Habitat Connectivity

Wildlife Corridor
Habitat Connectivity for Climate Change

Seasonal Migrations

Carroll et al. 2018
Global Change Biology
Avoiding Inbreeding

How are corridors identified?
The Eastern Wildway: Designing a Continental-Scale Habitat Network to Conserve Biodiversity from Florida to Quebec

• Pacific
• Boreal
• Western (Spine of the Continent)
• Eastern (Eastern Wildway)
What do we mean by Wildway?

1. Vision map of continental-scale habitat network
2. Robust, not minimal
3. Inspirational
4. Includes restoration opportunities
5. Avoids hard constraints such as urbanization
What do we mean by Wildway?

1. Vision map of continental-scale habitat network
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Road Ecology

Wildlife Road Crossings

Protecting land along highways?
The Wildlife Corridors Conservation Act would provide the most important step...at the present time, in enlarging the nation’s protected areas and saving...America’s wildlife and other fauna and flora”

- E.O. Wilson

STATES ARE MOVING WILDLIFE CORRIDOR LEGISLATION

Passed
New Mexico*
Oregon*
New Hampshire*
Maine
Wyoming
California

Introduced in 2019
Mississippi
Maine
Vermont
Virginia
Washington
Wyoming
Pennsylvania*
California*

* pending
Wildlife Corridor Conservation

Appalachian Trail Landscape Partnership

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RALLY 2019
National Land Conservation Conference | October 17-19 | Raleigh, NC

"...a realm and not merely a trail mark the full aim of our efforts."

- Benton MacKaye 1921

Landscape Conservation and the Appalachian Trail
A.T. landscape conservation projects have been completed or are on-going in every state along the A.T.

• Wildlife Habitat
• Ecosystems
• Climate Change Resiliency
• Viewsheds
• Watersheds
• Historic Sites
• Cultural Landscapes
• Outdoor Recreation
The Appalachian Trail is the backbone and heart of the Wild East Landscape.
The Wild East Action Fund

- Capacity Building
  Support partner projects that build capacity to implement new or existing strategic conservation plans; build capacity to sustain and steward the resources that define the A.T. landscape; and increase public awareness of the resources that define the A.T. landscape.

- Land Protection
  Projects that contribute to the permanent protection and stewardship of the A.T. landscape.

Wildlife Corridor Conservation
Connecting the connections: From the mountains to the sea

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Southeast Conservation Adaptation Strategy
Southeast Conservation Adaptation Strategy

10% or greater improvement in the health, function, and connectivity of Southeastern ecosystems by 2060.

Southeast Conservation Blueprint

The Southeast Conservation Blueprint (Draft 4.0)
- High conservation value
- Medium conservation value

Example: Promise of the Piedmont

- Date: April 2018
- Partners: U.S. Forest Service
- Context:
  - Sumter National Forest often applies for grant funding (e.g., Land Water Conservation Fund) to acquire new lands in the Piedmont
  - Making a presentation to Forest Service regional directorate to highlight the value the SC Piedmont
Example: Upper Waccamaw

Coastal Corridors and adaptation

- Helping ecosystems move

- Resilient coastal sites

Resilient coastal sites

* These are early draft numbers and attributes. Not final.

- Physical Characteristics
  - Large migration space & above a key threshold in size (space for future marsh)
  - Many tidal zones (grove for future habitats)
  - Ample sheltered edge (ease of migration)
  - Large current complex (source of flood material)

- Condition Characteristics
  - No anthropogenic barriers (allow for fender movement)
  - Ample sediment supply (needed for establishment)
  - Adequate water quality (excess b. prevents root growth)
  - Freshwater flushing (facilitate dispersal in river-dominated systems)
Coastal Corridors and adaptation

- Helping ecosystems move
- Resilient coastal sites
- Models and plans also need to regularly adapt

Help using the Blueprint (It’s free)

Reach out to the staff person working in your state:

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BRF Focus Area

- Nine local land trusts collectively serving 25 western-most counties in NC
- Collective conservation vision to connect protected areas on a landscape-scale
Conservation Priorities

- Significant ecological characteristics;
- Important wildlife habitat;
- High water quality;
- Cultural importance;
- Economic significance;
- Scenic value;
- Working farmland and forests

Creation of the BRF Viewer

- ESRI-based conservation planning model
- Serve as clearinghouse of conservation data for WNC
- Illuminate the most crucial tracts for protecting
- Funded by OSI through CTNC

Partnerships

- Wildlands Network
- Conservation Trust of North Carolina
- MAINSPRNC Conservation Trust
- CONSERVING CAROLINA
- RIVER LINK
- Foothills Conservancy
- New River Conservancy
- EcoForesters
- NEMAC National Environmental Monitoring and Analysis Center
- OSI

BRF Viewer Datasets

- Protected areas, WNC parcel/landowner data;
- USDA Soil Survey;
- NC Ag Lands Assessment Scores;
- Stream mapping;
- Surface water classifications;
- OSI Climate Resilience SBR Focus Area;
- TNC’s underrepresented geological settings (Wildland’s Network Analysis);
- Wildland’s Network Wildlife Connectivity Corridors
- Parcel-level analyses
Climate Resiliency

- OSI’s Southern Blue Ridge focus area
- Based on TNC’s climate resilience data
  - Landscape diversity
  - Local connectedness
- Large portion of the landmass is ranked
  - Slightly above average
  - Above average
  - Far above average

Wildland’s Network Connectivity Index Corridors

- Pathways expected to support greatest flow rate of dispersal for:
  - Black bear
  - Red wolf
  - Florida panther
  - Timber rattlesnake
  - Box turtles
  - Rafinesque’s big-eared bats
- Tier 1 form ‘backbone’ for connected all major protected areas
- Tier 2 all other high-priority corridors

Parcel-level Analysis

- Climate Resilience
- Agriculture
- Ecology/Biodiversity
- Geological settings and protection status
- Water

Wildlife Corridor Conservation

Land Trust Case Study: Wilkins Creek

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#Rally2019
Presentation Overview:

1. Introduction to Southern Appalachian Highlands Conservancy (SAHC)
2. Land Protection Strategic Planning
3. Pigeon River Gorge Study
4. Wilkins Creek Case Study

Over 78,000 acres protected since 1974

- 165 conservation easements and 78 fee simple preserves
- Accredited 2010; Renewals in 2015 & 2020

Conserving unique plant and animal habitat, clean water, farmland, scenic beauty and places for people to recreate in the mountains of NC & TN, for present and future generations.

Where We Work

6 Focus Areas
10 counties
Western NC & East TN
Why the Southern Appalachians?

- Dynamic GIS model
- Focused criteria
- Parcel-level assessment
- Model factors:
  - Ecological
  - Aquatic
  - Climate resilience
  - Recreation, scenery, culture
  - Adjacent to protected land
  = Priority Parcels

Land Protection Strategic Planning

- Resilient landscapes protect present and future generations of plants and animals
- Climate data added to prioritization model
  - Resilience Data
  - Wildlife Corridors

Climate Data

Habitat Fragmentation
**Wildlife Connectivity Data**

![Map of Wildlife Connectivity Data](image1)

**Wildlife Corridors**

![Map of Wildlife Corridors](image2)

**Pigeon River Gorge Study**

- Great Smoky Mountains National Park & Pisgah and Cherokee National Forests
- Home to black bears and introduced elk population
- Appalachian Trail

![Image of Pigeon River Gorge](image3)

**Existing and Potential Wildlife Corridors Across I-40 in Pigeon River Gorge**

![Map of Existing and Potential Wildlife Corridors](image4)
Wilkins Creek Acquisition

- 195 acres
- SAHC purchased May 2019
- Wildlands Network Connectivity Corridor, Tier 1
- Partner conservation priority
  - National Parks Conservation Association
  - The Conservation Fund
  - NC Wildlife Resources Commission
  - Wildlands Network
  - The Wilderness Society
  - Rocky Mountain Elk Foundation

Photo courtesy of SouthWings
Wilkins Creek Wildlife Study

- 4 Wildlife cameras onsite since Jan. 2019
  > Monitoring by NPCA & Wildlands Network; Duke NSOE intern
  > Abundant bear & white-tailed deer
  > Bobcat, coyote, southern flying squirrel, ruffed grouse
- Breeding bird survey, NPCA
  > 16 neotropical migrants
  > Special Conservation Concern: eastern whip-poor will, wood thrush, American woodcock, chimney swift
- Mortality hotspot & mitigation
Follow-up resources

TNC's Migrations in Motion Map

TNC: Strategies and Opportunities to Conserve Resilient Lands

TNC's Conservation Gateway: Resilient and Connected Landscapes

Habitat Connectivity & the Pigeon River Gorge - Story Map by Paul Noah, Duke Nicholas School of the Environment

Eastern Wildway Interactive GIS Map. Tip: click through the disclaimer and then turn off the legend for an unimpeded view