Thinking Globally: Science & Policy Drivers for Large-Landscape Conservation in the Appalachians

An Appalachian Trail Landscape Partnership All-Partner Learning Session

September 22, 2022

Intro Survey

There is a lot of federal funding that has recently been made available through federal policy such as the Great American Outdoors Act, Inflation Reduction Act, American Infrastructure Act, etc.

What do you/your organization need to better access this funding?

The Appalachian Climate Corridor

Assessing Natural Resources for the Appalachian Trail

ATLP All Partner Virtual Summit

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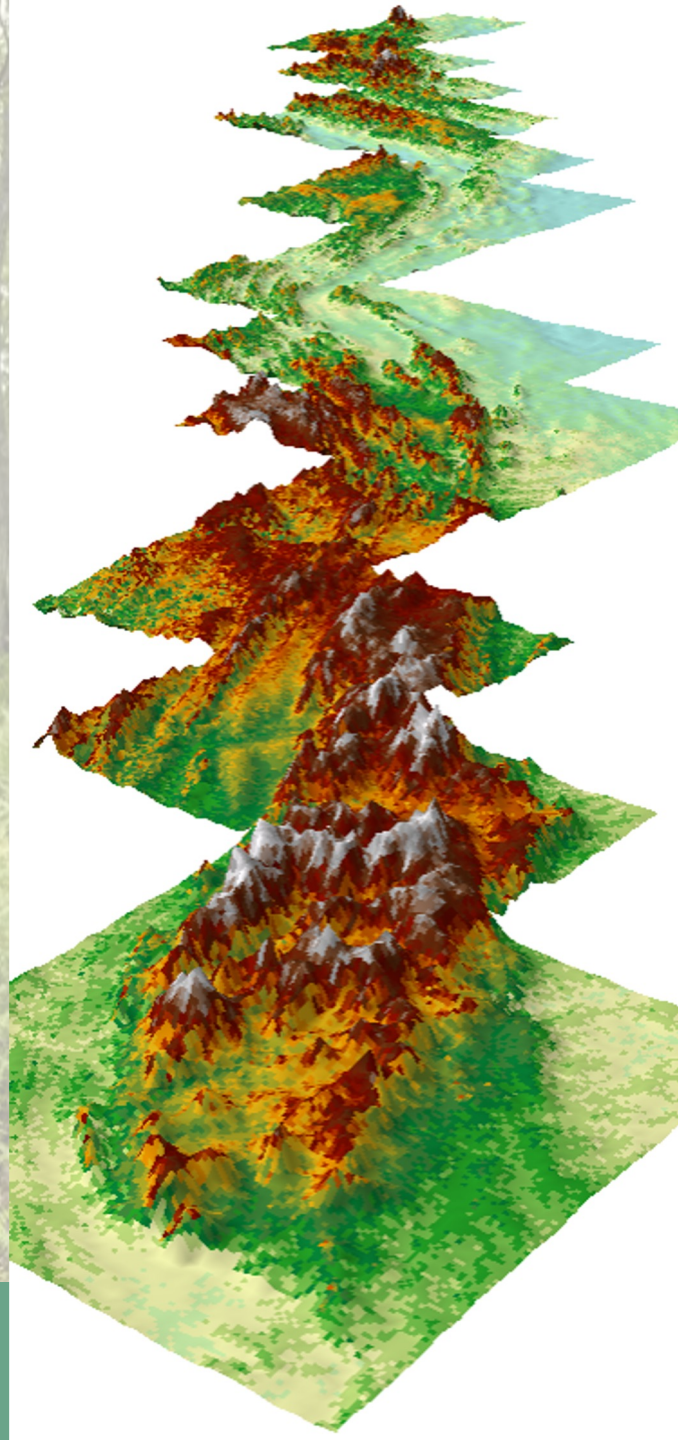
September 22, 2022



Center for Land Use and Sustainability
Shippensburg University

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Our team

Dr. Claire Jantz
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Northern Arizona University

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Project Manager
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Shippensburg University

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Research Analyst
CLUS
Shippensburg University

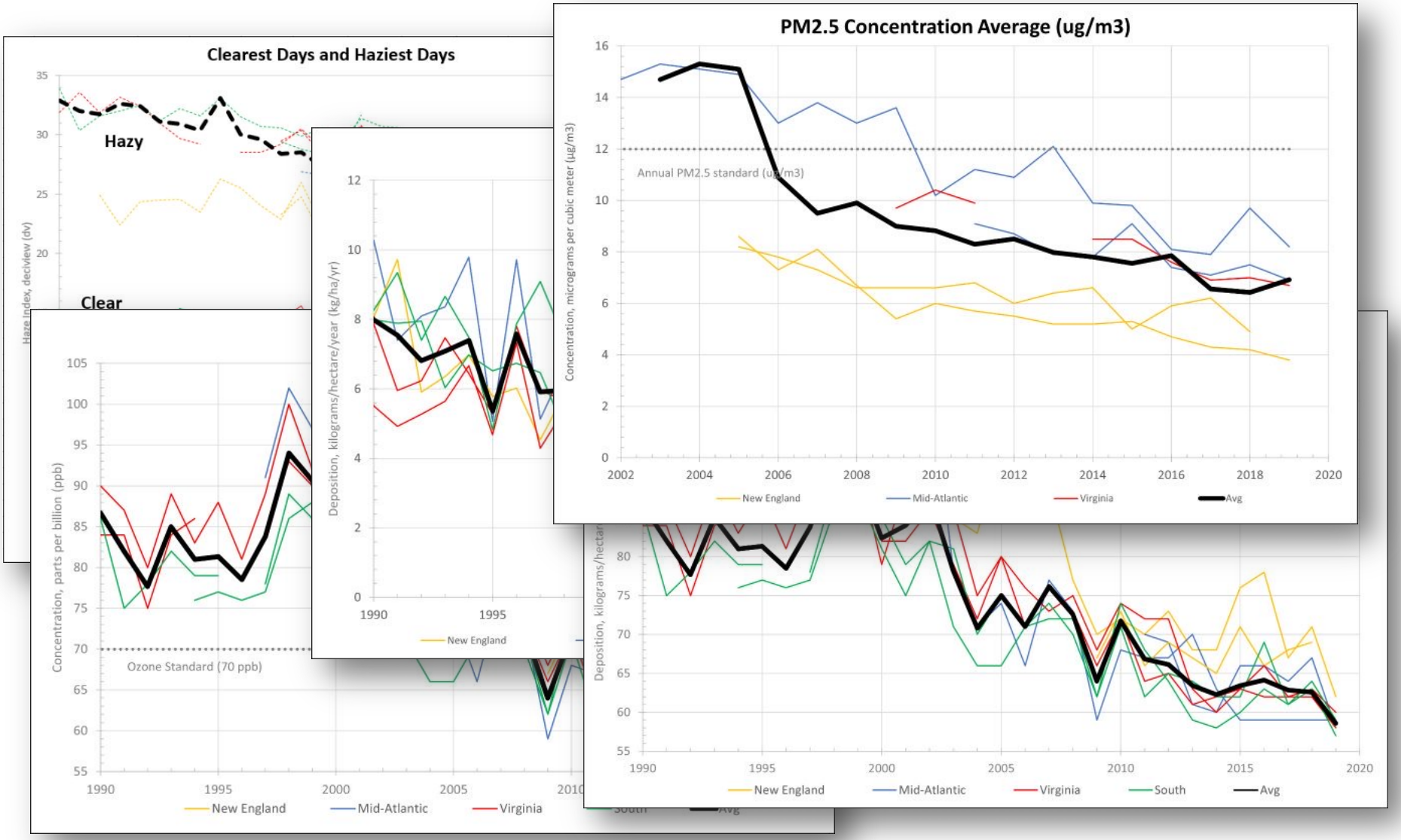
And so many students!
Tyler Costlow
Ben Stine
Ed Benish
Jack Wacker
Amber Millison
Ayrton Marriot
… apologies to any I missed!

Setting the Stage:

Highlights from the Natural Resource Condition Assessment

https://appalachian-trail-natural-resource-condition-assessment-clus.hub.arcgis.com/

Moving in the right direction: Air quality



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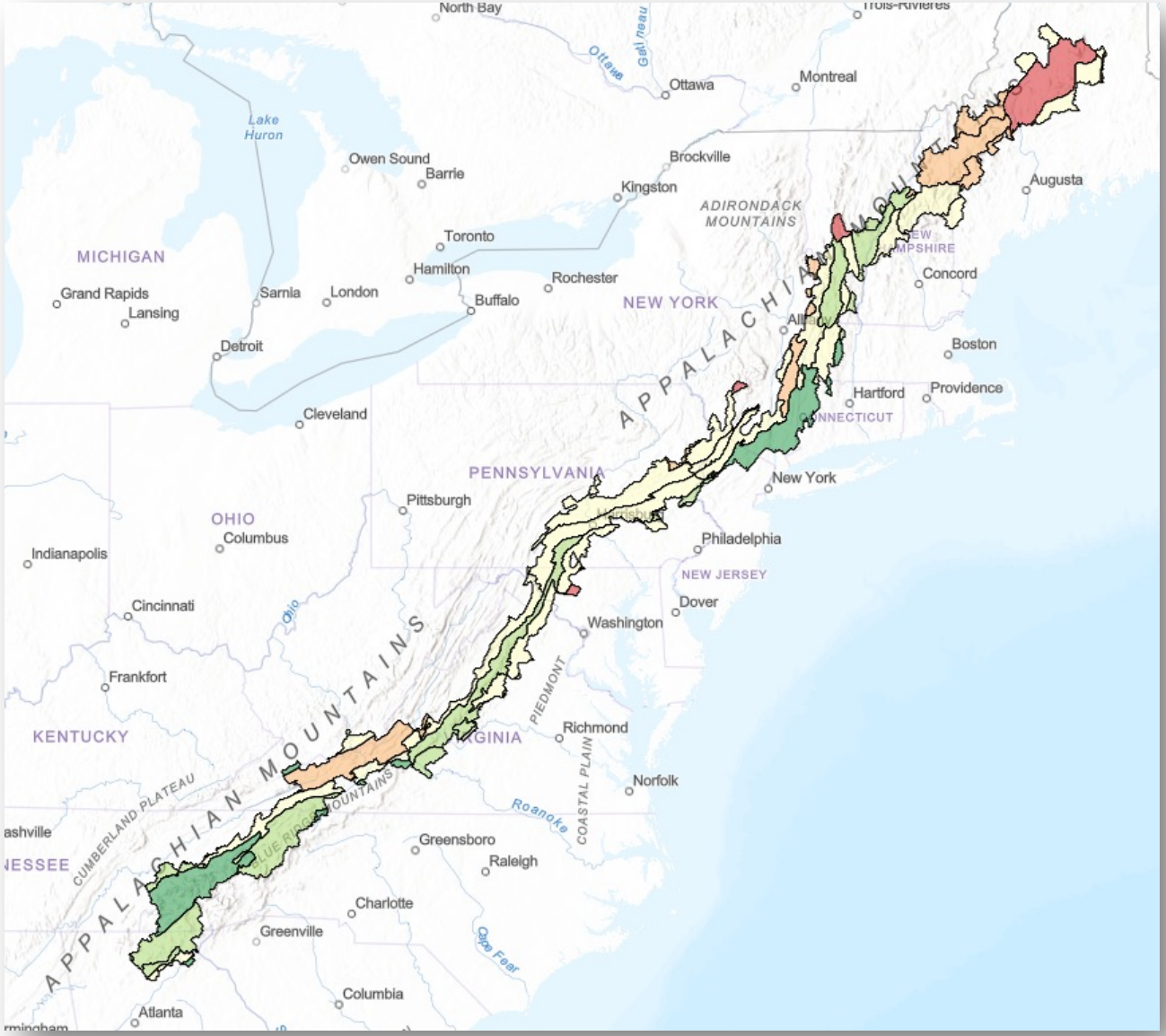
Holding the line: Forest condition



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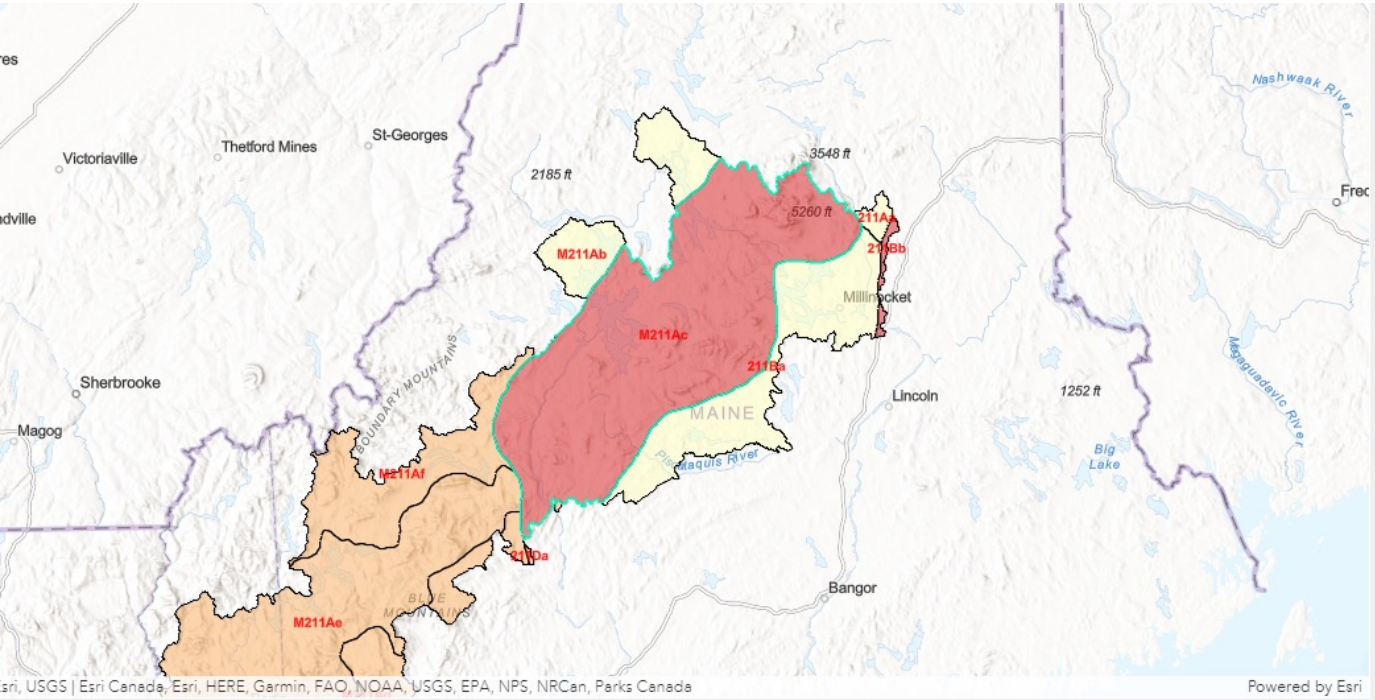


M211Ac

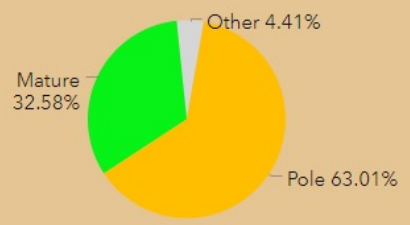
Maine Central Mountains

Division: *Warm Continental*

Province: *Adirondack-New England Mixed Forest--Coniferous Meadow*

- 211Aa
- 211Ba
- 211Bb
- 211Da
- M211Ab
- M211Ac
- M211Ae
- M211Af
- M211Ag

STAND STRUCTURAL STAGE



Trend

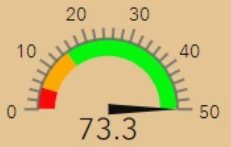
Condition: Sig. Concern

MEDIUM-LARGE SNAGS

Trend

Condition: Sig. Concern

COARSE WOODY DEBRIS



Trend

Condition: Sig. Concern

Info | Structure | Health

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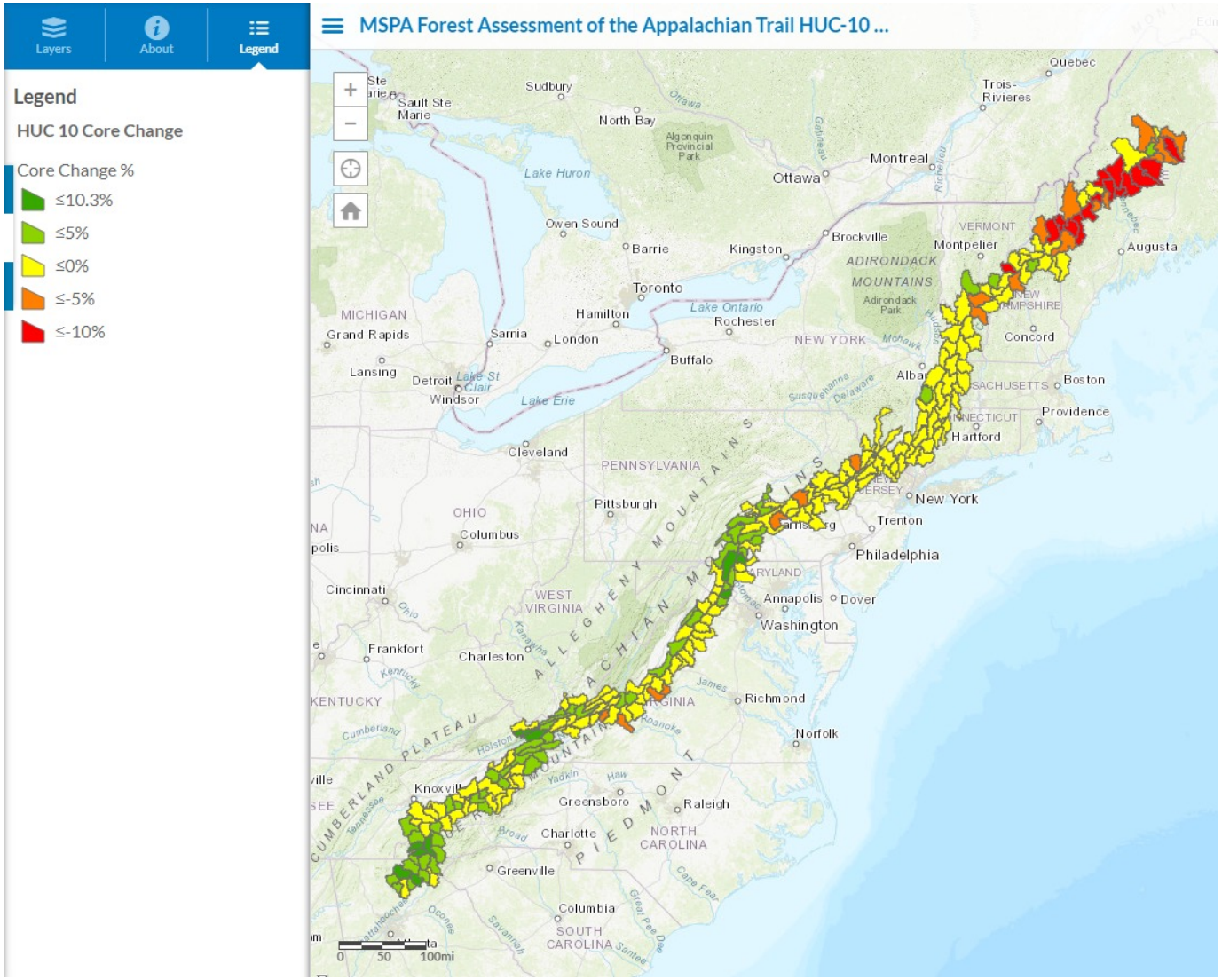
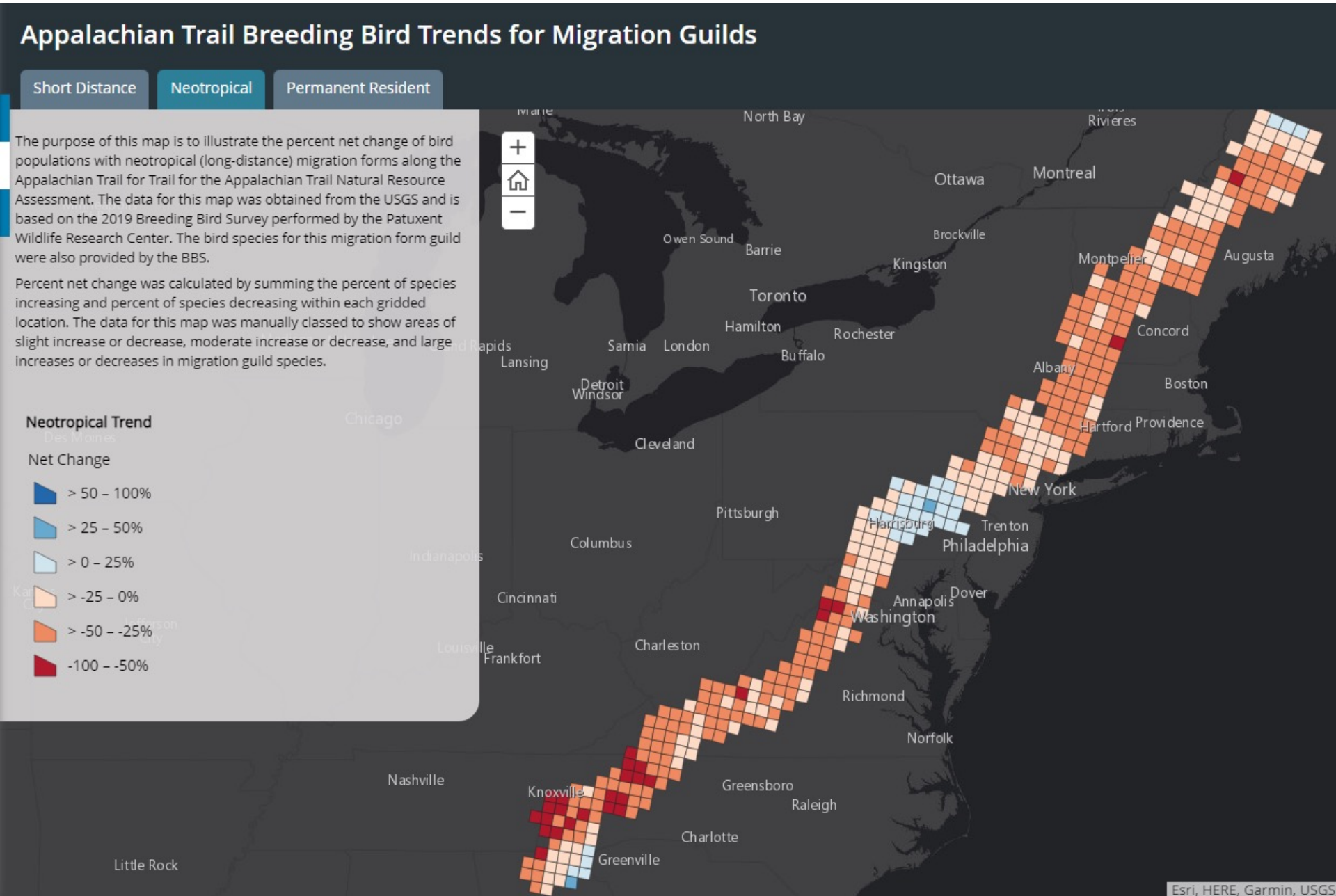
Warming signs: Multiple stressors



Warning signs: Birds



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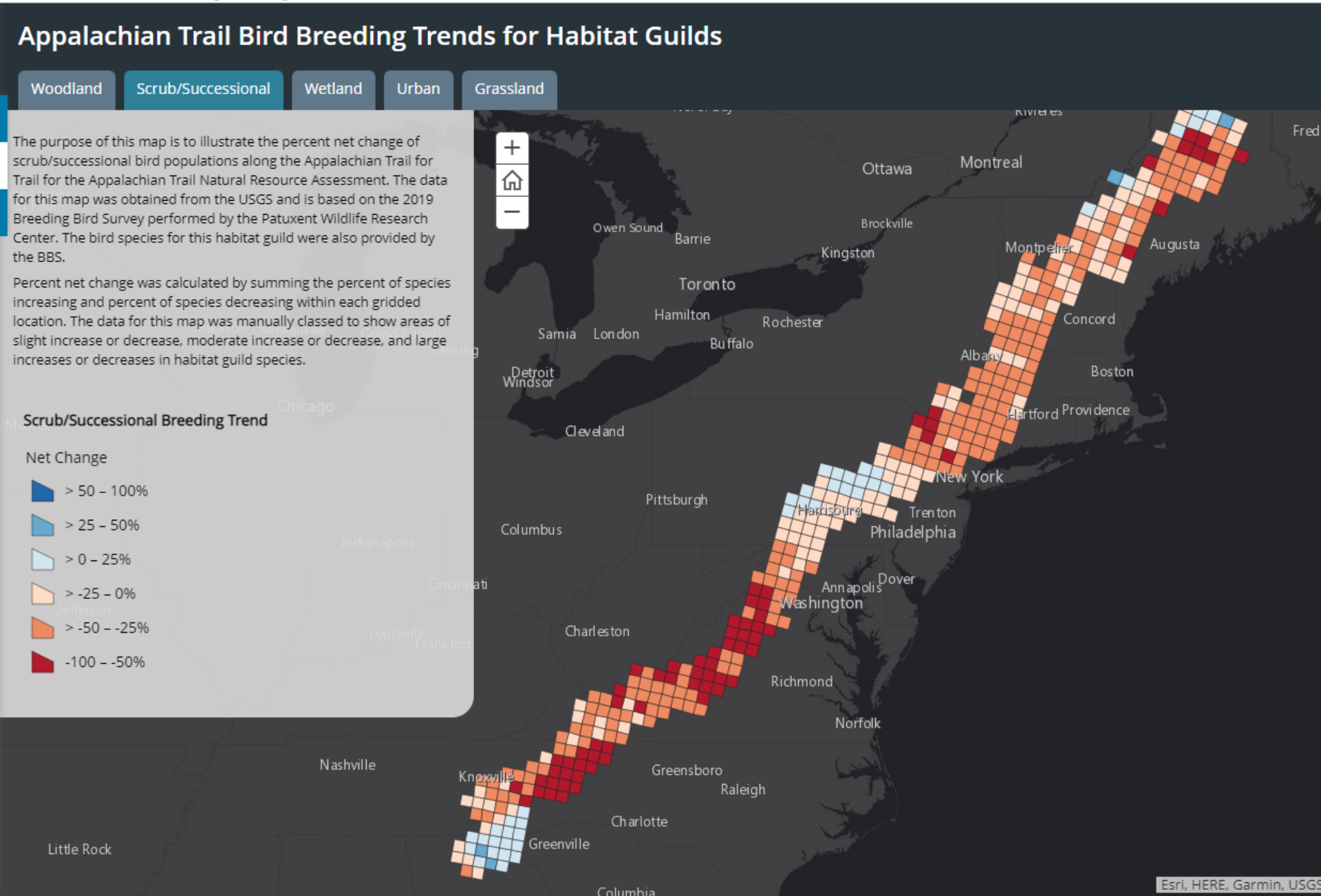

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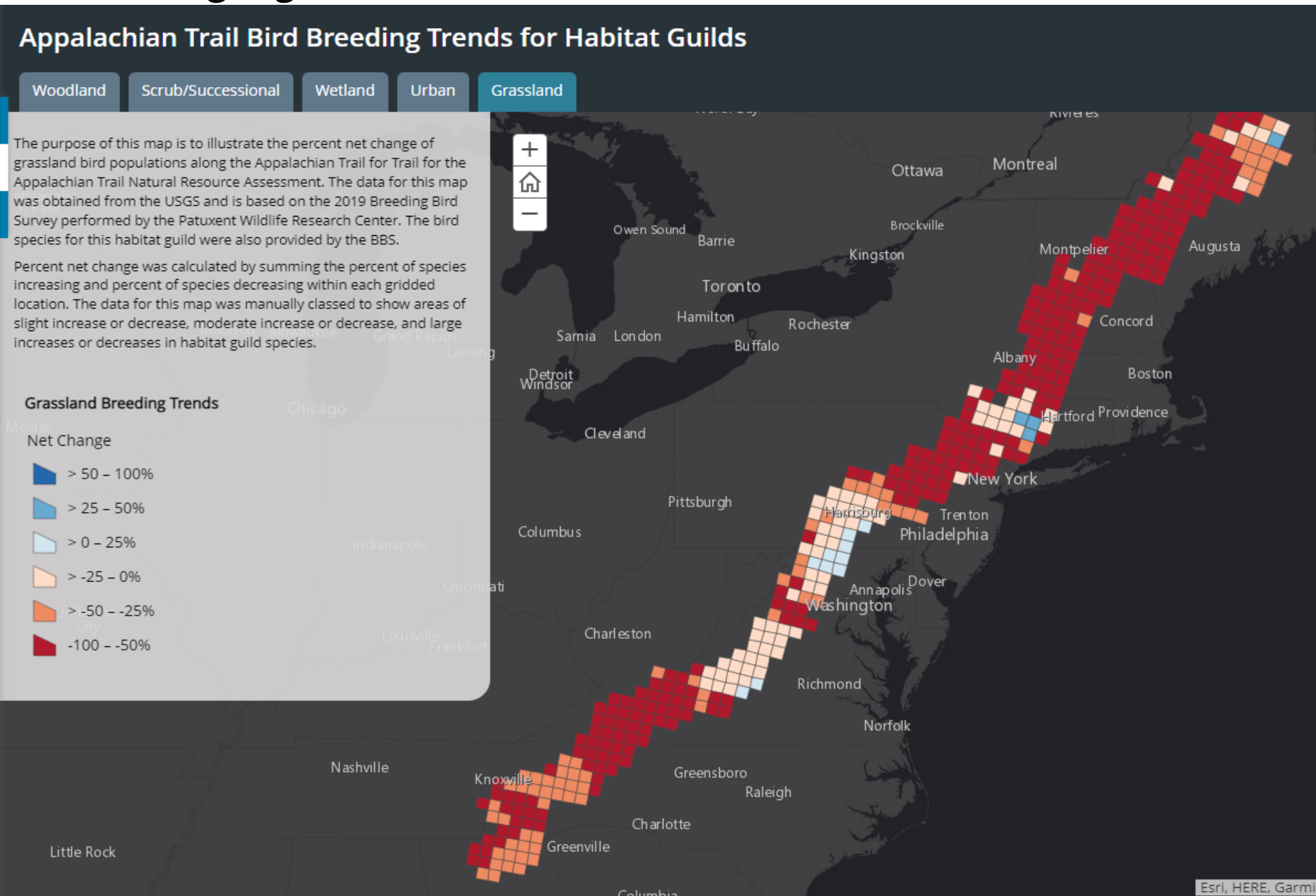
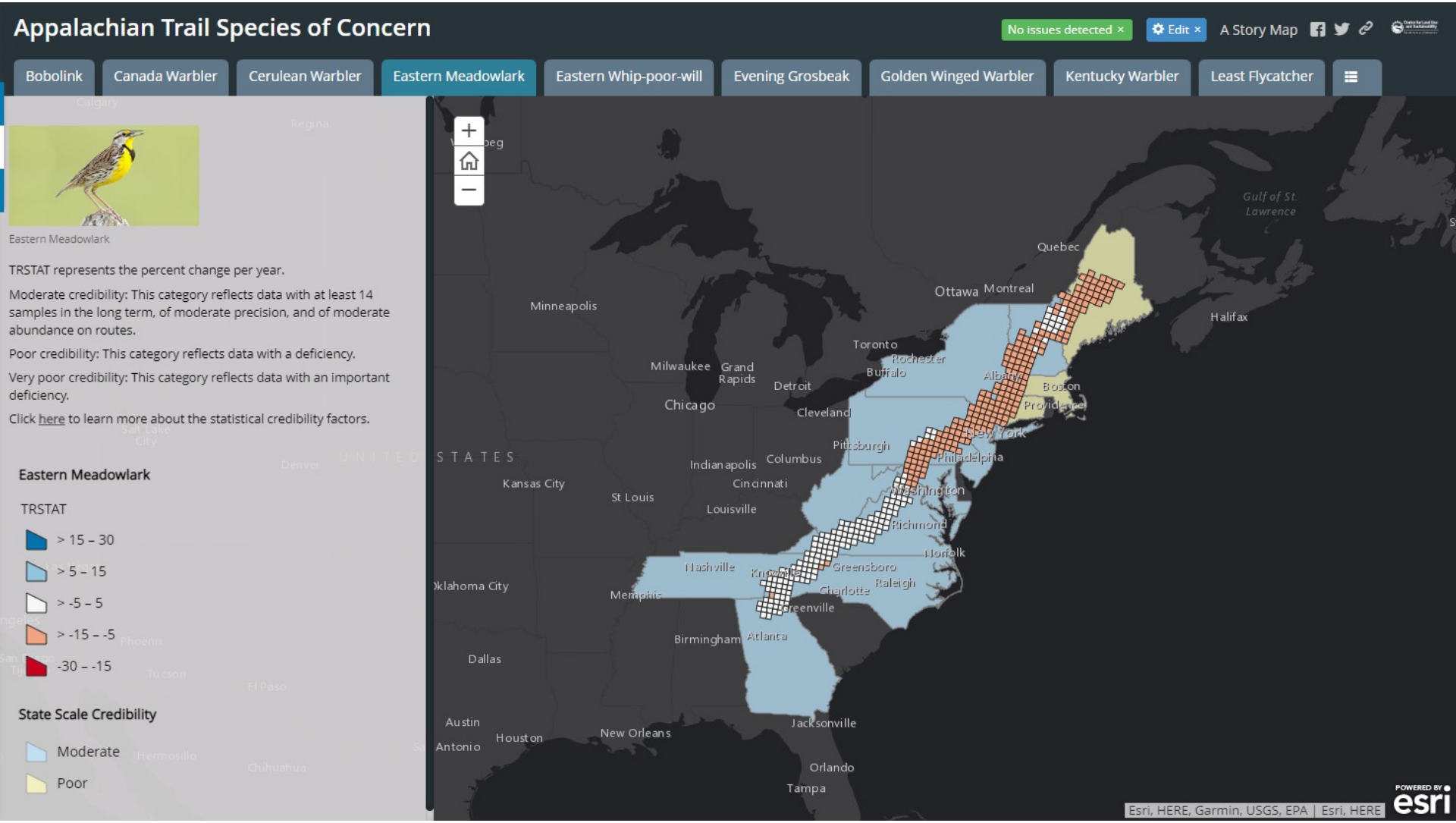
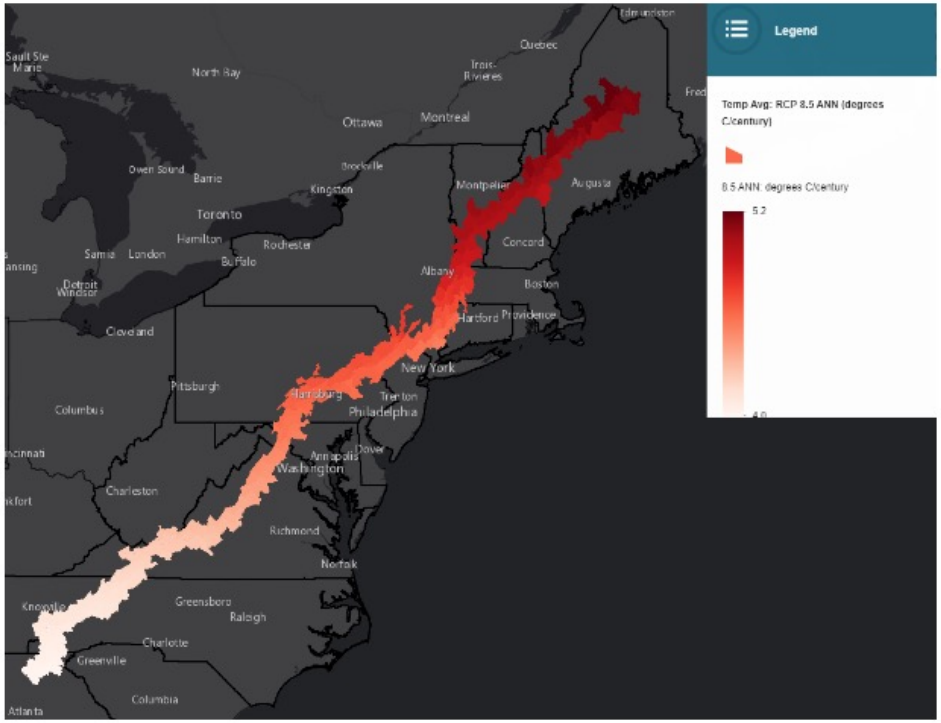


Warning signs: Birds

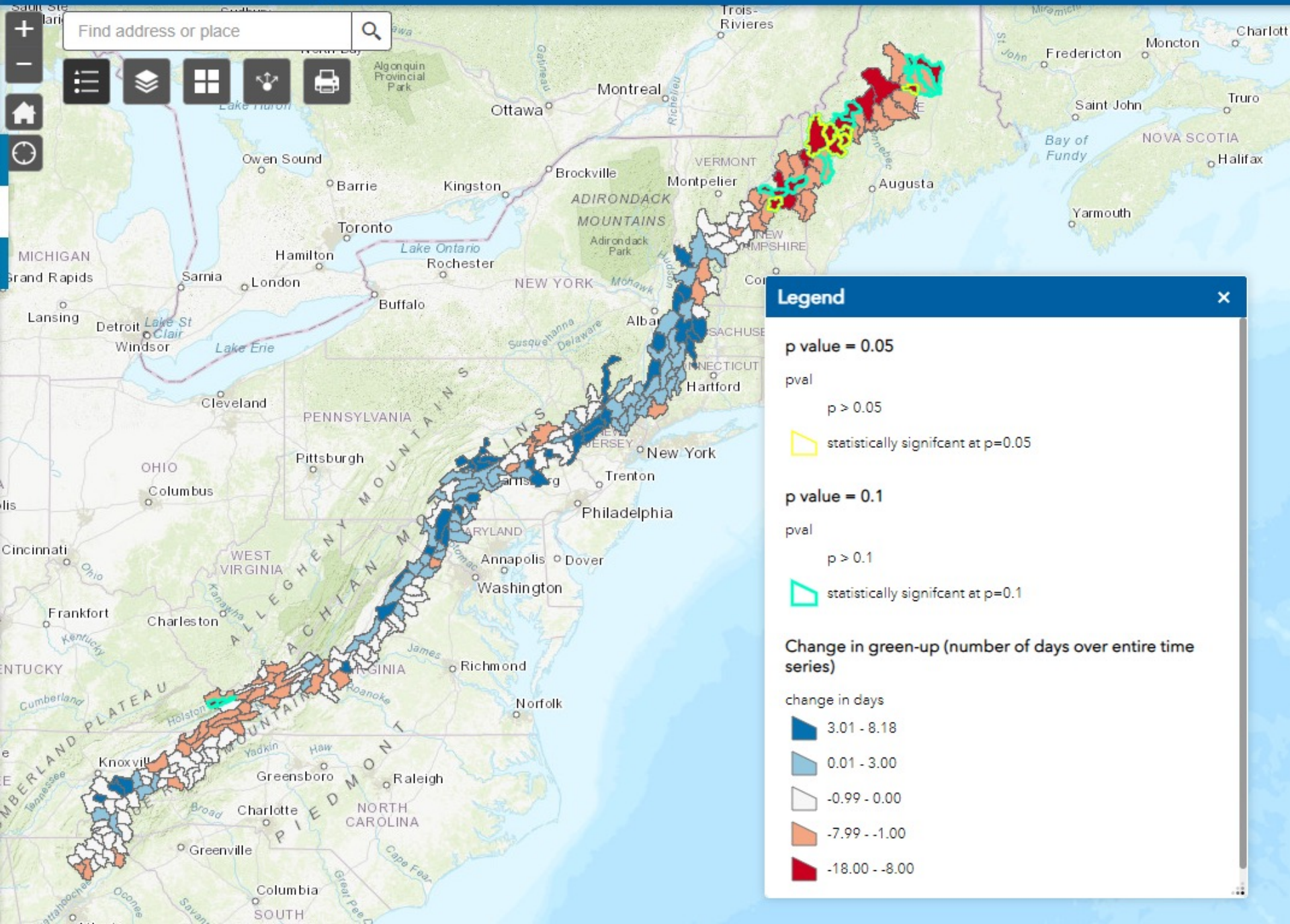


Warning signs: Climate change



MODIS-Based Phenology Trends 2001-2018

with ArcGIS Web AppBuilder



The next 100 years

Appalachian Climate Corridor

A connected and conserved landscape that protects the Appalachian Mountains so people and nature and thrive in an era of climate change.

Goal 1. Ecological Integrity

Ensure an intact and enduring landscape.

Goal 2. Human Connection to Nature

Inspire broad community action.

Assessing Natural Resources for the Appalachian Trail

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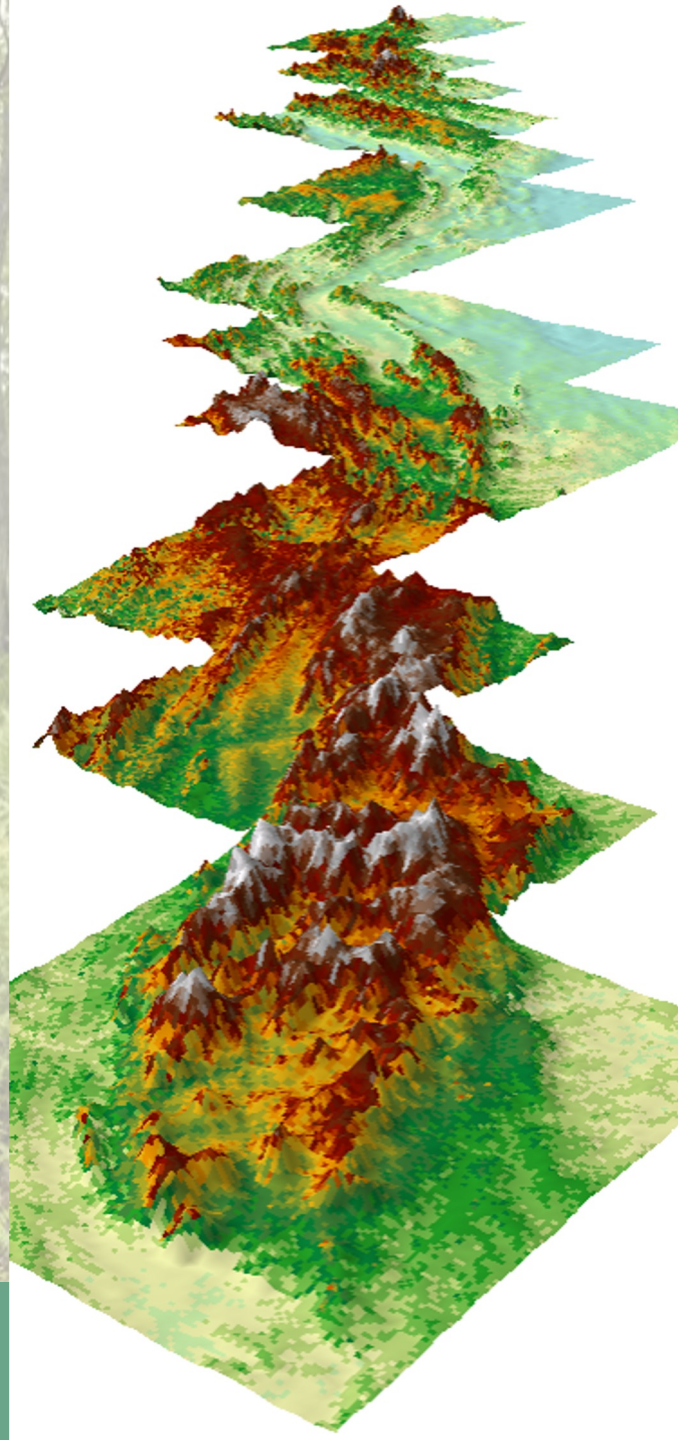
THANK YOU!



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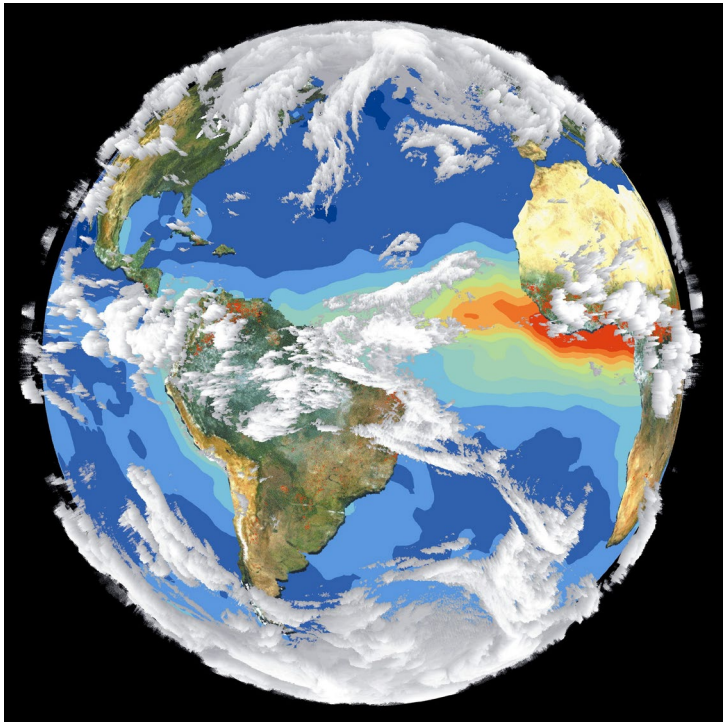
Designing a Continental Scale Climate Corridor

A resilient future for people and nature

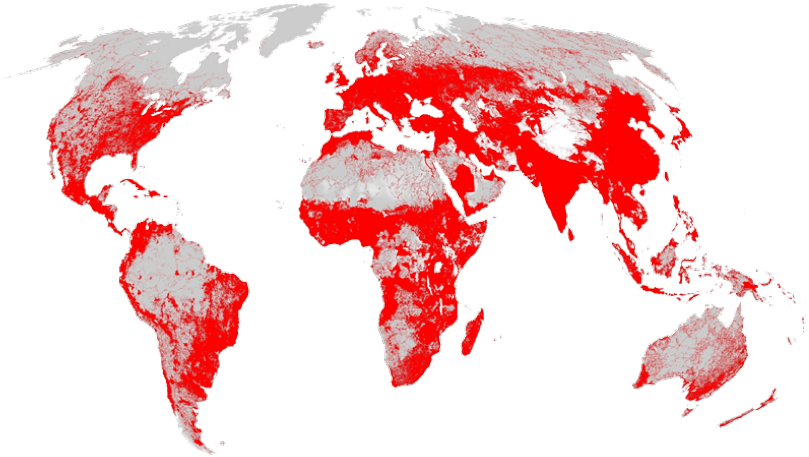
Gary Tabor MES VMD
President, Center for Large Landscape Conservation
gary@largelandscapes.org

Roan Highlands on the Appalachian Trail | Photo by @wncphototours

Atmosphere



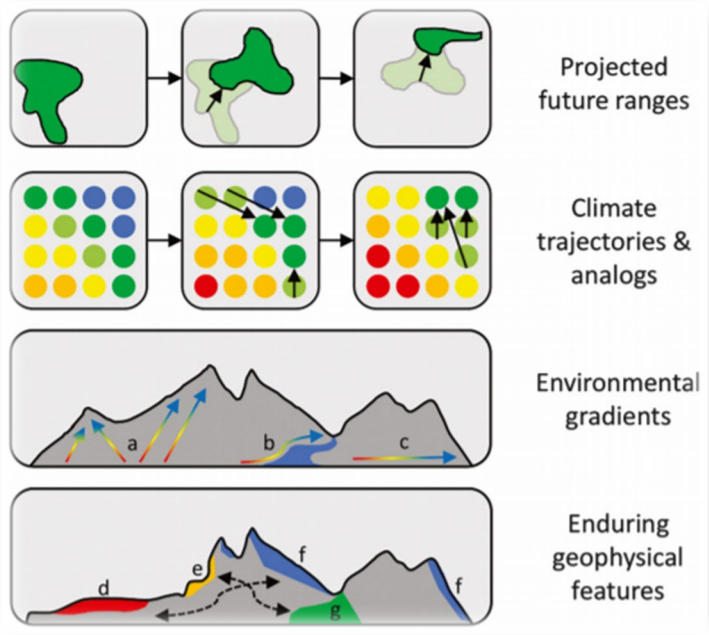
Biosphere



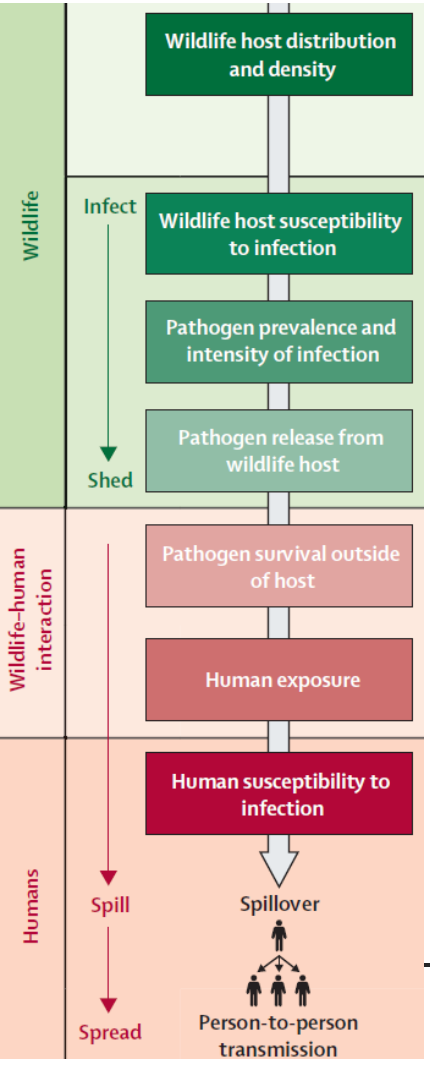
Watson et al. 2016, Conservation Letters

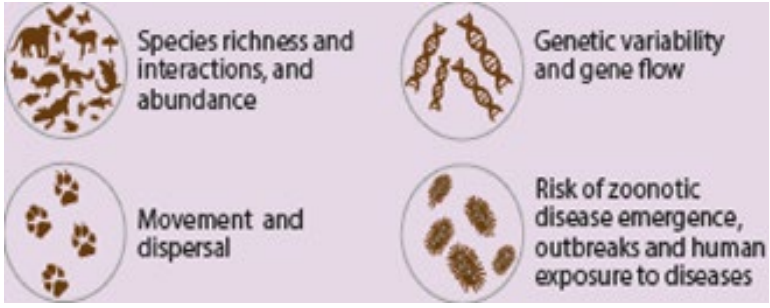
MORE THAN 50% OF THE PLANET IS NOW HUMAN DOMINATED LANDSCAPES

CLIMATE CHANGE: IMPLICATIONS FOR DESIGNING AND CONSERVING ECOLOGICAL NETWORKS



Littlefield et al. (2019). *Frontiers in Ecology and the Environment.*

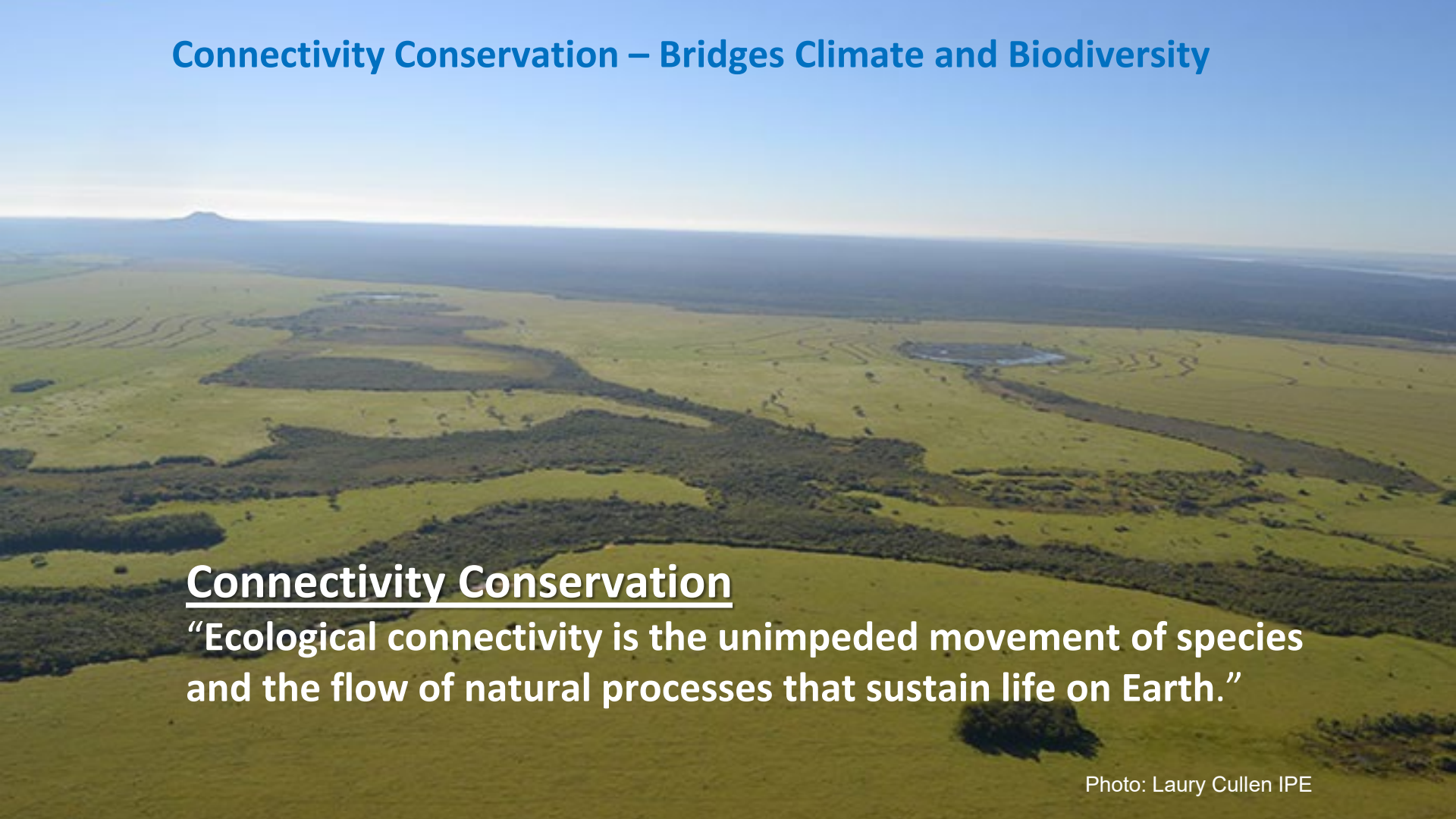




LANDSCAPE HEALTH IS PUBLIC HEALTH

Plowright, Raina K., et al. "Pathways to zoonotic spillover." Nature Reviews Microbiology 15.8 (2017): 502-510.

Connectivity Conservation – Bridges Climate and Biodiversity

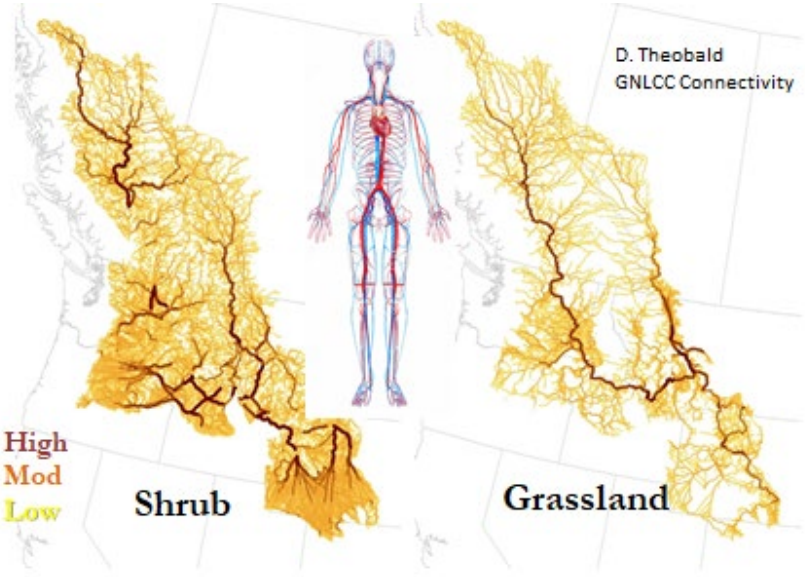


Connectivity Conservation

"Ecological connectivity is the unimpeded movement of species and the flow of natural processes that sustain life on Earth."

Photo: Laury Cullen IPE

Connectivity =
Circulatory System of Nature



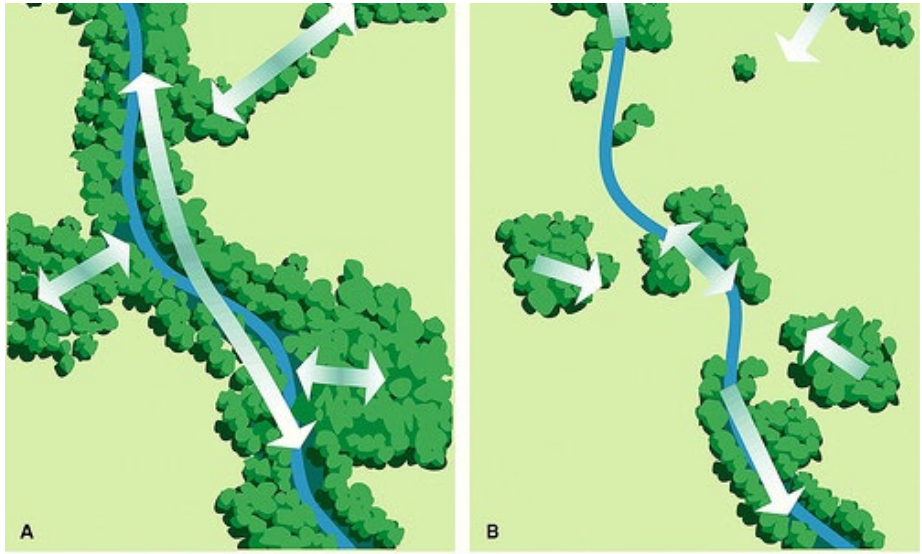


Fig. 2.38 -- Landscapes with (A) high and (B) low degrees of connectivity. A connected landscape structure generally has higher levels of functions than a fragmented landscape.
In Stream Corridor Restoration: Principles, Processes, and Practices (10/98)

Conservation Happens on ALL Lands and Waters

21st Century Conservation - Advancing Conservation Outside of Protected Areas – Known as the “Matrix”

- **Wildlife Movement Ecology**
- **Seasonal and Long-Distance Migration**
- **Dispersal**
- **Local Connectedness**
- **Pollination**
- **Nutrient Cycling**
- **Trophic Structure and Dynamics**
- **Stream Flows**
- **Subsurface Stream Flows (Hyporheic)**
- **Fire Behavior**
- **Disturbance Regimes**
- **Ecological Succession**
- **Wildlife Behavior Patterns**
- **Mycorrhizal Networks**
- **Climate Resilience**

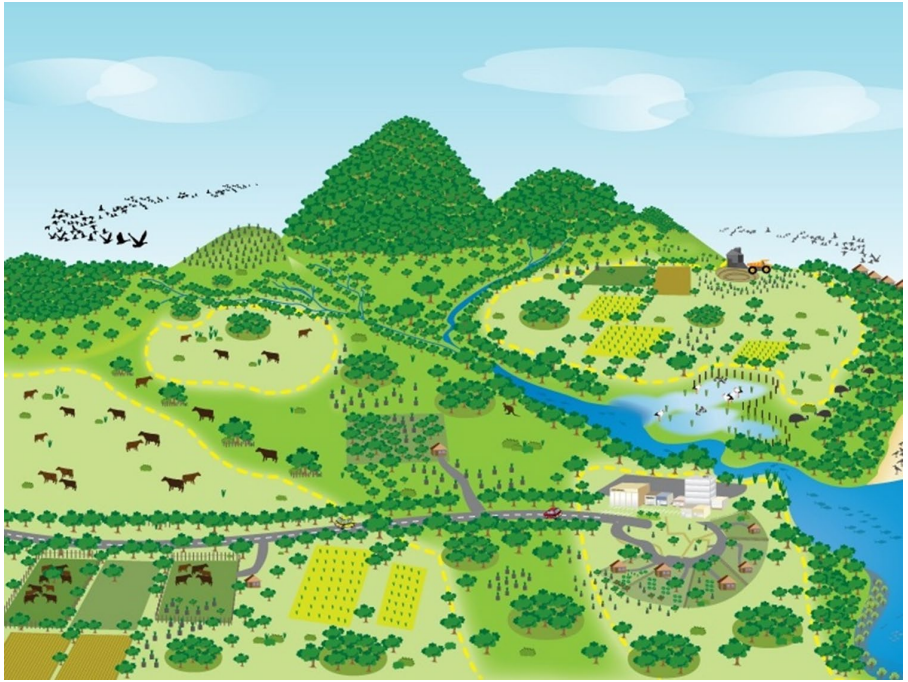
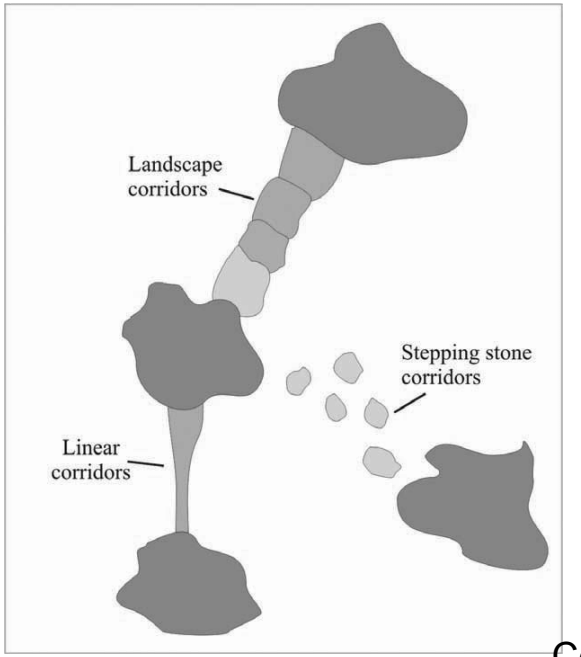
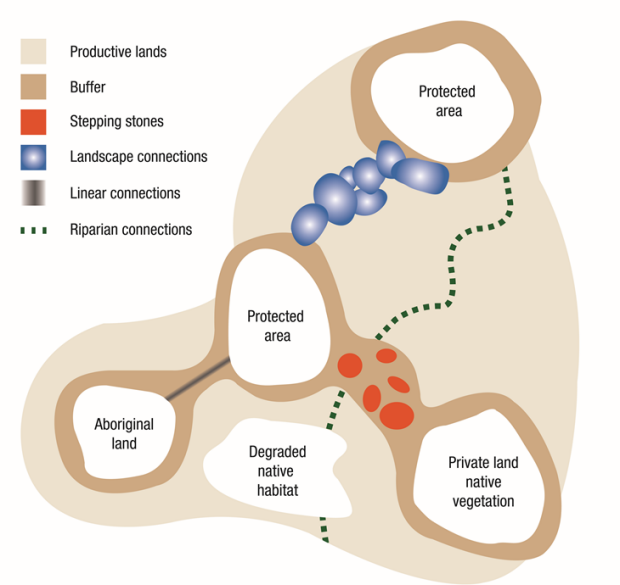


Image Courtesy of Australia Ministry of Environment and Energy

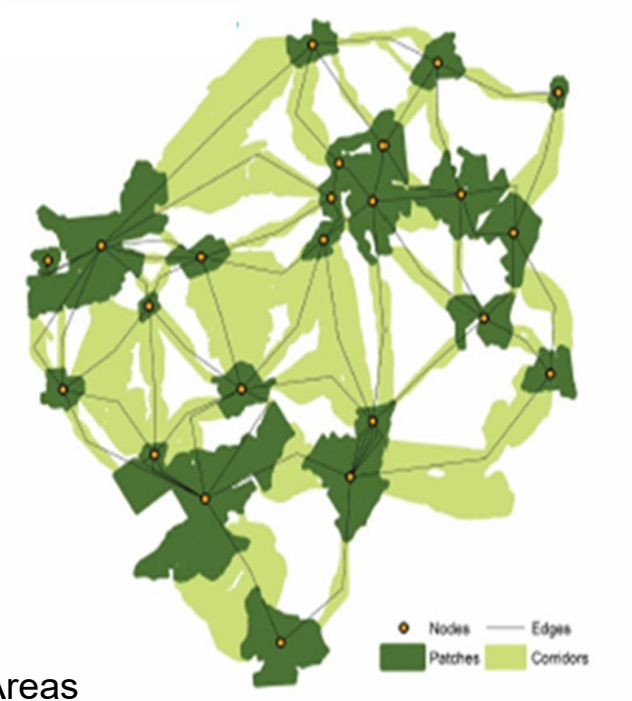
Connecting land to protect the ecological processes of nature



Elements of Connectivity

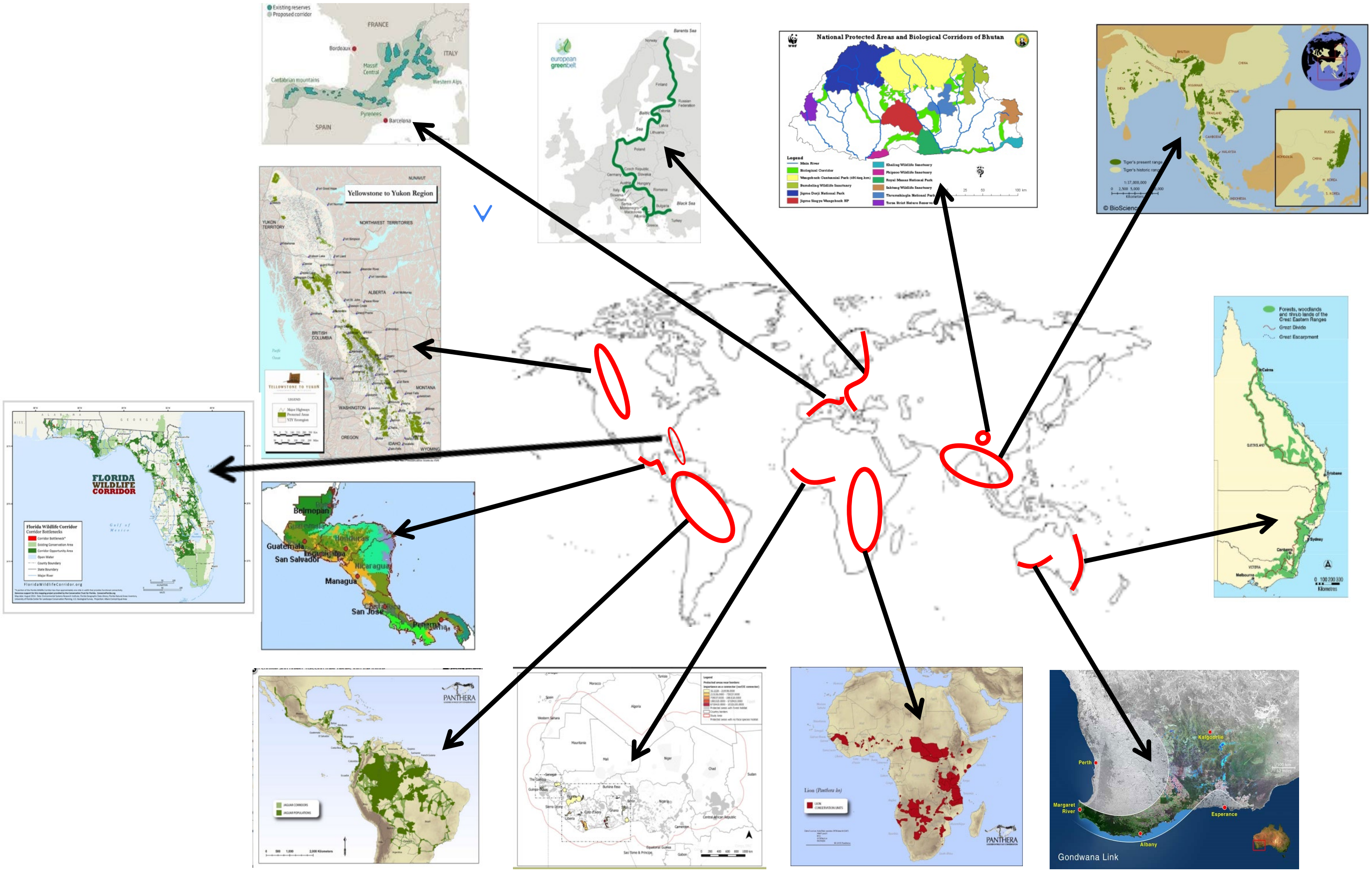


Connecting Core Habitats and Restored Areas across jurisdictions and tenures



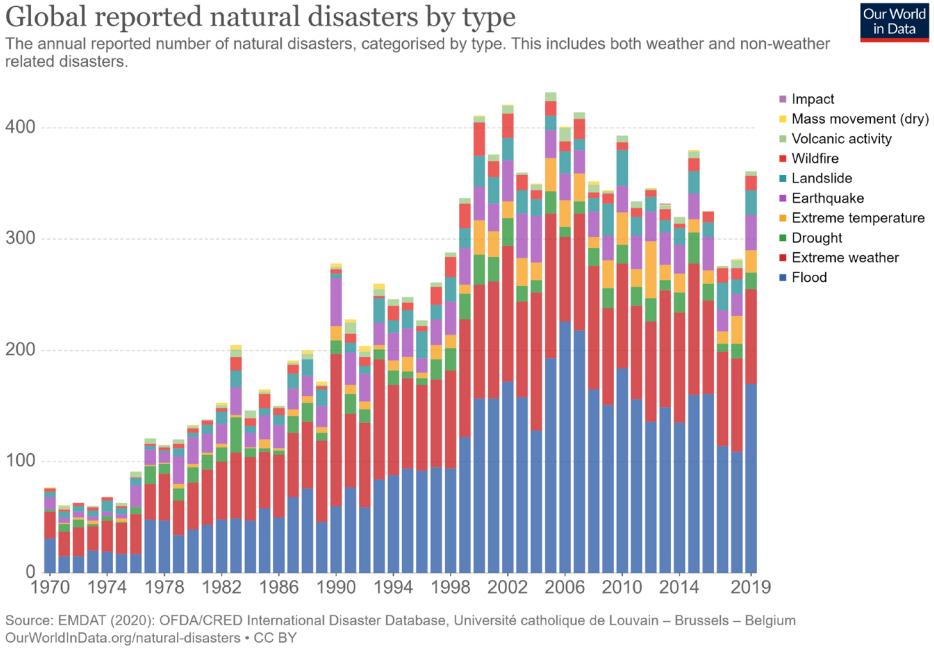
Building Ecological Networks

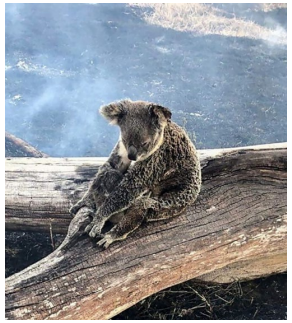
Networking core areas and corridors
Networking Protected Areas – Private Lands – Tribal Lands – Restoration Areas

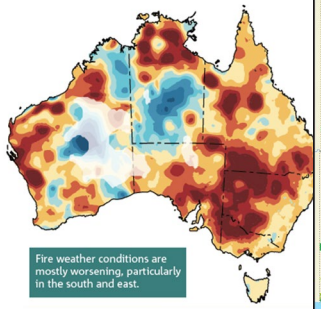

Existing reserves
Proposed corridor
FRANCE
ITALY
Bordeaux
Massif Central
Cantabrian mountains
Western Alps
Pyrenees
Barcelona
SPAIN
european greenbelt
Barents Sea
Black Sea
National Protected Areas and Biological Corridors of Bhutan
Legend
Yellowstone to Yukon Region
YUKON TERRITORY
NORTHWEST TERRITORIES
ALBERTA
BRITISH COLUMBIA
WASHINGTON
OREGON
MONTANA
IDAHO
WYOMING
FLORIDA WILDLIFE CORRIDOR
Florida Wildlife Corridor
Corridor Bottlenecks
FloridaWildlifeCorridor.org
Belmopan
Guatemala
San Salvador
Honduras
Nicaragua
Managua
San José
Panamá
© BioScience
Tiger's present range
Tiger's historic range
Forests, woodlands and shrub lands of the Great Eastern Ranges
Great Divide
Great Escarpment
Cairns
Brisbane
Sydney
Canberra
Melbourne
PANTHERA
Lion (Panthera leo)
Perth
Kalgoorlie
Margaret River
Esperance
Albany
Gondwana Link

Great Eastern Ranges - Bushfire Response: ‘Cores, Corridors, Koalas’

>1.25 billion vertebrates killed (mammals, birds & reptiles)







Climate Action Opportunity

Appalachian Climate Corridor:

A connected and conserved landscape that protects the Appalachian Mountains so people and nature can thrive in an era of climate change.

Global Significance of this Region

- **Largest, most resilient and healthy forest stock** in the continental U.S. without which we will not be able to remove millions of metric tons of carbon pollution from our atmosphere.
- **Critical migration corridor for wildlife** and the most important region of **biodiversity** in eastern North America.
- **Natural network of land and water** that provides more than **119 million people** with critical resources like clean water, air and food.
- **Regional economy in transition** provides an opportunity to build from existing efforts to **advance a shared vision for a just, resilient, diversified and inclusive economic transitions** .

CENTER for LARGE LANDSCAPE CONSERVATION

Clingmans Dome/Courtesy of Appalachian Trail Conservancy

Climate Advisory Group

- Evaluate the impacts of climate on the Appalachian Landscape
- Importance of this unique region in building resilience to climate change at the national scale.
- Elevate the collective action already underway and identified the readiness and willingness to work together to combat these threats.
- The CAG created a vision to bring partners together across disciplines to help safeguard and promote climate, environmental, and community resilience across this Landscape

Max Patch/Courtesy of Appalachian Trail Conservancy

VISION

Ensure an intact and enduring Appalachian landscape and inspire broad community action to secure the sources of life, and sustain life itself, as the climate changes.

Goal 1: Ecological Integrity

Ensure an intact and enduring landscape

- Value 1: Landscape Connectivity
- Value 2: Biodiversity
- Value 3: Nature-Based Solutions*

Goal 2: Human Connection to Nature

Inspire broad community action

- Value 4: Coalition Building
- Value 5: Thriving Communities

CENTER for LARGE LANDSCAPE CONSERVATION

Goal 1: Ecological Integrity

Ensure an intact and enduring landscape

Value 1: Landscape Connectivity

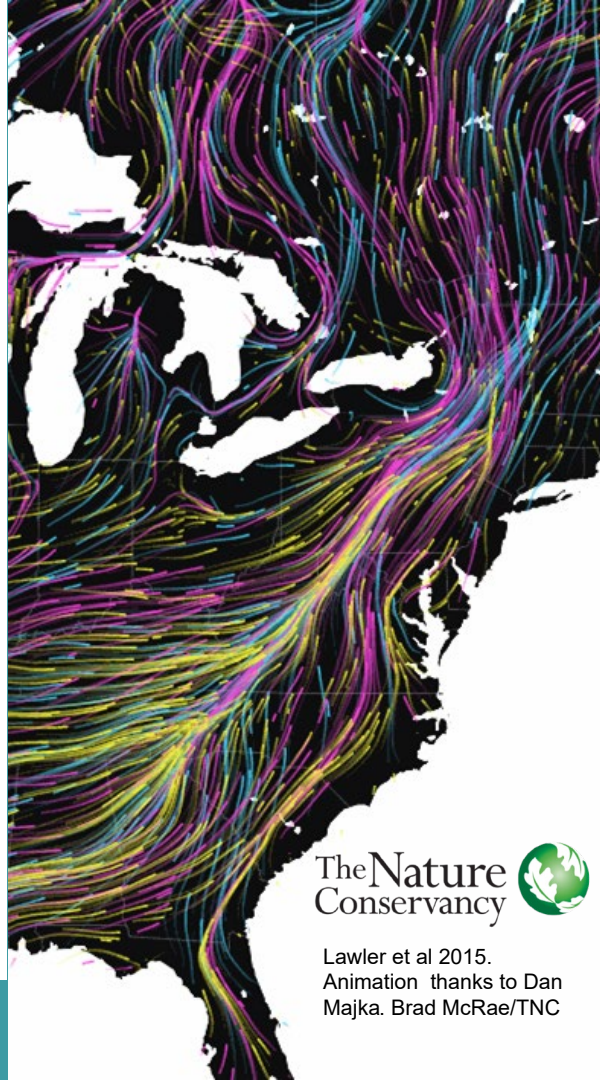
This landscape will be more resilient to stressors if we sustain and improve terrestrial and aquatic connectivity and protect the network of climate refugia.

Value 2: Biodiversity

Native species will thrive if we proactively conserve for vulnerable plants and wildlife, maintain essential habitat, and encourage climate-smart invasive species management.

Value 3: Nature-Based Solutions

To maximize the co-benefits we receive from this landscape like food security, clean air, and water, we can protect watersheds for drinking water and sustainably manage, and restore forests to enhance carbon sequestration and storage.



The Nature Conservancy

Lawler et al 2015. Animation thanks to Dan Majka. Brad McRae/TNC

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Example:

Goal 2: Human Connection to Nature

Inspire broad community action

Value 4: Coalition Building

To develop durable relationships and build broader community involvement, action, and inclusion we must dedicate resources and time to listen to and learn from communities, provide opportunities to build relationships, and co-create priorities that center on community resilience.

Value 5: Thriving Communities

To co-create sustainable pathways to achieve climate action we must provide access to relevant climate-related information and resources and secure resources to support economic and capacity-building opportunities.

CENTER for LARGE LANDSCAPE CONSERVATION

Recommendations

- **Collaborative Infrastructure**
- **Prioritization**
- **Communications**
- **Build an Enduring Conservation Framework**

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CENTER for LARGE LANDSCAPE CONSERVATION

APPALACHIAN TRAIL CONSERVANCY®

Breakout Group Instructions: Group Discussion & Sharing

- Please click the CoVision Link in the chat to open a new window.
- You have 30 minutes in your breakout room.
- Please allow a few minutes at the start for everyone to introduce themselves.
- Assign one person to capture the discussion to each question in CoVision, be sure to hit submit when you're done typing! (Multiple inputs allowed!)

Discussion Prompt:

How can the ATLP best support science and policy efforts to further land conservation at the regional, landscape, and international/global scale?

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