Landscape Conservation Design for the Northeast:

“Nature’s Network”
Lands and waters sustaining wildlife and people – from Maine to Virginia

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North Atlantic Landscape Conservation Cooperative

May 16, 2017
Northeast Climate Science Center’s Regional Science Meeting
North Atlantic Landscape Conservation Cooperative

Developing and delivering scientific information and tools...

...for partners to prioritize and guide conservation actions toward common goals
Introduction

A Shared Vision

A connected network of resilient and ecologically intact habitats that will support biodiversity under changing conditions for the benefit of society.
Why an interconnected, resilient network?

- Fish and wildlife populations
- Clean water
- Flood and erosion control
- Storm protection
- Forest and farm products
- Recreation and tourism
- Employment
- Quality of life
Nature’s Network – the Planning Team

Who is involved?

More than 30 team members on current team, plus contributions from many others representing:

- 13 Northeast states/NEAFWA
- USFWS and other federal programs
- Nongovernmental organizations
- Universities
- North Atlantic Landscape Conservation Cooperative
Major Components
Available now for voluntary use to complement local information

Nature’s Network
Conservation Design
1) Terrestrial & wetland core areas and connectors

- Collectively: a network of intact ecosystems resilient under changing conditions and climate
- Rare natural communities and wildlife habitat
- Strategic: top 25% of each large watershed
2) Aquatic core areas and buffers

Stream reaches, lakes, and ponds:

- Intact, well-connected, support a diversity of aquatic species and ecosystems
- Habitat for anadromous fish and brook trout
- Strategic: top 30% of aquascape of each large watershed
3) Habitat for imperiled species

- Imperiled: over 600 state-identified Species of Greatest Conservation Need (SGCN)
- Species data from Natural Heritage overlain on habitat types
- Important habitat types classified by condition
4) Regional connectivity

- Identify regional flow patterns
- Large scale, general patterns that are independent of the core areas
- Highlight concentrated areas and "bottlenecks"
5) Marsh migration zones

Undeveloped areas adjacent to existing tidal marshes within zones of potential sea level rise (NOAA)
6) Prioritization Tool for Conservation and Restoration

- Web tool for prioritizing watersheds (HUC12) and stream reach catchments using prioritization scenarios
- Scenarios comprised of various metrics (~400)
  - Series of “expert” scenarios
  - User interface for developing custom scenarios
Nature’s Network Conservation Design

Important Lands:
Terrestrial and Wetland Core Areas

Important Waters:
Aquatic Core Areas

Important Habitats:
Core Habitat for Imperiled Species

Land Connectors
Adapting to Climate Change

- Protect and enhance connectivity
- Create a network of ecologically connected conservation areas
- Protect climate refugia
- Conserve geophysical diversity
- Anticipate sea level rise
Tools to help partners voluntarily:

- Protect the irreplaceable
- Look ahead to make better decisions today
- Maximize limited resources
- Reinforce local priorities with regional perspective
- Find opportunities to work together
nalcc.databasin.org

Launch date May 17
Thank you to the many partners who make this work possible!

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Appalachian LCC Landscape Conservation Design (LCD2) Overview

Jean Brennan PhD
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+ 

Drs. Rob Baldwin and Daniel Hanks

May 2017
Interactive Conservation Planning & Design

“primarily concerned with spatially identifying and prioritizing lands and waters important for functioning ecosystems and biodiversity in a transparent plan”

Marxan
Informing Conservation Decisions Globally

the most widely used conservation planning software in the world

“optimization” : objective is to minimize cost to achieving defined targets
Pre-phase I: Consultation

"No Regrets"

1. Un-fragmented forest
2. High-elevation forest
3. Mature lowland forest
4. Early successional habitats
5. High-elevation streams [mid-high]
6. Low-elevation streams [mid-low]
7. Cave/Karst Systems
8. Forested Wetlands
Phase I: Landscape Conservation Design (LCD\(^1\))

Phase I
- Begin Phase I LCD
- Engage Technical Teams
- Present Phase I Design

January 2015 → July 2015

--- Optimization ---

(500 million iterations)

Regional Core
Local Build Out
Regional Linkage
E-W Linkage
Local Core
Climate connections:
Phase II “costs” (to avoid)
include departures from current
temperature and increases in
soil moisture deficits
Integrated Landscape Conservation Design (LCD2)

(1.5 billion iterations)
~600,000 hexagons (1 km²) "planning units"

‘take it to ground’ - implementation

Biodiversity Partnership

LCD 2 Design Elements
- LocalBuildOuts
- LocalCore
- LocalLinkage
- RegionalCore
- RegionalLinkage
Climate refugia in the *Nature’s Network* LCD

2010 → 2080

Climate Suitability → Landscape Capability → Habitat Capability

Climate Suitability → Landscape Capability

High% → Low%
Climate response in the Connect the Connecticut LCD

- **Gain**
- **Stable**
- **Loss**

Species distribution across different change percentages of LC.