



Overview of North Atlantic LCC Approach, Partnership & Products & Some Coastal Stuff

Andrew Milliken
North Atlantic Landscape Conservation Coordinator
U.S. Fish and Wildlife Service

Chesapeake Bay FWS Partners Meeting
Annapolis, MD

September 10, 2015

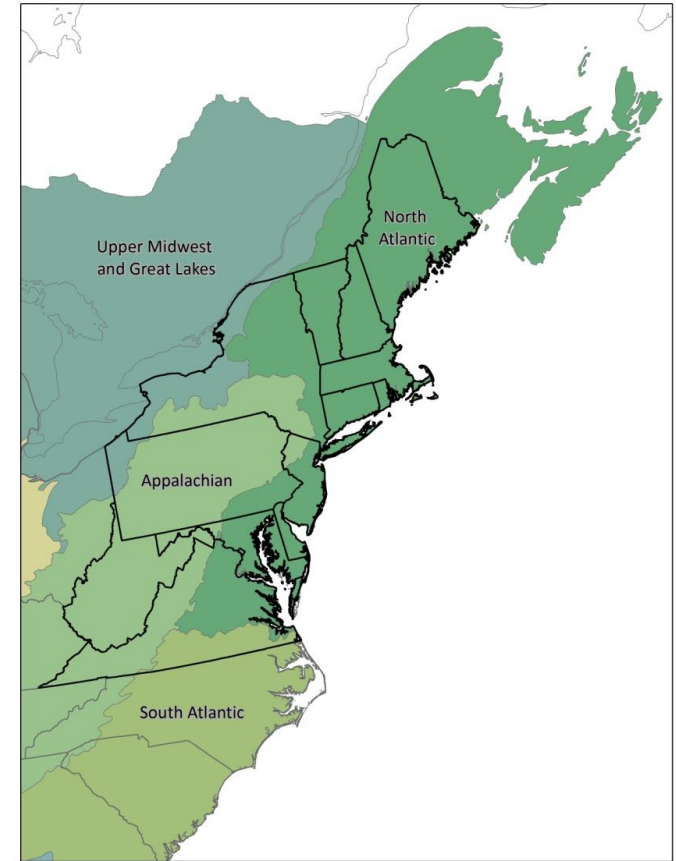


North Atlantic  Landscape Conservation Cooperative



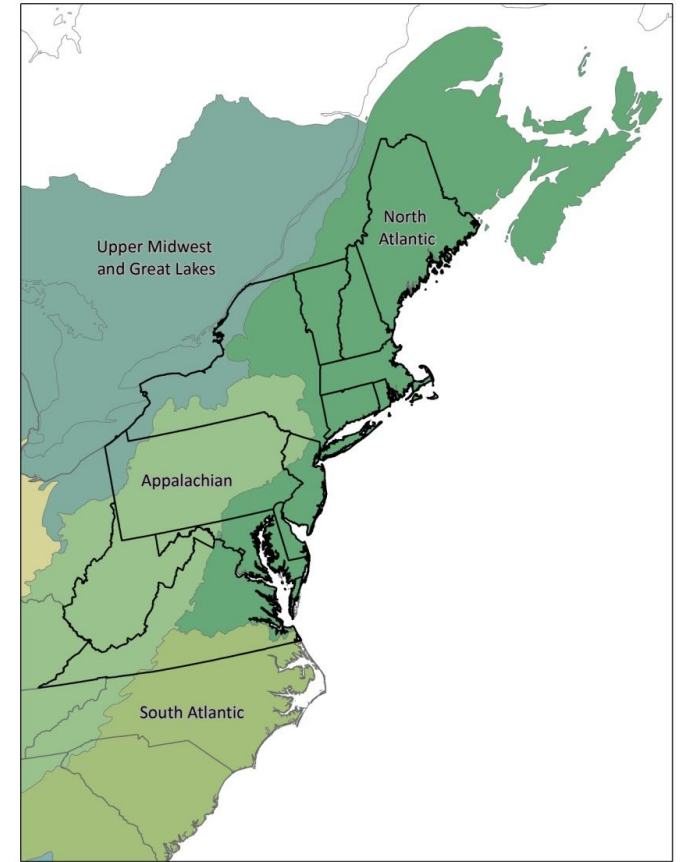
North Atlantic LCC

- 12 states + D.C.
- 4 Canadian provinces
- 15 Tribes
- Multiple partners & partnerships
- Diverse land use
- Predominantly private lands
- Diverse systems/habitats
 - Marine
 - Coastal
 - Riverine
 - Forests
 - Agriculture
 - Mountains



North Atlantic LCC – Mission

...provides a partnership in which the conservation community works together to address increasing land use pressures and widespread resource threats and uncertainties amplified by a rapidly changing climate.



North Atlantic  Landscape Conservation Cooperative



North Atlantic LCC Partnership



Steering Committee

- 33 Members (14 State, 1 Tribal, 8 Fed., 1 Canadian, 8 NGO, CSC)

Technical Committees

- 54 members (10 State, 28 Fed., 2 Can., 10 NGO, 4 LCC) aquatic, terrestrial/wetland and coastal/marine sub-teams (14 FWS)
- Plus multiple project oversight teams

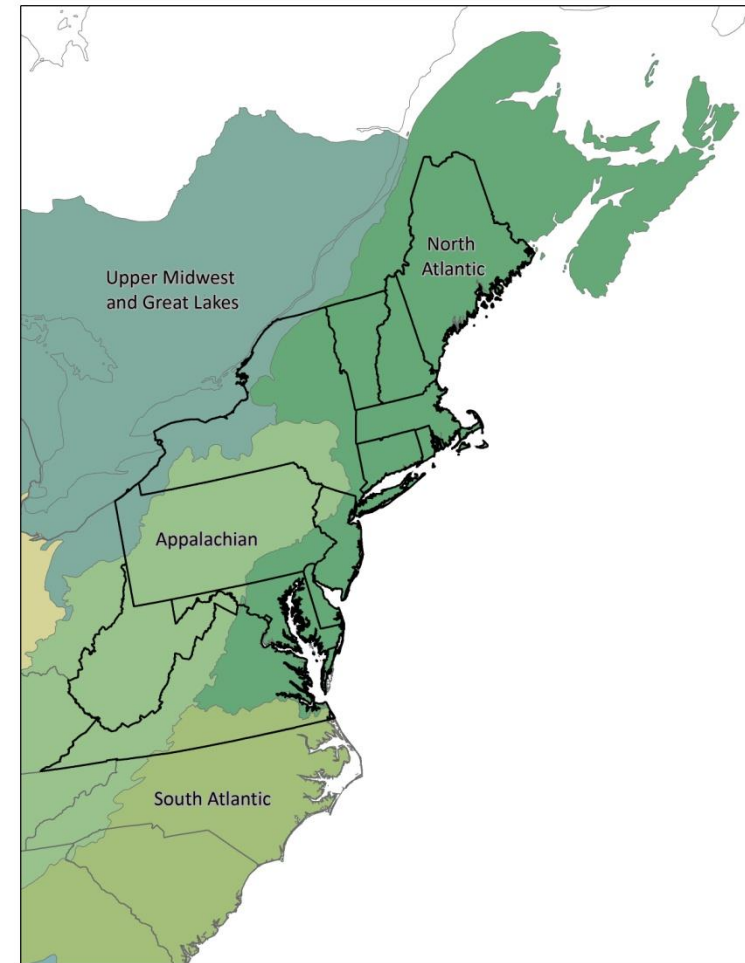
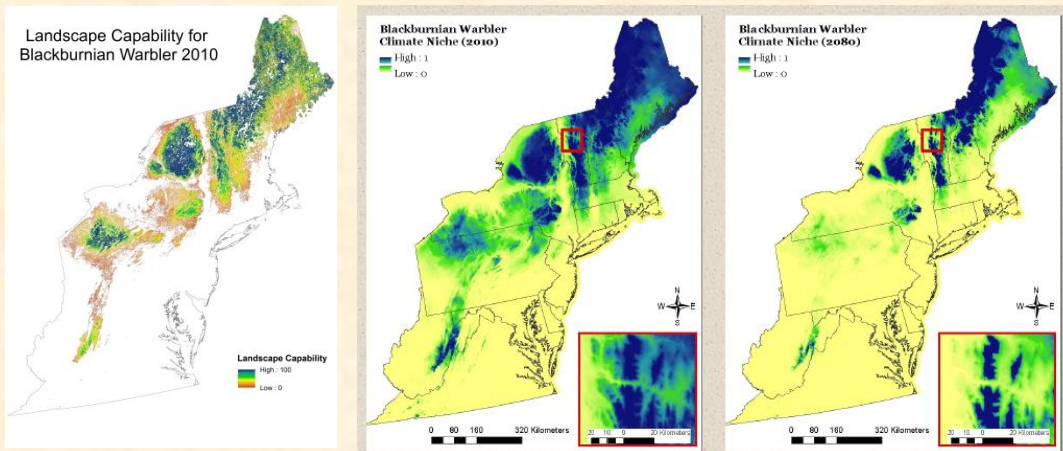
Science Delivery Team

- 30 members (8 State, 10 Fed., 9 NGO, 3 LCC) (6 FWS)



North Atlantic LCC Mission – Information and Tools

- Developing and delivering scientific information and tools
- Prioritizing and guiding conservation actions by partners toward common goals.



Northeast Conservation Framework

Albany
II



GOAL-SETTING
*Which species/habitats to conserve?
At what levels?
Who decides?*

BIOLOGICAL ASSESSMENT
*What do we know about the
status of priority wildlife?*

CONSERVATION DESIGN
*What should landscapes look like
to conserve species at goal levels*

**INFORMATION
MANAGEMENT**
*How will we manage the
demand for and creation
of data?*

SCIENCE TRANSLATION
*How do we make science
solutions useful?*

PRIORITIES
*Which species and
issues demand
immediate attention?*

CONSERVATION ADOPTION
*How do we get communities and
landowners engaged in
conservation?*

**MONITORING, EVALUATION AND
RESEARCH**
*What new information will we
gather to support
conservation?*

CONSERVATION DELIVERY
*How will we most efficiently put
conservation on the ground?*

North Atlantic  Landscape Conservation Cooperative



Science Needs & Projects



Strategic Plan criteria for prioritizing needs

- **Foundational needs** for organizing landscape conservation (consistent mapping, decision frameworks)
- Needs that **address major threats and uncertainties** to sustaining natural or cultural resources in the North Atlantic LCC (land use change, climate impacts, energy)
- Needs that address threats and uncertainties to **multiple species, habitats, ecosystems or other features.**
- Needs that will **inform conservation decisions** and actions *including landscape conservation designs*
- Needs that are **priorities for existing partnerships** in the North Atlantic LCC (NEAFWA, JVs, FHPs, NEPARC etc.)



LCC Science Projects

- Over 25 completed or ongoing science projects providing **foundational data, assessments and decision support** for terrestrial, aquatic and coastal systems

- <http://www.northatlanticlcc.org/projects>

- Product pages <http://www.northatlanticlcc.org/products> (coming soon)

You are here: Home

Companion Sites

REGISTER

LOG IN




About the North Atlantic LCC

The North Atlantic Landscape Conservation Cooperative is an applied science and management partnership working to protect natural lands, valued resources and the biological diversity that provide environmental benefits and services to the human communities across the region.



NALCC Conservation Planning Atlas



DATA BASIN

Participate in the North Atlantic LCC

- Register to become a member
- Share your photos
- Share your documents or data



Northeast Habitat Guides Completed for Northeast Association of Fish and Wildlife Agencies

Photo by: Jonathan Mays



1 2 3 4 5 6

NEWS

- Appalachian LCC featured in premier Climate Education and Literacy Program
LCC Coordinator and Senior Scientist Dr. Jean Brennan was invited to speak at an inaugural... [More](#)
- North Atlantic LCC seeks proposals for priority science needs funding
The deadline is September 18th to apply for funding from the North Atlantic LCC's Priority... [More](#)
- LCC Network releases updated interactive LCC map
The revised map more accurately depicts the geographies of the 22 LCCs across the continent... [More](#)
- FWS News highlights Priority Amphibian and Reptile Conservation Areas project
A special feature on Conserving Amphibians highlights a North Atlantic LCC funded project to... [More](#)

EVENTS

- Tidally Influenced Culverts Meeting
Meeting for state, federal and provincial staff to exchange information needs regarding tidally... [More](#)
- [MORE EVENTS](#)



DESCRIPTION: This dataset depicts the ecological integrity of locations (represented by 30 m grid cells) throughout the northeastern United States based on environmental conditions existing in approximately 2010. Ecological integrity is defined as the ability of an area (e.g., local site or landscape) to sustain important ecological functions over the long term. In particular, the functions include the long-term ability to support biodiversity and the ecosystem processes necessary to sustain biodiversity.

[SEE DETAILS](#)

North Atlantic Landscape Conservation Cooperative Conservation Planning Atlas

Search North Atlantic LCC CPA

search by geography

powered by DATA BASIN

Get Started

Browse

Create

My Workspace

What is the North Atlantic LCC Conservation Planning Atlas (CPA)?

What is the North Atlantic LCC?

What can I do?

How do I start exploring?

The North Atlantic LCC Conservation Planning Atlas is a platform for easy access to high-quality geospatial datasets, maps and information to facilitate partner-driven conservation.

[Learn more](#)



Get started quickly with the North Atlantic LCC Conservation Planning Atlas

[Take a Tour](#)

North Atlantic LCC Galleries...

Terrestrial



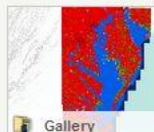
Aquatic



Coastal and Marine



Recommended Items



Gallery
Chesapeake Bay region sea-level rise modelling



Dataset
USGS National Land Cover Database (2006, 2001, 1992)

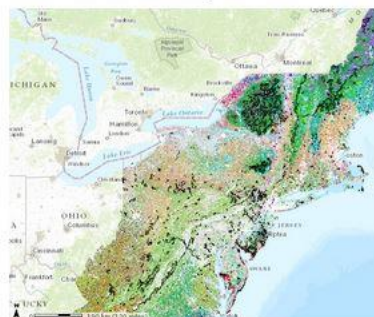


Map
Northeast Terrestrial Habitat and Secured Lands Map



Dataset
Northeast Secured Lands 2011 Gap Status 1 and 2 only

Northeast Terrestrial Habitat and Secured Lands Map



This is a pilot map for the North Atlantic LCC to begin using DataBasin.

erative



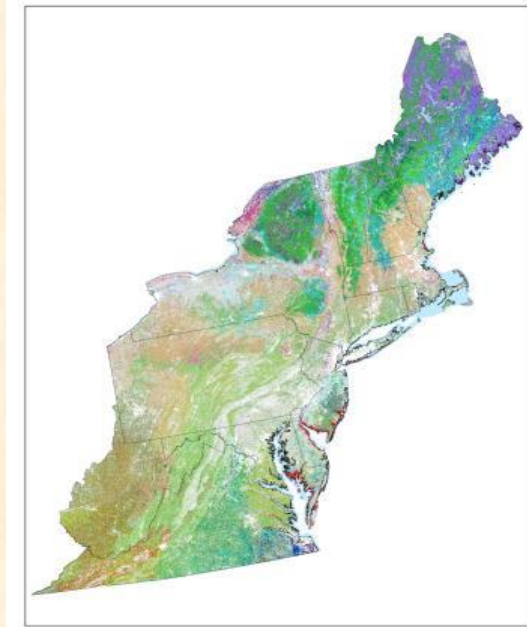
- LC MAP - Landscape Conservation Management and Analysis
- ern Tallgrass Prairie and Big Rivers Landscape Conservation Cooperative
- Basin Landscape Conservation Cooperative
- Northern Landscape Conservation Cooperative
- Plains Landscape Conservation Cooperative
- Coast Prairie
- Coastal Plains and Ozarks Landscape Conservation Cooperative
- andscape Conservation Cooperative (LCC) Boundaries for the US
- Network Boundaries
- nal Data: Links and GIS Services
- al Resource Data Analysis Tools
- America Spatial Data
- Atlantic Landscape Conservation Cooperative
- Pacific Landscape Conservation Cooperative
- s and Prairie Potholes Landscape Conservation Cooperative
- ern Rockies Landscape Conservation Cooperative
- r Midwest and Great Lakes Landscape Conservation Cooperative
- ern Alaska Landscape Conservation Cooperative

How Projects and Products Fit Together

- These **science projects and their resulting products** fit together and build towards information, tools and capacity needed to make more informed conservation decisions. The projects include those that develop:
 - **foundational information** providing the basis for assessing condition of and threats to priority resources;
 - **assessments** of the condition, major threats and vulnerabilities to these resources; and
 - **decision support tools** including conservation designs that use the foundational information and assessments to help partners prioritize and decide how much of what conservation actions are needed where to sustain these resources
- **Science delivery** projects make information and tools available, understood and used by decision makers and demonstrate their applications.

Science Products - Foundational

- Terrestrial Habitat Map (complete)
 - Extension into Canada (ongoing)
- Aquatic Map Revisions (complete)
 - Extension into Canada (initiated)
- Coastal and Marine Classification & Map (complete, peer review)
- NWI Updates (complete)
- Compilation of Regional Vernal Pool Data (underway)
- Road Stream Crossings (underway)



Plus many foundational data layers being as part of assessment and design projects

- >140 regionally consistent spatial data layers available along with tools to use them

Science Products - Assessments

- Regional Habitat Vulnerabilities to Climate Change (complete)
- Regional Species Vulnerabilities to Climate Change (final peer review)
- Piping Plover-Beaches Vulnerability to Sea Level Rise & Increased Storms (complete)
- Marine Bird Mapping and Risk Assessment (final peer review)
- Brook Trout-Cold Water Streams Vulnerability to Changing Flow and Temperature (ongoing)
- Road-stream crossings – assessing impacts to aquatic connectivity and vulnerability to flooding (ongoing)
- Tidal Marsh Obligate Species - Marsh Habitat Vulnerability/Resiliency to Sea Level Rise & Increased Storms (ongoing)
- Integrated resources - *Designing Sustainable Landscapes* (ongoing)
 - linking together landscape change, assessment and design



Science Products – Decision Support

- Conservation Designs – Connecticut River, RCOAs, others
- Decision Support Tool to Assess Coastal/Aquatic Fish Habitats and Threats (ongoing)
- Forecasting Changes in Aquatic Systems and Resilience of Brook Trout (ongoing)
- Priority Amphibian and Reptile Conservation Areas (ongoing)
- Priority Migratory Bird Stopover Areas (ongoing)
- Regional Connectivity - Permeable Landscapes (in review)
- Aquatic Connectivity and Resiliency of Road Stream Crossings (ongoing)
- Increasing Beach Resiliency in the Face of Sea Level Rise and Storms (ongoing)
- Increasing Tidal Marsh Resiliency in the Face of Sea Level Rise & Storms (ongoing)



Why is this Information Relevant?

Landscape/Regional Context to Guide Conservation Planning and Actions

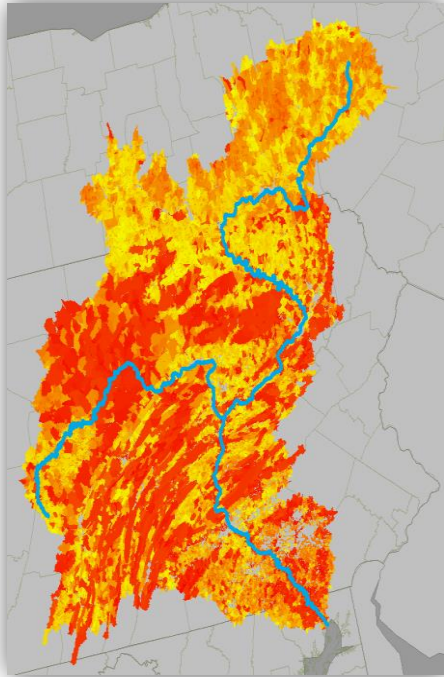
- Where should we invest in **land protection**, and how much?
- How should we **manage** protected lands?
- Where should we invest in ecological **restoration**?
- Where/how should we focus **species protection and restoration**?
- Where and how should we influence local **land use / open space planning**?
- Where should **infrastructure** go to have least impact?



Science Delivery

- Expanding Capacity to Deliver Science including:
 - Training, technical assistance and workshops
 - Development of networks (including FWS)
 - Translating science and development of media
 - Development of science applications to support management decisions
 - Strategic communications
 - Information management: user-friendly web/portal access to data/products
- Grants to partners
 - Demonstration projects
 - Delivery of information through partner networks

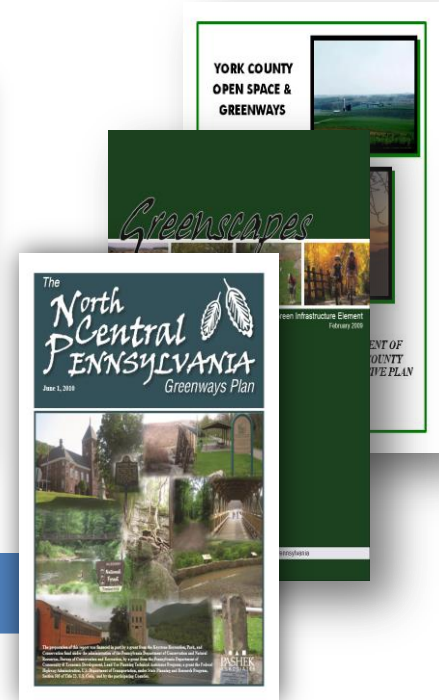
Science Delivery Chesapeake Conservancy: *Envision the Susquehanna*



Data Analysis



Community Input



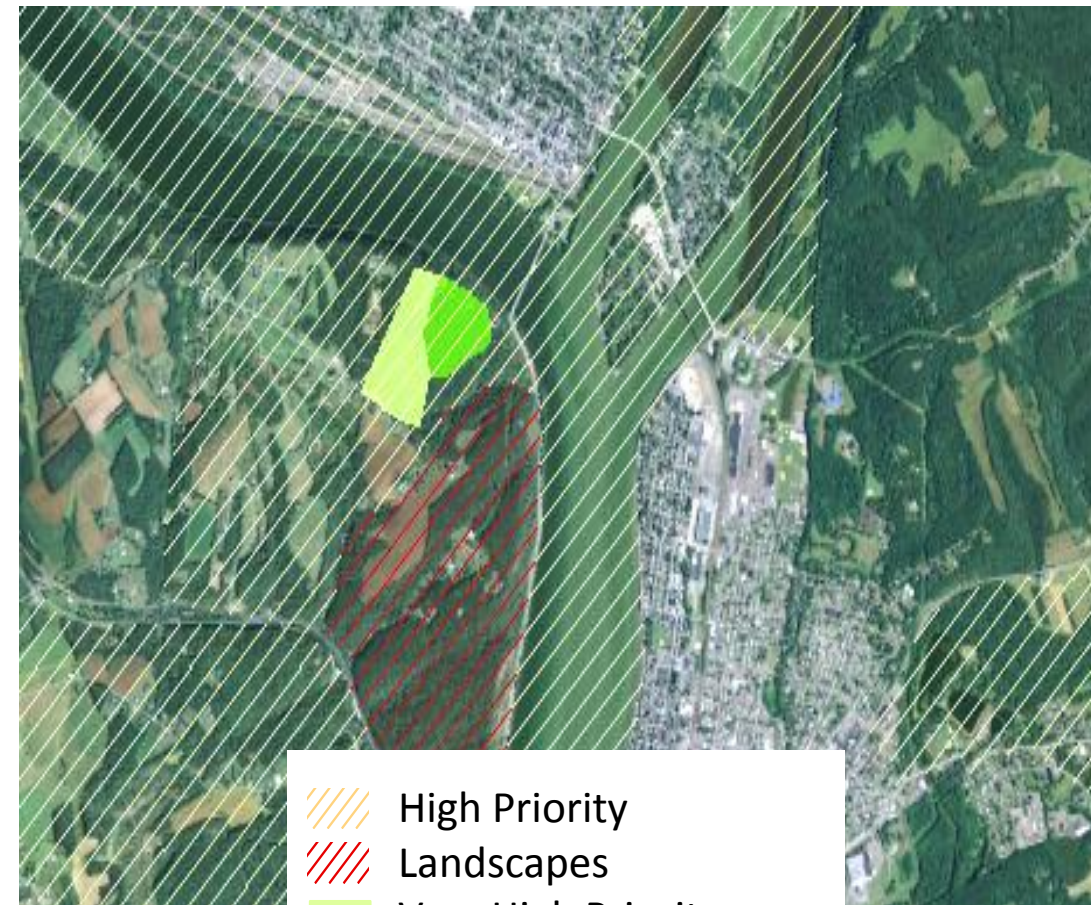
Plans Analysis

Vision for the Susquehanna River

Community supported, evidence based conservation solutions

Saving the Chesapeake's Great Rivers and Special Places

Integrating NALCC datasets into landscape conservation decision-making



Potential Demonstration Project:
Supporting the acquisition of land to expand Shikellamy State Park



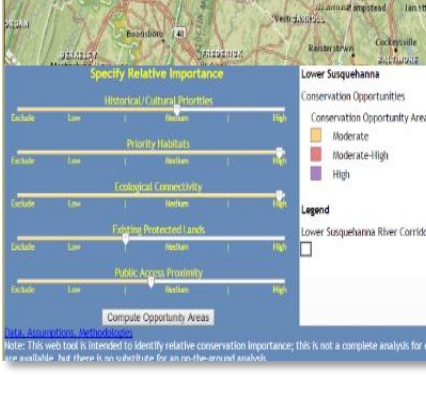
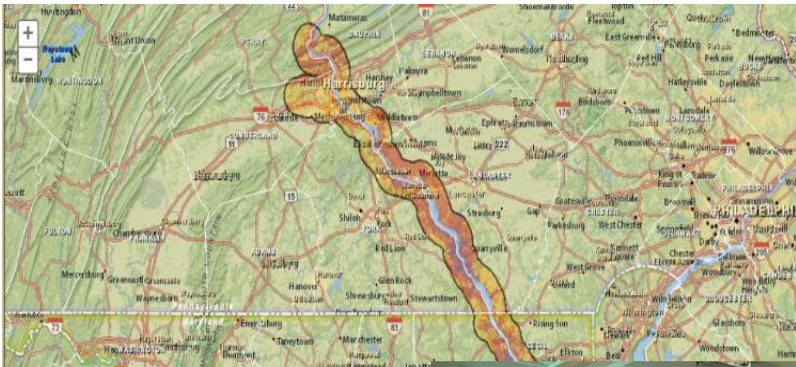
View from Shikellamy Bluffs

Land Acquisition
Shikellamy State Park

Introducing practitioners to new and existing regional datasets

Hosting data workshops to:

- introduce practitioners to regional datasets,
- help local groups understand the regional context of the resources within their communities, and
- develop tools tailored to fit the needs and priorities of each organization.



Upcoming Envision the
Susquehanna workshops:
September 25th: Darlington, MD
September 28th: Wrightsville, PA

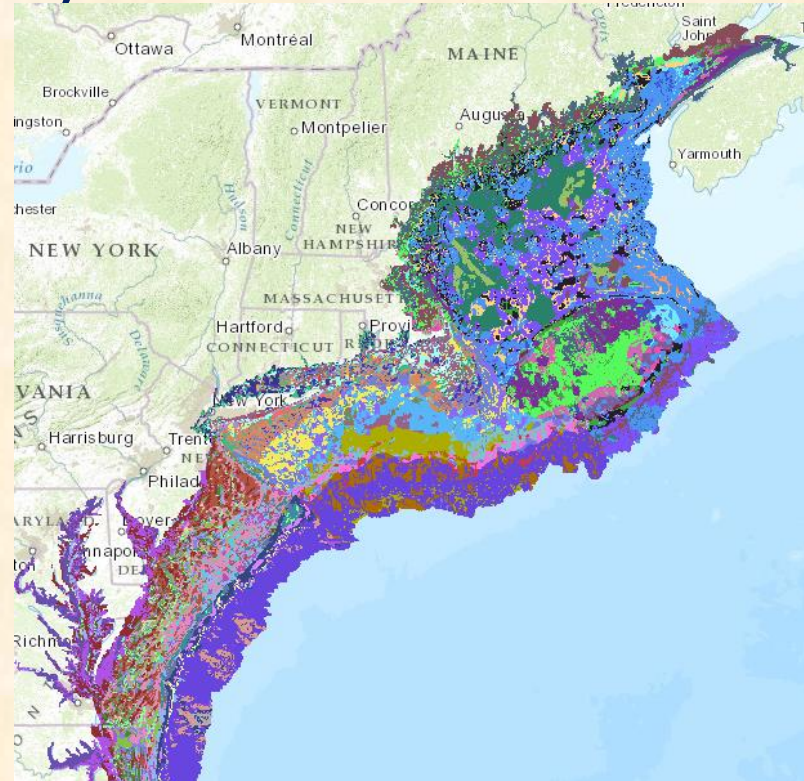
Examples of LCC Products

- Marine
 - Mapping
 - Marine Birds
- Coastal
 - Sea Level Rise SDM
 - Beach Habitats and Species
 - Tidal Marsh Habitats and Species
- *Aquatic*
 - *North Atlantic Aquatic Connectivity Collaborative*
 - *Fish Habitat Tool*
- *Terrestrial & wetland*
 - *Designing Sustainable Landscapes*
 - *Terrestrial Resilience*
 - *Other*
- *Integrated conservation design*



Foundational Mapping: Coastal and Marine Ecological Classification (completed)

- Cross-walked classification available at 3 spatial scales
- Intended use by ocean/coastal managers (NROC, MARCO, etc.) – further steps needed for full adoption



On Conservation Planning Atlas: crosswalk with TNC NAMERA benthic habitat model

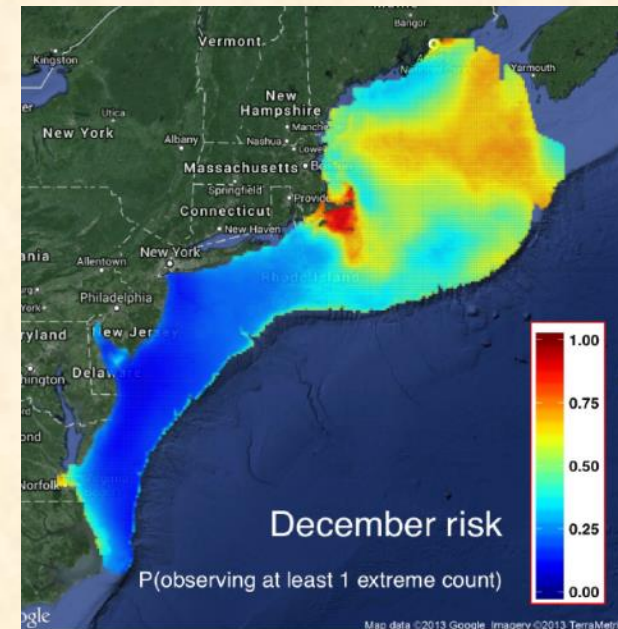
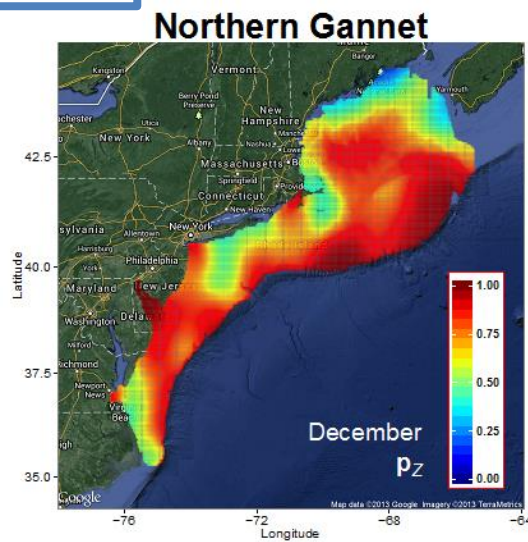


Assessment/Decision Support: Marine Bird Mapping and Risk Assessment

Key products:

Monthly and annual occurrence models for 24 marine birds

Combined monthly occurrence for all 24 species



Landscape Conservation for Sea Level Rise Adaptation – A Regional Framework



Coastal Resiliency Sea Level Rise SDM

Optimize the allocation of conservation efforts in a spatially explicit manner in order to sustain ecological values of beaches/tidal marshes across the North Atlantic Coast in the face of storm impacts and sea level rise

Sustainable Conservation of Ecosystem Services (Carbon + Protection of Human Infrastructure + Rec Measure)

Ensure Persistence of Native Habitats (Pr Persist Beach Complex + Pr Persist Marsh Complex)

Ensure Persistence of Native Species (Δ Suitability Spp Beach + Δ Suitability Spp Marsh)

Regional Sea Level Rise & Response Model(s)

Predictions Vulnerability of Habitat - Sea level rise + Storm Impacts

Universe of Alternatives (Suites of Actions)

Type of Action, State of Patch, Location of Patch, Time of Implementation

Acquire New Habitat – Future Buffering
(Habitat that could buffer effects, but will need management to transition)

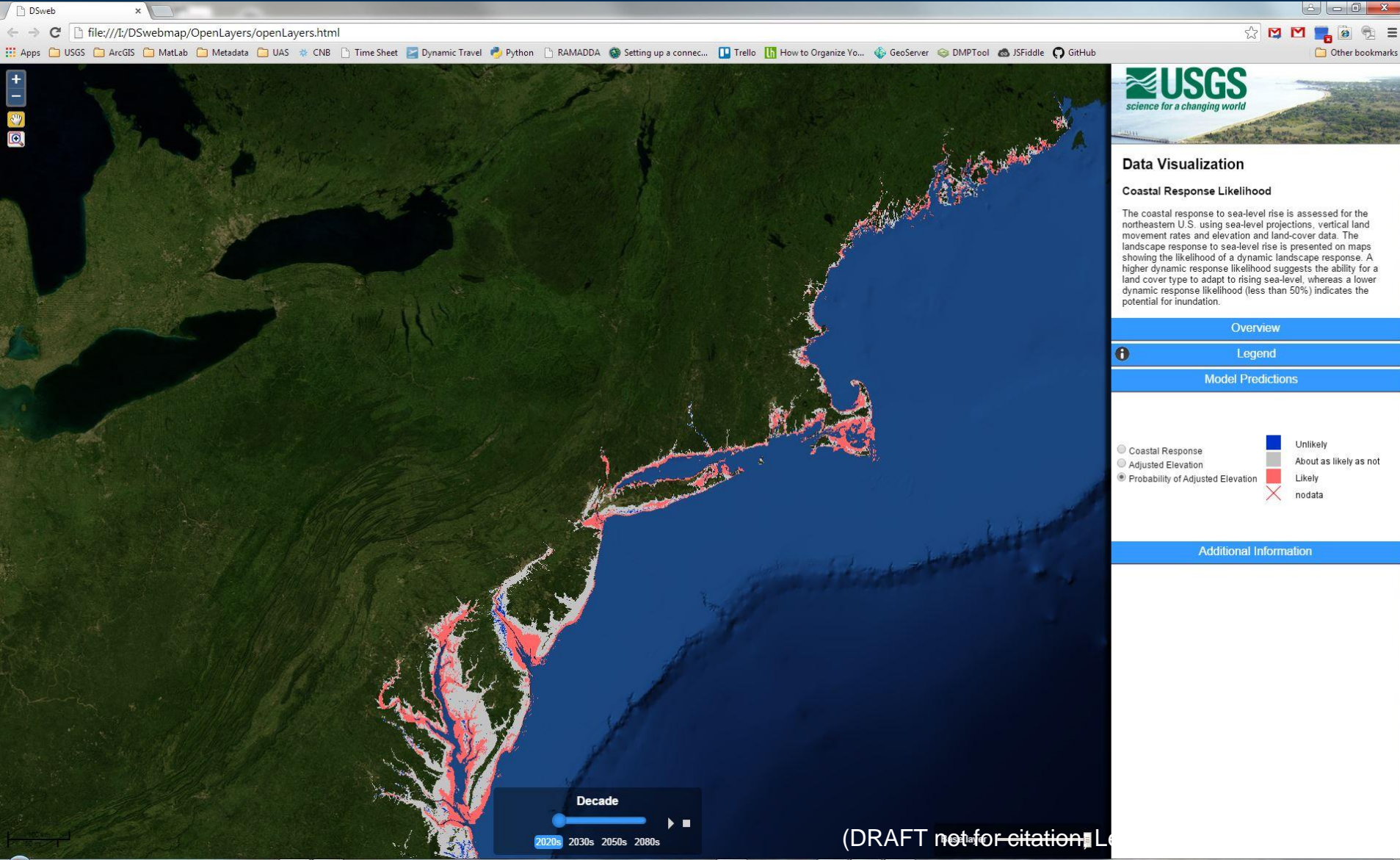
Manage New Habitat - Transition
(Management to get newly acquired habitat to buffer effects)

Acquire Existing Habitat
(Maintain high-quality habitat)

Manage Existing - Resiliency
(Management to habitat in conservation status to improve resiliency to effects)

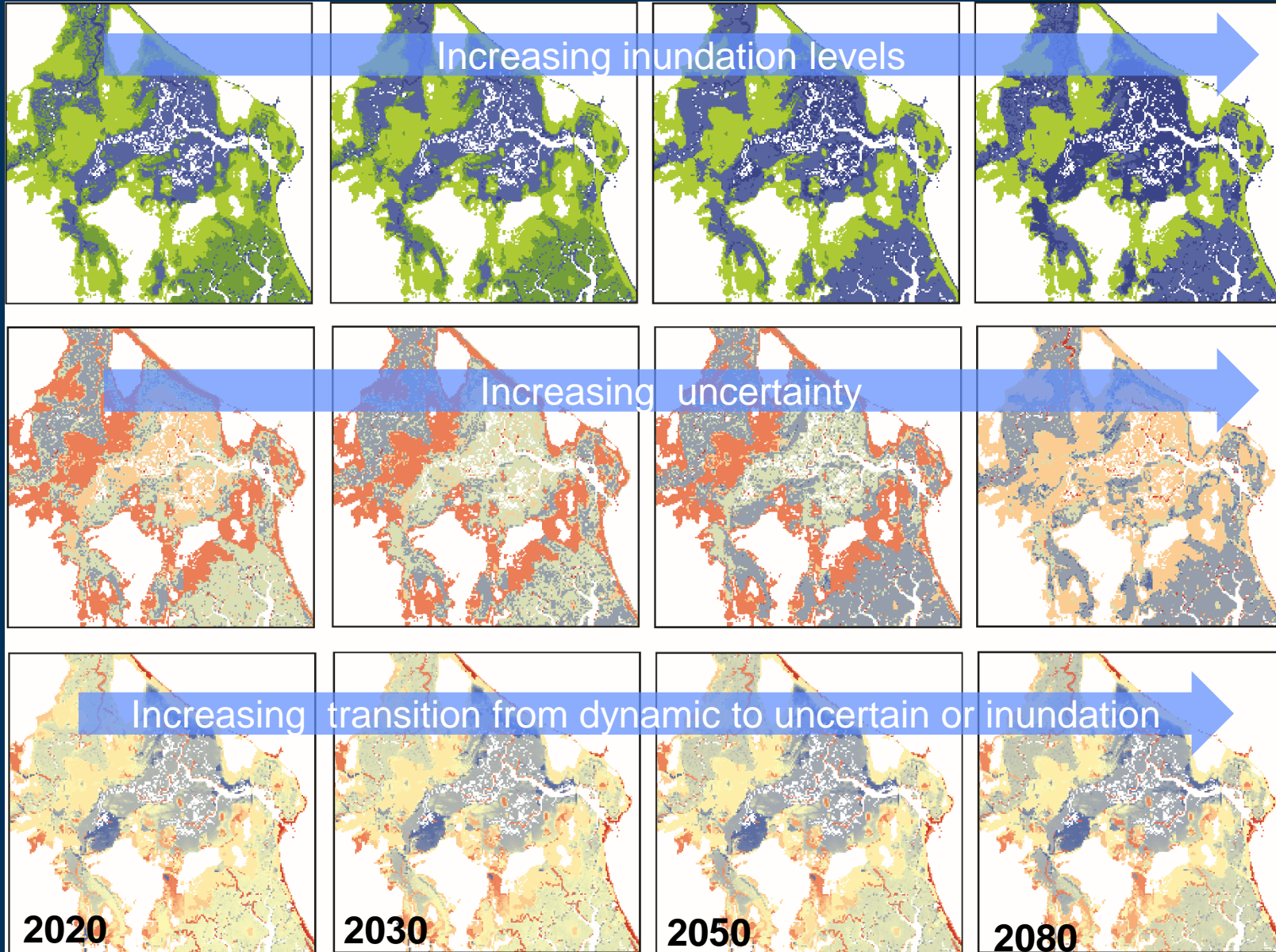
Modeling coastal response to sea-level rise in the North Atlantic LCC

http://woodshole.er.usgs.gov/project-pages/coastal_response/



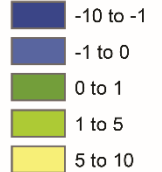
(DRAFT not for citation)

Changes through time

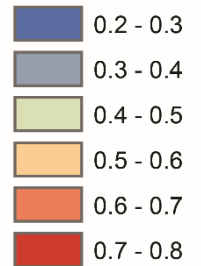


Adjusted Elevation Range

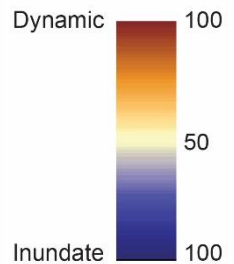
(meters)



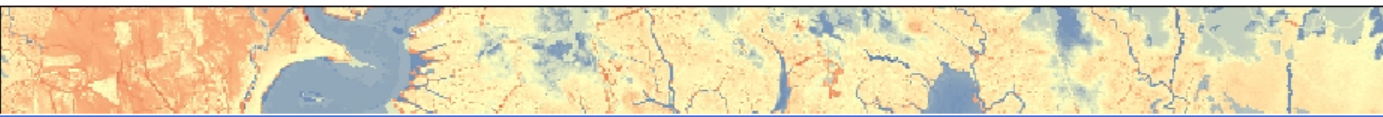
AE Probability



Coastal Response Probability (%)



0 1.25 2.5 5 Kilometers



USGS Home
Contact USGS
Search USGS

Woods Hole Coastal and Marine Science Center

Woods Hole Coastal and Marine Science Center > Coastal Landscape Response to Sea-Level Rise Assessment for the Northeastern United States

Coastal Landscape Response to Sea-Level Rise Assessment for the Northeastern United States

- Home
- Overview
- Approach
- Data
- Publications and References
- Contacts



As part of the USGS [Sea-Level Rise Hazards and Decision-Support project](#), this assessment seeks to predict the response to sea-level rise across the coastal landscape under a range of future scenarios by evaluating the likelihood of inundation as well as dynamic coastal change. The research is being conducted in conjunction with resource managers and decision makers from federal and state agencies, and non-governmental organizations and utilizes a structured decision-making

APPROACH



Landscape Change Predictions
The coastal response to sea-level rise is assessed for the northeastern U.S. using sea-level projections, vertical land movement rates, and elevation and land cover data. The landscape response to sea-level rise is presented on maps showing probabilistic predictions of the level of potential landscape submergence and the likelihood of landscape change.



Decision-Support Tools
Tools allow users to explore and identify which areas may be best-suited to meet their land adaptation or management requirements for a variety of planning horizons. Coming soon!



Structured Decision Making
Structured decision making (SDM) is a formalized approach to problem solving that requires consideration of the objectives, management options, alternative actions, and tradeoffs related to the decision problem from the outset. Outcomes from an SDM workshop were used to inform coastal response model development at the beginning of this project to ensure predictions can be applied to specific land and resource management objectives.

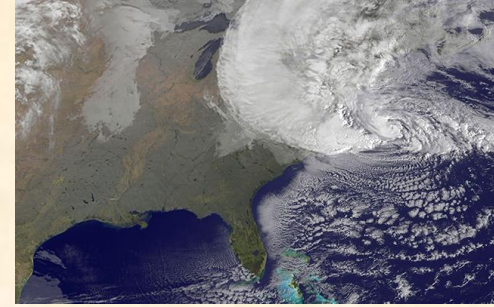
ONLINE DATA OR MULTI-MEDIA

- [Adjusted Elevation](#)
- [Adjusted Elevation Probability](#)
- [Coastal Response Type Likelihood](#)

Maps and Report Available now, Decision Support Tools soon



Hurricane Sandy



- Coordination among science projects
- Support and Coordination of Science Related to:
 - Increasing Beach Resiliency in the Face of Sea Level Rise and Storms
 - Increasing Tidal Marsh Resiliency in the Face of Sea Level Rise & Storms
 - *Aquatic Connectivity and Resiliency of Road Stream Crossings*



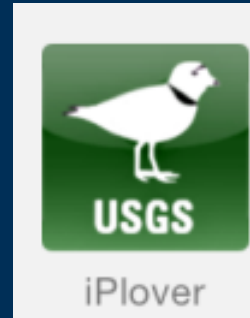
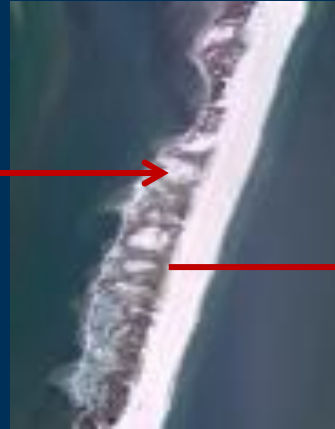
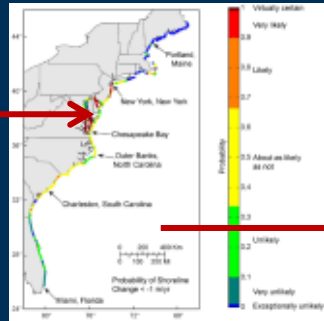
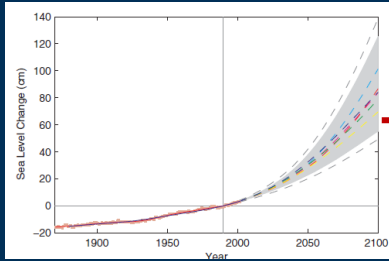
Increasing Resiliency of Beach Habitats and Species in the Face of Storms & Sea Level Rise

- Expand SLR beach response/plover model to Region
 - USGS, Virginia Tech
- Collect beach-nesting bird location and habitat data on NWRs and NPs (and beyond)
 - USFWS, NPS, USGS (iPlover)
- Inventory of beach and inlet modifications before and after Hurricane Sandy
 - Terwilliger Consulting
- Assess effects of beach stabilization projects in NY & NJ on beach habitats and species
 - Virginia Tech, Rutgers, Conserve Wildlife NJ
- Deliver results to partners
 - Rutgers, NROC, MARCO

North Atlantic Landscape

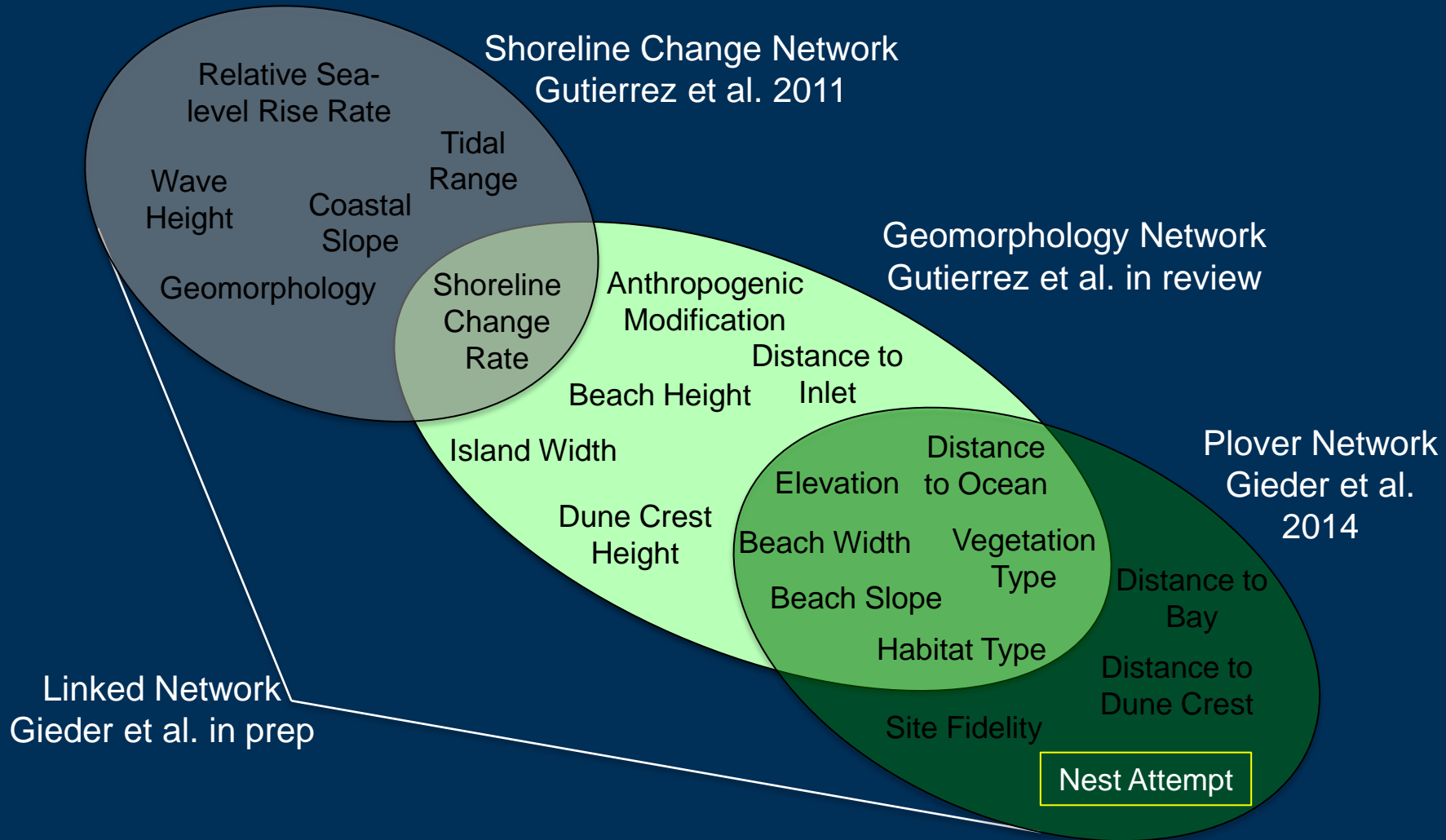


Objective: predict influence of sea-level rise \Rightarrow coastal morphology \Rightarrow plover



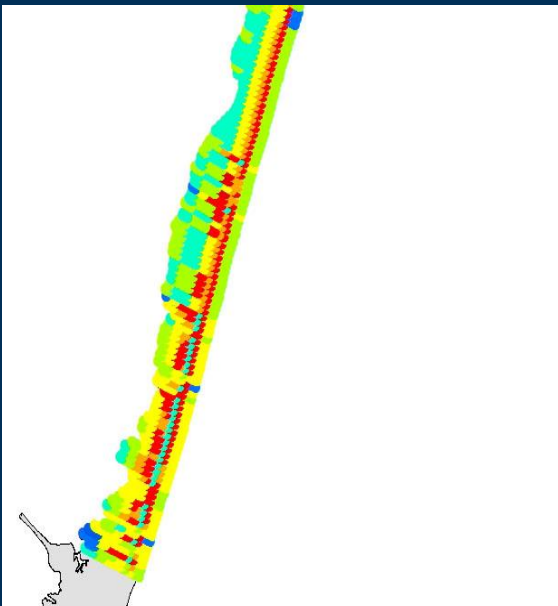
- Sea-level change (and other factors) drives coastal erosion
- Erosion and sedimentation modify morphology
- Large-scale and local morphology predicts plover success (and vegetation, groundwater resources, wetland behavior, etc.)

Forecasting the Effects of Sea-Level Rise on Piping Plovers



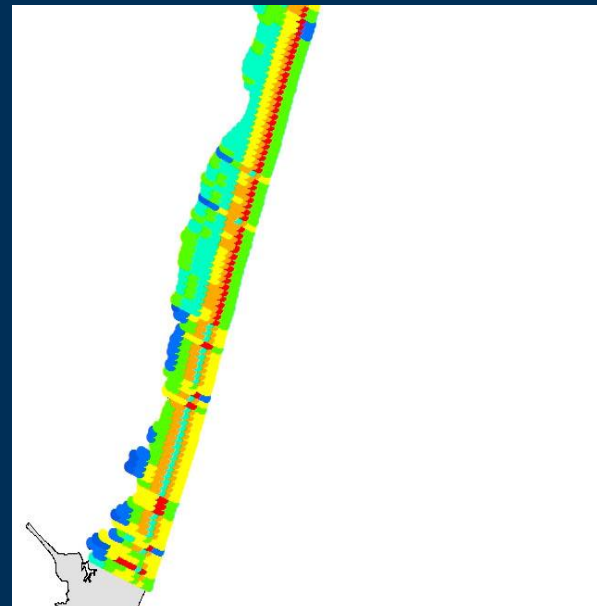
Forecasting hypothetical future management scenarios and plover nesting (and other beach dependent species) probability

~2050, 4.1 mm/yr SLR



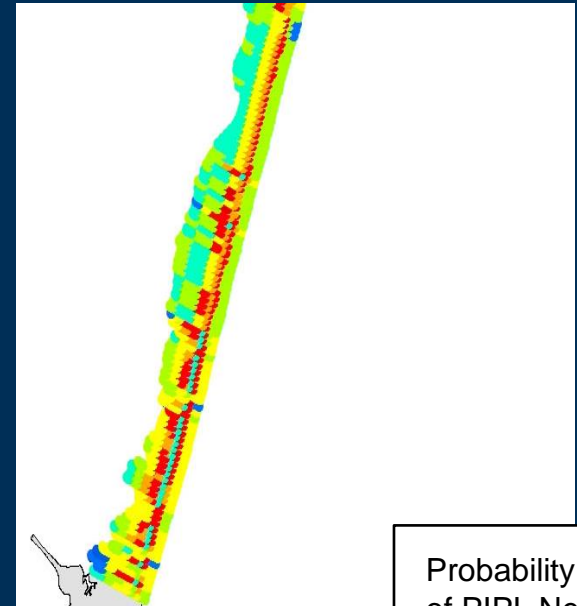
Good

~2050, 4.1 mm/yr SLR, with frequent sand placement

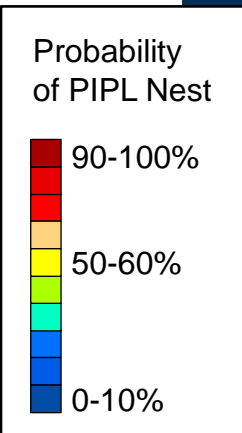


Not-as-good

~2050, 4.1 mm/yr SLR, with increased berm height



Good



Beach and Inlet Inventories, Initial Publications , iPlover available now
Regional Model available in 2016

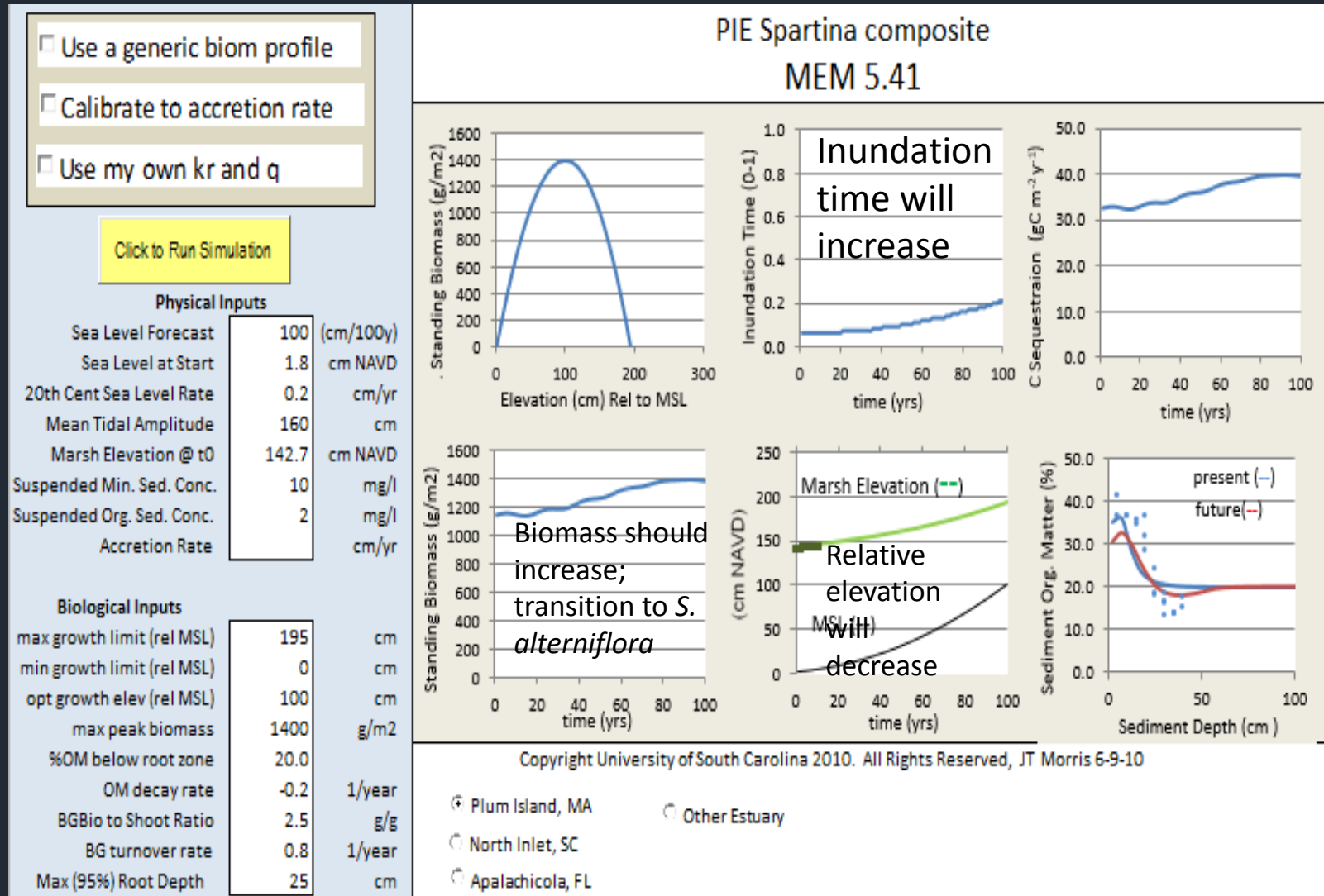
(Gutierrez, Gieder et al., in prep)

Increasing Resiliency of Tidal Marsh Habitats and Species in the Face of Storms & SLR

- High/low marsh mapping, elevation surveys
 - SHARP (U Maine, U Del)
- Develop/refine models for understanding impacts of sea level rise and storms on tidal marshes and marsh species
 - Vegetation and wildlife response (SHARP)
 - Modeling marsh community response (USC, LSU, USGS)
- Decision support models and incorporation into decision model framework
 - UMass, TNC
- Monitoring and assessment of effectiveness of restoration for marsh resiliency
 - USFWS, NPS, SHARP (U Maine, U Conn, U Del, SUNY)
- Delivery of results to partners
 - NROC, MARCO

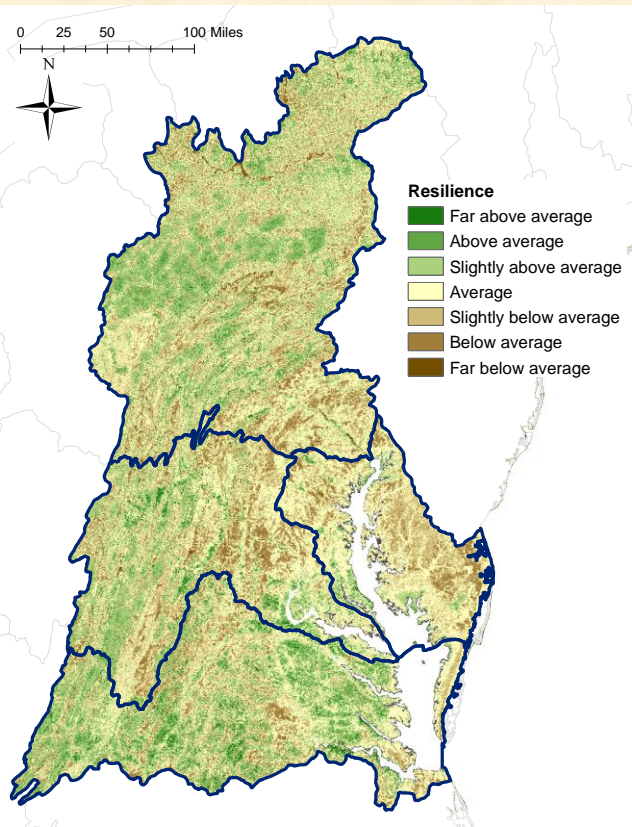


The Marsh Equilibrium Model (MEM)

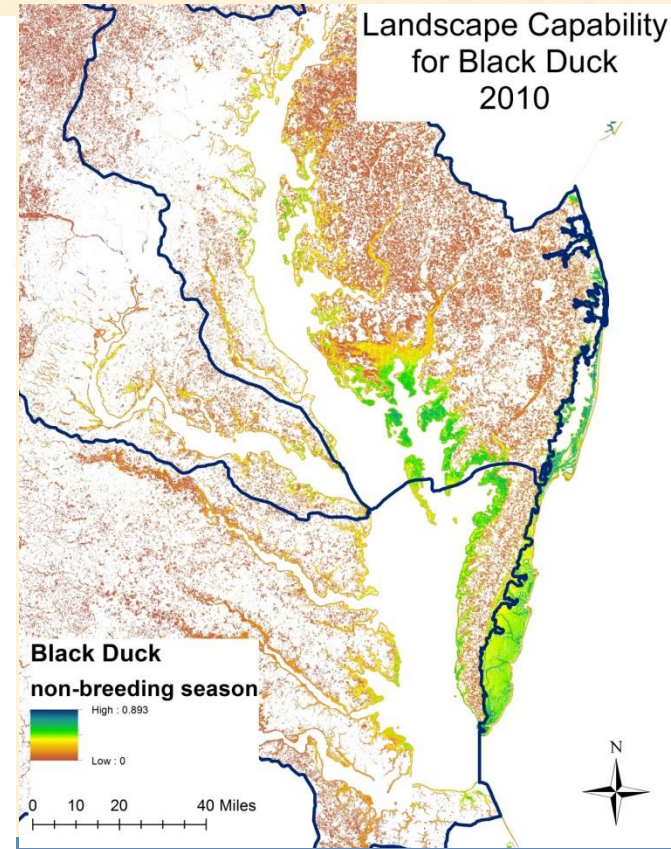
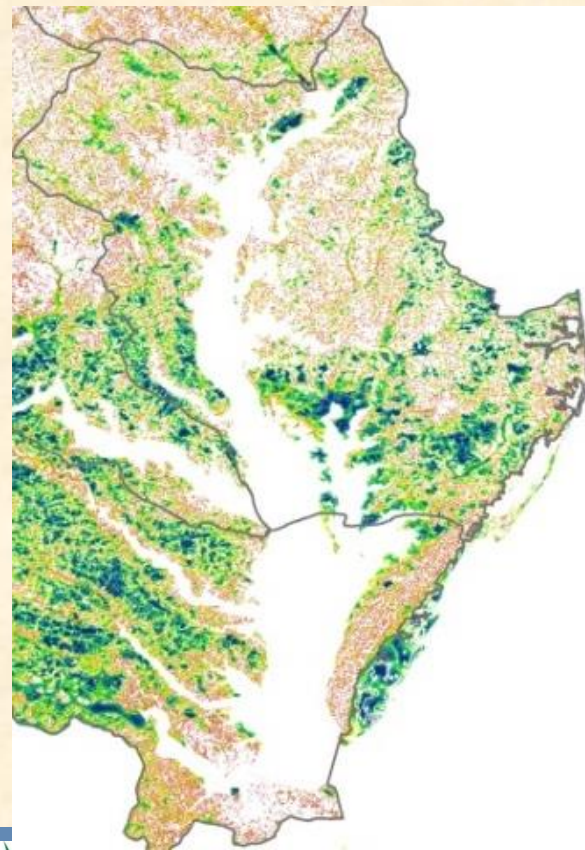


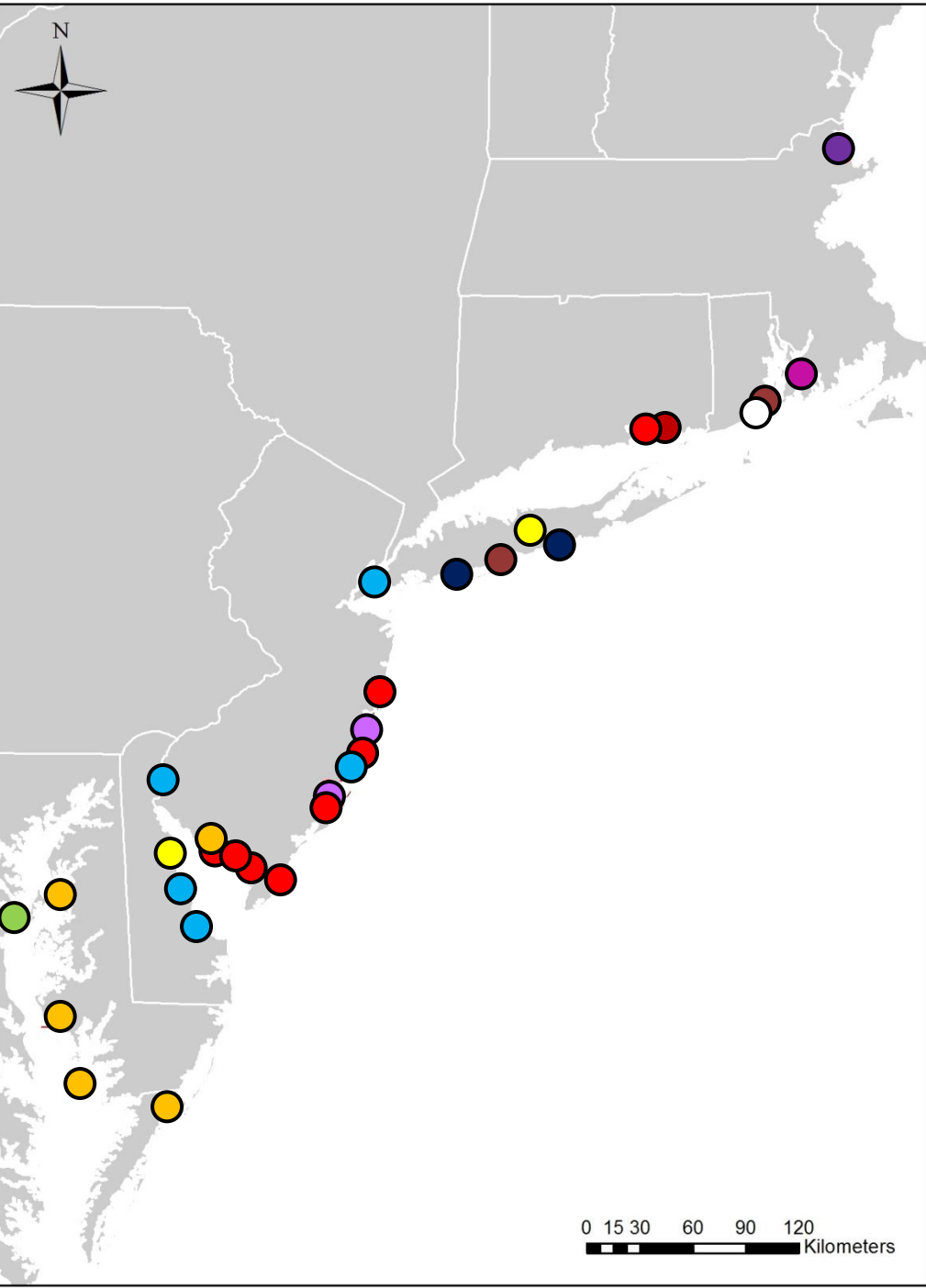
Improving coastal components of assessment tools

Resilience (TNC)



Integrity & Landscape Capability (UMass)





Tidal Marsh Restoration Activities

- alter hydrology
- sediment additions
- living shorelines
- assisted migration

-
-
-
-
-
-

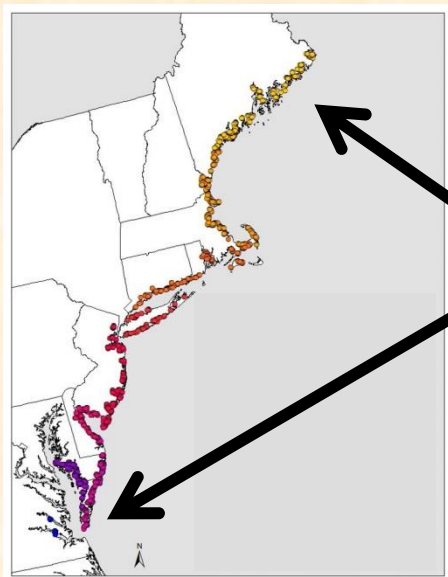
} multiple methods

Evaluate Impacts of Hurricane

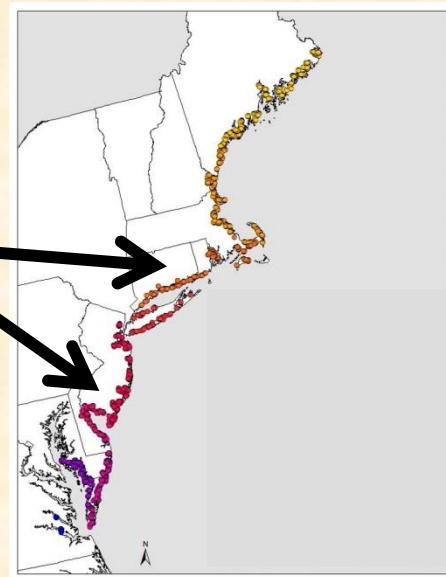
Evaluate Effectiveness of restoration

Before

After

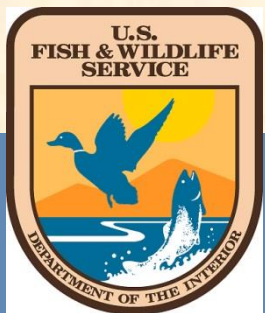


Control – Impact



2011-2012

2013-2014



North Atlantic  Lands



ion Cooperative

North Atlantic  LCC

North Atlantic Landscape
Conservation Cooperative

North Atlantic Landscape Conservation Cooperative

Coastal Resiliency

Marshes, Beaches and Aquatic Systems

Search Site Search
 only in current section

- Home
- About
- Topics
- Library
- Projects
- Products
- Partners
- News and Announcements
- Calendar
- Links
- NALCC

Companion Sites REGISTER LOG IN

You are here: Home

Coastal

Welcome

Coastal resiliency... such as... The Disas... Sandy rela... including t...

To learn more... visit <http://...>

North Atlantic Landscape Conservation Cooperative

Search Site Search
 only in current section

- Home
- Who We Are
- Spatial Data
- Projects
- Work Spaces
- News & Events

Companion Sites REGISTER LOG IN

You are here: Home / News & Events / Meet the new Coastal Resilience Research Associate



Meet the new Coastal Resilience Research Associate

Climate scientist Emily Powell sees an opportunity to combine her expertise and her dedication to sharing information in a new role working with coastal LCCs on resilience issues: "I wanted to get back to the space between research, science, and communications, working as a liaison between data, tools, and the people who need them."



When Emily Powell learned about the opening for a Coastal Resilience Research Associate with the Atlantic and Gulf Coast Landscape Conservation Cooperatives (LCCs), she saw a chance to dive back into the field of coastal resilience after a short but instructive break.

Although her departure from the coast had taken her hundreds of miles inland to Lubbock, Tex., it offered a valuable landscape-level perspective to bring back to the new position. Powell had been working for one of the Department of the Interior

NALCC RSS Feeds

- News
- Projects

Ches. Bay Opportunities to Utilize LCC Coastal Information and Tools

- Marine Bird Mapping
 - Offshore siting guidance
- Beaches, Plovers (and other beach spp.)
 - Utilize results for beach management
 - Use iPlover to collect data, inform models
 - Utilize predictions of impacts of SLR and management



Ches. Bay Opportunities to Utilize LCC Coastal Information and Tools

- Salt Marshes
 - Utilize high/low marsh mapping
 - Modeling of accretion and migration
 - Where to protect restore in place
 - Where to protect restore adjacent for the future
 - Monitor and learn from restorations
- Land Protection, Management, Impact Assessment and Avoidance
 - *Utilize habitat maps, Integrity, Resilience, Species Habitat Capability*
 - *Integrated Conservation Design*

