

Post-Sandy Assessment of Living Shorelines:

Valuing the Multiple Benefits Provided by Green Infrastructure

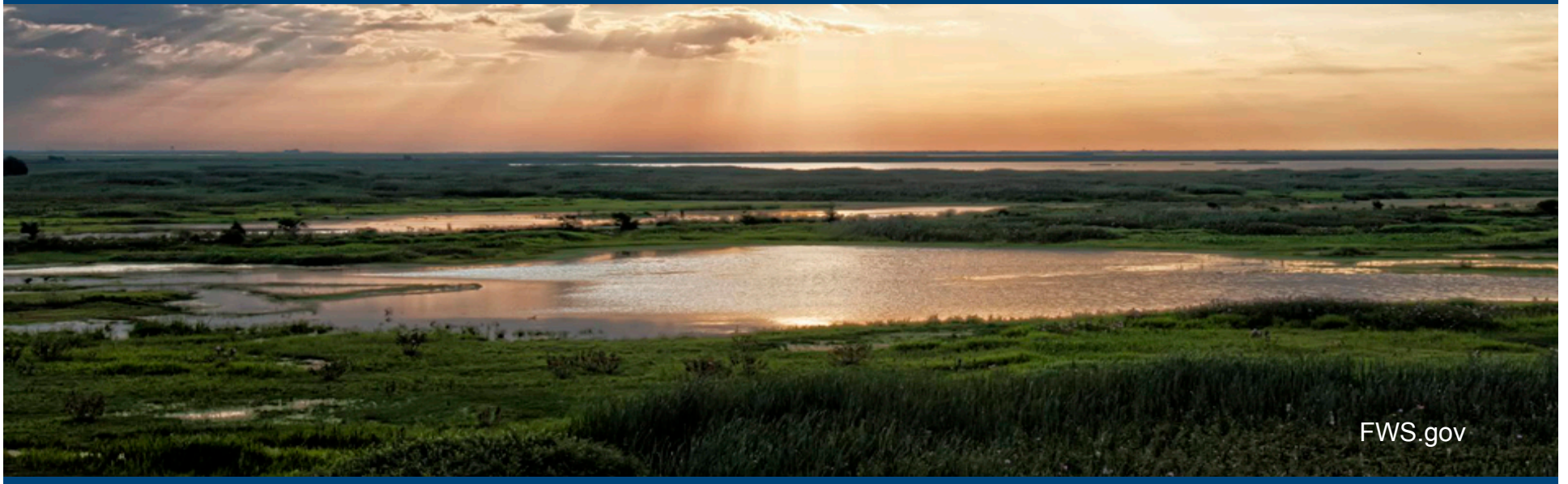
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New Partners for Smart Growth Conference

Ecosystem Services and Adaptation

- **What is important to people**
- **Well being**
- **Breadth**



Relative Benefits

- **What has been damaged**
- **What can be restored**
- **Co-benefits**



Tradeoffs

- **Adaptation and restoration**
- **Bins of services (systems)**
- **Mutual exclusivity**



Sandy



(Reuters/Lucas Jackson)

Ecosystem Services



Forsythe NWR. USFWS

NOAA and ERG

- **NOAA and ESV**
- **Disaster Relief Appropriations Act 2012**
- **Eastern Research Group**



Project Goals

- **Methods Development**
- **Estimates of economic value**
- **USACE & NFWS restoration projects**

Partners

- US Army Corps of Engineers
- US Fish and Wildlife Service
- The Nature Conservancy



Partner Engagement

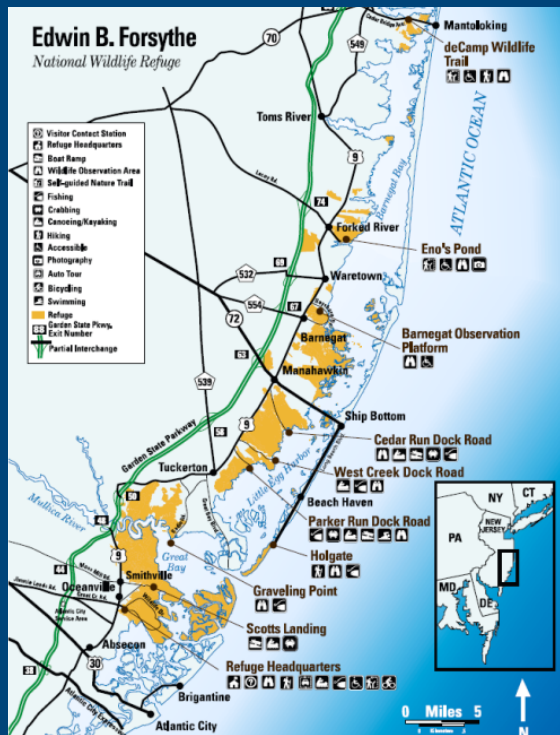
- **Information exchange**
- **Usefulness to current/future restoration**
- **Common need for methods, valuation info**

Project Steps

- **Potential restoration efforts**
- **Select study sites**
 - Geographic (state, urban/rural)
 - Relevancy
 - Breadth
- **Identify stakeholders, services**
- **Methods**
- **Implementation**

Forsythe NWR

- 50 miles, 47,000 acres
- ~100,000 visitors each year



- Managed for salt marsh, coastal forest and wildlife
- Heavy damage from Sandy
- Ongoing climate work

Forsythe NWR – Damage

- **Removal of sediment from coastal marshes**
- **Freshwater impoundment inundated with highly saline bay water**
- **Flattening of dunes that resulted in sand being pushed into salt marshes**
- **Storm surge resulted in down trees and forest damage**

Forsythe NWR – Survey

- **Benefits of salt marsh restoration**
 - Storm protection
 - Contaminant removal
 - Habitat
 - Recreation
 - Food web
 - Carbon Storage
- **Choice experiment – relative benefits**

Jamaica Bay

- **Part of New York City and sits south of Brooklyn and Queens**
- **Salt marsh, open waters, mud flats**
- **Habitat to 300+ species of birds and 100+ species of fish**



Kathy Willens/Associated Press

Jamaica Bay Damage

- **Rockaway peninsula**
 - significant property damage
 - significant damage to beaches and dunes
 - Fire that consumed more than 130 homes (Breezy Point)
- **Two man-made freshwater ponds in the Bay were breached**
- **Communities inside the bay (flooding)**

Jamaica Bay - Survey

- **Shoreline armoring vs living shorelines**
- **Provide decision-makers with information on how different options are valued.**

Perspectives

- Questions that elicit how concerned the respondent is with the status of the study sites
- How much the respondent was impacted by Sandy

Methodology

- **Choice experiment**
- **WTP for**
 - Marsh restoration options
 - Coastal protection measures
- **“Options” are provided, including benefits and costs**
- **Respondents vote for preferred**

Sample

- **Knowledge Networks online panel**
- **Respondents from New York, New Jersey, Connecticut, Delaware, Maryland, and Pennsylvania**
- **Will allow us to assess how valuation varies with distance from the sites**
- **500+ from each site**

Results



- **Develop methods to estimate benefits of restoration**
- **Better understand relative benefits**
- **Inform restoration decisions**
- **Enhance resiliency through better decisions**

Questions?

Thanks!

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