



# Landscape Conservation Cooperatives

Providing Regional Information to Guide Conservation Decisions

Steve Fuller  
U.S. Fish and Wildlife Service



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## Conservation in Transition

*“Like the resource it seeks to protect, wildlife conservation must be dynamic, changing as conditions change, seeking always to become more effective”*



Rachel Carson



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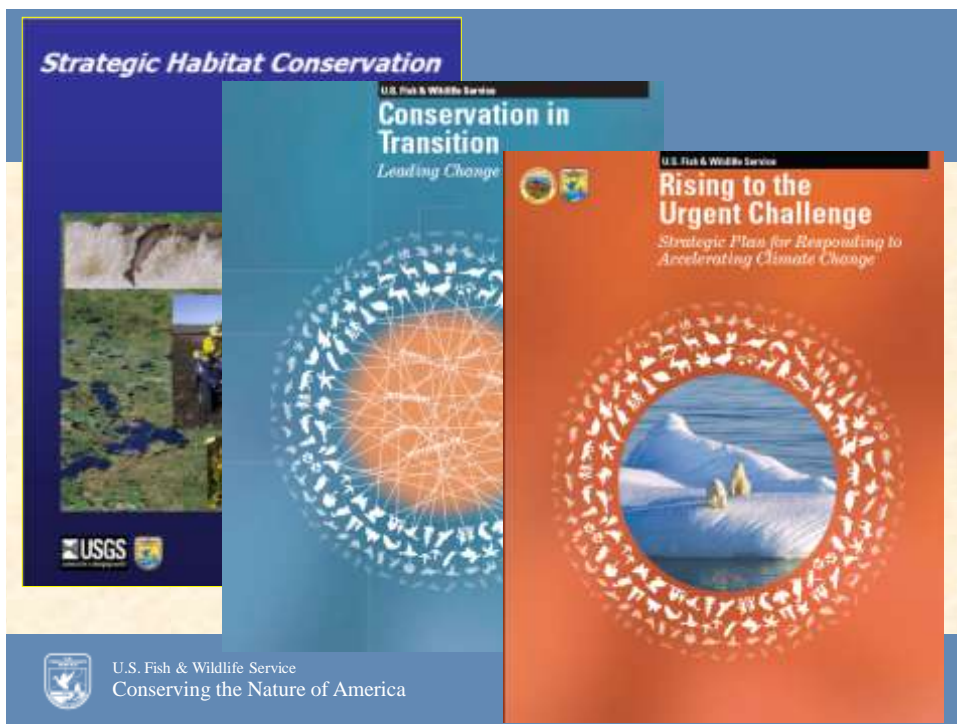


# Conservation in Transition

- Unprecedented scale, pace and complexity of resource management challenges
  - Habitat loss, fragmentation and degradation
  - Invasive species
  - Contaminants
  - Hydrologic impacts
- Accelerated climate change is magnifying impacts on water and land resources, agriculture and biological diversity

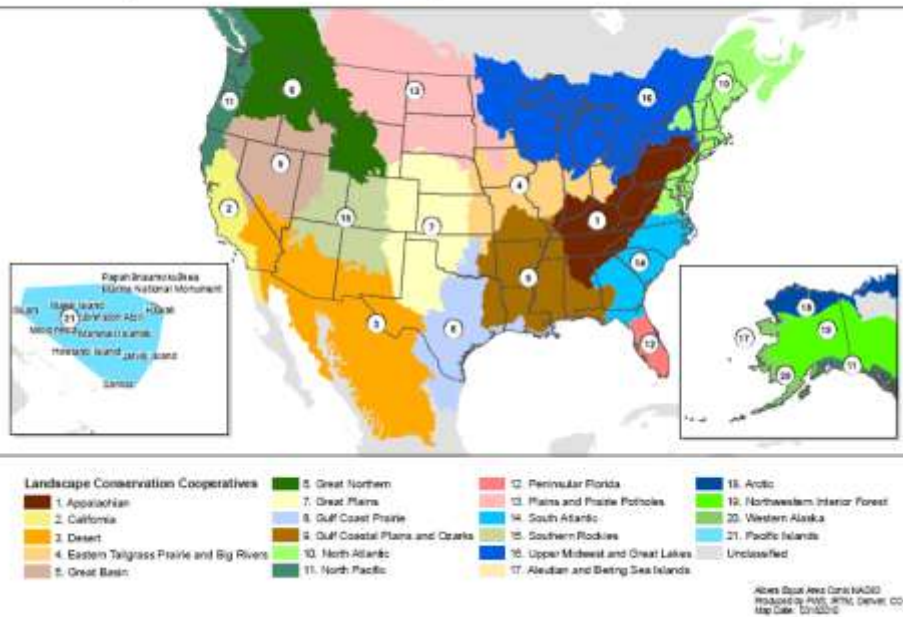


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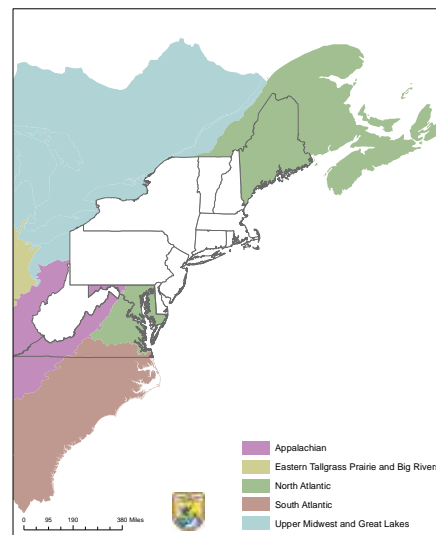
## Landscape Conservation Cooperatives



## The North Atlantic Landscape Conservation Cooperative

- 12 states + D.C.
- 4 Canadian provinces
- Multiple partnerships
- 17% of U.S. population
- Large latitude gradient
- Diverse land use
- Diverse systems/habitats
  - Marine
  - Coastal
  - Estuarine
  - Riverine
  - Forests
  - Agriculture
  - Mountains

Landscape Conservation Cooperatives in the Northeast Region



## North Atlantic LCC Governance

- Steering Committee
  - States
  - Federal Agencies
  - Tribes
  - NGOs
  - Canadian Partners
  - Existing Partnerships
- Technical Teams
  - Taxonomic and geographic representation
  - Management-oriented scientists
- Staff



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## North Atlantic LCC - Mission

The North Atlantic Landscape Conservation Cooperative provides a partnership in which the private, state, tribal and federal conservation community works together to address increasing land use pressures and widespread resource threats and uncertainties amplified by a rapidly changing climate.



## North Atlantic LCC - Mission

The partners and partnerships in the cooperative address regional threats and uncertainties by agreeing on common goals for land, water, fish, wildlife, plant and cultural resources and jointly developing the scientific information and tools needed to achieve those goals.



## North Atlantic LCC - Mission

What are we doing to help deliver regional science to the local land conservation community?



## North Atlantic LCC - Mission

- Providing governance for a diverse partnership
- Funding projects to create new data
- Assembling and managing information
- Translating information to useful scales and formats



## North Atlantic LCC - Mission

- Assessing needs and organizing around a common framework for planning
- Website and data portal development
- Showcase projects
- Developing a funding program for Science Delivery mechanisms





## Northeast Conservation Framework



## Collaborating to find the best solutions...



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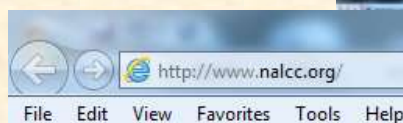
[www.northatlanticlcc.org](http://www.northatlanticlcc.org)



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## North Atlantic Landscape Conservation Cooperative



**We are NOT:**  
**www.nalcc.org**



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The screenshot shows the North Atlantic Landscape Conservation Cooperative website. The main navigation bar includes links for Home, About, Partners, Resources, Projects, Groups, LCC Network, News & Announcements, and Calendar. A dropdown menu for 'Groups' is open, listing the following teams:

- Steering Committee
- Demonstration Projects Team
- Technical Committee
- Local Planning Team
- Coastal and Marine Technical Team
- Aquatic Technical Team
- Terrestrial and Freshwater Wetland Team
- Conservation Design Team
- SWAPs Team
- Information Management Team

The 'Spatial Data Library' section is highlighted, showing the breadcrumb trail: You are here: Home > Resources > Spatial Data Library > Spatial Data. Below this, the text 'NALCC Spatial Data' is visible.

At the bottom of the page, the U.S. Fish & Wildlife Service logo is displayed with the text: U.S. Fish & Wildlife Service, Conserving the Nature of America.

The screenshot shows the North Atlantic Landscape Conservation Cooperative website, specifically the 'Projects' section. The main navigation bar includes links for Home, About, Partners, Resources, Projects, Groups, LCC Network, News & Announcements, and Calendar. The 'Projects' section is highlighted, showing the breadcrumb trail: You are here: Home > Projects.

The 'Projects' section lists two projects:

- Application of the Coastal and Marine Ecological Classification Standards (CMECS) to the Northeast**  
This project will utilize the national Coastal and Marine Ecological Classification Standard (CMECS) to classify estuarine and marine environments in the northeast Atlantic region (Maine to Virginia).  
[Read More](#)
- Assessing Priority Amphibian & Reptile Conservation Areas (PARCAs) and Vulnerability to Climate Change in the North Atlantic Landscape Conservation Cooperative (LCC)**  
Amphibians and reptiles are experiencing threats throughout North America due to habitat loss and other factors. To help conserve these species, this project will identify Priority Amphibian and Reptile Conservation Areas (PARCAs) that are most vital in sustaining amphibian and reptile populations, taking into account potential future climatic conditions.  
[Read More](#)

**North Atlantic Landscape Conservation Cooperative**

**Assessment of Landscape Changes in the North Atlantic Landscape Conservation Cooperative: Decision Support Tools for Conservation (Phase 1)**

The purpose of this project is to assess the capability of current and potential future landscapes to provide integral ecosystems and suitable habitat for a suite of representative species, and provide guidance for strategic habitat conservation.

[Read More](#)

**Assessment of Landscape Changes in the North Atlantic Landscape Conservation Cooperative: Decision-Support Tools for Conservation (Phase 2)**

This project is assessing the capability of habitats to sustain populations of wildlife in the Northeastern U.S. in the face of urban growth, changing climate, and other disturbances. Building on Phase 1, this project expands the geographic scope from three pilot watersheds to the 13 state Northeast region and considers additional wildlife species.

[Read More](#)

**Completing Northeast Regional Vulnerability Assessment Incorporating the NatureServe Climate Change Vulnerability Index**

NatureServe and State Heritage Programs collaboration have developed a Climate Change Vulnerability Index (CCVI) to provide a rapid, scientifically defensible assessment of species' vulnerability to climate change. This project will apply the CCVI to 80 s

[Read More](#)

**Extending the Northeast Terrestrial Habitat Map to Atlantic Canada**

This project will develop a comprehensive terrestrial habitat map for the entire extent of the North Atlantic Landscape Conservation Cooperative (NALCC) region by extending the Northeast Terrestrial Habitat Map to Atlantic Canada and southern Quebec.

[Read More](#)

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[Read More](#)

**Forecast Effects of Accelerating Sea-level Rise on the Habitat of Atlantic Coast Piping Plovers and Identify Responsive Conservation Strategies**

This project will develop predictions of how Piping Plover breeding habitat will change as a result of sea level rise and altered storminess. It will also analyze the effectiveness of conservation strategies, given projected sea-level rise.

[Read More](#)

**Forecasting Changes in Aquatic Systems and Resilience of Aquatic Populations in the NALCC: Decision-support Tools for Conservation**

The objective is to develop a web-based decision support system for evaluating effects of alternative management scenarios on local population persistence of brook trout under different climate change scenarios.

[Read More](#)

**North Atlantic Landscape Conservation Cooperative**

**Habitat Map for Virginia Piedmont and Coastal Plain**

This project updated the Northeast Terrestrial Habitat files by remapping the Virginia coastal plain and piedmont. (The previous version adopted the Southeast GAP map for these regions.) This resulted in a map that is fully consistent across the 13 state Northeast region (Maine to Virginia and West Virginia).

[Read More](#)

**Mapping the Distribution, Abundance and Risk Assessment of Marine Birds in the Northwest Atlantic Ocean**

This project will develop a series of maps depicting the distribution, abundance and relative risk to marine birds from offshore activities (e.g., wind energy development) in the northwestern Atlantic Ocean. The maps are intended to be used for informing decisions about siting offshore facilities, marine spatial planning, and other uses requiring maps of seabird distributions.

[Read More](#)

**North Atlantic Landscape Conservation Cooperative: Wildlife Habitat Models for Terrestrial Vertebrates**

This project will develop habitat suitability models for representative wildlife species. It is part of a project led by the U. of New Amherst to enhance the capacity of partners to assess and design sustainable landscape conservation in the Northeast.

[Read More](#)

**Permeable Landscapes for Species of Greatest Conservation Need**

Landscape permeability, also referred to as "habitat connectivity," is the ability of a diverse land area to provide for passage of animals. This project will evaluate and map landscape permeability across the 13 state Northeast region.

**North Atlantic Landscape Conservation Cooperative**

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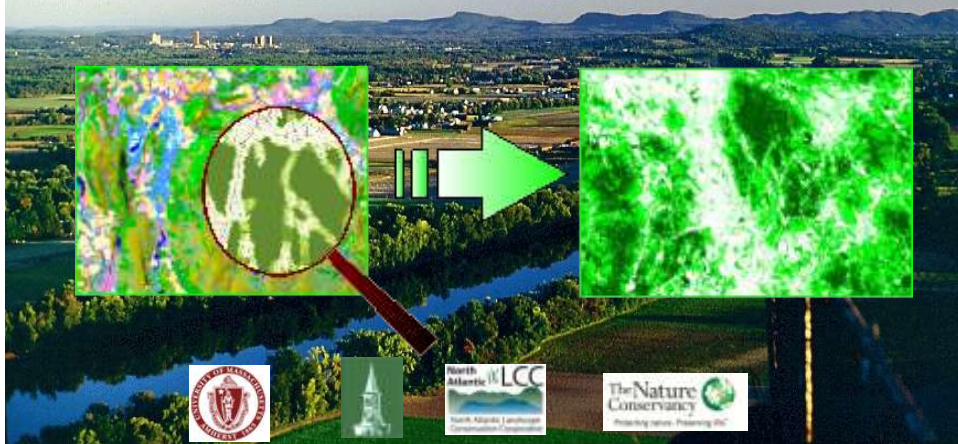
**New Project:**  
**Providing Assistance to States to develop**  
**Northeast Wildlife Action Plan**  
**Conservation Synthesis**

**Permeable Landscapes for Species of Greatest Conservation Need**

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## SHOWCASE of a NALCC PROJECT:

Providing Science and Tools in Support of the  
North Atlantic LCC:  
*Designing Sustainable Landscapes for Wildlife*

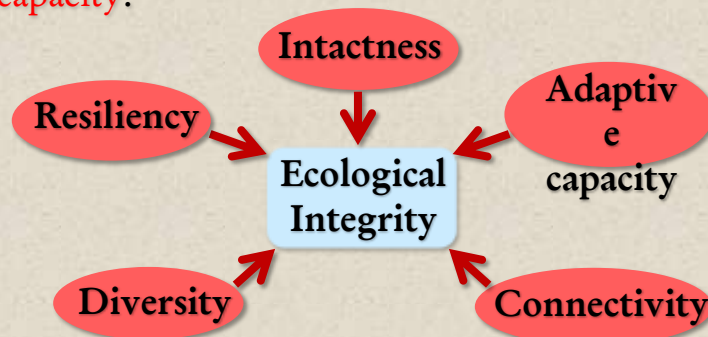


## Planning Climate Adaptation

### Landscape Assessment

#### Coarse filter

“An *integral landscape* has a green infrastructure containing a **diversity** of **connected** ecosystems with high **intactness**, **resiliency** and **adaptive capacity**.”





## Planning Climate Adaptation

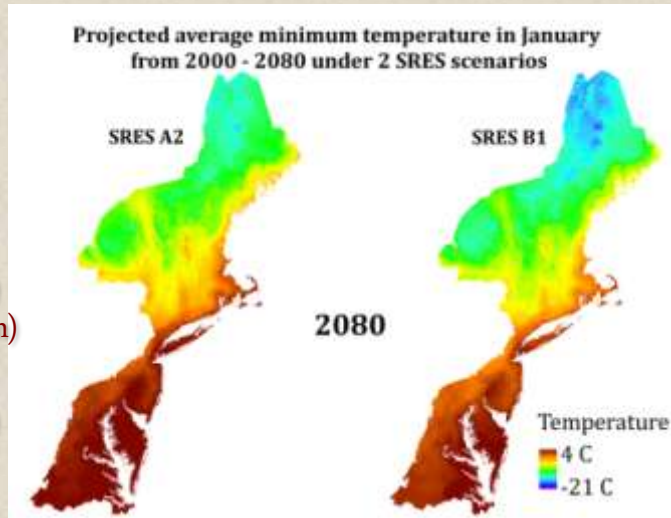
### Landscape Change

#### Drivers

#### Climate change

- 3 SRES scenarios (B1, A1B, A2)
- Ensemble of 16 GCM's (36 total runs)
- Statistical (BCSD) downscaling (12 km)
- ΔPRISM (800 m)
- Resampled (30 m)
- GDD, Tmin, Pannual

#### Climate change scenarios



## Planning Climate Adaptation

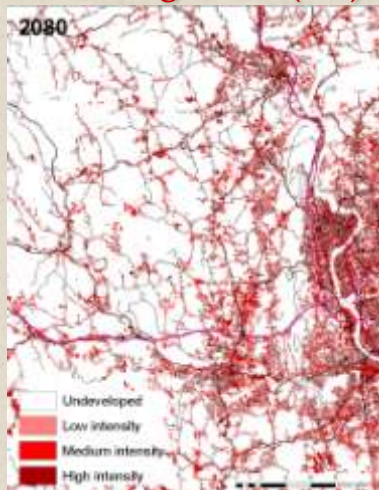
### Landscape Change

#### Drivers

- Multi-stage statistical model
- User-defined scenarios to vary total amount and sprawliness of growth relative to historical patterns.

#### Urban growth scenarios

#### Baseline growth (1%)



#### Double growth (2%)





## Planning Climate Adaptation

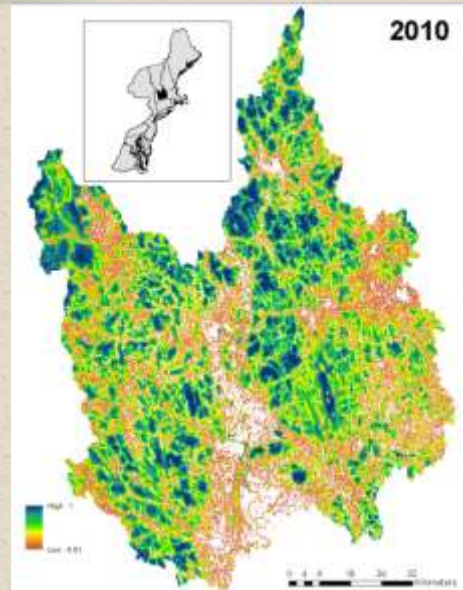
### Landscape Assessment

IEI

#### Coarse filter

- Local composite index of ecological *integrity*

What is the *overall ecological integrity* of the cell for a given time step?



## Planning Climate Adaptation

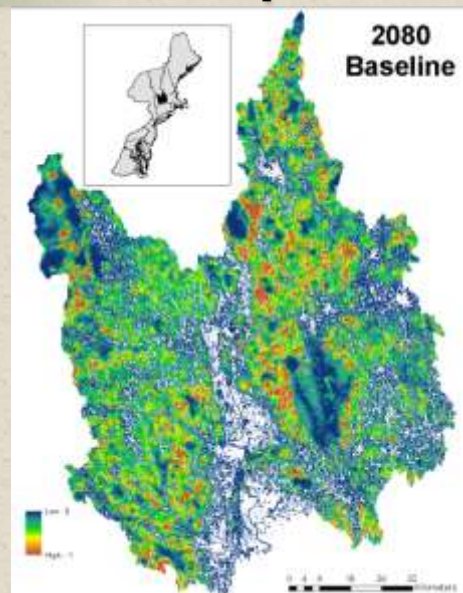
### Landscape Assessment

Impact

#### Coarse filter

- Local composite index of ecological *impact*

What is the magnitude of change (i.e., impact) in ecological integrity at each cell between current and a future time step under a particular scenario?



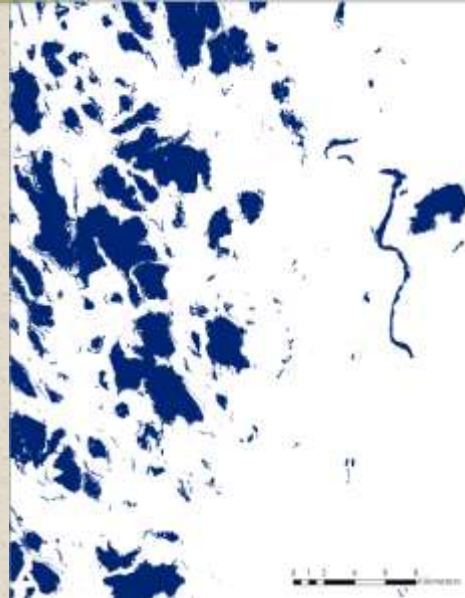
## Planning Climate Adaptation

### Land Protection

2010 Top 30% IEI

- Prioritizing land for protection

What about areas with high *ecological integrity* today?



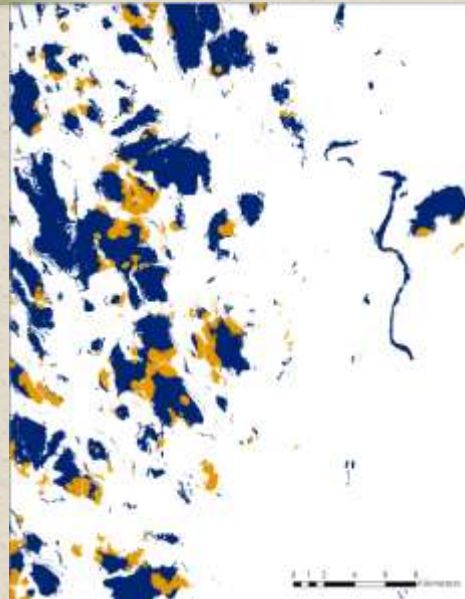
## Planning Climate Adaptation

### Land Protection

2080 Impact-baseline

- Prioritizing land for protection

What about areas most likely to be *impacted* by future development?



## Developing a funding program for Science Delivery mechanisms...



## Regional Information to Support Community Planning

- Priority areas are primarily on private land
- Effective conservation depends upon communities
- Information must be at the scale and in the format needed by community planners, land trusts and regional initiatives



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## Regional Information to Support Conservation Planning

### Questions

- When is information useful?
- What information do you need?
- What is missing at the local level in order to make implementation happen?



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