

# NJ's Changing Coastal Environment and Bay Island Restoration



2026 New Jersey Coastal and Climate Resilience Conference



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March 11, 2026



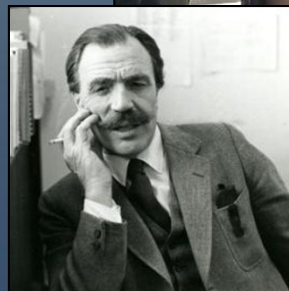
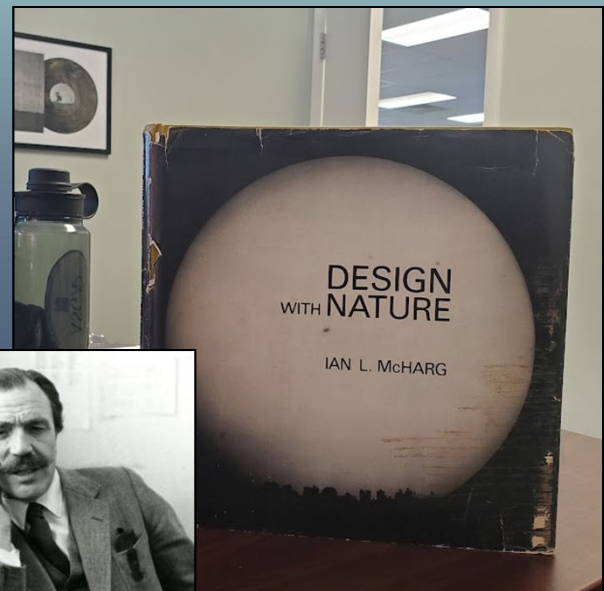
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## SEA AND SURVIVAL

“Ignorance is compounded with anarchy and greed to make the raddled face of the Jersey Shore.”

“From the fifth to the eight of March 1962, there came retribution.”



Ian McHarg, Design with Nature. 1969

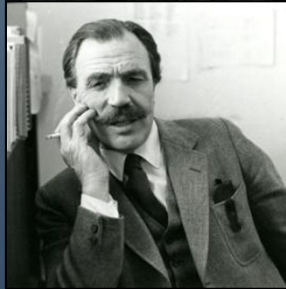
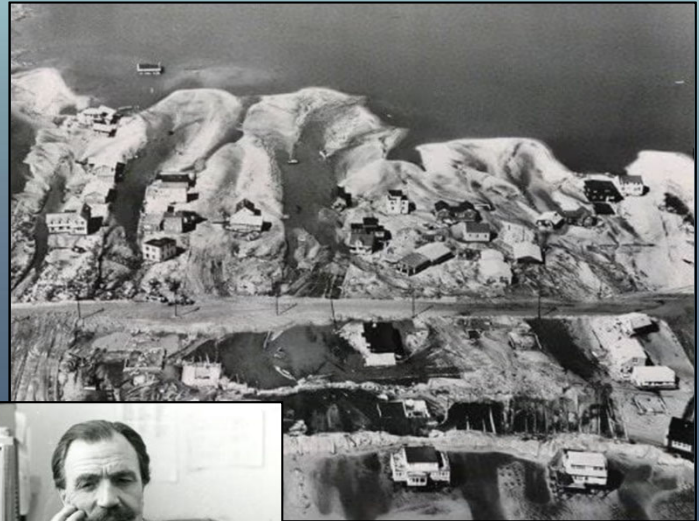


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## SEA AND SURVIVAL

“In a remarkable example of wisdom and virtue rewarded, in those rare cases where the dune was stable and unbreached, clothed in grasses, the houses endured, suffering only broken windows and lost shingles.”



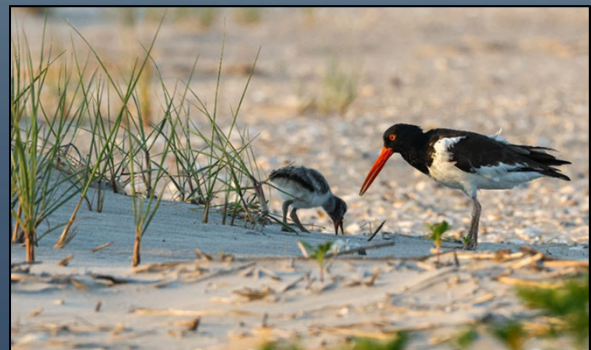
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## WHY ISLANDS?

- They are unique places.
- They provide valuable habitat, above and below the water.
- They can provide protection for shoreline property and infrastructure.
- They are a bellwether.



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Bill Reinert Photos

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## OVERVIEW

- How have our actions (past and present) impacted them?
- What can we do to protect, restore, and even create them?
- Renewed sense of urgency.

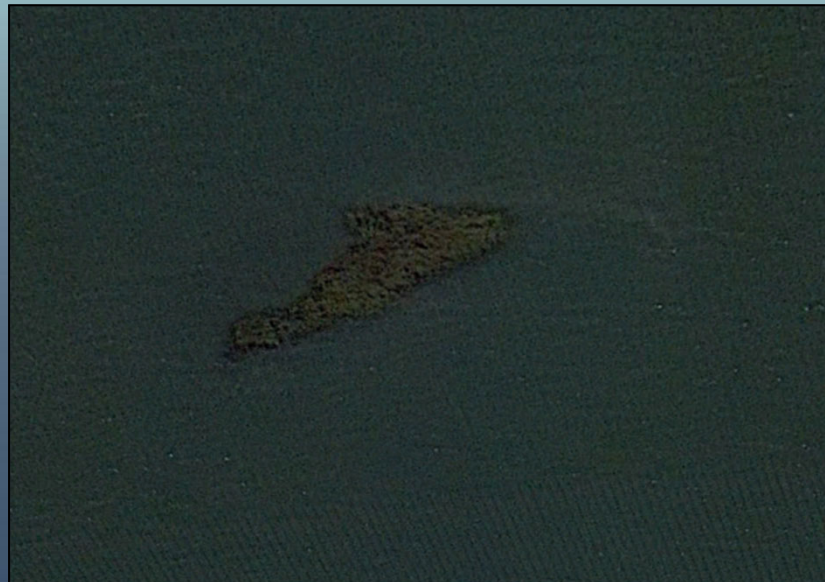


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1995: One acre in size.  
2019: A small island (~100 ft long, 2,200 sf).



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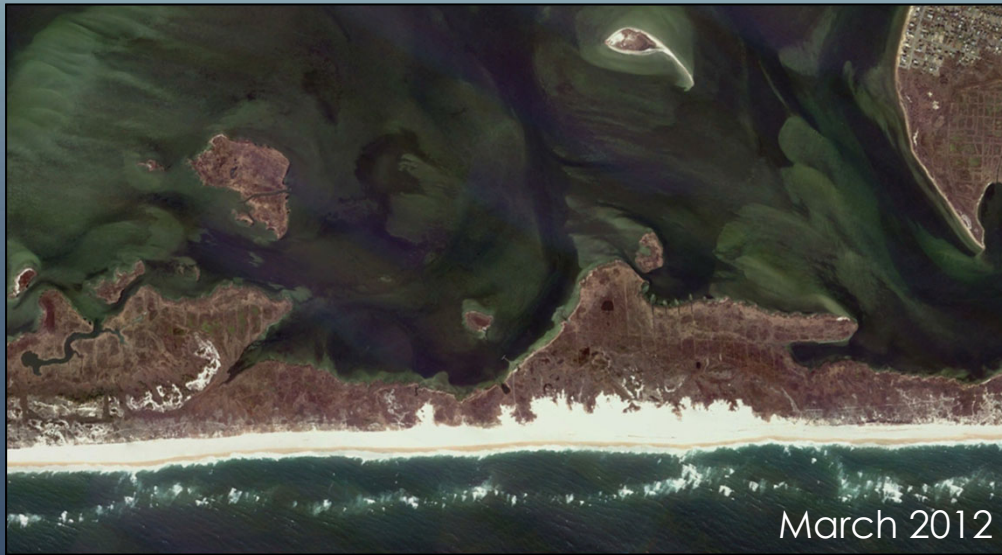
2026: She's Gone...  
Hauled away to the mainland to grow turf.



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## EXAMPLES OF BREACH/OVERWASH



March 2012



Fire Island National Seashore, NY

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# EXAMPLES OF BREACH/OVERWASH



November 2012



Fire Island National Seashore, NY

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# EXAMPLES OF BREACH/OVERWASH



April 2021



Major water quality improvements and new sediment input.

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## Flood tide deltas are common along the coast.

- Barnegat Inlet, Great Egg Harbor, Great Bay etc.
- Historic/former inlets and barrier island breaches/overwash have been bringing sand into the bay for the last 7,000 years



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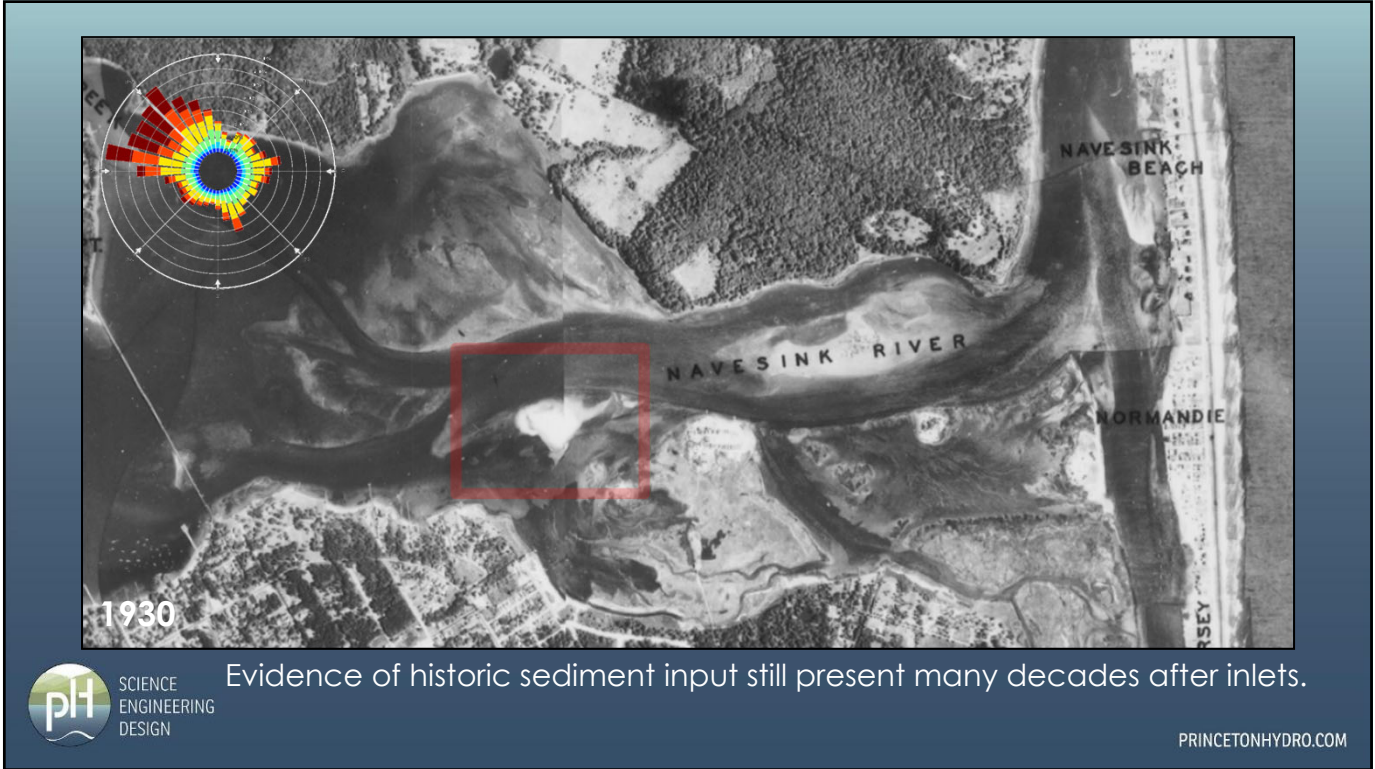
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## SHREWSBURY & NAVESINK RIVERS

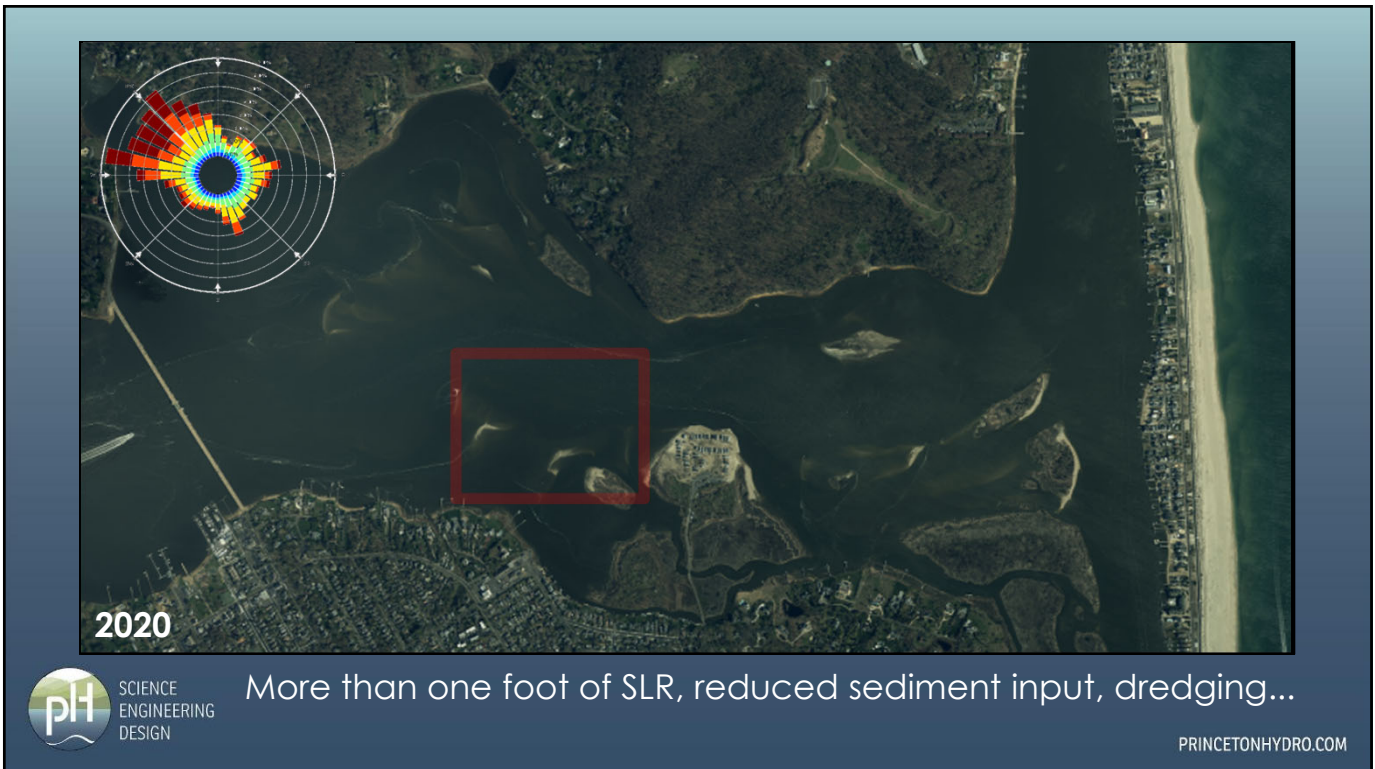


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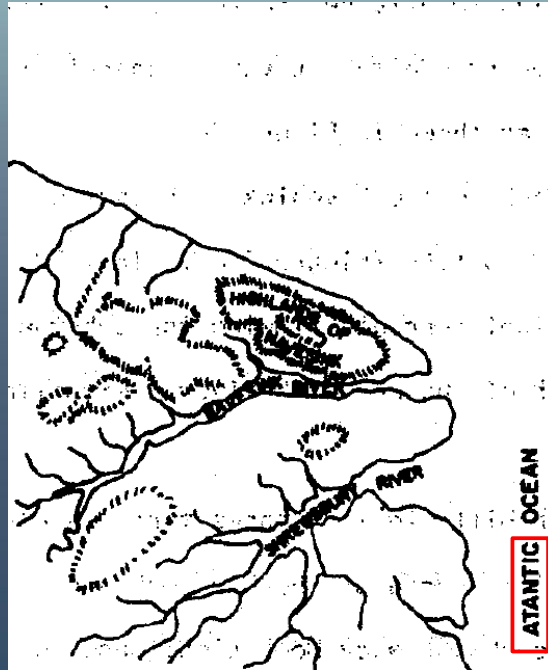
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## DEVELOPMENT OF SANDY HOOK

Headlands project far into the ocean.



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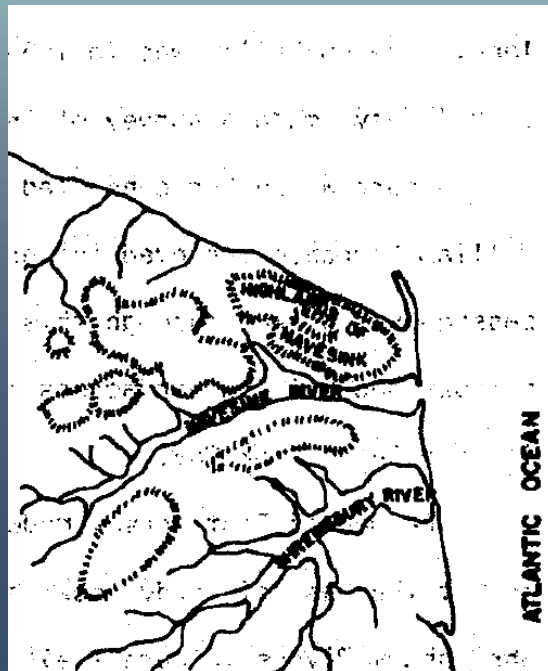
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## DEVELOPMENT OF SANDY HOOK

Erosion of the headlands begins. Several small spits begin to form.



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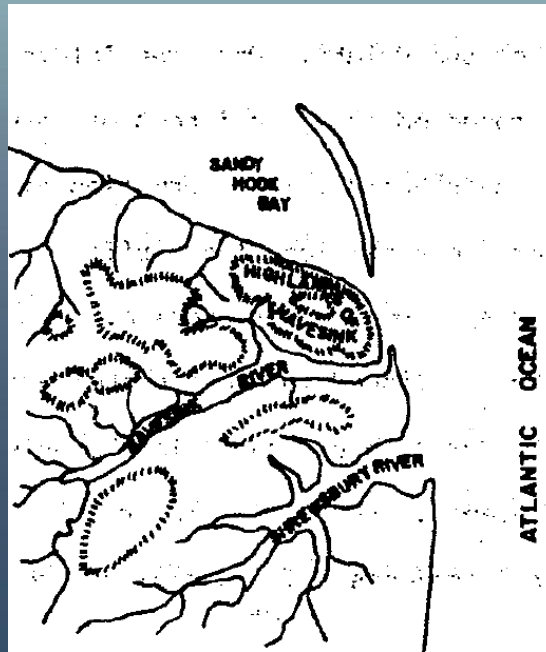
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## DEVELOPMENT OF SANDY HOOK

Sandy Hook in 1685, as surveyed by George Keith, Surveyor-General of East Jersey.



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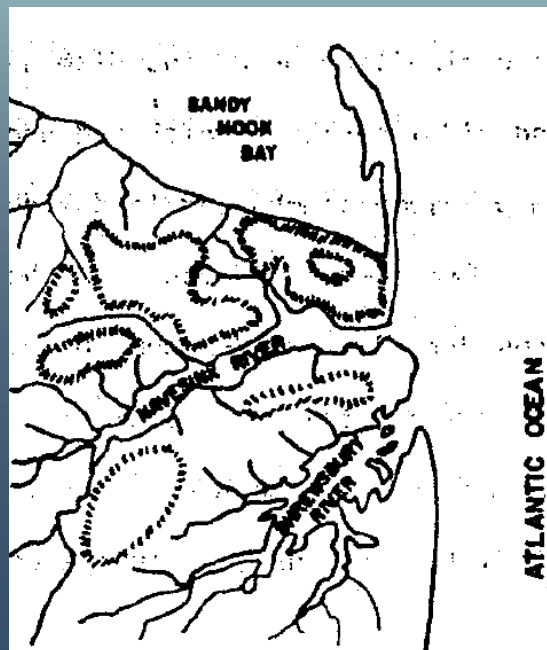
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## DEVELOPMENT OF SANDY HOOK

Sandy Hook prior to 1764, surveyed by William Lawrence.



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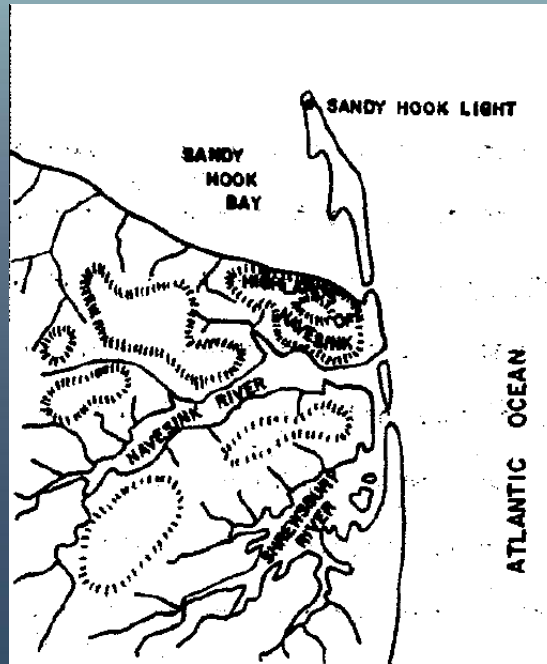


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## DEVELOPMENT OF SANDY HOOK

Sandy Hook in 1796, as surveyed by John Hills. Sandy Hook light was built in 1764.



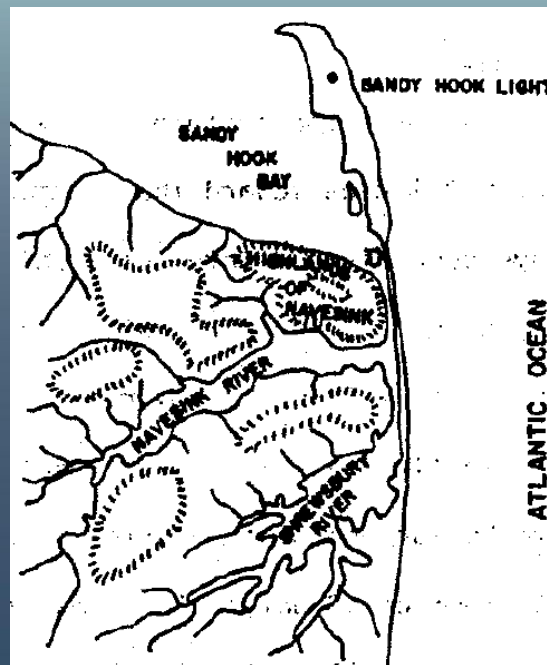
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## DEVELOPMENT OF SANDY HOOK

Sandy Hook in 1885.

From the mid 1800's the former inlets have been closed off and the tidal datums have been attenuated, significantly limiting the sediment supply.

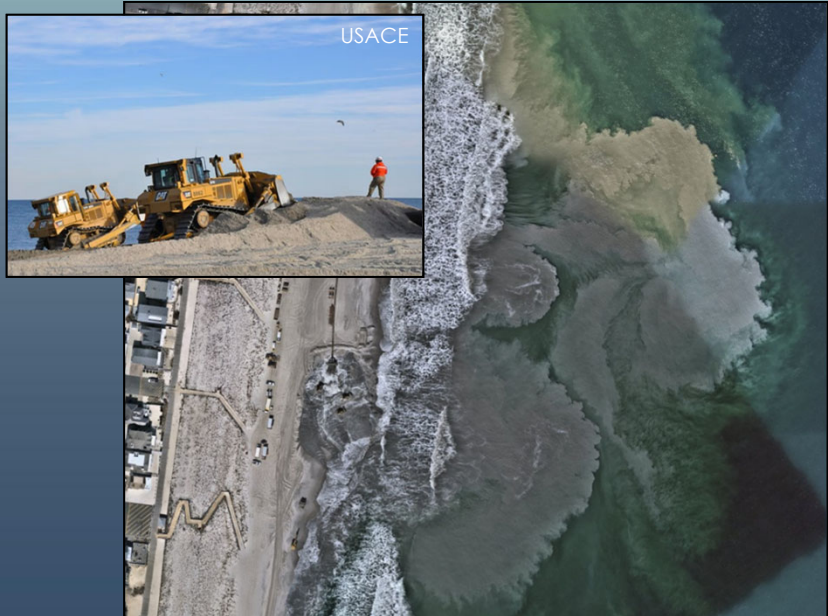


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## BEACH NOURISHMENT

- More than **250 Million Cubic Yards** of sand have been placed on New Jersey beaches.
- Equal to **100 vertical feet of sand** along the entire 130 miles of New Jersey beaches!



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Note the eroding sod bank and flood tide shoal (2023)  
Also note how low the newly established tidal marsh is,  
photo taken at slack low.



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2002

2025

Flood

Flood

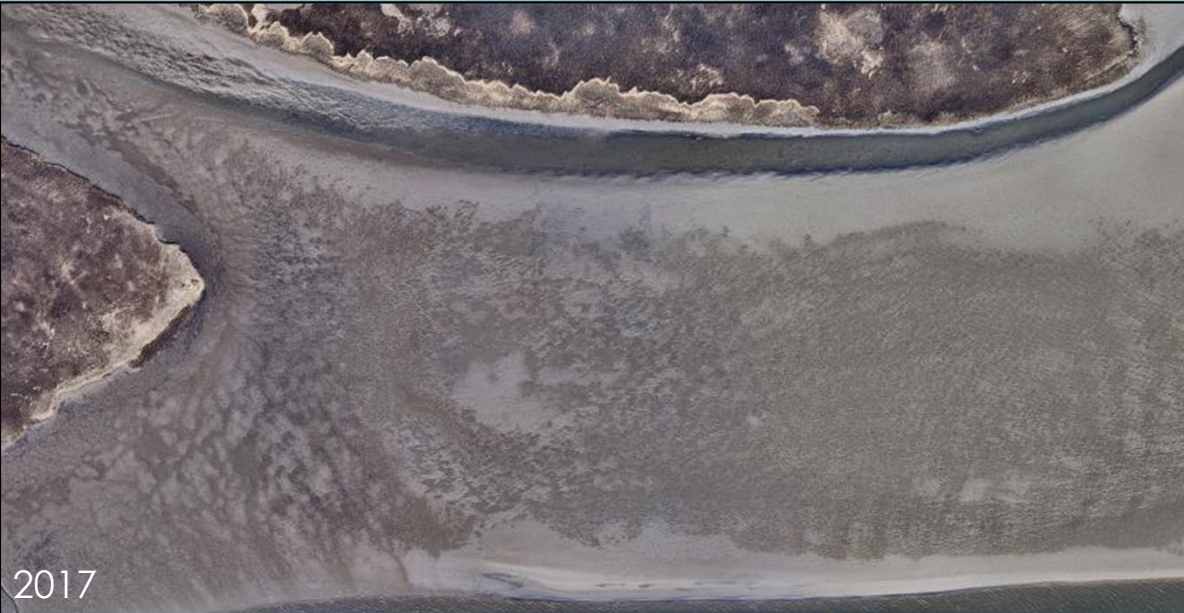
New low marsh establishment, moving towards the inlet.




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2017



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2025

New low marsh establishment within flood tide delta.



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2014

More than 100 years of inundation.



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2025

Almost fully revegetation following the introduction of tidal exchange.



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## CLOSING THOUGHTS

Our Shore is involved in a:

*“continuous contest with the sea”*

Our actions are part of that contest:

1. Sea Level Rise
2. Stabilized Barrier Islands/Inlets
3. Dredging
4. Beach nourishment
5. Boat Wakes



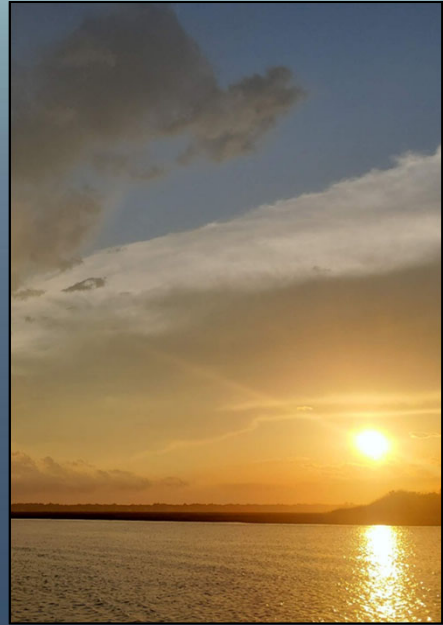
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## CLOSING THOUGHTS

- To do nothing is to be part of the problem and sea level rise is waiting for no one.
- History will not reflect fondly on the net export of sediment.
- We worry too much about short-term habitat changes.
- Must look forward: protect, restore, and create.

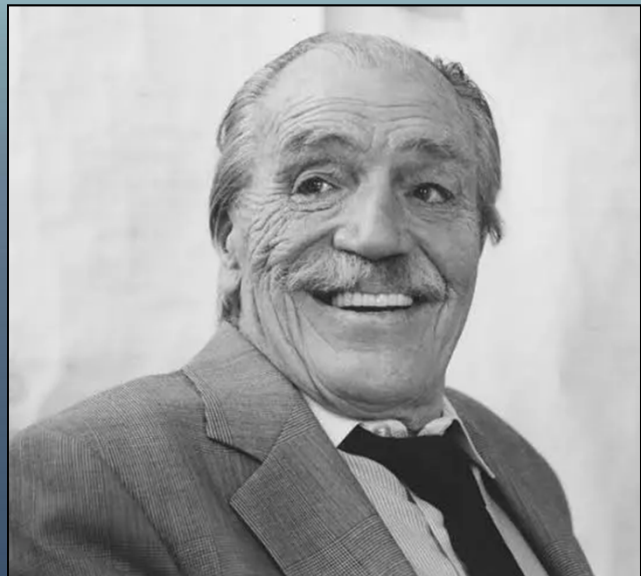


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What would Ian McHarg say about New Jersey if he could see us now?

Restoration efforts should mimic the natural processes that created and to some extent still shape our bay shore.



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# QUESTIONS



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