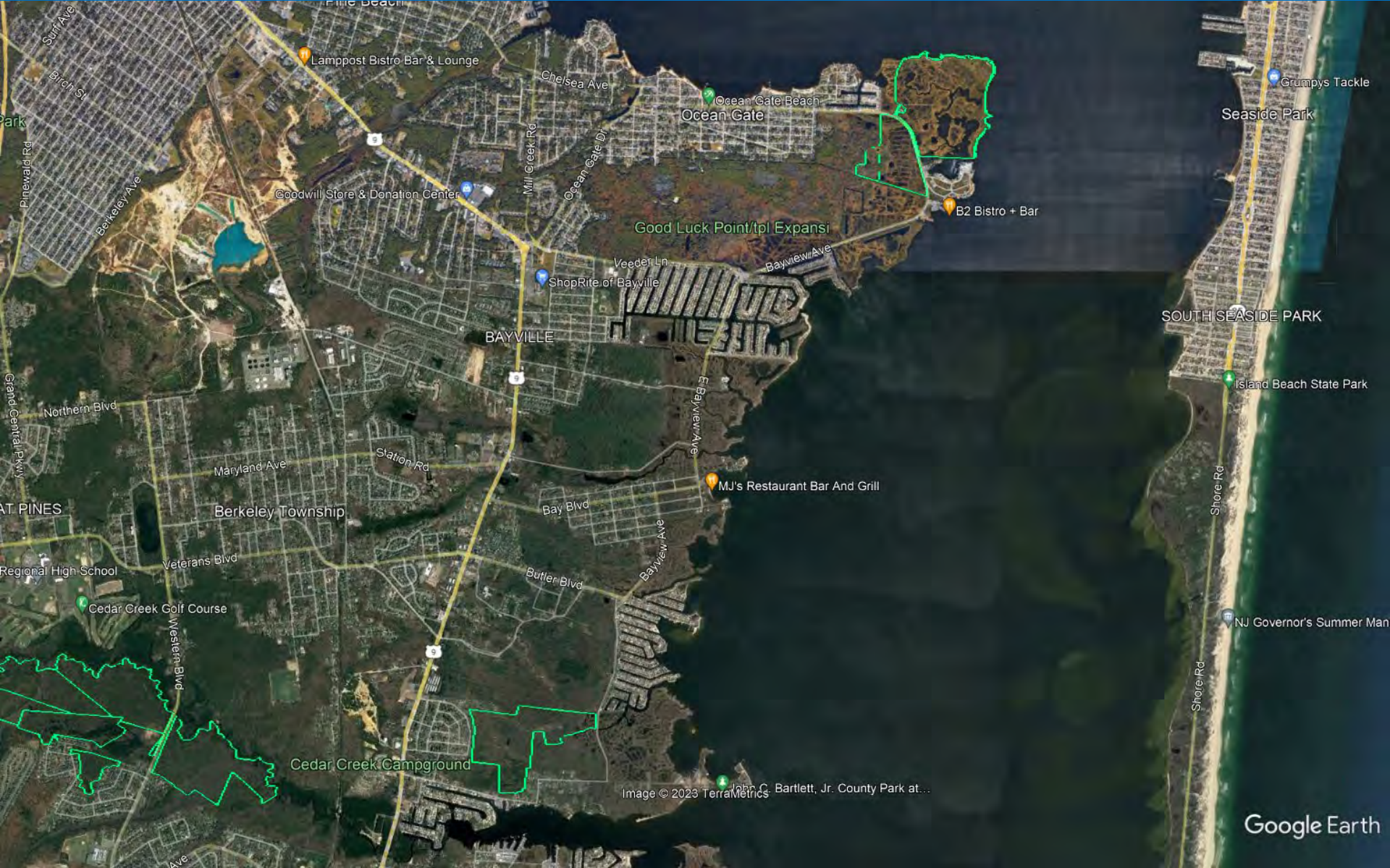


# The Future

- Is not crystal clear
- R-A-D option will change over time in different areas
- Implications for lands being held that are not being managed?









# THANK YOU!

## Questions?

