NFWF and Resilience

National Association of Environmental Professionals Webinar, May 28, 2020

About Us

Who We Are

- Chartered by Congress in 1984
- 30 member Board appointed by Secretary of the Interior,
  - Includes FWS Director and NOAA Administrator

What We Do

- Sustain, restore and enhance wildlife
- Bring collaboration among federal agencies and private sector

How We Do It

- Leverage public funding with private money – average 3:1

Bald eagle

NFWF is

- An implementer – we fund projects

NFWF is not

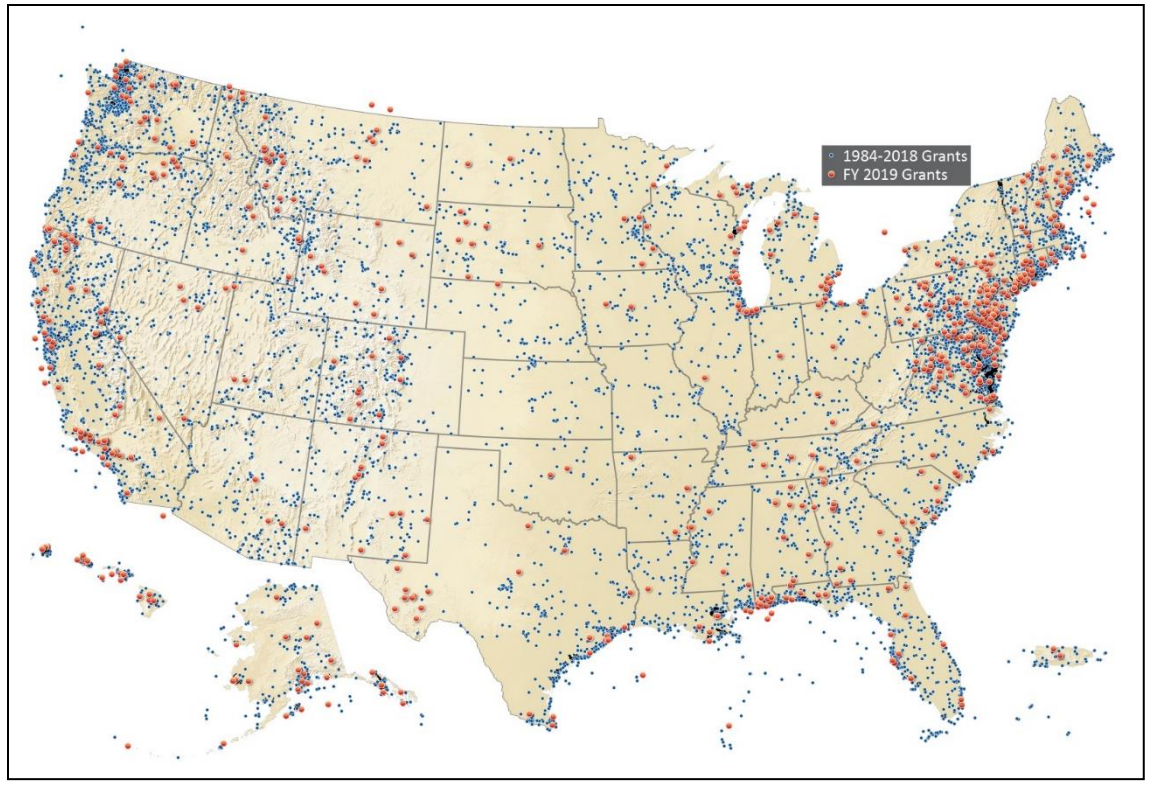
- An advocacy organization that engages in lobbying or litigation

NATIONAL FISH AND WILDLIFE FOUNDATION NFWF

NFWF Conservation Investments (1984 – 2019)

Overview of NFWF Funds Invested

	FY 2018	FY 2019	FY 1984 – FY 2019
Federal Funds	$ 106.7 million	$ 141.0 million	$ 1.42 billion
Non-Federal Funds	$ 196.1 million	$ 366.0 million	$ 2.04 billion
Grantee Matching Funds	$ 156.4 million	$ 245.0 million	$ 2.63 billion
Total Funds Invested	**$ 459.2 million**	**$ 752.0 million**	**$ 6.09 billion**
# of Projects Awarded	**758**	**931**	**18,670**



- $507 million awarded to 931 projects in 2019
- More than $3.46 billion awarded since 1984
- 18,670 Investments
- 5,000 organizations
- All 50+ states

NATIONAL FISH AND WILDLIFE FOUNDATION NFWF

NFWF Invests Millions in Resilience Grants Annually

Through annual resilience programs:

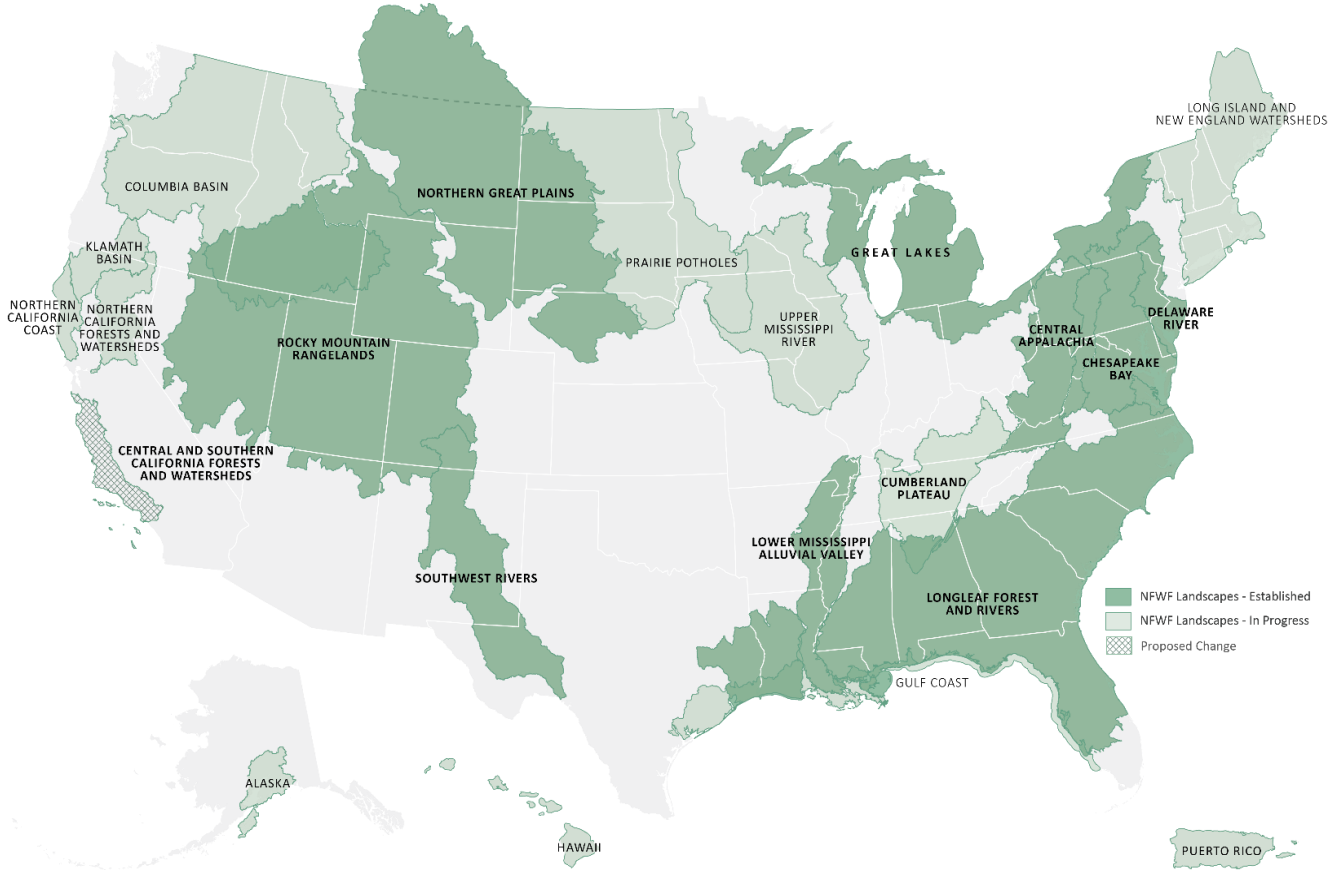
- National Coastal Resilience Fund
- Resilient Communities Program

Through emergency resilience funding:

- Emergency Coastal Resilience Fund
- Hurricane Sandy Coastal Resiliency Program

Through dozens of landscape-scale indicatives and programs

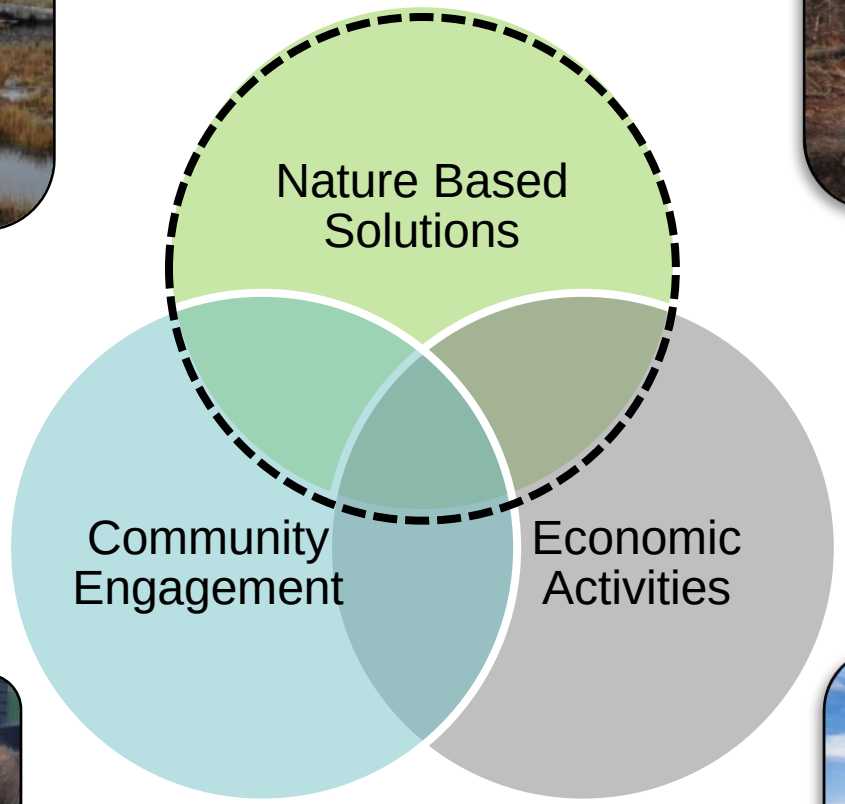
www.nfwf.org



Resilience

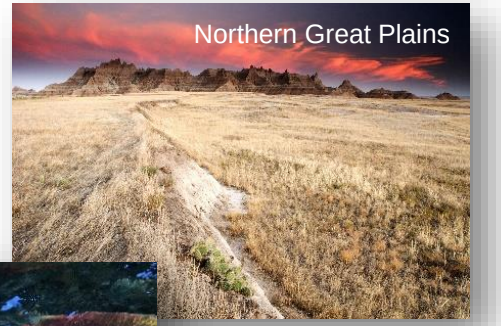
Capacity of nature and communities to withstand and recover from a disruption, or adapt to change.

Improving Nature Improves Resilience

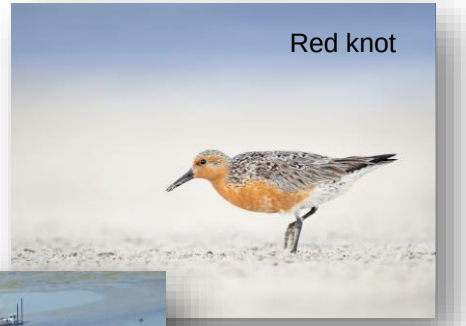


Applying Resilience Across our Investments

Long-term Planning



Implementation: Building Back BETTER



Immediate Response

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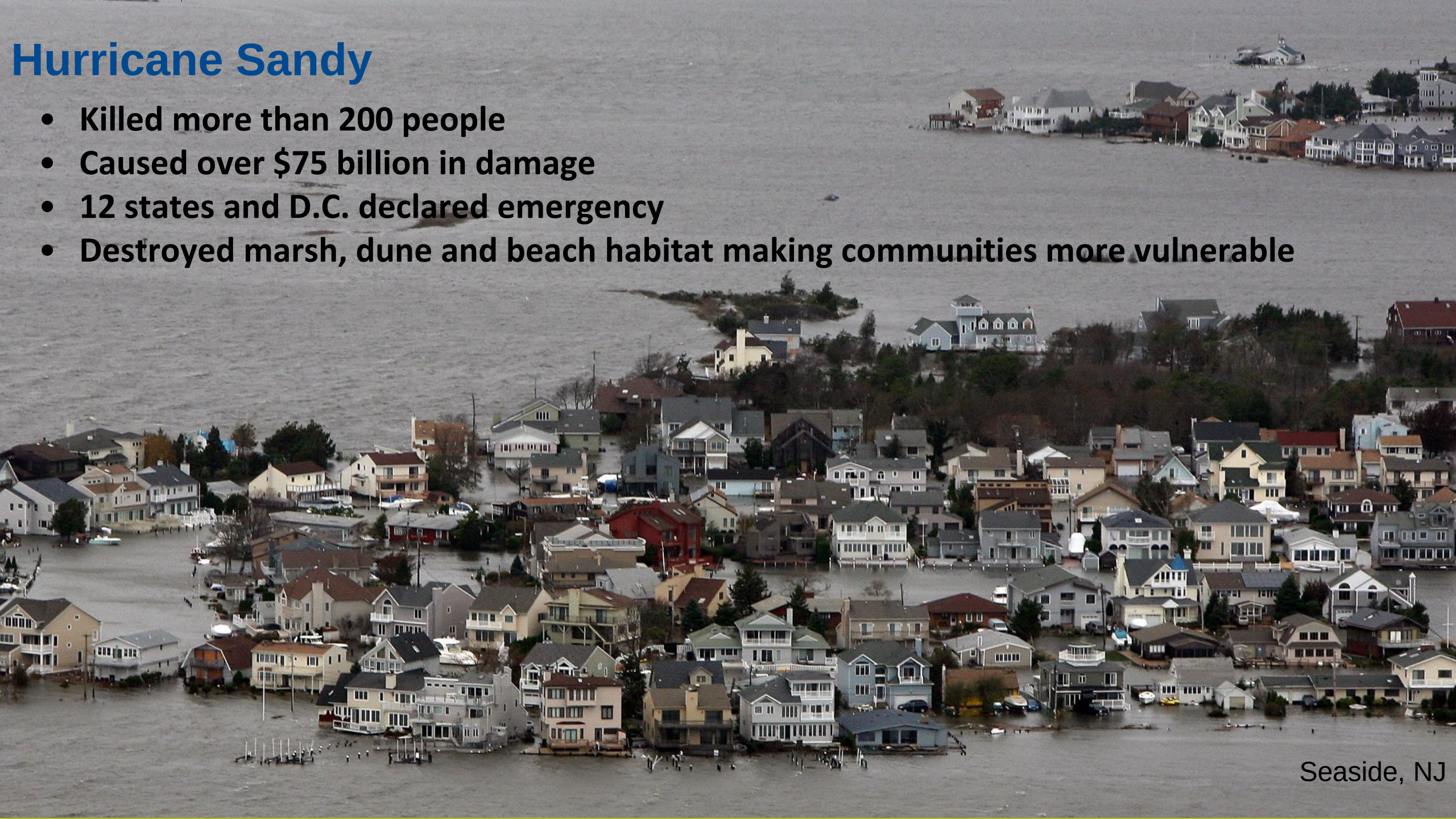
Hurricane Sandy

- Killed more than 200 people
- Caused over $75 billion in damage
- 12 states and D.C. declared emergency
- Destroyed marsh, dune and beach habitat making communities more vulnerable



Seaside, NJ

DOI-NFWF Hurricane Sandy Partnership: Timeline

You are here!

Established Core Metrics

Impact Evaluation I

Impact Evaluation II

Long-Term Project Monitoring

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

Projects Implemented

Resilience Benefits Increasingly Realized

$302 million portfolio of 160 projects

Hurricane Sandy Program Overview

Three main goals:

- **Reduce impacts** of coastal storm surge, wave velocity and sea level rise
- **Strengthen ecological integrity** of coastal/inland ecosystems to protect communities and enhance fish and wildlife and their habitats
- **Better understand** the impacts of storms and identify tools to help **mitigate the effects of future** storm and sea level rise impacts.

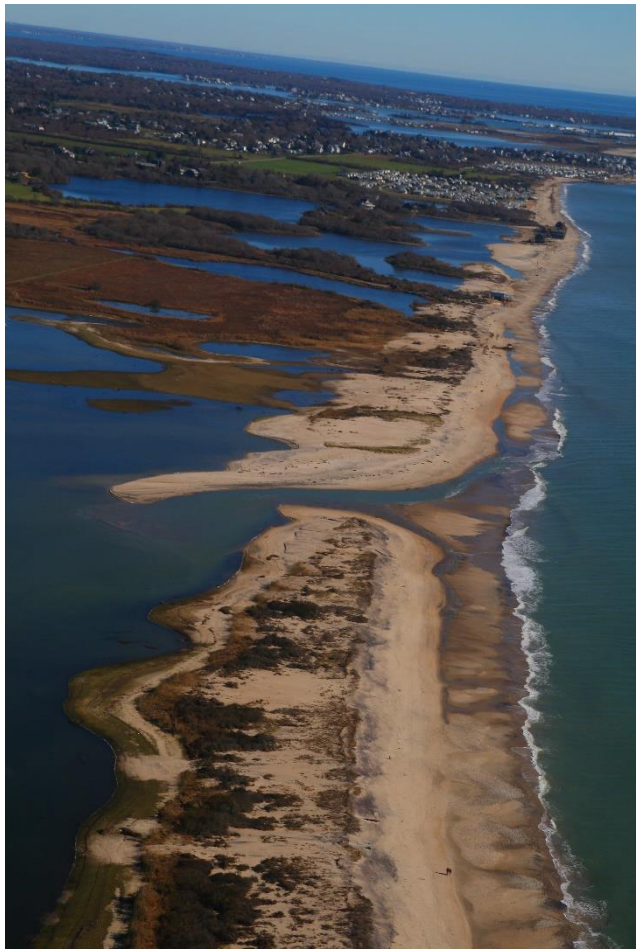
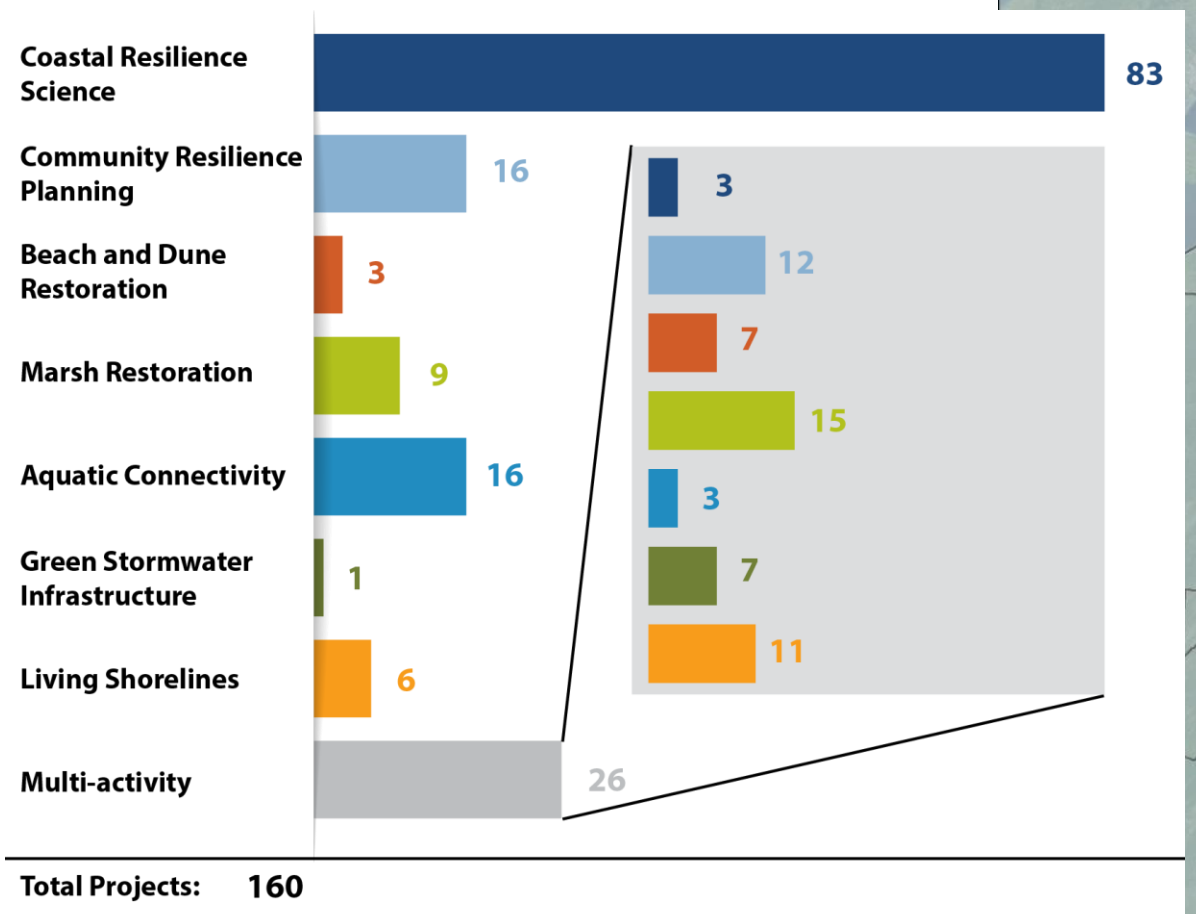
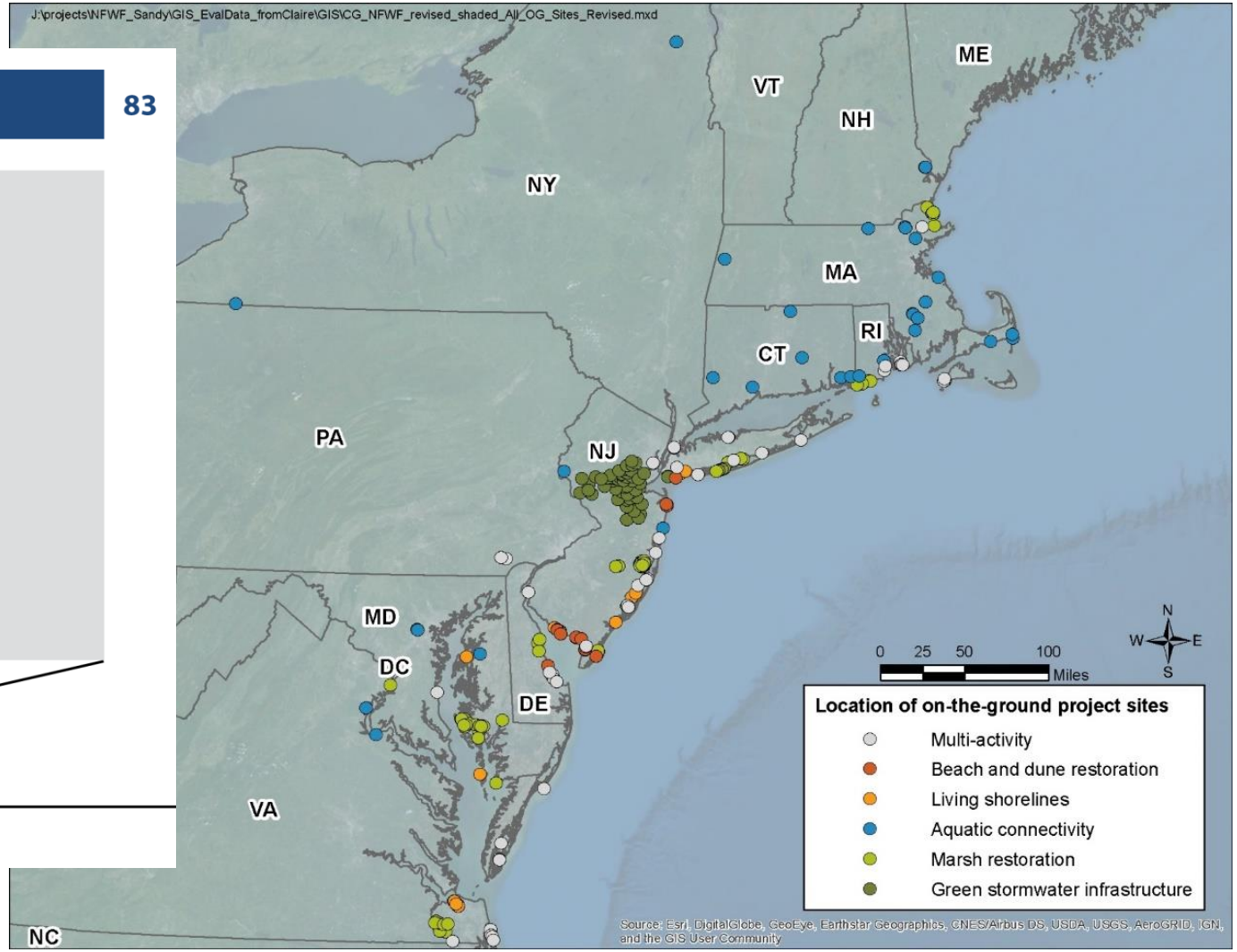


Image source: USFWS

Project Portfolio Overview





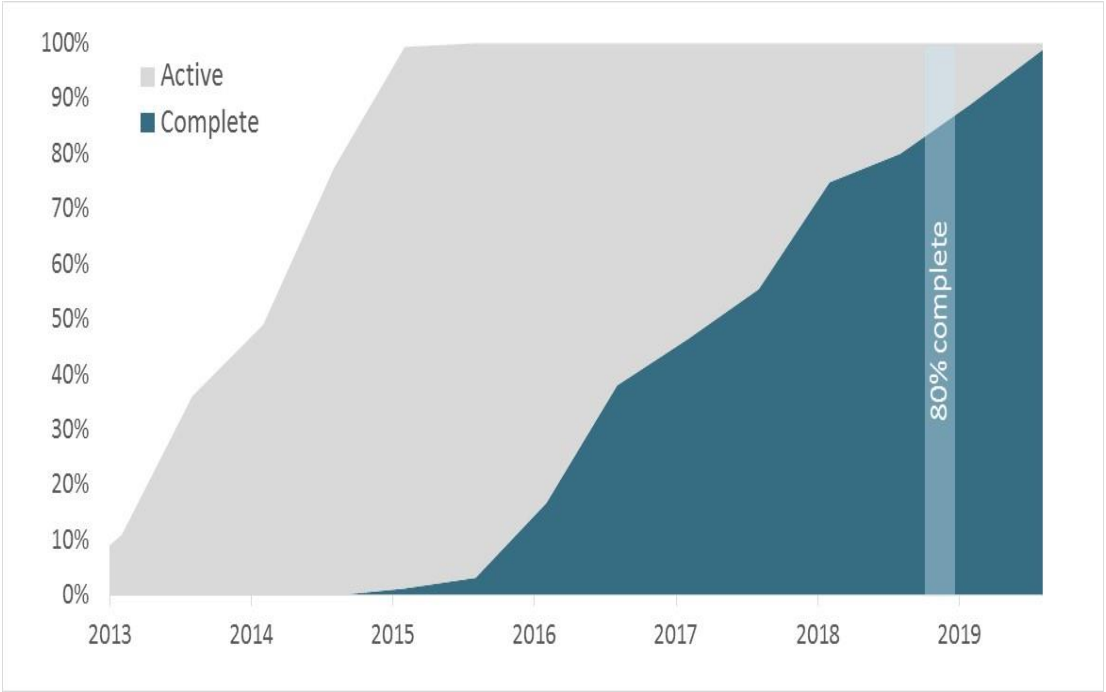
$302 million portfolio of 160 projects

BOLD
THINKERS
DRIVING
REAL-WORLD
IMPACT

Evaluation of Hurricane Sandy Coastal Resilience Program

https://www.nfwf.org/hurricane-sandy-coastal-resiliency-competitive-grant-program/hurricane-sandy-monitoring-and-evaluation

Completed by Abt Associates in spring 2019



Evaluation Case Studies

- Marsh restoration
- Living shorelines
- Aquatic connectivity
- Beach and dune restoration

- Community resilience planning
- Coastal resilience science

Case Study Findings: Marsh

Key activities:

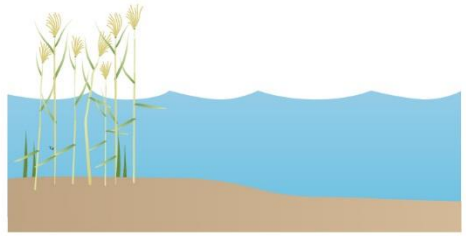
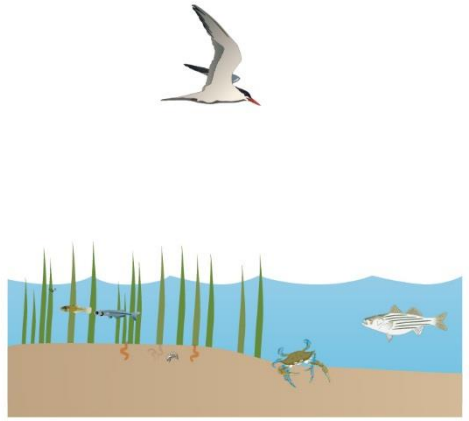
Hydrologic reconnection removes artificial drainage and restores natural marsh channels.

Thin-layer deposition increases marsh elevation to preserve marsh habitat.

Removing or controlling invasive species improves habitat quality and resilience.

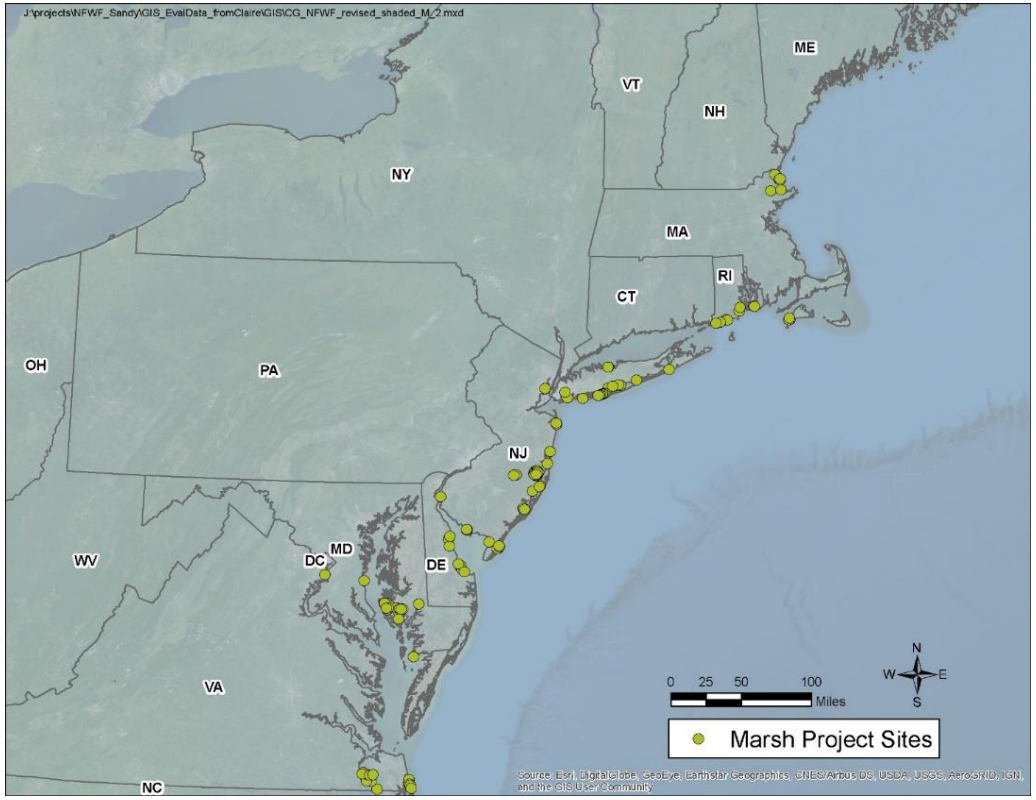
Planting native marsh vegetation enhances vegetative recovery

Case Study Findings: Marsh

Year 0 (Pre-project)	Short-term outcomes (1–2 years)	Mid-term outcomes (3–7 years)	Long-term outcomes (10+ years)
			
• No to sparse native vegetation • Minimal support to key wildlife • Habitat prone to erosion.	• Marsh elevation increases, vegetation establishes and matures over time, similar to reference by 15–30 years • Storm protection improves over time; native biota increase • Hydrologic features restored, similar to reference after 20 years • Water quality improves over time.		

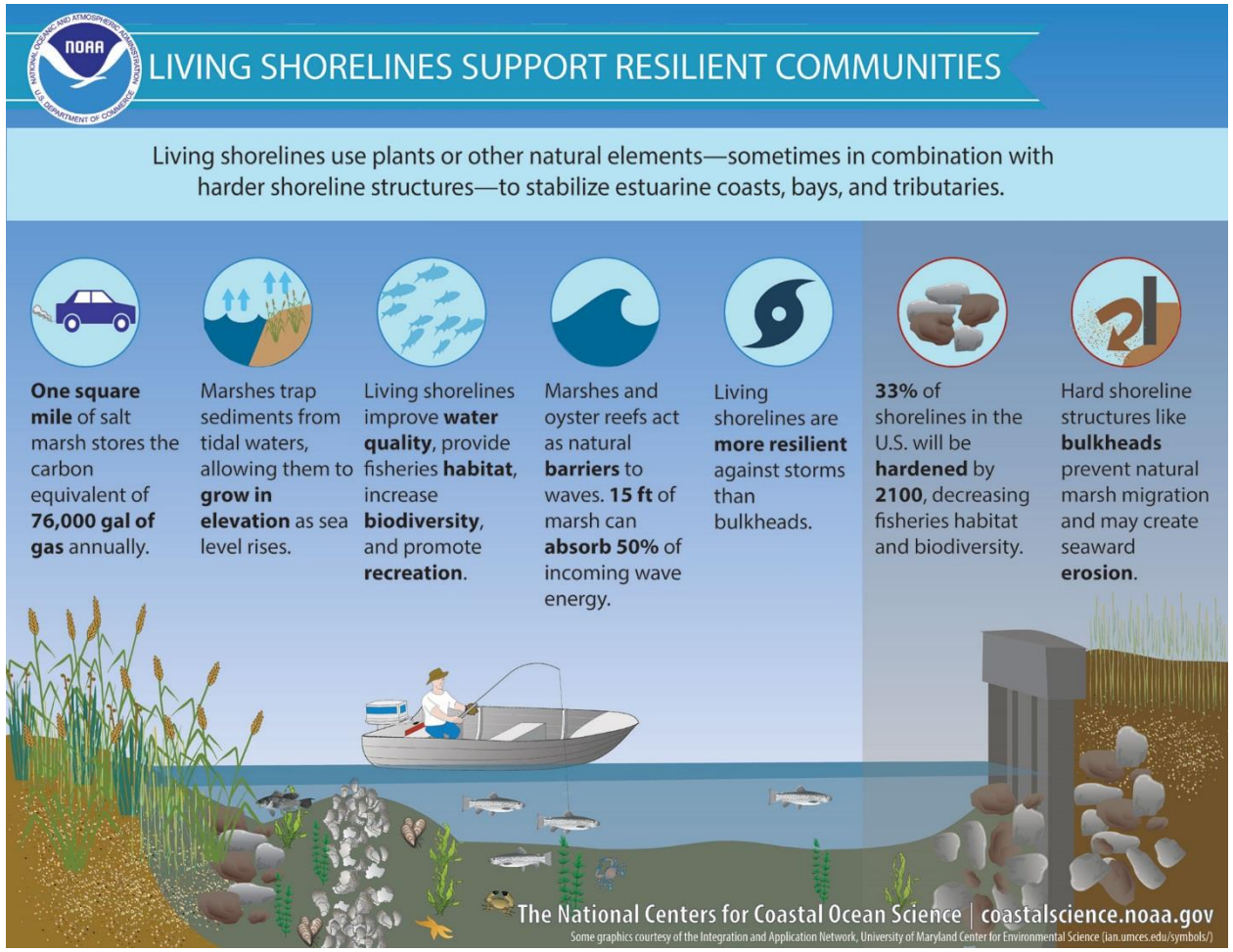
Case Study Findings: Marsh

- 24 projects in 7 states
- $92.6 million in program funds
- 195,000+ acres restored
- Some of the most ambitious and innovative Sandy projects
- Target elevations and/or tidal regimes were achieved
- Vegetation response and some wildlife
- Marsh restoration still experiment and requires adaptive management



Case Study Findings: Living Shorelines

- Help reduce coastal erosion
- Provide habitat for wildlife
- Alternative to traditional gray or hard infrastructure
- Cost-effectiveness was key focus – can inform future investments



Source: NOAA, 2019.

Case Study Findings: Living Shorelines

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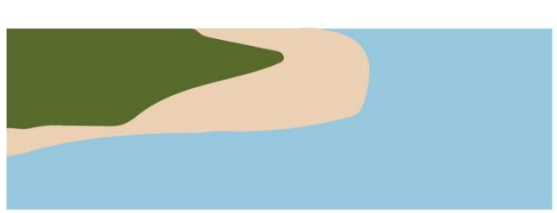
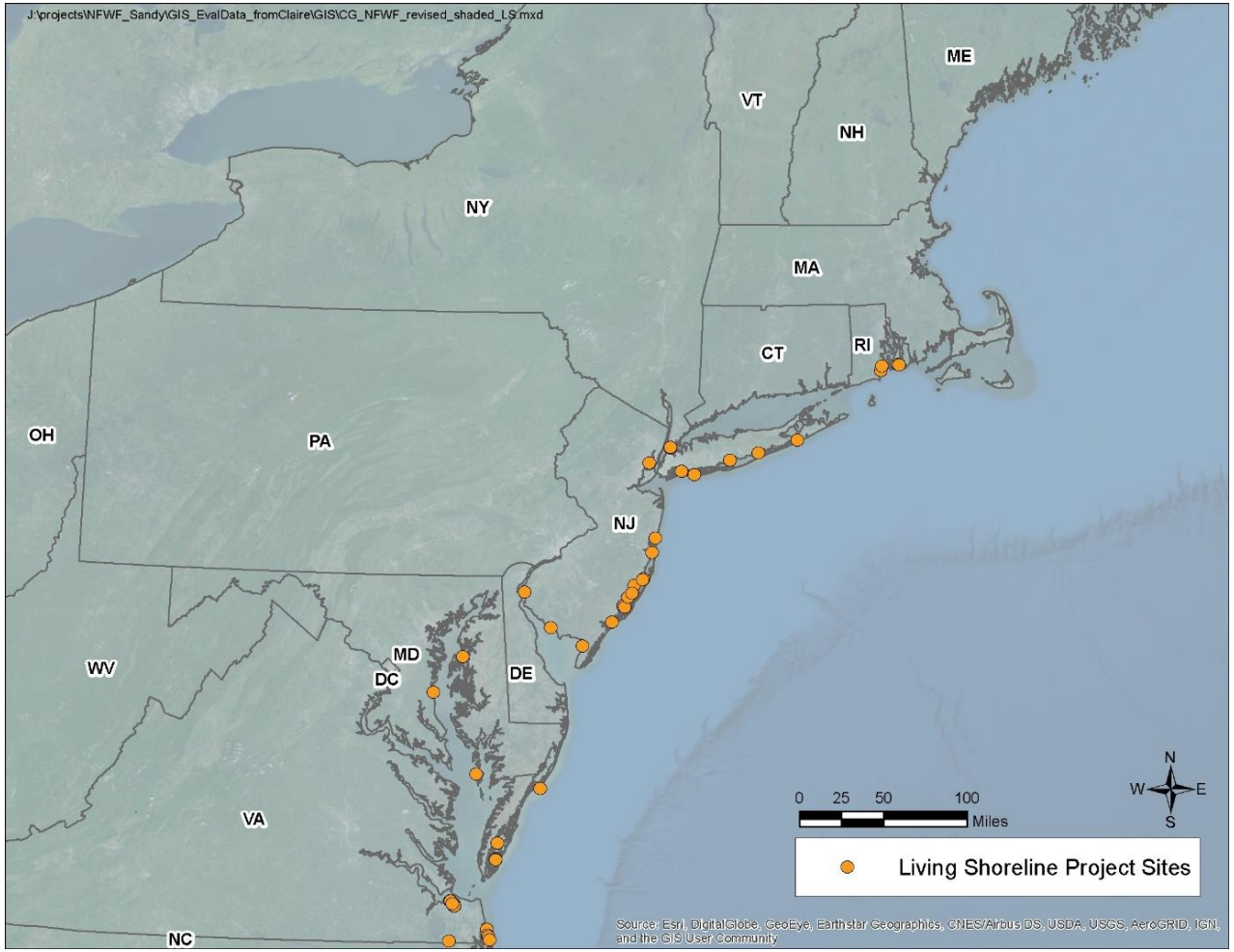
			
• No to sparse native vegetation • Minimal support to key wildlife • Habitat prone to erosion	• Vegetation and seagrass establish over time, similar to reference by 15–30 years • Seagrass, oysters, and mussels recruit; native biota increases • Shoreline stabilization increases, leading to stabilized or increased shoreline elevation		

Case Study Findings: Living Shorelines

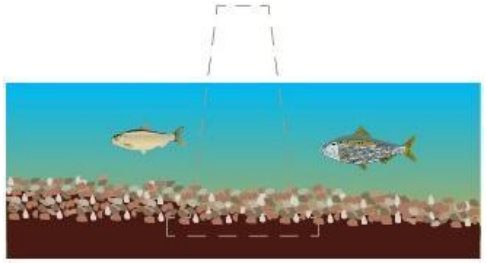
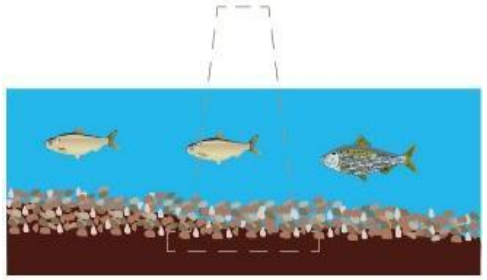
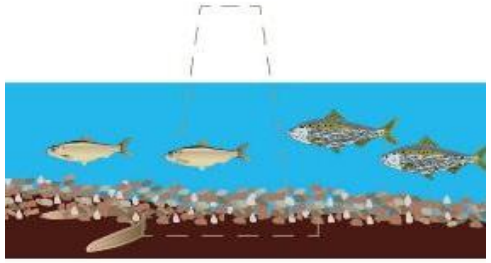
- 17 projects, 29 project sites
- $37.6 million in program funds
- Nearly 53,000 linear feet of living shorelines installed protecting 440 acres of habitat and infrastructure
- In 17 of 22 projects assessed, living shoreline approach **more cost-effective than comparable gray infrastructure** at reducing risk of erosion



Case Study Findings: Aquatic Connectivity

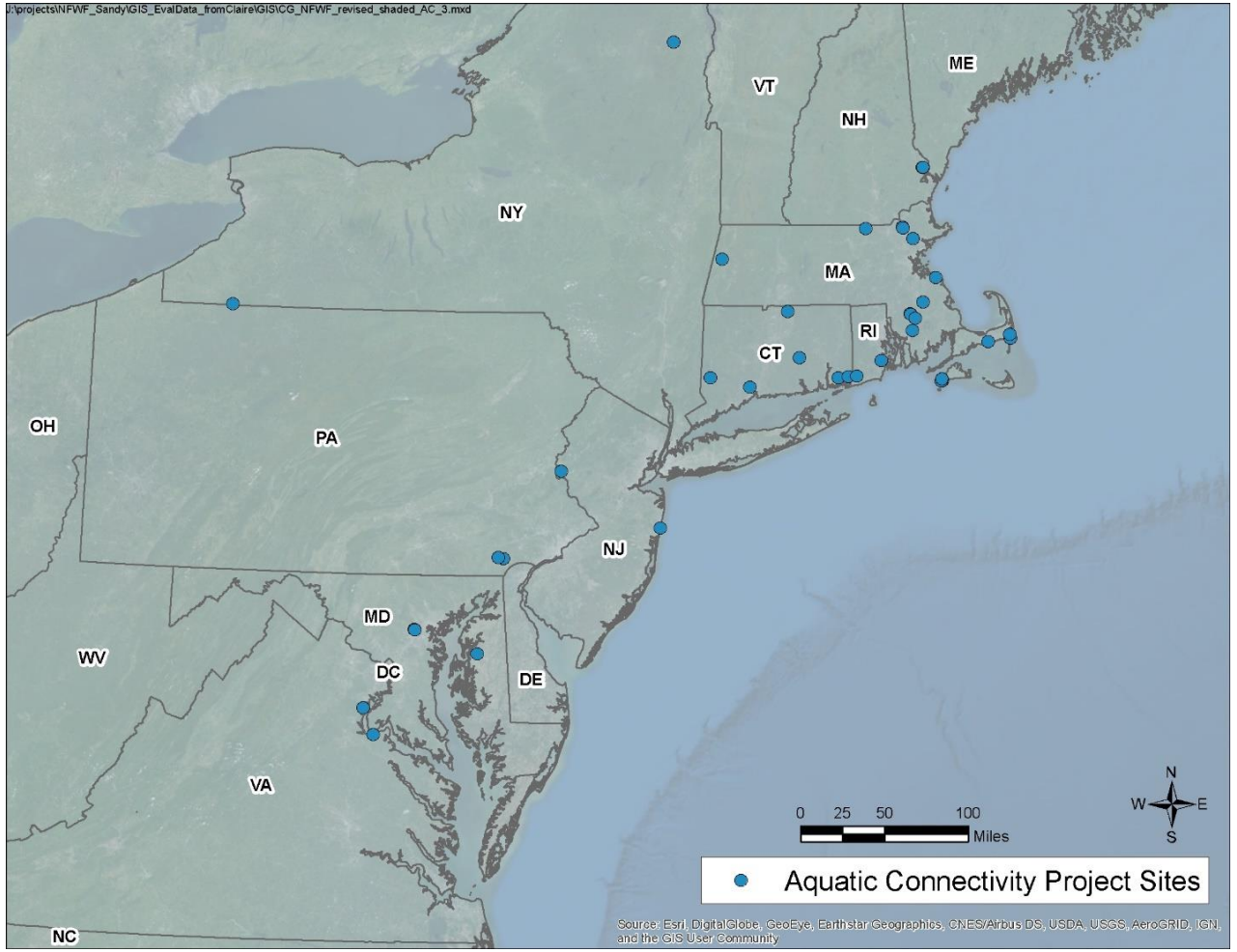
- Enhance or re-connect habitat up- and downstream of dams and failing culverts
- Dams and failing culverts degrade **water quality**, prevent aquatic organism **passage**, can contribute to chronic **flooding**, may pose risks to human property and safety from **catastrophic failure**
- All dams removed were > 50 years old, half were > 150 years old
- Half of dams removed were rated as a significant or high safety hazard

Case Study Findings: Aquatic Connectivity

Year 0 (Pre-project)	Short-term outcomes (1–2 years)	Mid-term outcomes (3–5 years)	Long-term outcomes (10+ years)
			
• Barrier alters hydraulics, traps sediment • Few or no diadromous fish • Flooding risk.	• After barrier is removed, risk of structure failure is immediately eliminated, and upstream inundation risk reduced • Channel morphology and sediment dynamics improve over time • Diadromous fish and other aquatic species recolonize available habitat • Water flows approach reference conditions.		

Case Study Findings: Aquatic Connectivity

- 19 projects in 9 states
  - 23 dams, 10 culverts
- $30.6 million in program funding
- Projects lowered water elevations and reduced flood risk
- Opened >370 miles of upstream habitat
- Species response observed at many sites



Case Study Findings: Beach & Dunes

- Ecological and community resilience benefits of projects designed to improve wildlife habitat and/or protect and sustain important community resources or activities.
- Projects had two main goals:

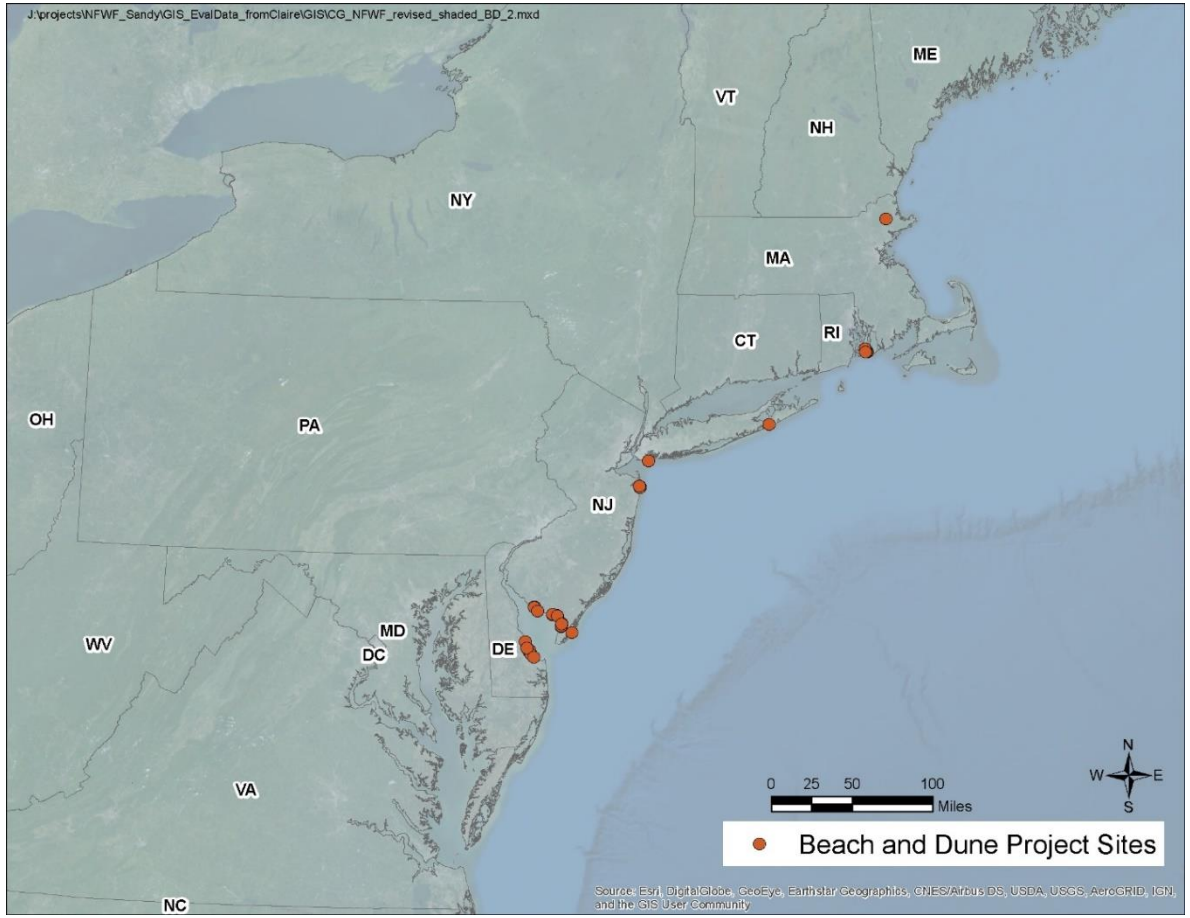
Habitat restoration: Projects that restore and create beach or dune habitat, specifically to support horseshoe crabs and migratory shorebirds.	**Community protection:** Projects that restore beaches or dunes to prevent erosion, enhance shoreline resilience, and mitigate flooding.
	

Case Study Findings: Beach & Dunes

Year 0 (Pre-project)	Short-term outcomes (1–2 years)	Mid-term outcomes (3–7 years)	Long-term outcomes (10+ years)
			
• No to sparse native vegetation • No to little storm protection • Few or no key species	• Vegetation establishes and matures over time, until next storm disturbance; if undisturbed, similar to reference by 24+ years • Beach and dunes stabilize over time (without disturbance), leading to improved storm protection • Invertebrates recolonize (without disturbance), providing food to birds/wildlife that increases over time		

Case Study Findings: Beach & Dunes

- 10 projects in 5 states
- $27.8 million in program funding
- 11 miles and > 140 acres of habitats restored
- Functioning as expected; however, renourishment and maintenance expected
- *All* ecologically-focused projects observed improved outcomes for target species, including:
  - horseshoe crab breeding activity
  - bird utilization of beach habitat,
  - bird breeding activity, and
  - bird weight gains on restored beaches



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Synthesis of Findings: Lessons learned

Program Structure

- **Mix of resilience activities** addressed multiple risks (e.g., sea level rise, storm surge, erosion, inland flooding)
- "On-the-ground" and "**science and planning**" projects complement each other

Program Implementation

- **Delays associated with design/permitting** addressed by up-front coordination, decoupling design-build grants
- Investments in **design-only grants** are successful (50% resulted in on-the-ground implementation by time of evaluation survey)

Synthesis of Findings: Lessons learned

Project Results

- On-the-ground projects **generally on track** to improve ecological and community resilience, **consistent w/expected trajectories**
- **Science and planning** projects that **incorporate stakeholders and end users** in project design and delivery move more rapidly to uptake/diffusion/scale-up
- **Investments in metrics development and long-term monitoring** will enable a robust understanding, will inform best practices, etc. esp. given time lags to projected outcomes

DOI-NFWF Hurricane Sandy Partnership: Timeline

We are here

Established Core Metrics

Impact Evaluation I

Impact Evaluation II

Long-Term Project Monitoring

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

Projects Implemented

Resilience Benefits Increasingly Realized

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Core Resilience Metrics

Ecological Metrics

Socio-Economic Metrics

Long-Term Monitoring: 2017-2023

For more information

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