

# Nature's Network

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Regional Conservation Design  
Suite of Products  
Network of Partners

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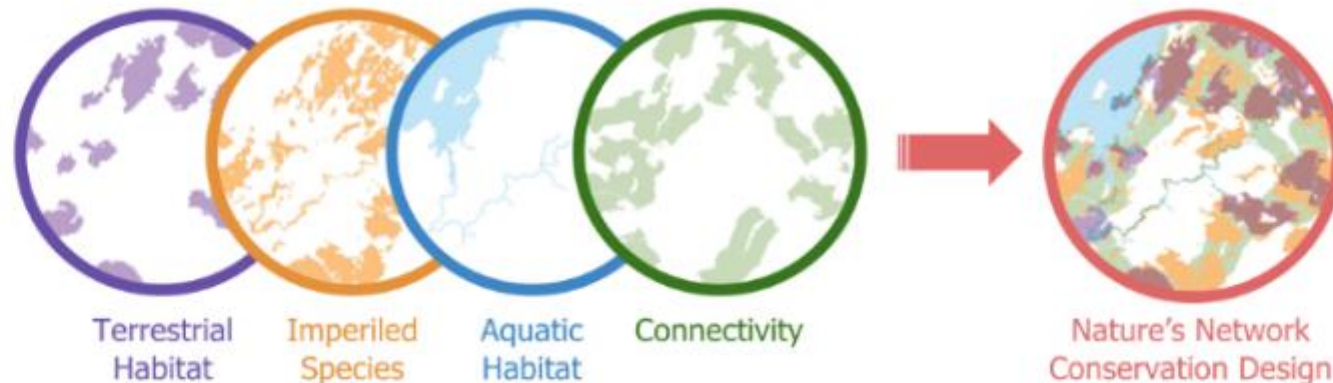
## Nature's Network

Lands and waters sustaining wildlife and people

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**Nature's Network** is a collaborative effort facilitated by the North Atlantic Landscape Conservation Cooperative that brings together partners from 13 states, the U.S. Fish and Wildlife Service, nongovernmental organizations, and universities to identify the best opportunities for conserving and connecting intact habitats and ecosystems and supporting imperiled species to help ensure the future of fish and wildlife across the Northeast region.





# About

## Finding common ground to address shared priorities

From the Canada lynx living deep in Maine's spruce-fir forests to the freshwater mussels found in the Tennessee River Basin in Virginia, thousands of species have found their niche in the Northeastern United States. Some are common, some are game species, and some are on the brink of extinction, but all depend on regional habitats to survive.

The resources sustaining these species also provide essential benefits like clean water to the tens of millions of people who make their home in the Northeast. It is the most densely populated region in the country, yet it is a place where people and nature have long coexisted. The Northeast is a mosaic of communities, working lands, open spaces, and protected habitats, and a place where our history has been shaped by our relationship to the land.

But land use and changing environmental conditions are threatening the natural places that define us, the resources we depend upon, and the wild things and places we care about. To sustain these valuable natural resources into the future, we need to work together.

## Laying the groundwork for unified action

In response to these threats, the North Atlantic Landscape Conservation Cooperative (LCC) and the Northeast Association of Fish

### Science contributors:

- Chesapeake Conservancy
- NatureServe
- North Atlantic Landscape Conservation Cooperative
- Regional Conservation Needs program
- The Nature Conservancy
- University of Massachusetts Amherst, Designing Sustainable Landscapes project
- Pennsylvania Natural Heritage Program
- Wildlife Conservation Society Adirondacks Program



# About

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- Wildlife Conservation Society Adirondacks Program

# Project team member organizations.

- Connecticut Department of Energy and Environmental Protection
- Delaware Division of Fish and Wildlife
- Harvard Forest
- Hudson River Estuary Program, Cornell University
- Maine Department of Environmental Protection
- Maine Department of Inland Fisheries and Wildlife
- Maine Natural Areas Program
- Maryland Department of Natural Resources Wildlife and Heritage Service
- Massachusetts Division of Fish and Wildlife
- New Hampshire Fish and Game Department
- New Jersey Division of Fish and Wildlife
- New York State Department of Environmental Conservation
- North Atlantic LCC
- Terwilliger Consulting
- The Chesapeake Conservancy
- The Nature Conservancy, Eastern Division
- The Nature Conservancy, Rhode Island
- University of Connecticut Wildlife and Fisheries Conservation Center
- University of Massachusetts, Amherst
- U.S. Fish and Wildlife Service
- Vermont Department of Environmental Conservation
- Vermont Fish and Wildlife
- Virginia Commonwealth University
- Virginia Department of Game and Inland Fisheries
- Western Pennsylvania Conservancy
- Wildlife Conservation Society Adirondacks Program



# The conservation design.



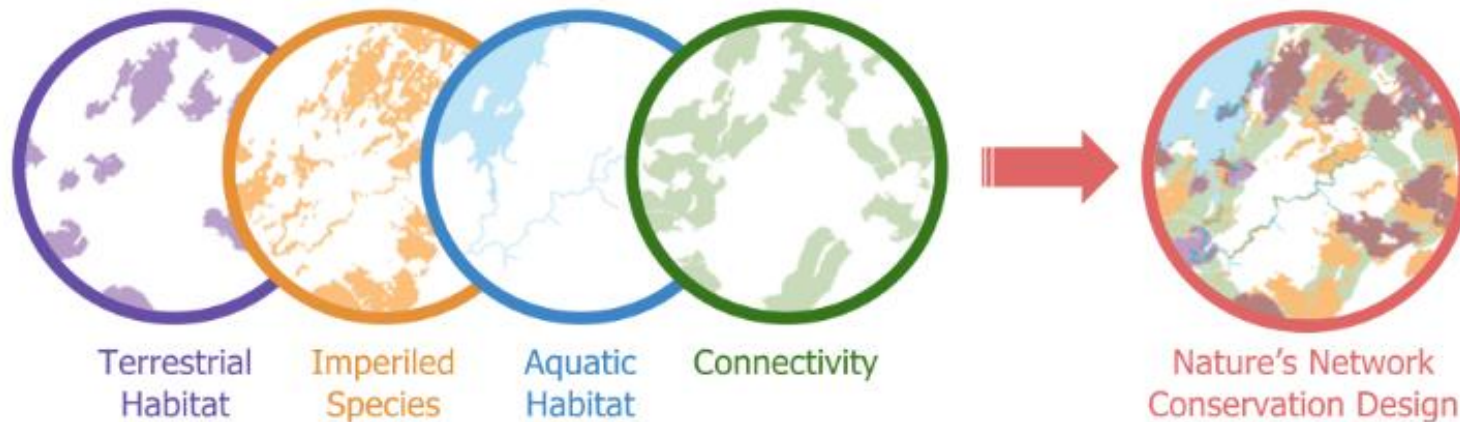
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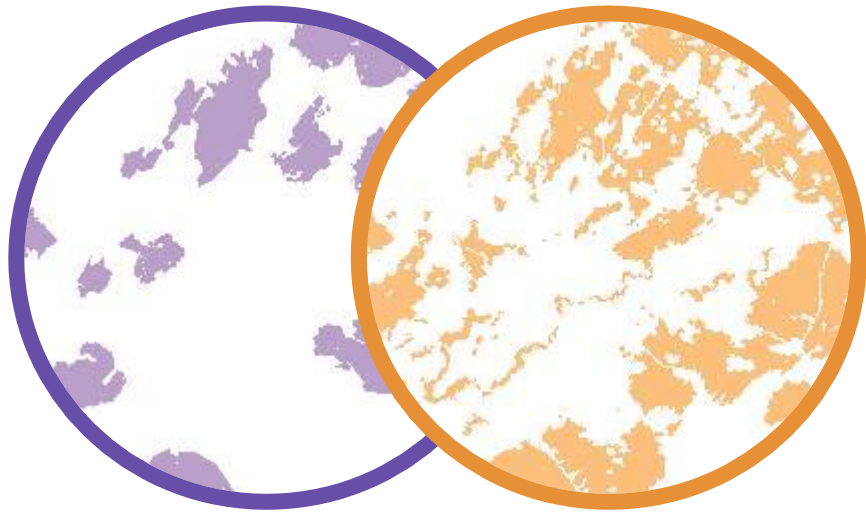
# The conservation design.



Terrestrial  
Habitat

Terrestrial and wetland core areas contain **intact, resilient** examples of every **major ecosystem type** in the Northeast and Mid-Atlantic. Core areas contain widespread ecosystems (such as hardwood forests), rare natural communities (such as bogs), and important habitat for a variety of fish, wildlife, and plants.

# The conservation design.

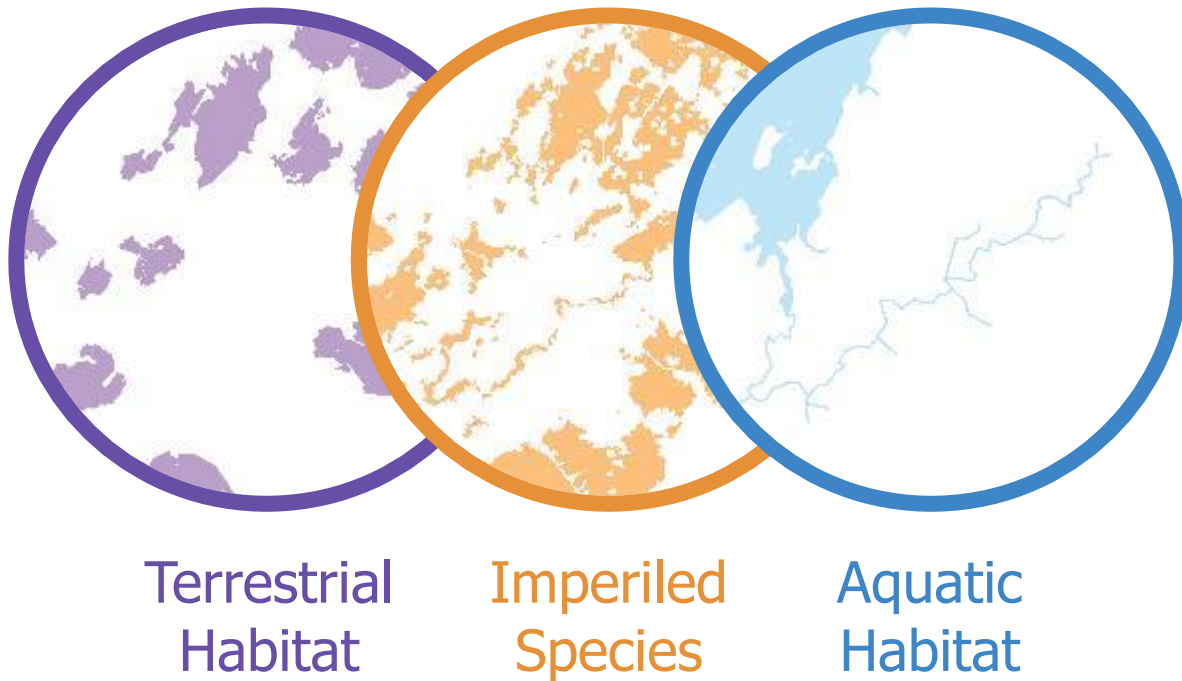


Terrestrial  
Habitat

Imperiled  
Species

Core areas for Imperiled Species identify the **most important places for imperiled species** of fish and wildlife, based on data showing the the common habitat needs of over 600 Species of Greatest Conservation Need (SGCN).

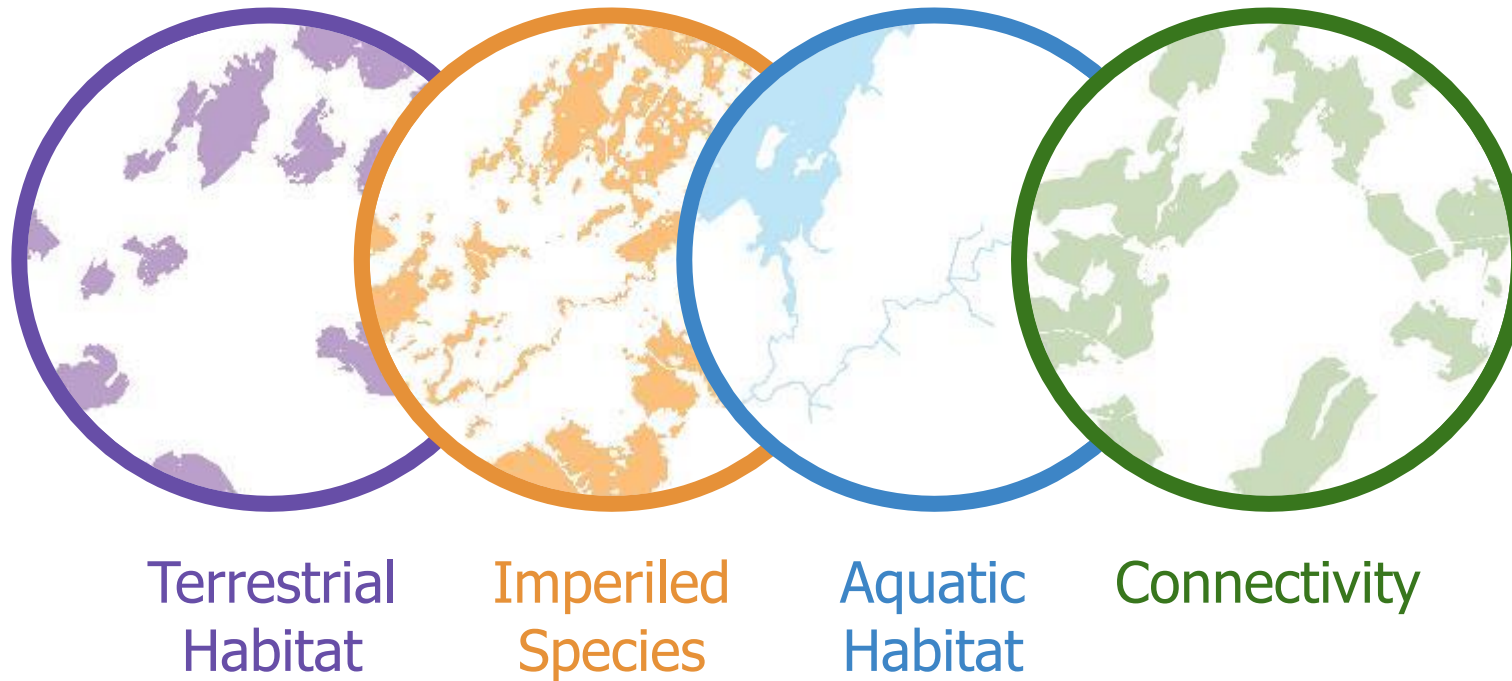
# The conservation design.



The aquatic core areas include **intact, resilient** examples of each **stream class** and type of **lake and pond** across the region, along with habitat for priority aquatic species.

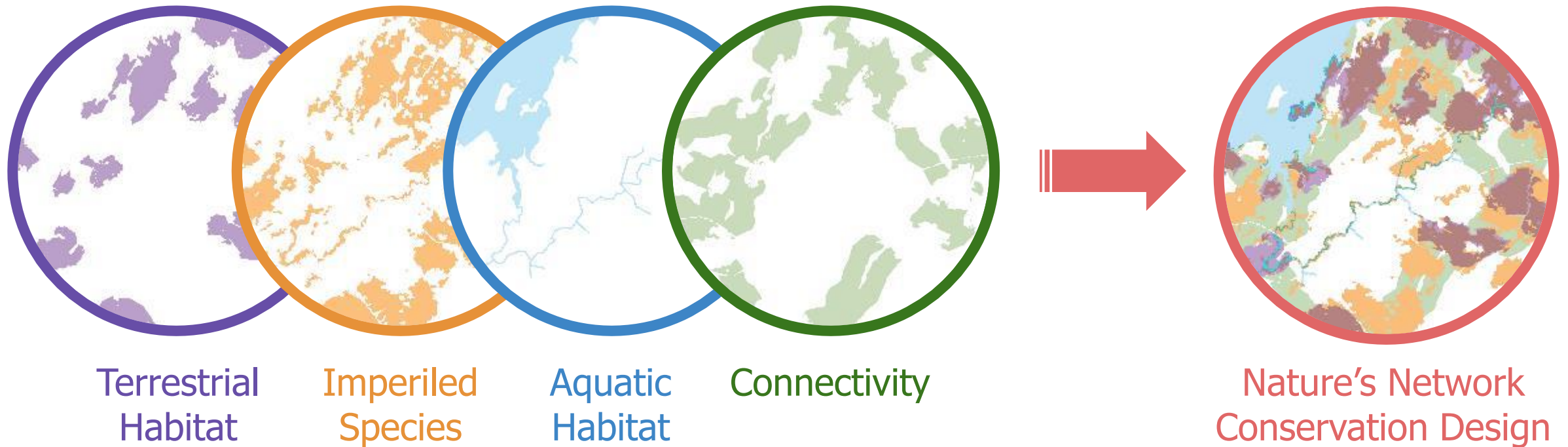


# The conservation design.



Connectivity will help **ensure** fish, wildlife, plants are able to **access the ecosystems** on which they depend. There are four types of connectivity that are analyzed in this project: “core to core” connectivity, “regional flow,” marsh migration corridors, and riparian climate corridors.

# The conservation design.



The key features of each of the four components are **integrated in one map** for Nature's Network Conservation Design, but many complementary data layers are available to support conservation planning.

# Accessing documentation.

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## Data & Tools



### Access datasets

See all of the data that is available to **download**, both as individual files and bundled packages.



### Identify priorities

Open the interactive **Prioritization Tool** to identify habitats in the northeast for conservation and restoration

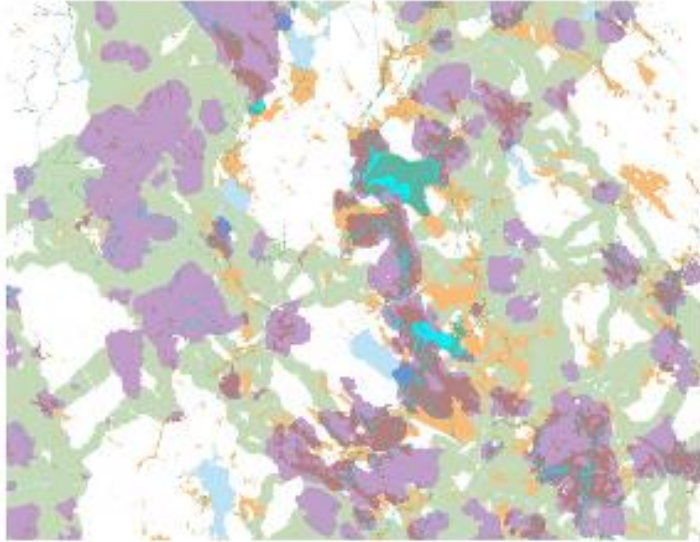


### See the big picture

Check out the entire Nature's Network gallery on the **North Atlantic LCC's Conservation Planning Atlas** to see shared priorities across the region.



# Accessing documentation.



## Nature's Network Conservation Design

Nature's Network Conservation Design depicts an interconnected network of lands and waters that, if protected, will support a diversity of fish, wildlife, and natural resources that the people of the Northeast and Mid-Atlantic region depend upon. This map serves as the "cover page" for the Nature's Network suite of products: it outlines some of the most important natural areas in the region and provides an entry point to learn more about the information used to identify them.



Imperiled species



Terrestrial and  
Wetland Core-  
Connector Network



Aquatic Core  
Networks

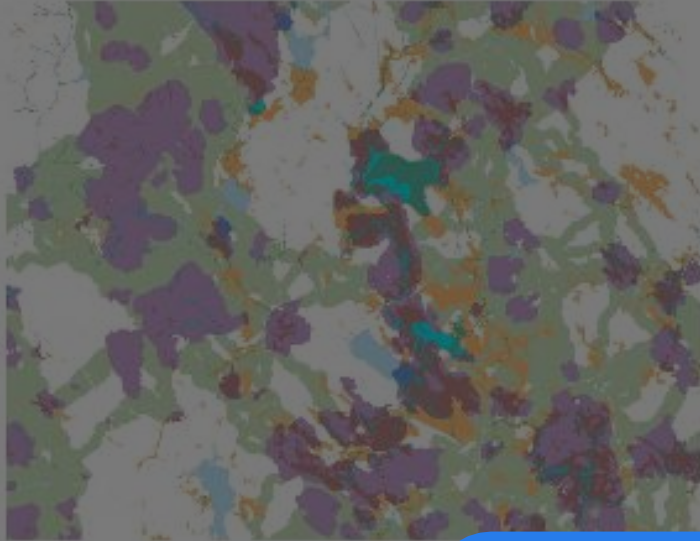


Regional  
Connectivity and  
Marsh Migration



Prioritization Tool

# Terrestrial & wetland cores & connectors.



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Prioritization Tool



# Terrestrial and Wetland Core-Connector Network



## Terrestrial and Wetland Core-Connector Networks

Connected network of intact and diverse terrestrial, wetland, and coastal systems that provide habitat for wildlife, and benefits for people, such as access to intact forests and sources of clean water.

Nature's Network  
Conservation Design

Imperiled Species

**Terrestrial and Wetland  
Core-Connector Network**

Aquatic Core Networks

Regional Connectivity and  
Marsh Migration

Prioritization Tool





Aquatic Core Networks

Regional Connectivity and  
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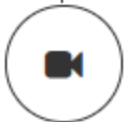
### Access Datasets

View or download the Terrestrial and Wetland Core-Connector Network dataset



### Quick start guide

A downloadable PDF that provides an overview of the Terrestrial and Wetland Core-Connector Network dataset



### Watch webinar

View a previously recorded webinar that walks through basic information about the Terrestrial and Wetland Core-Connector Network dataset

## Quick start guide

### Description

Intended uses

Get started

Background

Known issues and limitations

Links for technical information

Terrestrial and wetland core areas are intact, well-connected places that, if protected, will support a diversity of fish, wildlife, and plants, and the ecosystems they depend upon. Core areas contain important or unique features, including intact, resilient examples of every major ecosystem type in the Northeast and Mid-Atlantic. Core areas contain widespread ecosystems (such as hardwood forests), rare natural communities (such as bogs), and important habitat for a variety of fish, wildlife, and plants. By design, they encompass approximately 25% of the landscape of the region.

Core areas are linked together by a network of connectors. If protected, the connectors will foster the movement of animals and plants between core areas and across the landscape into the future.



Aquatic Core Networks

Regional Connectivity and  
Marsh Migration

Prioritization Tool

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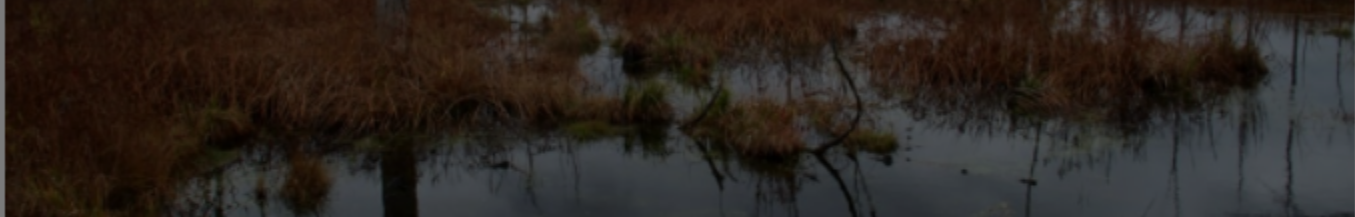
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## Quick start guide

A downloadable PDF that provides an overview of the Imperiled species dataset

## Quick start guide

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### Background

Three related products have been developed to identify the most important places in the Northeast and Mid-Atlantic region for imperiled species of fish and wildlife, based on an analysis of habitats used by over 600 Species of Greatest Conservation Need (SGCN). Habitat Importance for Imperiled Species scores the importance of habitat types for imperiled terrestrial, wetland, and aquatic species across the region. The ecological integrity of the top one-third most important of these habitat types is estimated in the product Habitat Condition for Imperiled Species. The locations of those habitats with the highest ecological integrity are identified in Core Habitat for Imperiled Species. Core Habitat for Imperiled Species can be viewed as core areas are linked together by a network of connectors. If protected, the connectors will foster the movement of animals and plants between core areas and across the landscape into the future.

### Known issues and limitations

### Links for technical information



# Quick start guide

## Terrestrial & Wetland Cores, Connectors and Natural Blocks

### Description

**Terrestrial and wetland core areas** are intact, well-connected places that, if protected, will support a diversity of fish, wildlife, and plants, and the ecosystems they depend upon. Core areas contain important or unique features, including intact, resilient examples of every major ecosystem type in the Northeast and Mid-Atlantic. Core areas contain widespread ecosystems (such as hardwood forests), rare natural communities (such as bogs), and important habitat for a variety of fish, wildlife, and plants. By design, they encompass approximately 25% of the landscape of the region.



Terrestrial and wetland core areas

Core areas are linked together by a network of **connectors**. If protected, the connectors will foster the movement of animals and plants between core areas and across the landscape into the future.



Core areas with connectors



Core areas with road-bounded natural blocks (paler)

Core areas are also embedded within **road-bounded natural blocks**. These blocks are natural areas that surround and help support the integrity of core areas. They maintain ecological processes and foster the movement of animals and plants across the landscape. By following the boundaries between natural and developed areas, they also provide practical units for conservation action.



Grassland bird core areas

This set of products also includes a network of **core areas for grassland birds**. Due to their unique association with habitat that has been created and maintained for human use, grassland birds are treated separately from wildlife that use habitat such as forests and wetlands. Forest and wetland species typically are not as reliant on intensive management as are grassland birds. Grassland bird core areas therefore represent an important complement to terrestrial and wetland core areas. These core areas are not linked by connectors

## Quick start Terrestrial & Wetland Cores, Connectors and Natural Blocks

because grassland birds are less dependent on naturally-vegetated corridors for movement compared to many of the species that inhabit terrestrial and wetland core areas.

Together with aquatic core areas and buffers, the terrestrial core areas and connectors provide the primary network of resilient and ecologically intact habitats that will support biodiversity under changing conditions in the Northeast and Mid-Atlantic region. These areas represent a "coarse-filter" approach to biodiversity conservation and provide strategic guidance for conserving natural areas and the fish and wildlife that they support. They are complemented by the "fine-filter" approach of the Core Habitat for Imperiled Species.

### Intended uses

- Identify the best places to begin land and water protection
- Sustain natural resources on private lands by promoting stewardship with private landowners
- Inform strategic acquisition of parcels by public or nonprofit organizations
- Set local conservation priorities with a regional perspective
- Protect biodiversity by understanding the ecological importance of individual areas
- Identify important natural areas vulnerable to future development
- Determine which areas in the network remain unsecured from development

### Get started

You can explore the [Terrestrial Cores and Connectors map](#) on the North Atlantic LCC Conservation Planning Atlas. Notice that there are two copies of terrestrial core areas: one that includes connectors and one that includes road-bounded natural blocks. For either type, you can zoom into areas of interest using the Zoom Tool, and you can find information about why a core area is important using the Identify Tool. You can learn more about the ecosystem types identified as being important by referring to the [Northeast Habitat Guides: A Companion to the Terrestrial and Aquatic Habitat Maps](#).

You can also get more information by turning on the individual component products that are available in the map but not activated when you open it. To see the list of these products, click on the "Layers" tab on the left side of the map. Click in the

## Designing Sustainable Landscapes: HUC6 Terrestrial Core-Connector Network

### *A project of the University of Massachusetts Landscape Ecology Lab*

#### Principals:

- Kevin McGarigal, Professor
- Brad Compton, Research Associate
- Ethan Plunkett, Research Associate
- Bill DeLuca, Research Associate
- Joanna Grand, Research Associate

#### With support from:

- North Atlantic Landscape Conservation Cooperative (US Fish and Wildlife Service, Northeast Region)
- Northeast Climate Science Center (USGS)
- University of Massachusetts, Amherst



**Report date: 09 May 2017**

#### Reference:

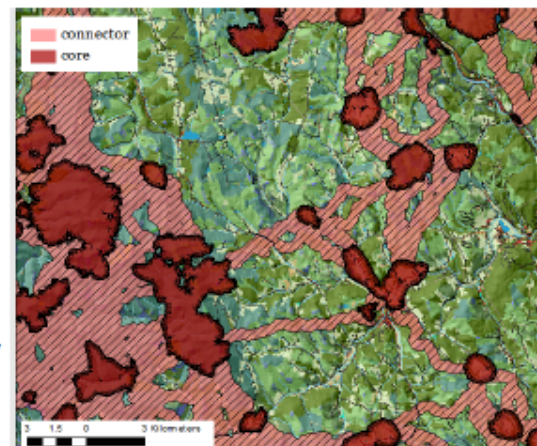
McGarigal K, Compton BW, Plunkett EB, DeLuca WV, and Grand J. 2017. Designing sustainable landscapes: HUC6 terrestrial core-connector network. Report to the North Atlantic Conservation Cooperative, US Fish and Wildlife Service, Northeast Region.

## DSL Data Product: HUC6 Terrestrial Core-Connector Network

### General description

The HUC6 terrestrial core-connector network is one of the principal Designing Sustainable Landscapes (DSL) landscape conservation design (LCD) products, and it is best understood in the context of the full LCD process described in detail in the [DSL document on landscape conservation design](#). This particular product was initially developed for the Connecticut River watershed as part of the Connect the Connecticut project—a collaborative partnership under the auspices of the North Atlantic Landscape Conservation Cooperative (NALCC), and subsequently developed for the entire Northeast region as part of the Regional Conservation Opportunities Areas (RCOA) project.

The HUC6 terrestrial core-connector network represents a set of terrestrial core areas and the connectors between them (Fig. 1). In combination with the aquatic core areas, they spatially represent the ecological network designed to provide strategic guidance for conserving natural areas, and the fish, wildlife, and other components of biodiversity that they support within the Northeast.

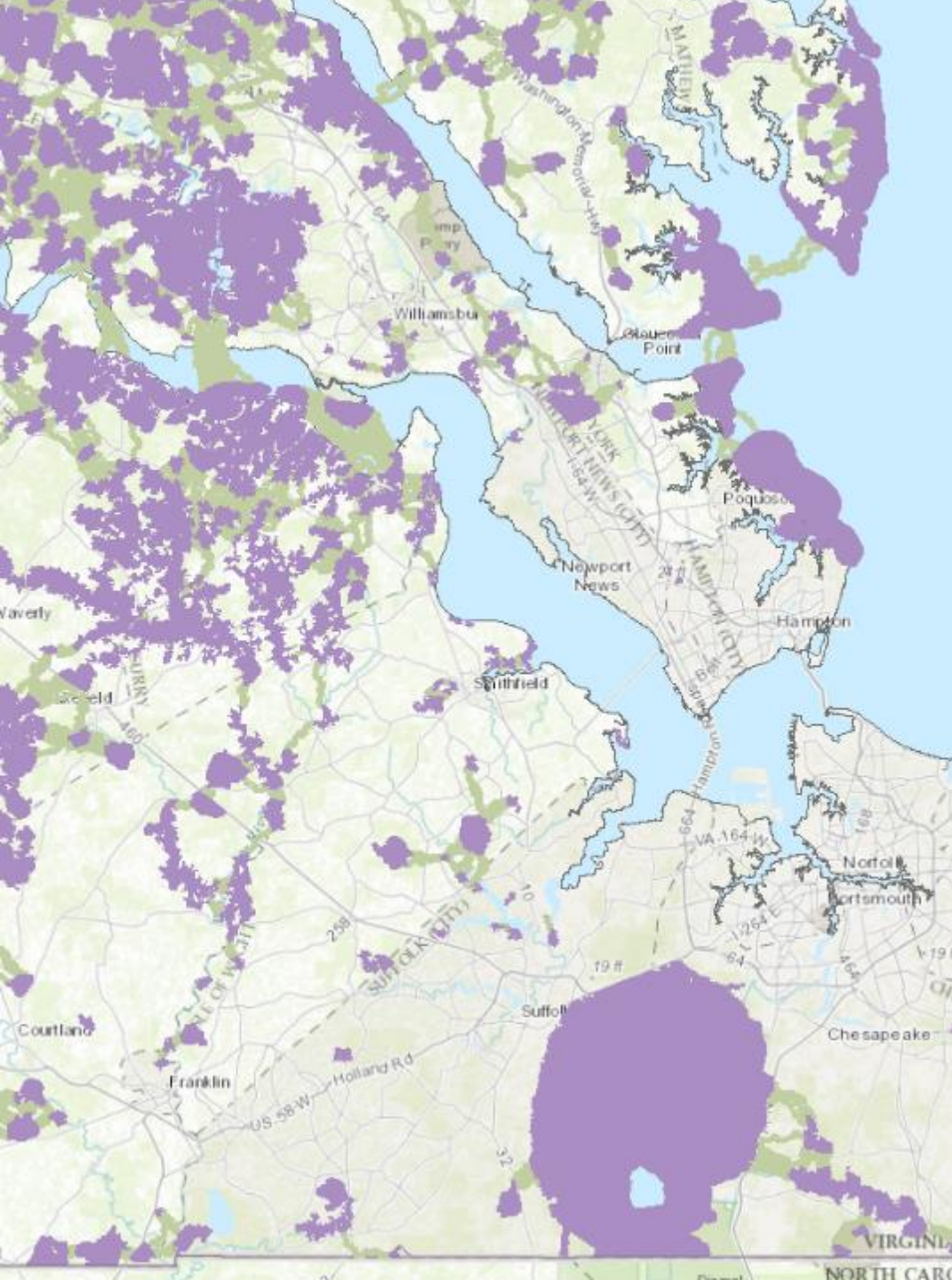


**Figure 1.** Terrestrial core areas and connectors on a background of the ecological systems map (without a legend).

Core areas serve as the foundation of the LCD. They reflect decisions by the LCD planning team about the highest priority areas for sustaining the long-term ecological values of the landscape, based on currently available, regional-scale information. In this product the terrestrial core areas represent the following:

- 1) areas of relatively high **ecological integrity** across all terrestrial and wetland ecosystem types and geophysical settings, emphasizing areas that are relatively intact (i.e., free from human modifications and disturbance) and resilient to environmental changes (e.g., climate change). Integrity has the potential to remain high in these areas, both in the short-term due to connectivity to similar natural environments, and in the long-term due to proximity to diverse landforms and other geophysical settings;
- 2) areas of relatively high **current landscape capability** for a suite of representative (a.k.a. surrogate species) terrestrial wildlife species, emphasizing areas that provide the best habitat and climate conditions today; and
- 3) areas of **rare terrestrial natural communities** that support unique biodiversity, regardless of their landscape context; inclusive of communities listed by state heritage

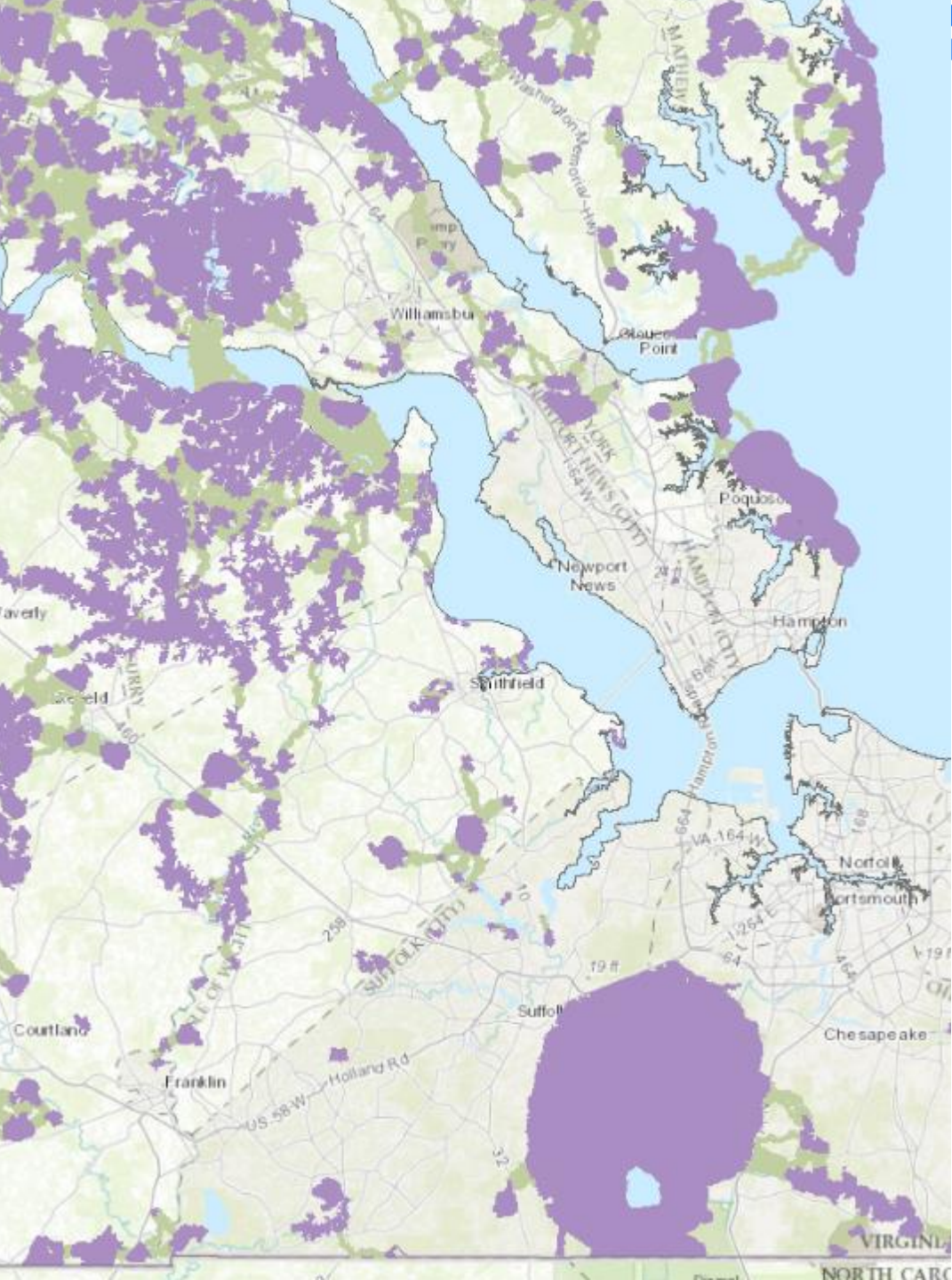




# Terrestrial & wetland core-connector network: Cores

- A network of intact ecosystems resilient under changing conditions and climate
- Contain widespread ecosystems (e.g., hardwood forests), rare natural communities (e.g., bogs), and important habitat for wildlife
- Based on ecological integrity and resilience, best examples of each terrestrial system type are included
- By design, encompass 25% of landscape

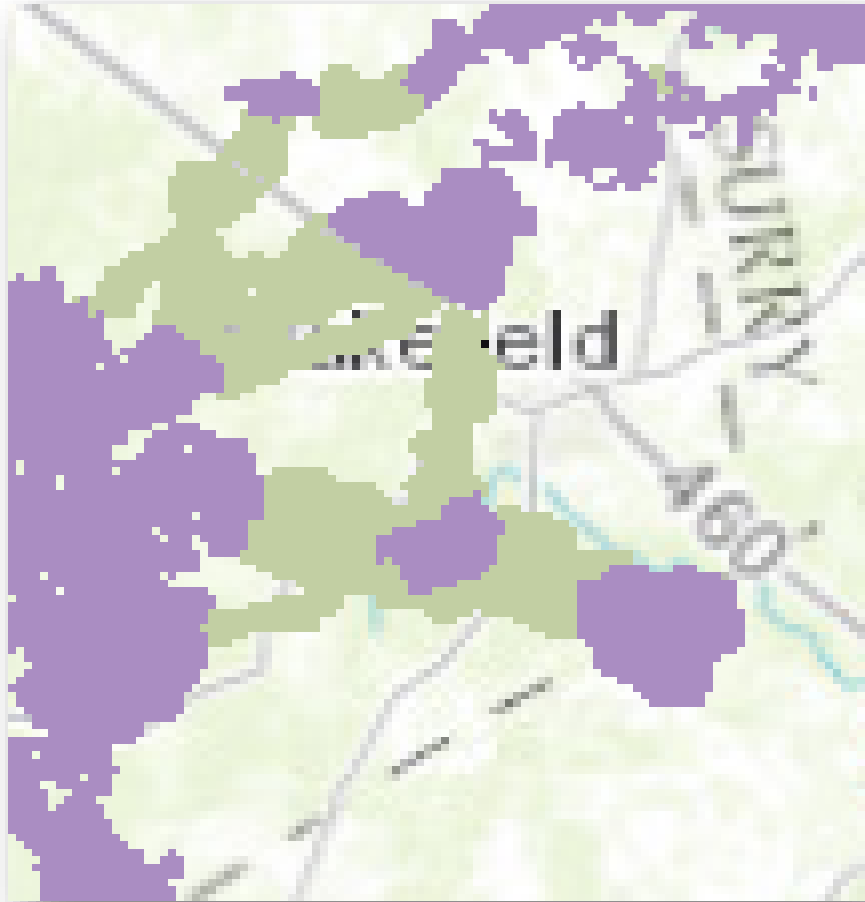




# Terrestrial & wetland core-connector network: Connectors

- Connect terrestrial core areas
- Most likely movement pathways for wildlife between core areas
- Context dependent: depend on locations of cores, built to move through and connect similar habitats
- Modeled on relatively wide-ranging types of species

# Connectors: Methods



- Link adjoining core areas along routes that possess the greatest ecological similarity to the ecosystems in the adjoining cores
- May traverse areas of low-density development and cross roads, but do not include high-intensity development
- Not identified between core areas > 10 km apart
- Encompass an additional ~17% of the Northeast

# Case Study: Connectivity & Transportation

## Staying Connected Initiative

*A Program of Two Countries One Forest*

Is a visionary partnership working to restore and enhance landscape connections for the benefit of people and wildlife across the Northern Appalachian/Acadian region of the eastern U.S. and Canada

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





# Adirondacks to Tug Hill

