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Taking the Lead on Climate Change: Land Protection for Climate Cores and Corridors

June 29, 2017

Wells, ME

Abigail Weinberg
Director of Research
Open Space Institute

Wells



Talk Outline

A Critical Role for
Land Trusts

Resilience
Characteristics

Resources and
Datasets





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Land Trust Alliance

Together, conserving the places you love

“Climate change is resulting in the the sixth wave of extinctions..., the largest since the loss of the dinosaurs 65 million years ago.”

- Center for Biological Diversity





RESPONSE:

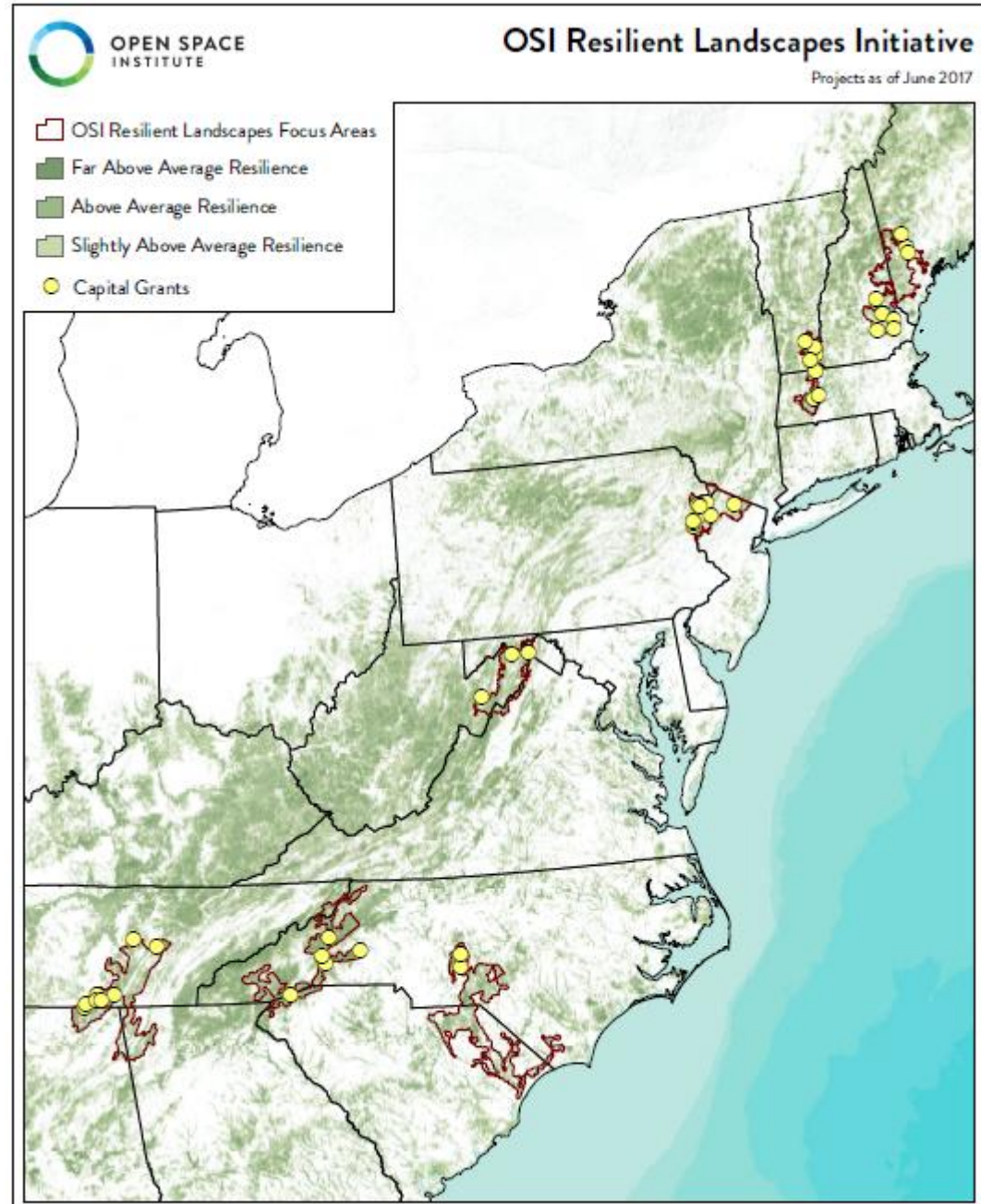
To permanently protect a network of connected, and biologically intact sites representing the full diversity of physical and biological features.





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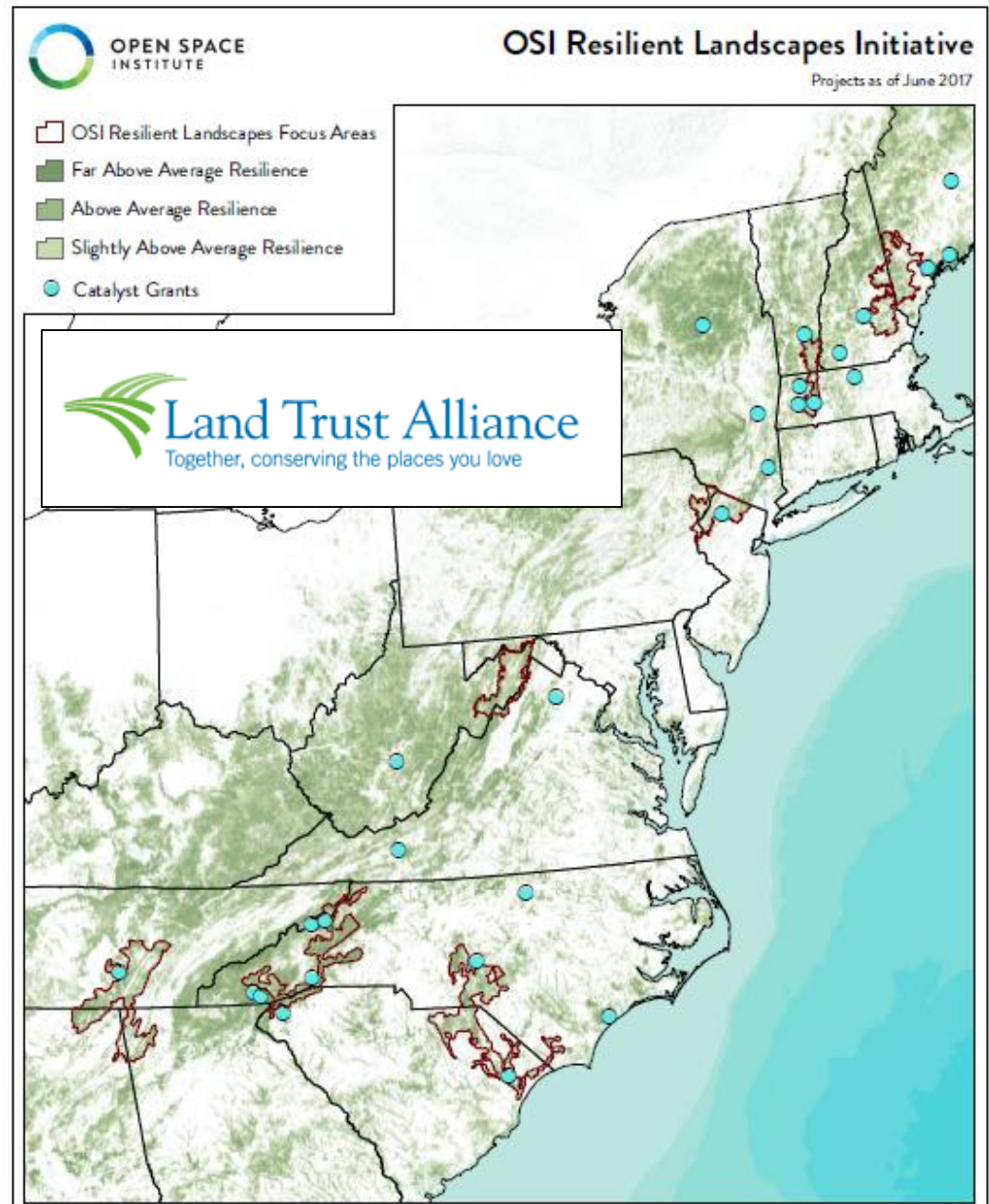
Land Trusts
protecting over
37,000 acres of
resilient lands!



And completed over 30 climate-resilient conservation plans covering all or part of 12 states!

New England Catalyst Planning Grants

- 12 Rivers Conservation Collaborative
- Mount Agamenticus to the Sea and the State of Maine
- Monadnock Conservancy
- Appalachian Mountain Club
- Bear-Paw Regional Greenways
- Vermont Land Trust
- Massachusetts Audubon Society (2)
- Highstead (3 sub-awards)
- North Quabbin Regional Conservation Partnership
- Downeast Conservation Network
- Vermont/Massachusetts Partnership

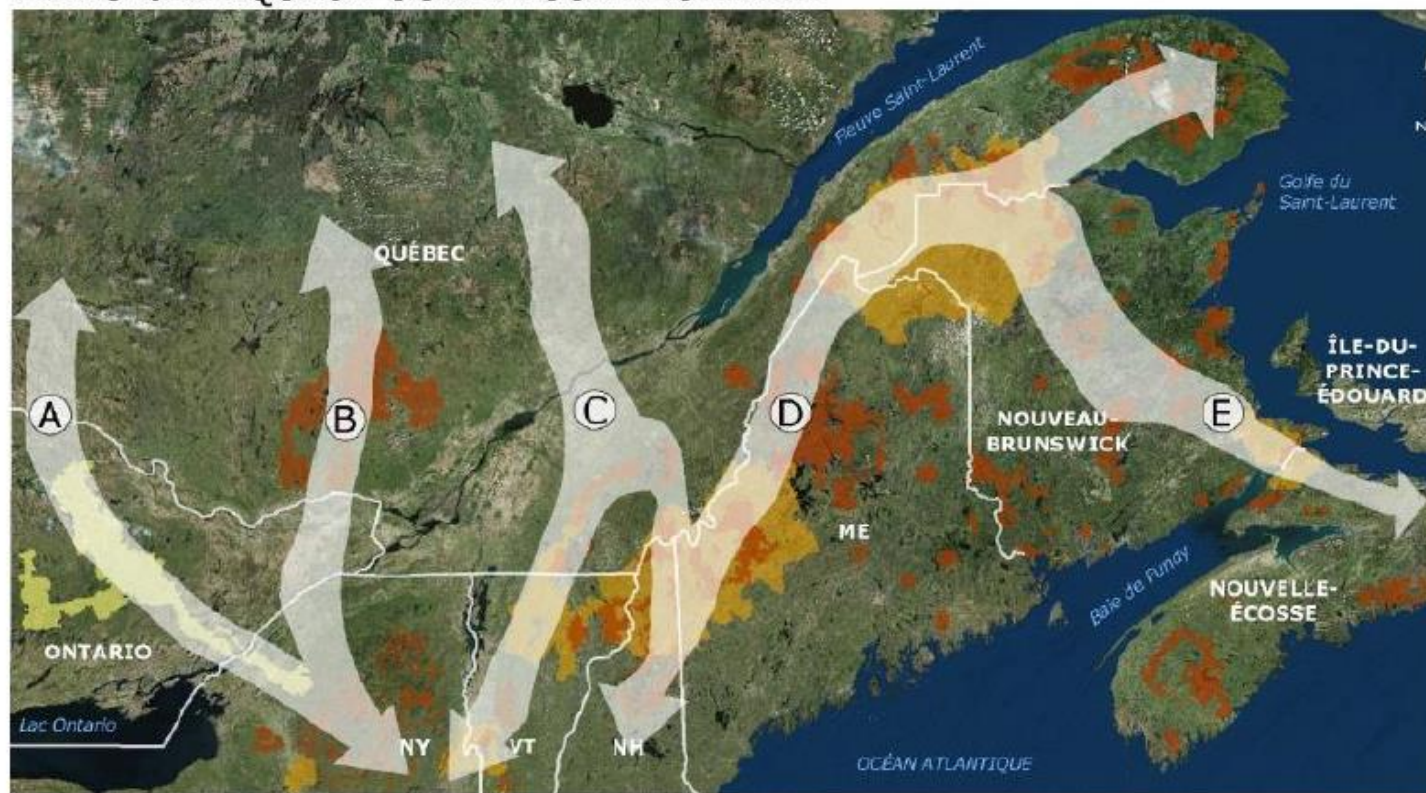




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LIENS CRITIQUES POUR LA CONNECTIVITÉ

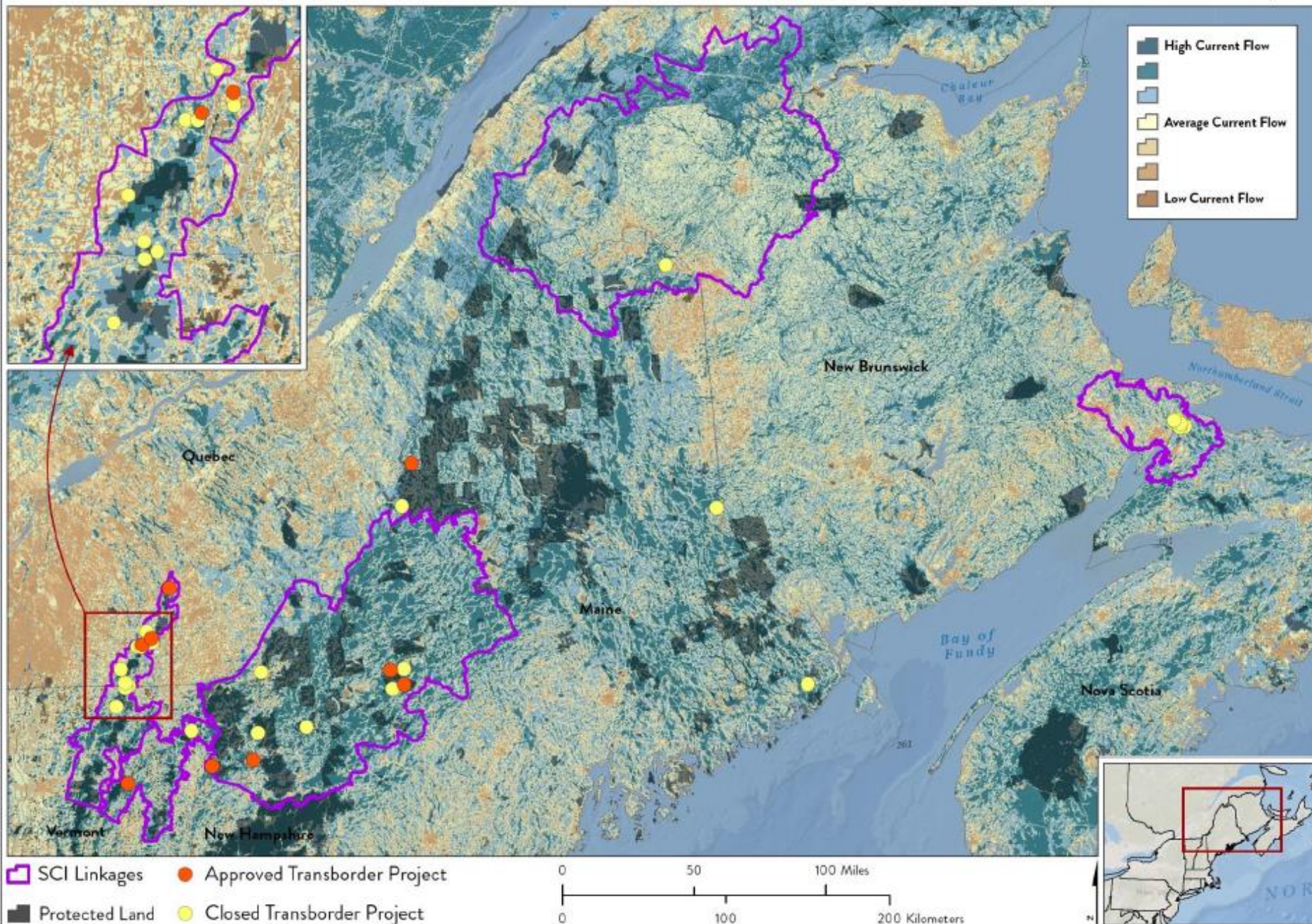


Source: EarthspaceOnline, GeoInfo, Earthstar Geographics, INRS/Arbores, USDA/USGS/ARL, Setmap.com, Aerialist, INO, IOP, SWIS360, and the GIS User Community. Global Administrative Areas. Économies Laurentiennes, 2017. Conservation de la nature

- A** Adirondack — Algonquin
- B** Adirondack — Laurentides
- C** Montagnes Vertes — Forêt boréale
- D** Montagnes Blanches — Gaspésie
- E** Restigouche — Baie de Chignecto

- Corridor forestier d'importance
- Zone essentielle à la connectivité
- Corridor Adirondack Algonquin (A2A)

Données modifiées et distribuées par
The Nature Conservancy (TNC), Deux Pays Une Forêt (2C1F),
Éco-Corridor Laurentien et Conservation de la nature Canada (CNC)



NJ SPOTLIGHT
NEWS, ISSUES AND INSIGHT FOR NEW JERSEY

BUDGET EDUCATION ENERGY & ENVIRONMENT HEALTHCARE
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ENERGY & ENVIRONMENT

ARTICLE COMMENTS

MORE THAN SCENIC, DELAWARE WATER GAP SERVES AS DEFENSE AGAINST CLIMATE CHANGE

area with addition of three tracts of

APRIL 21, 2016

The CHRISTIAN SCIENCE MONITOR

How climate change is spawning a new view of conservation

Conservation has long been about protecting communities of plants and animals where they are. But climate change is leading to a nascent form of conservation that embraces change and seeks to provide a thriving stage on which it can happen.

By Pete Spotts, Staff writer | August 20, 2015



Chester, Mass. — It's a late-July morning, and Andy Finton works his way up a trail in western Massachusetts' Berkshire Hills, walking beneath a canopy of sugar maple, ash, beech, and basswood.

Newton, NJ 61°

NEWS SPORTS OPINION OBITUARIES YOUR LIFE PHOTOS & VIDEOS WEATHER

News

Water Gap Recreation Area called a climate change shock absorber

By Bruce A. Scruton New Jersey Herald
Posted: Apr. 21, 2016

BUSHKILL, Pa. — Ecology has been focusing on the study quantifying animal species. The report notes that the area is a migration corridor for wildlife, including bobcats, and the ecology of orchids.



environment360
Reporting, Analysis, Opinion & Debate

13 JUL 2015: ANALYSIS

Resilience: A New Conservation Strategy for a Warming World

As climate change puts ecosystems and species at risk, conservationists are turning to a new approach: preserving those landscapes that are most likely to endure as the world warms.

BY JIM ROBBINS

The San Francisco Bay was once one of the richest estuaries in North America. Almost completely enclosed and protected from the open ocean, and with more than 100 freshwater creeks feeding into it, it was a fertile refuge for young salmon and steelhead trout, and a haven for birds and smelt. It was



Blue Ridge Mountains in conservation spotlight

BY KAREN CHAMBERLAIN/ASHVILLE CITIZEN-TIMES

More than the Appalachians, it is the Blue Ridge Mountains that are the focus of conservation efforts. The region is home to a diverse array of plants and animals, and its forests are a vital part of the region's ecology. The region is also home to a diverse array of plants and animals, and its forests are a vital part of the region's ecology.

'Climate-resilient' landscapes are targeted for preservation

BY KAREN CHAMBERLAIN/ASHVILLE CITIZEN-TIMES

They've had their eyes on the mountains for decades, and now they're finally getting around to it. The last few decades, conservationists have been looking for places to preserve that are resilient to climate change. The region is home to a diverse array of plants and animals, and its forests are a vital part of the region's ecology.

A Blight on the Hawaiian Islands

...natural areas and the gold standard of conservation are increasingly being redrawn park boundaries, logging, and other

Adds Urgency to World's Seeds

temperatures and worsening droughts are threatening the world's seed repositories of agricultural seeds



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Characteristics of Resilient Sites

Identifying resilient landscapes for land protection



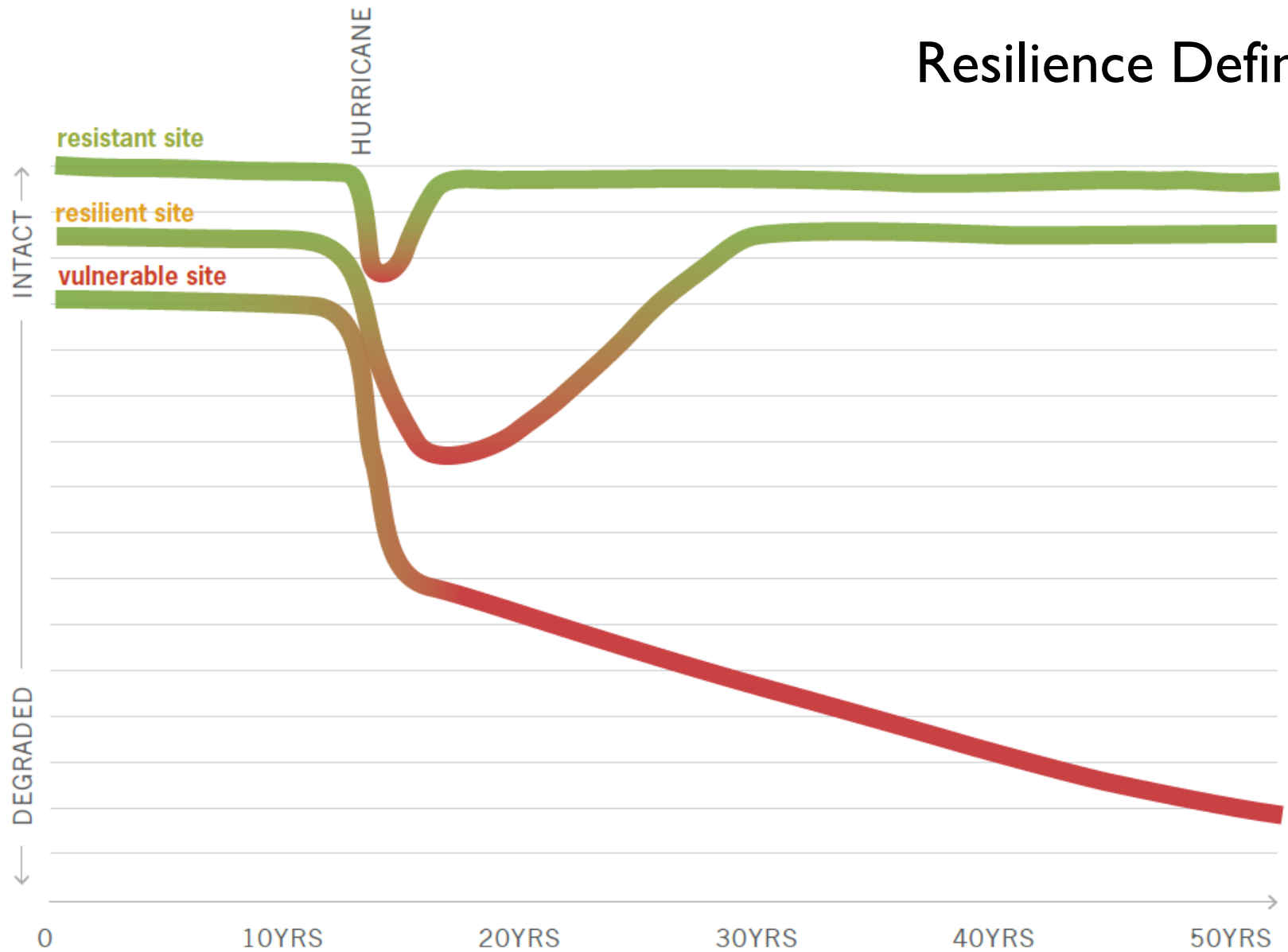
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Resilience Defined

Climate Resilience

The ability of a species, habitat or ecosystem to adjust to an environmental disturbance caused by climate change by **evolving**, **taking advantage of local opportunities**, or **relocating to more suitable habitat**.

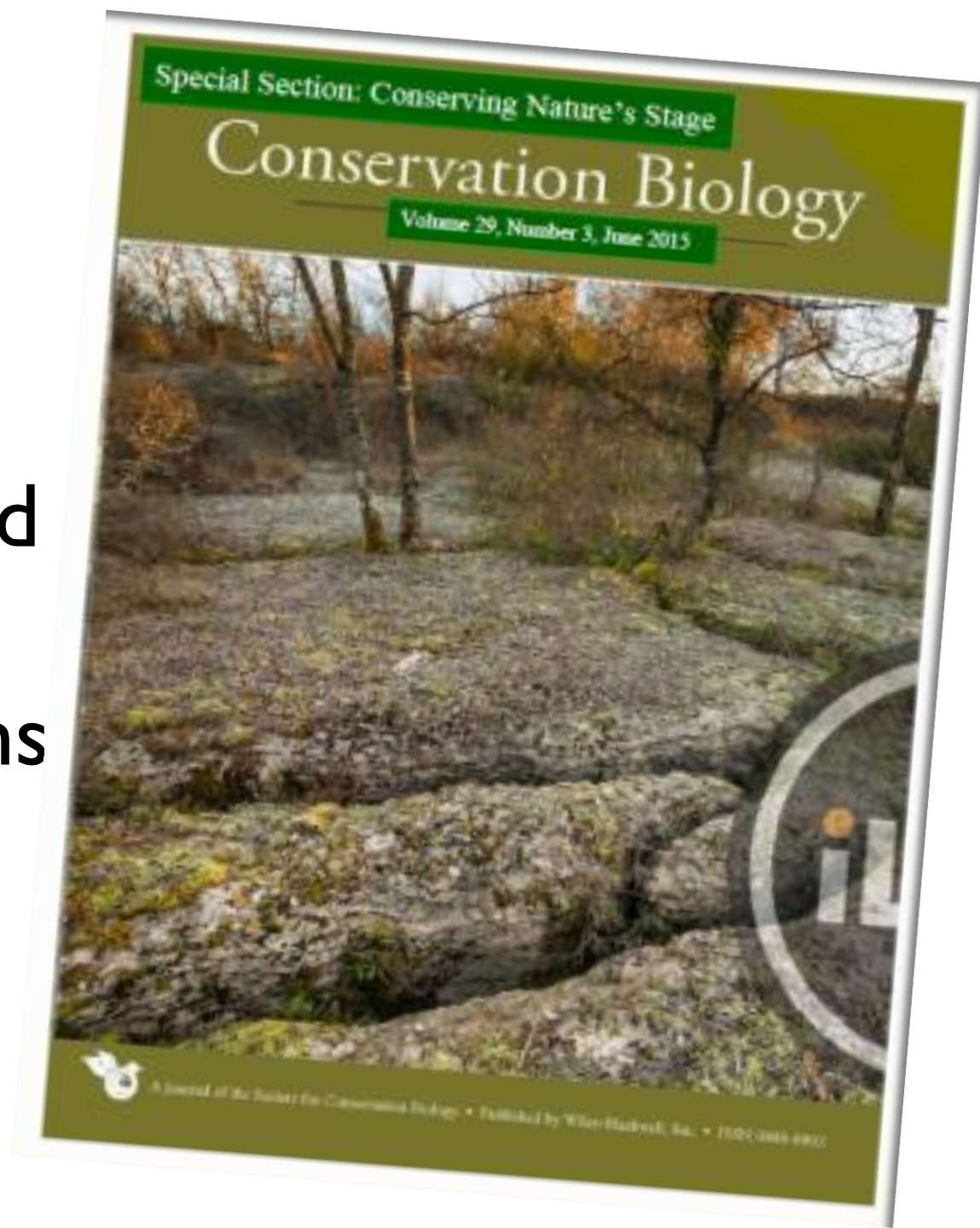
Resilience Defined





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Ensuring features
Not species based
Avoids predictions





Four Characteristics of Climate Resilience

- Geodiversity (geology + elevation + latitude)
- Landform diversity
- Connectedness
- Intact biological condition



Habitat Diversity!

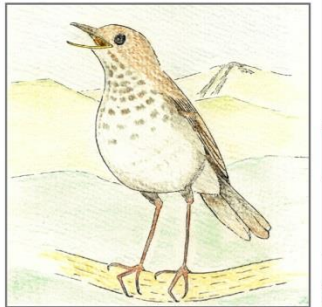
1. Geodiversity

Low Elevation Limestone



Walking Fern
Asplenium rhizophyllum

High Elevation Granite



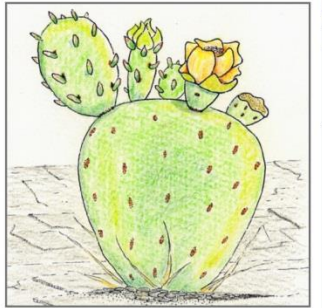
Bicknell's thrush
Catharus bicknelli

Low Elevation Silt



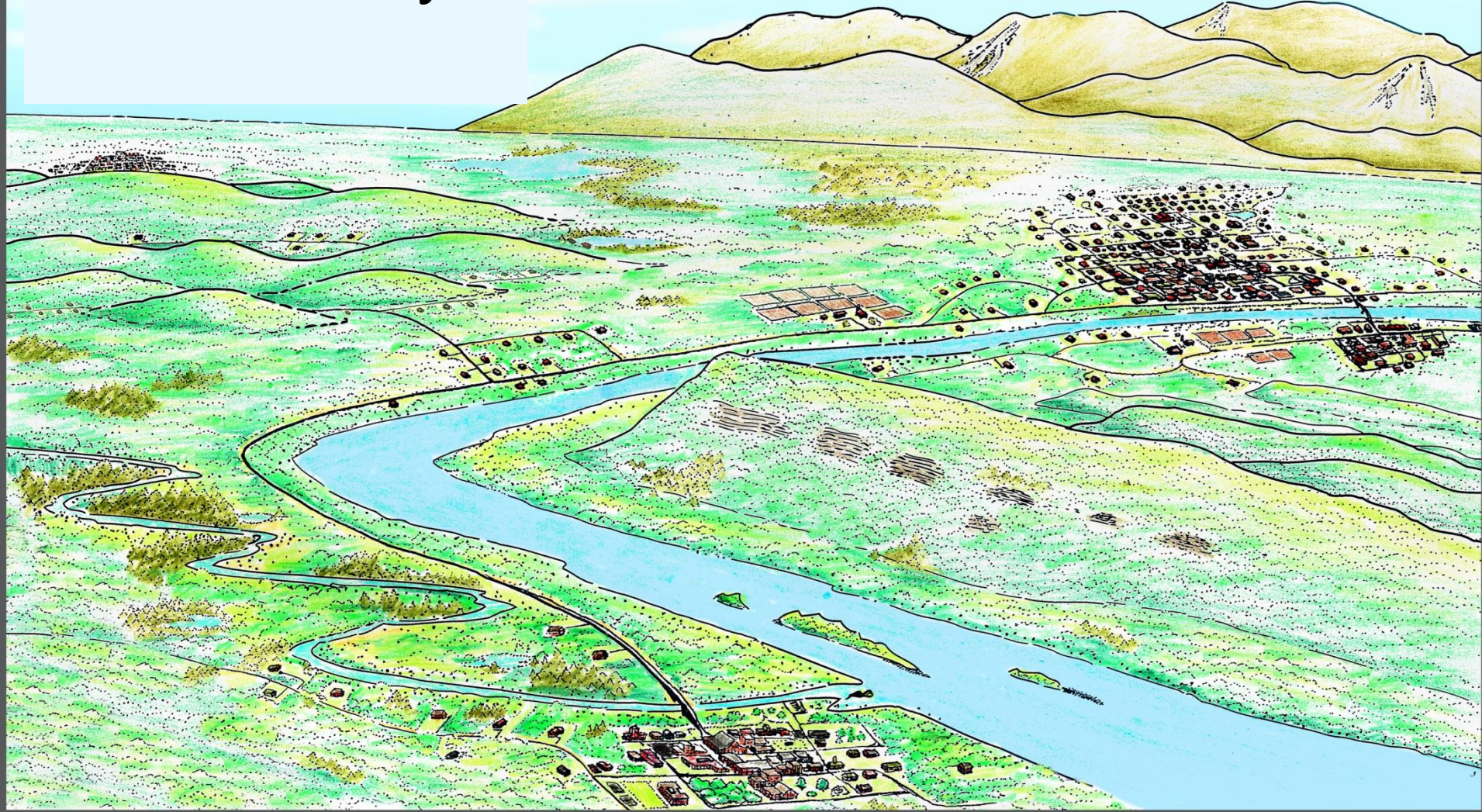
Atlantic White Cedar
Thuja occidentalis

Mid Elevation Shale

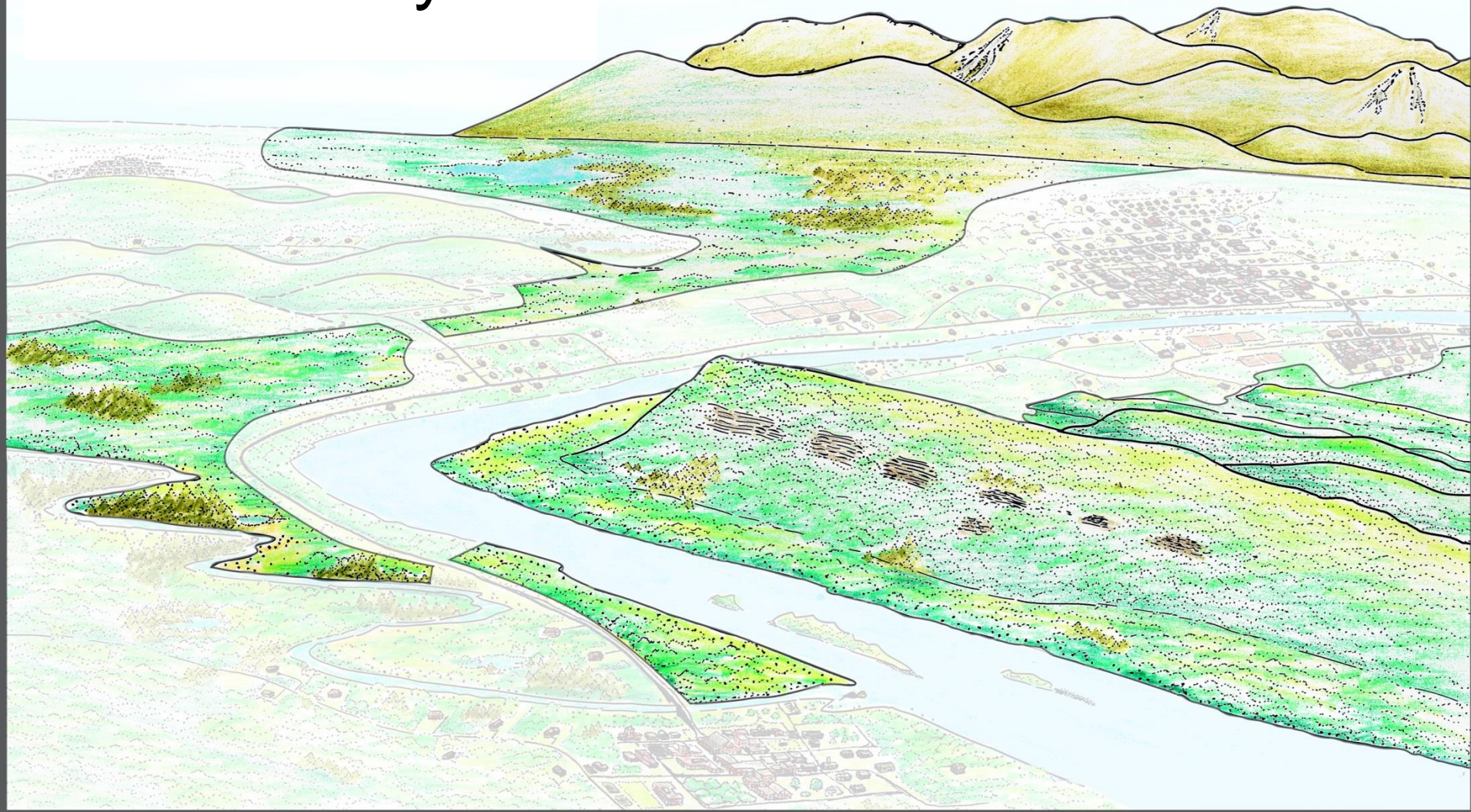


Eastern Prickly Pear
Opuntia humifusa

Geodiversity

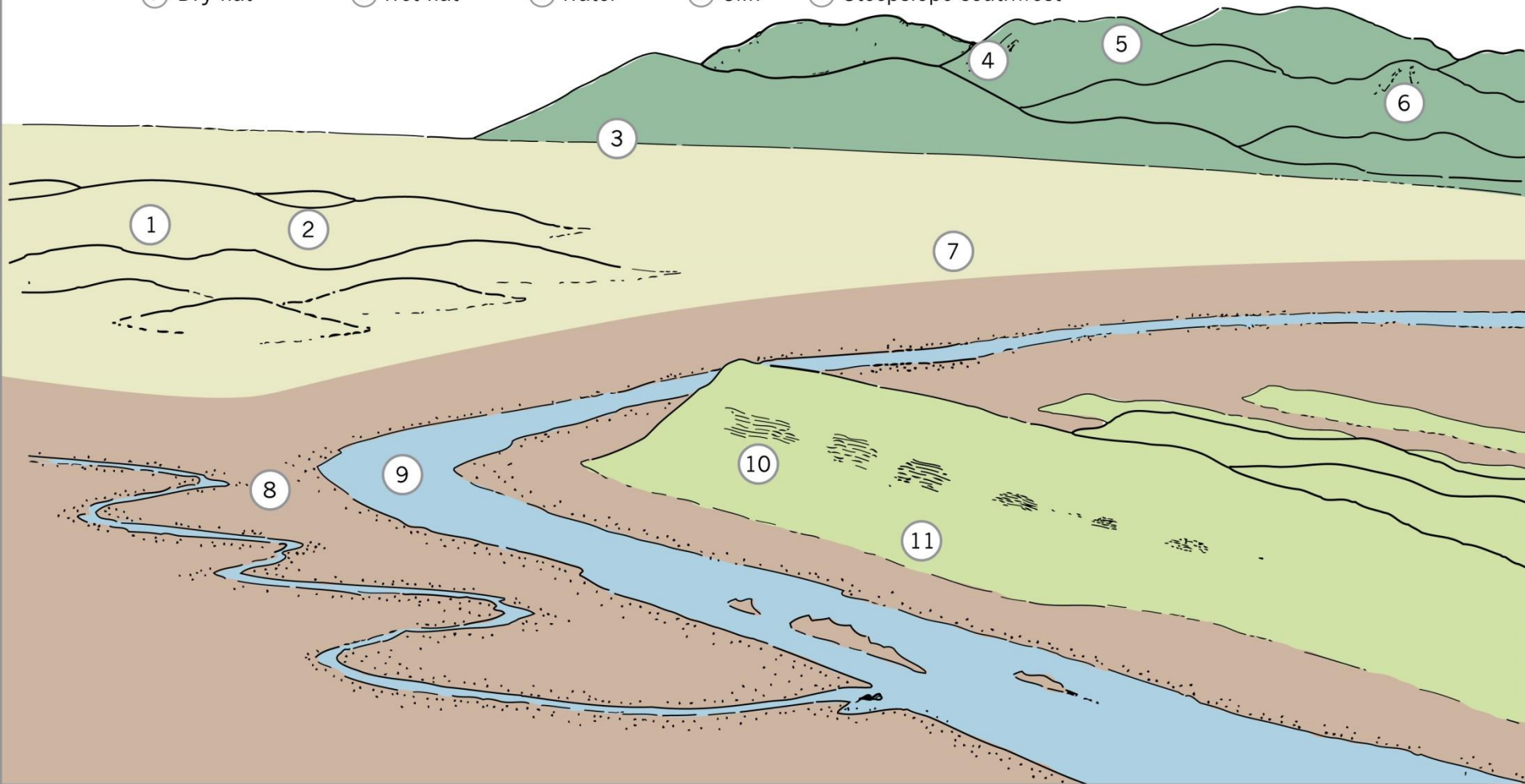


Geodiversity

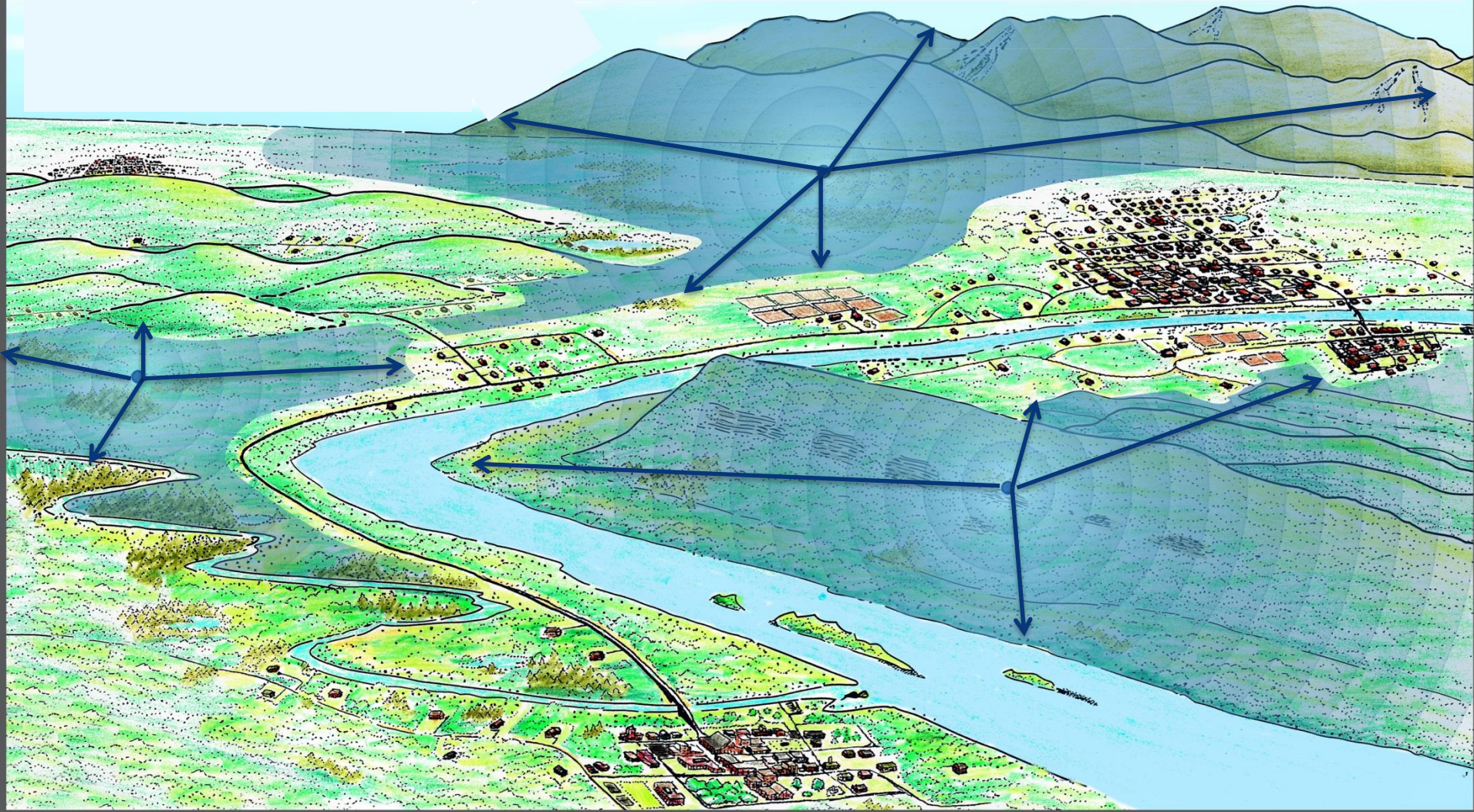


2. Landform Diversity

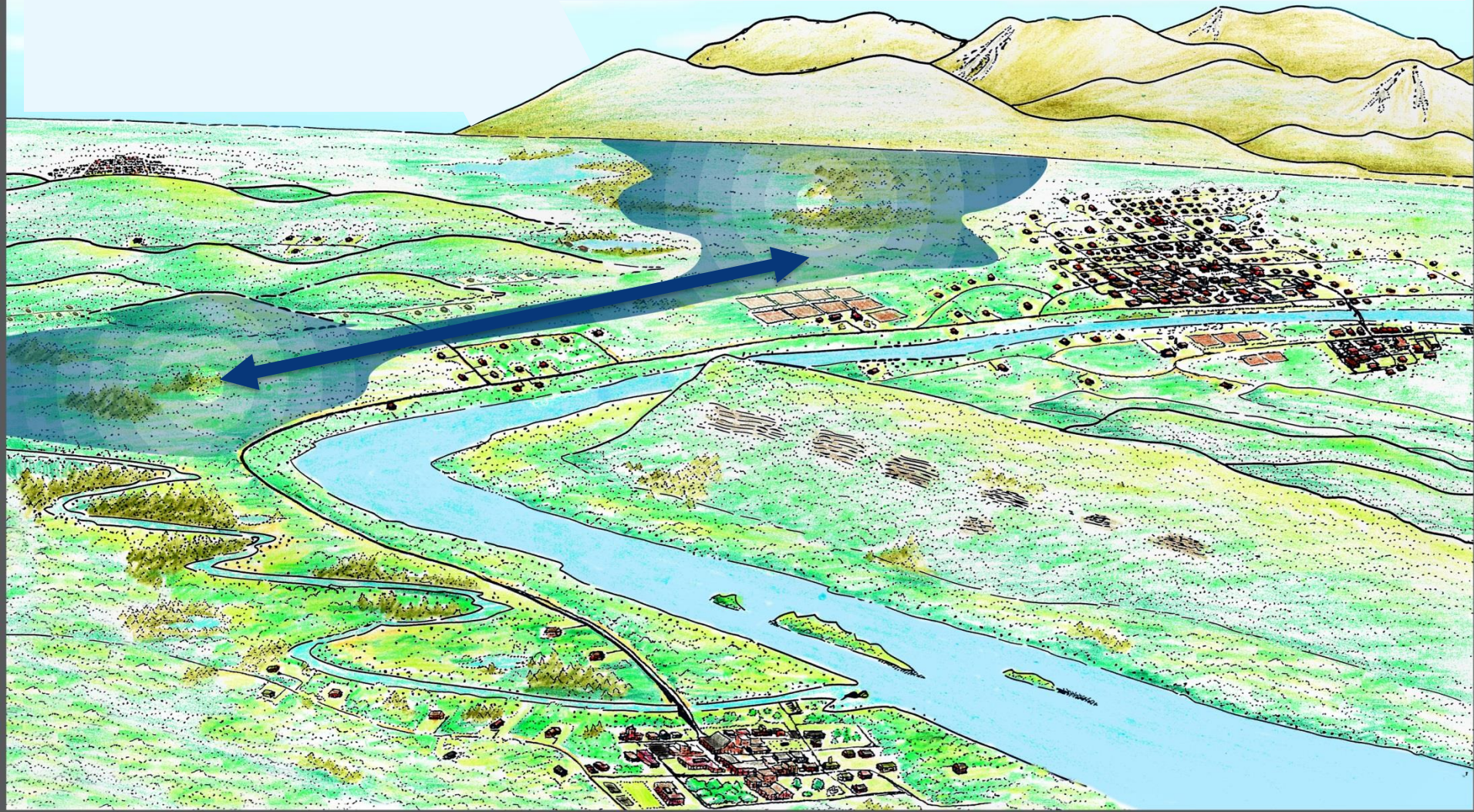
- ① Low hilltop flat ② Low hill ③ Foothlope ④ Sideslope, southwest ⑤ Ridgetop ⑥ Sideslope, northeast
⑦ Dry flat ⑧ Wet flat ⑨ Water ⑩ Cliff ⑪ Steepslope southwest



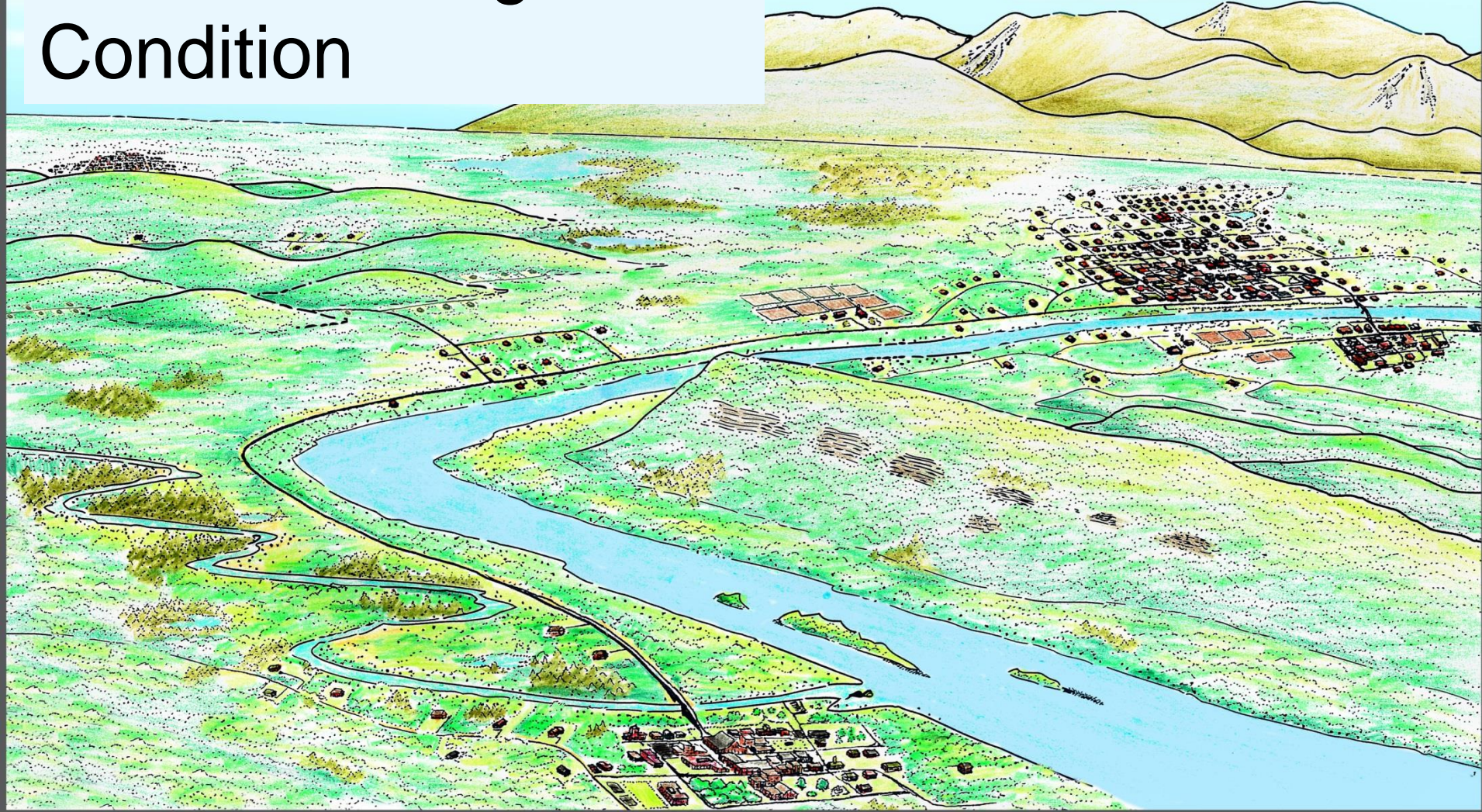
3. Connectedness – Local



3. Connectedness – Regional



4. Intact Biological Condition





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Resources and Datasets

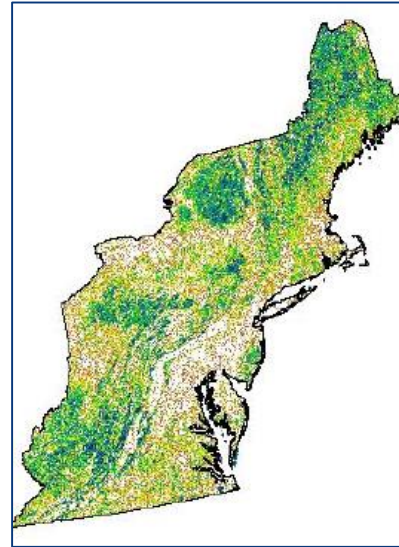
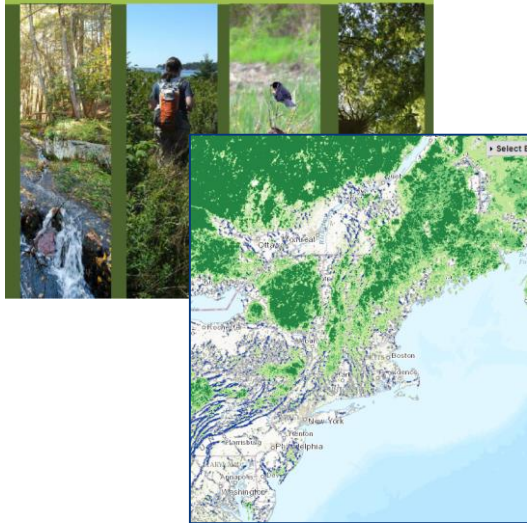
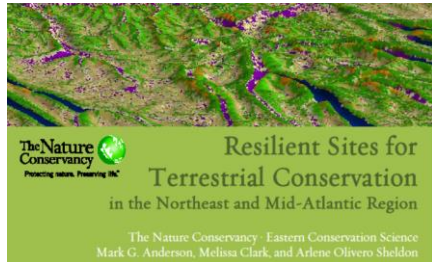
Identifying resilient landscapes for land protection



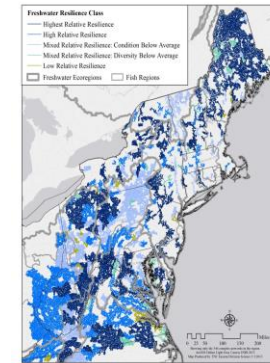
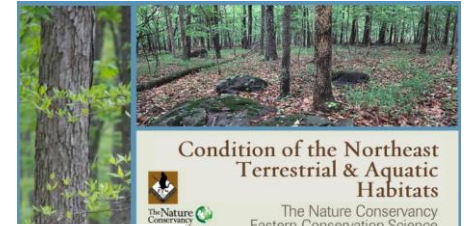
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Index of Ecological Integrity (NA LCC)

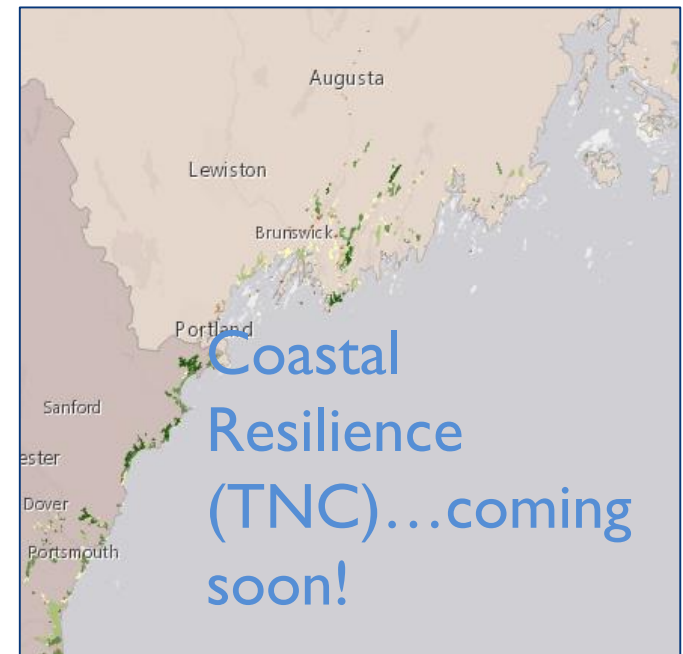
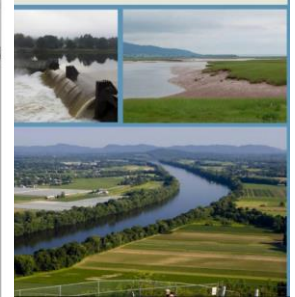
Terrestrial Resilience and Regional Flow (TNC)



Fresh Water Resilience (TNC)



Regional Freshwater Resilience Class
Stratified by Fish Region and Freshwater Ecoregion

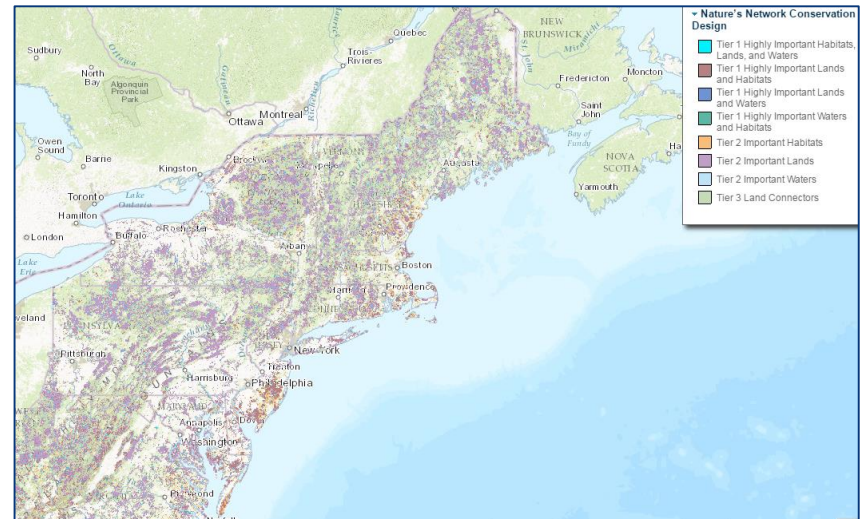
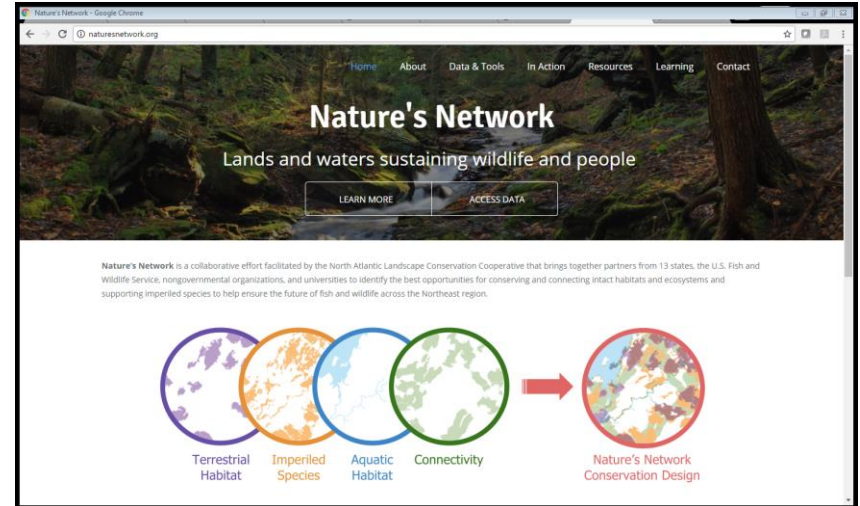
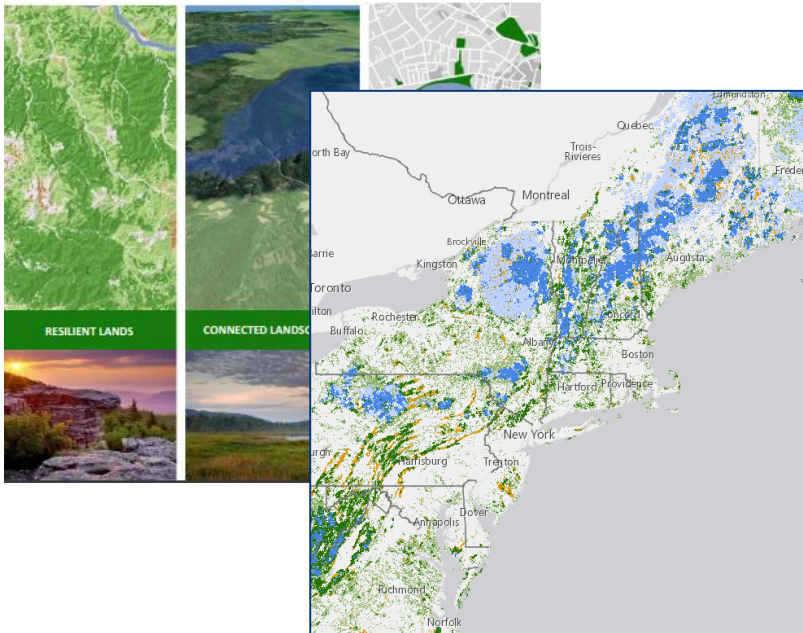




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Nature's Network (NA LCC)

Resilient and Connected Landscapes (TNC)

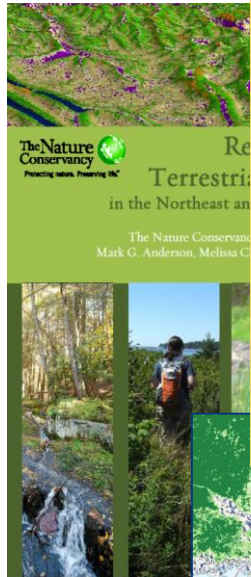




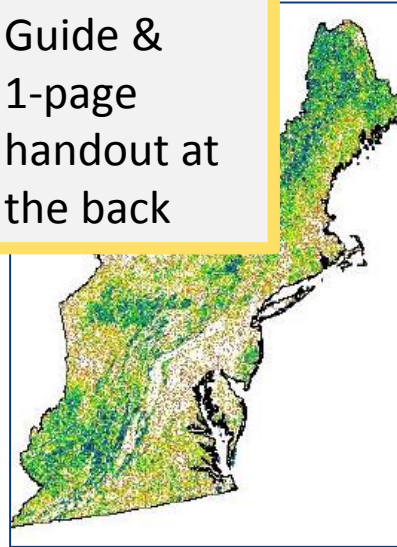
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Index of Ecological Integrity (NA LCC)

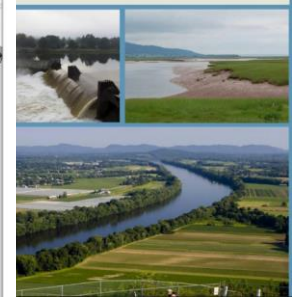
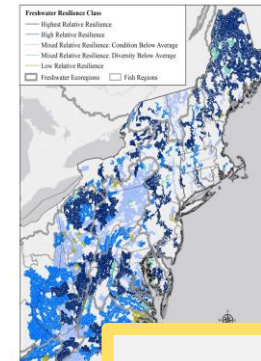
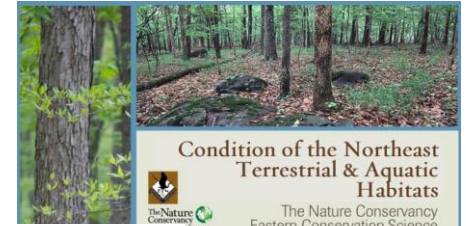
Terrestrial Resilience and Regional Flow (TNC)



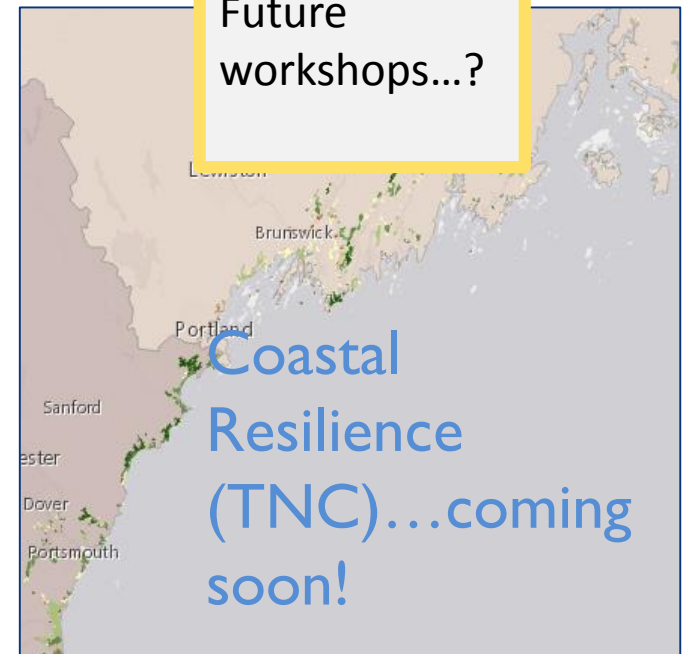
Climate
Guide &
1-page
handout at
the back



Fresh Water Resilience (TNC)



Future
workshops...?



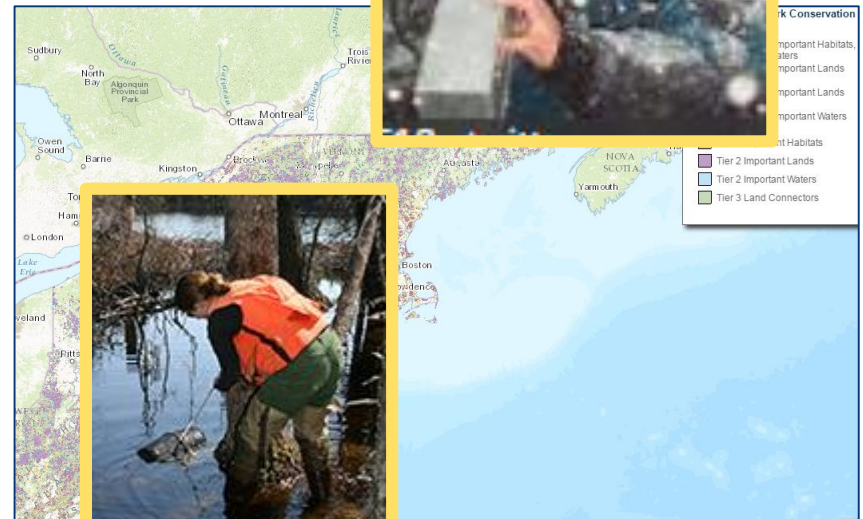
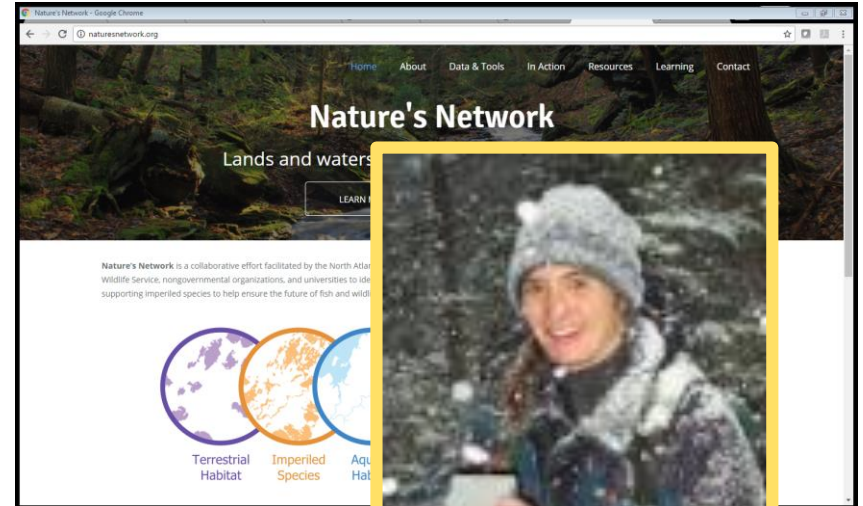
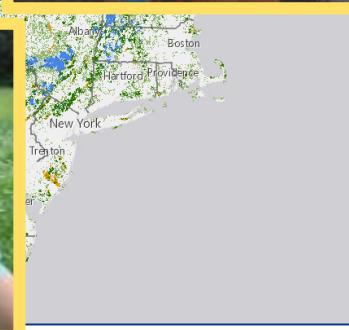
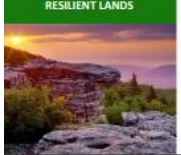
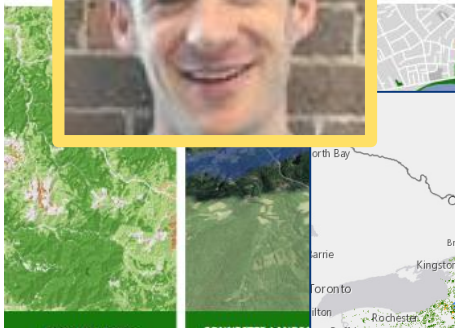
Coastal
Resilience
(TNC)...coming
soon!



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Nature's Network (NA LCC)

Resilient and Connected Landscapes (TNC)





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RESUME PRESENTATION AFTER LUNCH



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North Atlantic  **Landscape Conservation Cooperative**
Conservation Planning Atlas



Data Exercise



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Conservation Planning Atlas
DATA BASIN

Nature's Network

Sharing stories of conservation in action... LEARN MORE

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News

Events

JUN 30, 2015

EVENT DATE: JUL 19, 2017



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Search: Land protection in a changing climate

North Atlantic LCC CPA - Google Chrome

Secure | https://nalcc.databasin.org

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land protection in a changing climate

North Atlantic Landscape Conservation Cooperative
Conservation Planning Atlas

powered by DATA BASIN

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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

Acoustic

Recommended Items

Nature's Network

Nature's Network

Northeast Terrestrial Habitat and Secured Lands Map



Land Protection in a Changing Climate

Created by North Atlantic LCC

Mar 16, 2016 (Last modified Oct 27, 2016)



About

The Land Protection in a Changing Climate Gallery was created as a companion to a practical guide, **CONSERVING NATURE IN A CHANGING CLIMATE**, developed by the Open Space Institute with support from the North Atlantic Landscape Conservation Cooperative and other partners. The Guide walks users through the characteristics of a network of resilient sites, introduces the data sets available in this gallery, and provides a detailed case study of how these data sets were used to identify land protection priorities by a set of land conservation organizations working in Massachusetts.

Tags

elevation, geology, complexity, geodiversity, connectedness, diversity, resilience, landscape



This gallery is visible to everyone

Gallery contains



1 Folders



17 Datasets



2 Maps

Usage



bookmarked by 2 members

Gallery Contents

Sort by: Default

Display:



Map

Connectivity Components



Dataset

Regional Flow (Anthropogenic Resistance) Simplified Categories



Dataset

Terrestrial and Wetland Core-Connector Network



Dataset

Landscape Diversity Stratified by Geophysical Setting and Ecoregion ...



Dataset

Geophysical Settings, 2016 Eastern U.S. and Canada



Dataset

Local Connectedness Stratified by Setting and Ecoregion with Regional ...



Dataset

Regional Flow 2016, Eastern U.S. and Canada



Dataset

Resilience Stratified by Setting and Ecoregion with Regional Override, ...



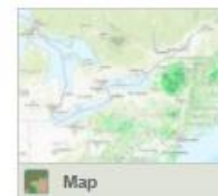
Dataset

Index of Ecological Integrity, Stratified by Ecosystem, Region-wide, ...



Dataset

Terrestrial and Aquatic Habitat Map (DSLland), Version 3.1, Northeast ...



Map

Land Protection in a Changing Climate

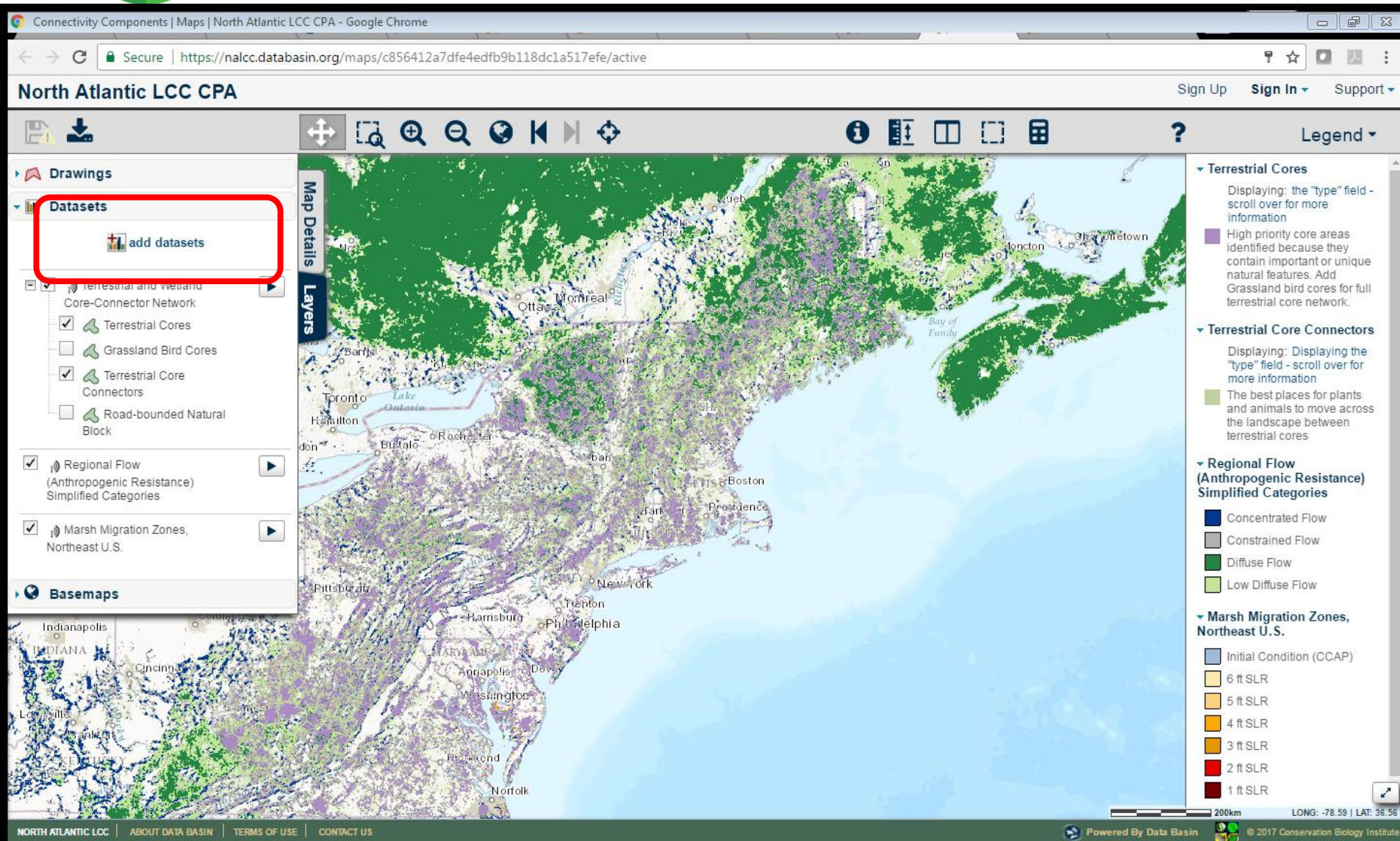


Dataset

Secured Lands, 2014, Eastern U.S.



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Add Items...

You can select **datasets** from within galleries, groups, & maps. Single click an item to select, double-click to view contents. Sign in for more options.

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Showing 1 - 20 of 22 Items; Page 1 of 2

FILTER: Datasets (22) Galleries (0) Groups (0) Maps (0)

Sort by: **Relevance** Display:



Dataset
Terrestrial Resilience,
New York State



Dataset
TNC Terrestrial
Resilience and
Connectivity Datasets



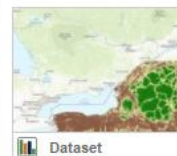
Dataset
**Resilience Stratified by Setting and Ecoregion
with Regional Override, 2016, Eastern U.S. and
Canada**
The Nature Conservancy
A climate-resilient conservation portfolio includes sites
representative of all geophysical settings selected for their
landscape diversity and local connectedness. We developed
methods to identify such a portfolio. First, we mapped
geophysical settings across the entire study area. Second, within ...
North Atlantic LCC (Last modified June 16, 2017)



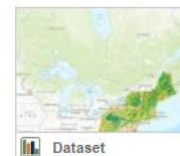
Dataset
Ecological Settings
hexagons,



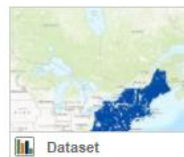
Dataset
Index of Ecological
Integrity, Stratified by
Ecosystem, Region-
wide, ...



Dataset
Local Connectivity, New
York State



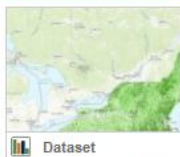
Dataset
Index of Ecological
Integrity, Stratified by
Ecosystem, Region-
wide, ...



Dataset
Aquatic Core Networks,
Northeast U.S.



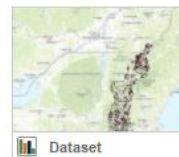
Dataset
Terrestrial Ecosystem
Core Areas,
Unstratified, Northeast
U.S.



Dataset
Habitat Importance for
Imperiled Species,
Northeast U.S.



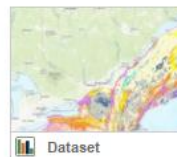
Dataset
Terrestrial Ecosystem-
based Selection Index,
Stratified by HUC 6, ...



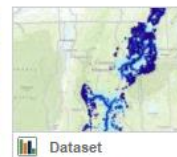
Dataset
Terrestrial Core and
Connector Network, CT
River Watershed



Dataset
TNC Terrestrial
Resiliency, CT River
Watershed



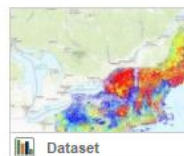
Dataset
Bedrock Geology,
Northern
Appalachians/Acadians



Dataset
Aquatic Core Network
and Buffers, CT River
Watershed



Dataset
Index of Ecological
Integrity, New York State



Dataset



Dataset



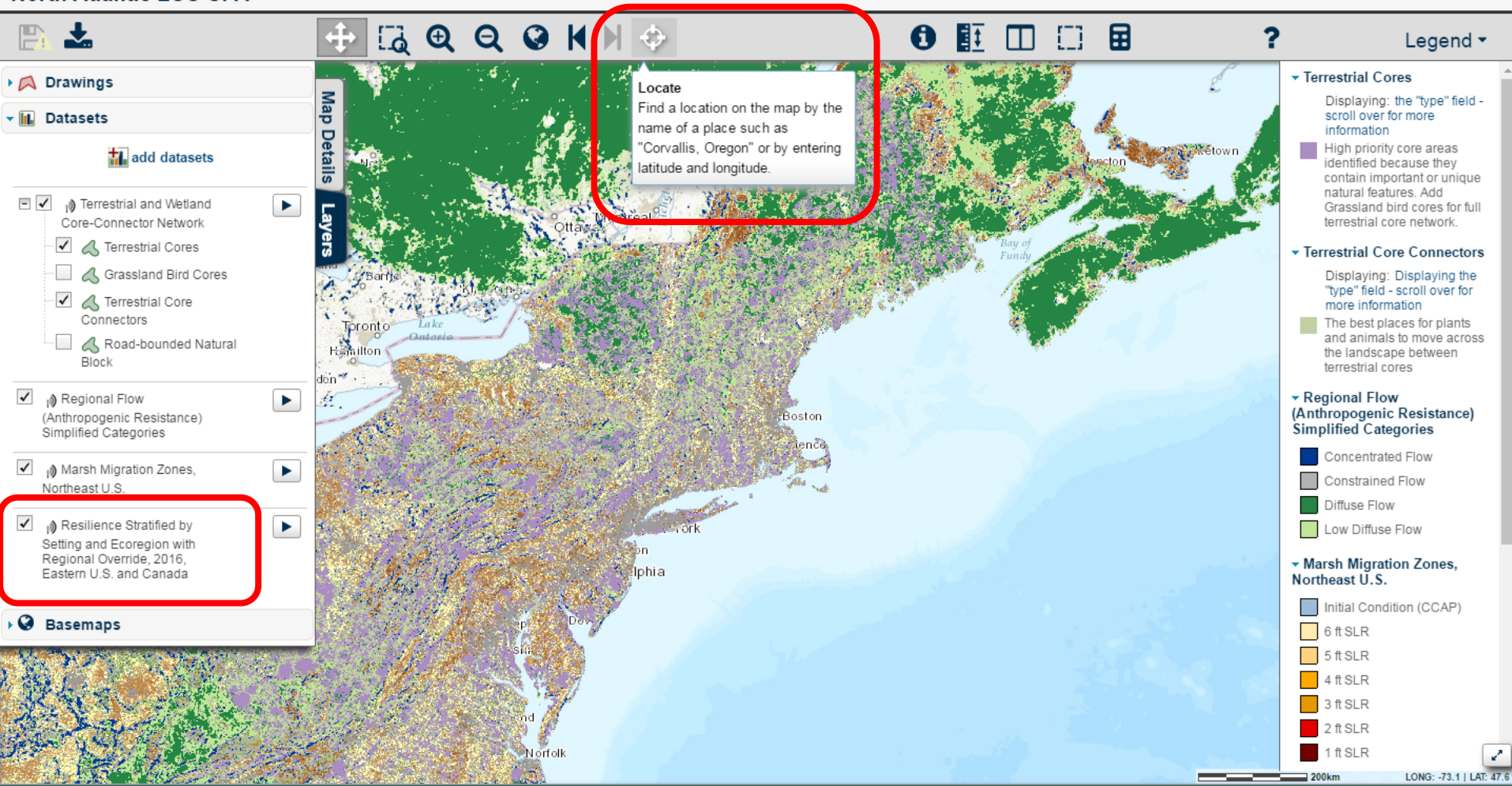
Add datasets



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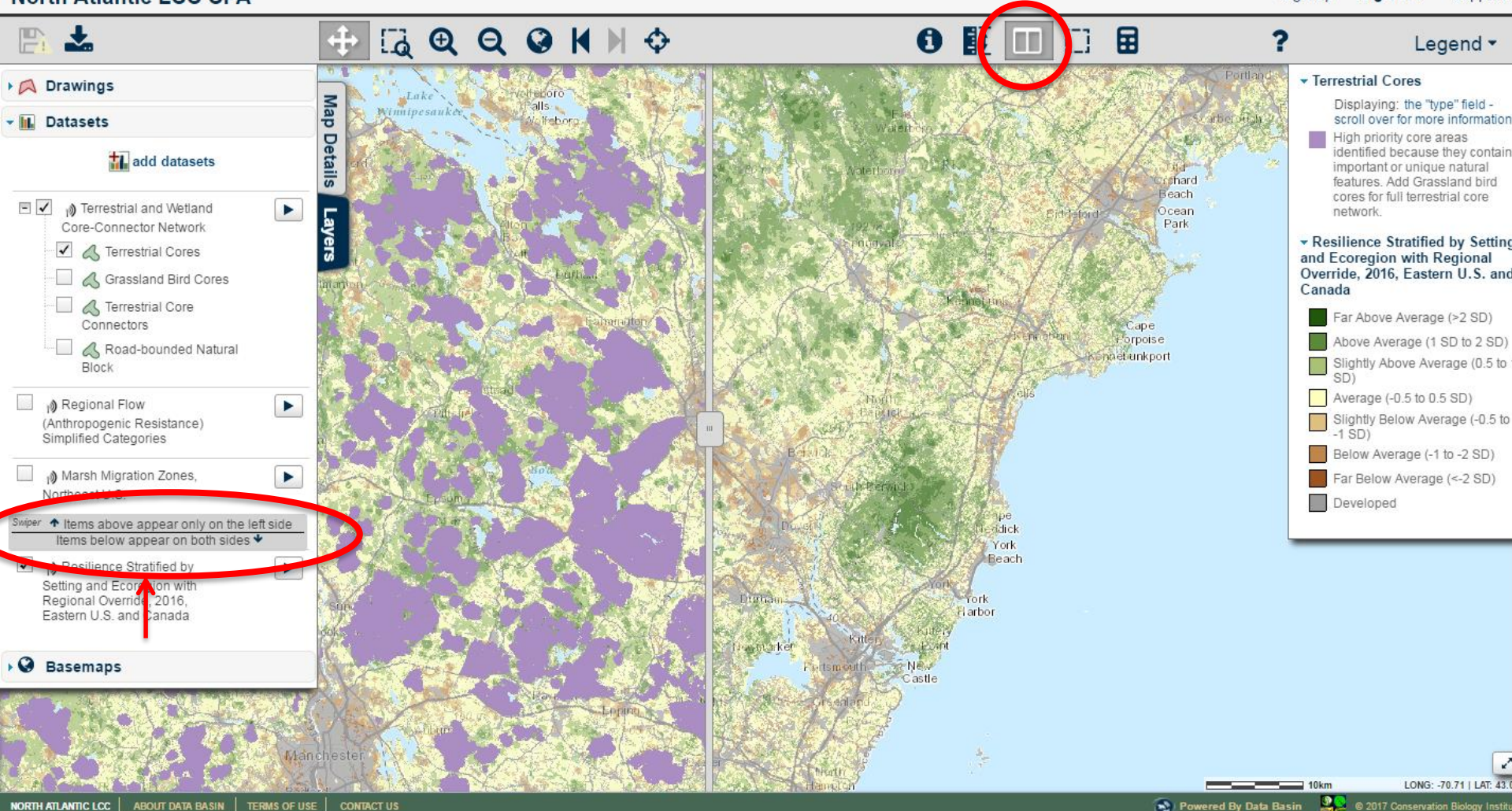


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Where do terrestrial cores
and resilient sites
intersect? Where do they
differ? Why might that be?

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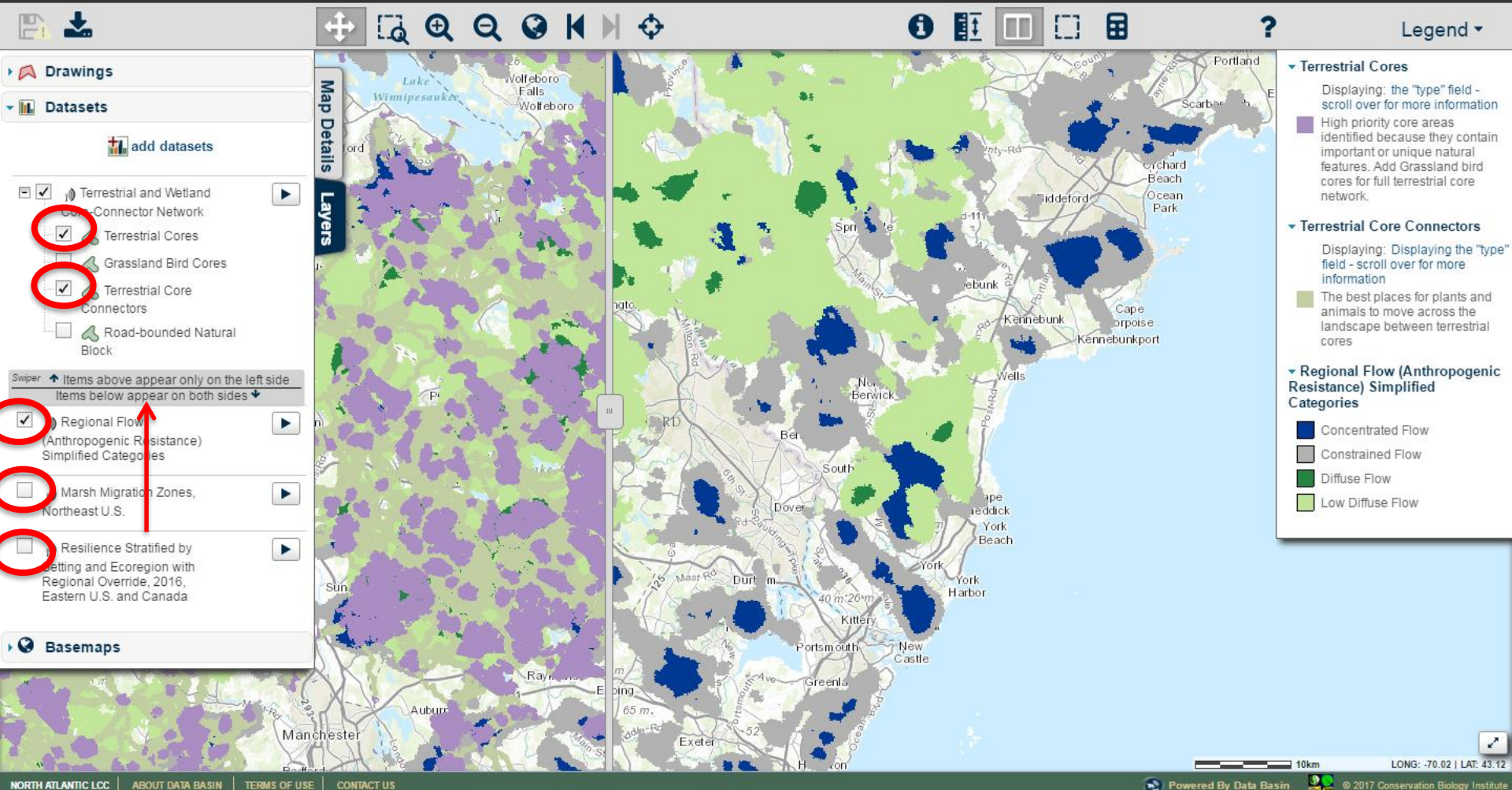


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Where do terrestrial
connectors and regional flow
sites intersect? Where do they
differ? Why might that be?

North Atlantic LCC CPA

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Search: Secured lands

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Search Browse Items

<< Modify search

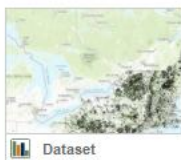
Showing 1 - 14 of 14 Items; Page 1 of 1

FILTER: Datasets (12) Galleries (0) Groups (0) Maps (2)

Sort by: Relevance Display:



Map
Northeast Terrestrial
Habitat and Secured
Lands Map



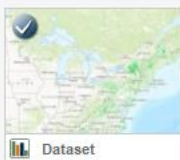
Dataset
Secured Lands, 2012,
Northeast



Dataset
Terrestrial and Aquatic
Habitat Map (DSLland),
Version 3.1, Northeast
...



Dataset
Secured Status, 2014,
Northeast



Secured Lands, 2014, Eastern U.S.

The Nature Conservancy, Eastern Division

A spatial dataset of public and private lands and waters secured by a conservation situation that includes an explicit level of security from future conversion and current incompatible uses.

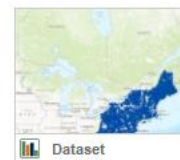
The eastern secured lands system represents a commitment to nature and to future generations, ...

Recommended Dataset

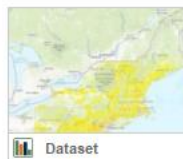
North Atlantic LCC (Last modified May 4, 2016)



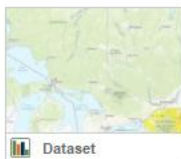
Dataset
Habitat Condition for
Imperiled Species,
Northeast U.S.



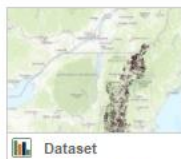
Dataset
Aquatic Core Networks,
Northeast U.S.



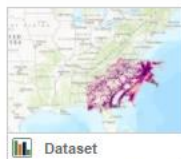
Dataset
Probability of
Development, 2030,
Northeast U.S.



Dataset
Probability of
Development, 2080,
Northeast U.S.



Dataset
Terrestrial Core and
Connector Network, CT
River Watershed



Dataset
Conservation Blueprint
2.1: Priorities for shared
action



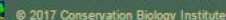
Map
Protected Areas (U.S.
Only)

cancel

add items



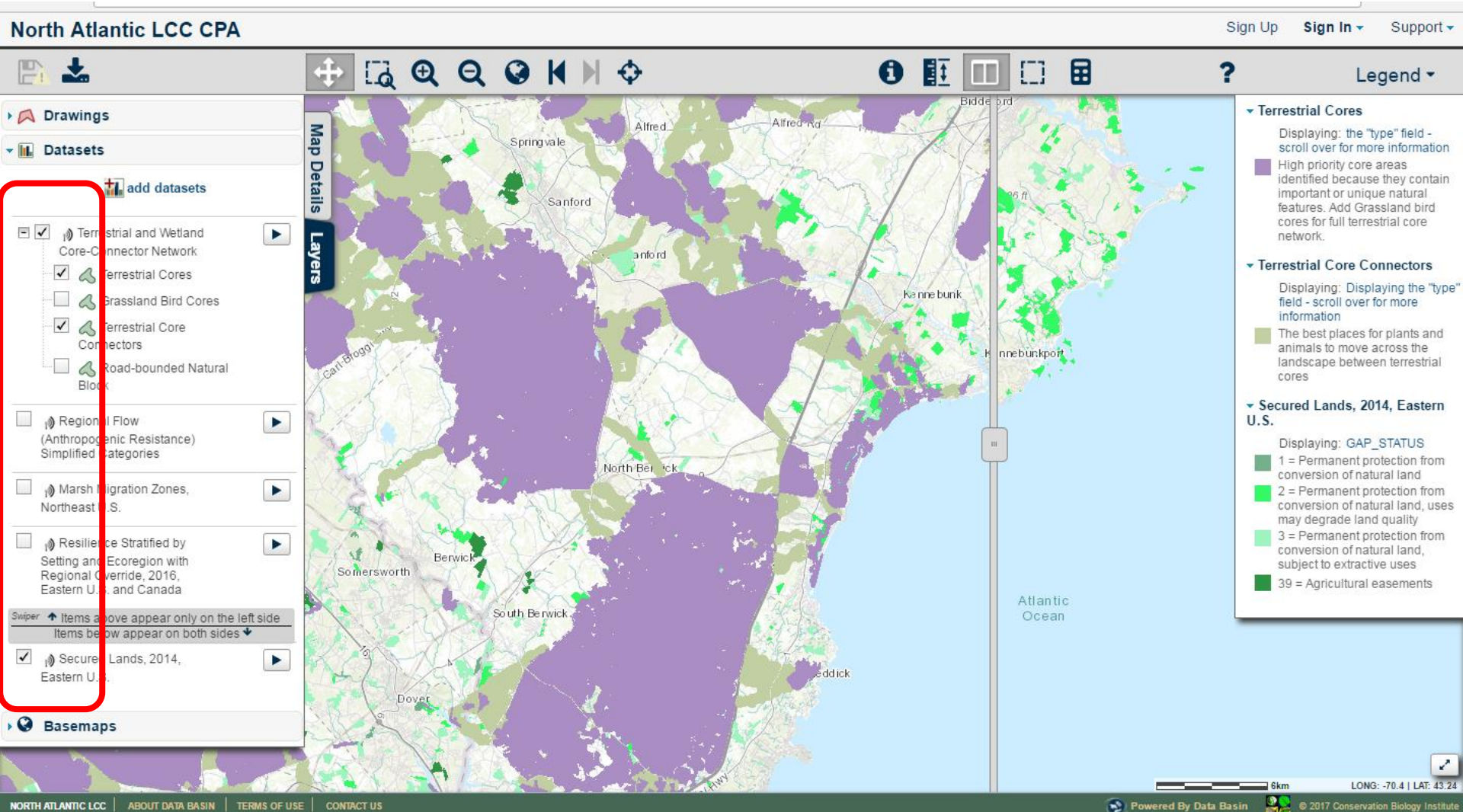
Looking only at protected lands, where are the corridors emerging?





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What is the potential for a functional set of cores and corridors for this area?



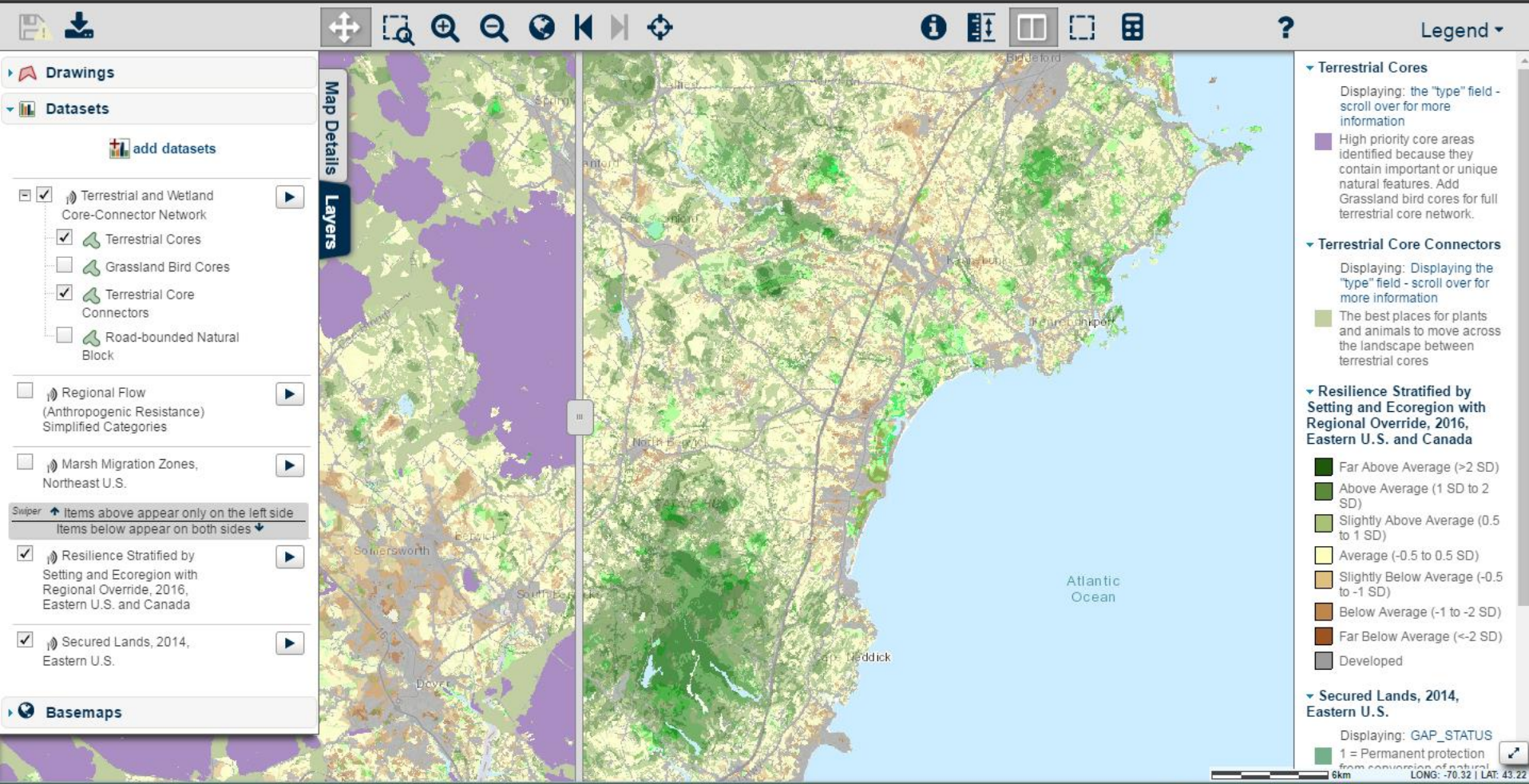


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Are the NA LCC cores and corridors resilient?

North Atlantic LCC CPA

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What other datasets would you add? What questions would you ask?

Gallery Contents

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 Map Connectivity Components	 Dataset Regional Flow (Anthropogenic Resistance) Simplified Categories	 Dataset Terrestrial and Wetland Core-Connector Network	 Dataset Landscape Diversity Stratified by Geophysical Setting and Ecoregion ...	 Dataset Geophysical Settings, 2016 Eastern U.S. and Canada	 Dataset Local Connectedness Stratified by Setting and Ecoregion with Regional ...
 Dataset Regional Flow 2016, Eastern U.S. and Canada	 Dataset Resilience Stratified by Setting and Ecoregion with Regional Override, ...	 Dataset Index of Ecological Integrity, Stratified by Ecosystem, Region-wide, ...	 Dataset Terrestrial and Aquatic Habitat Map (DSLland), Version 3.1, Northeast ...	 Map Land Protection in a Changing Climate	 Dataset Secured Lands, 2014, Eastern U.S.

climatechange.lta.org/resilience-guide/

An aerial photograph of a rural landscape. A river flows through the scene, bordered by lush green fields and patches of forest with autumn-colored trees. In the background, rolling hills and mountains are visible under a clear sky. The foreground features a mix of green grass and brown, harvested fields.

CONSERVING NATURE IN A CHANGING CLIMATE:

A Guide for Land Trusts in the Northeast

An abstract, pixelated pattern at the bottom of the page, composed of various shades of blue, yellow, and brown, creating a mosaic-like effect.