

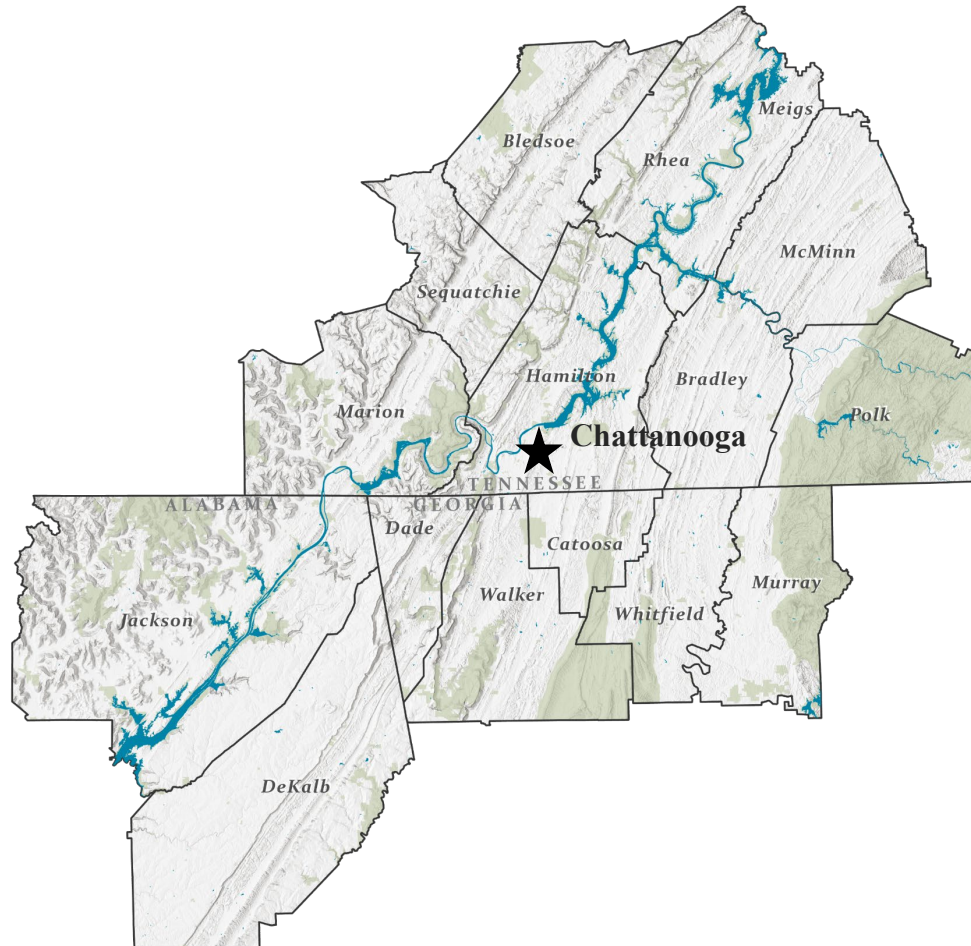
Preserving the Cradle of Southern Appalachia

Using GIS to develop a landscape conservation model to promote collaboration and land protection in the Chattanooga, TN Region.

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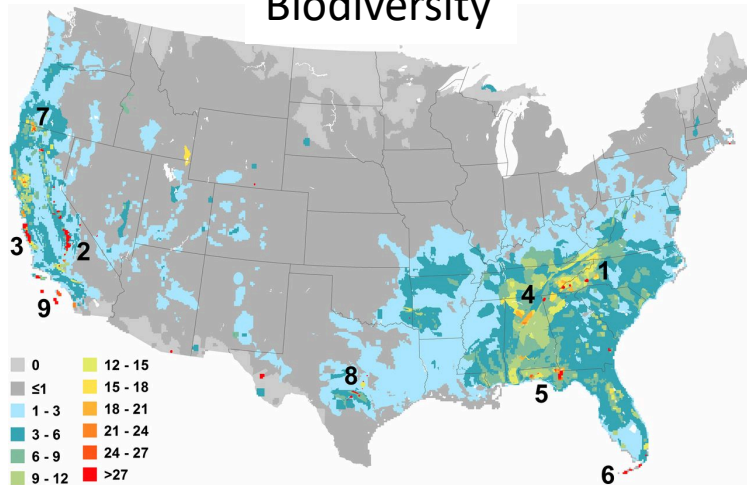


The Greater Chattanooga, TN Region

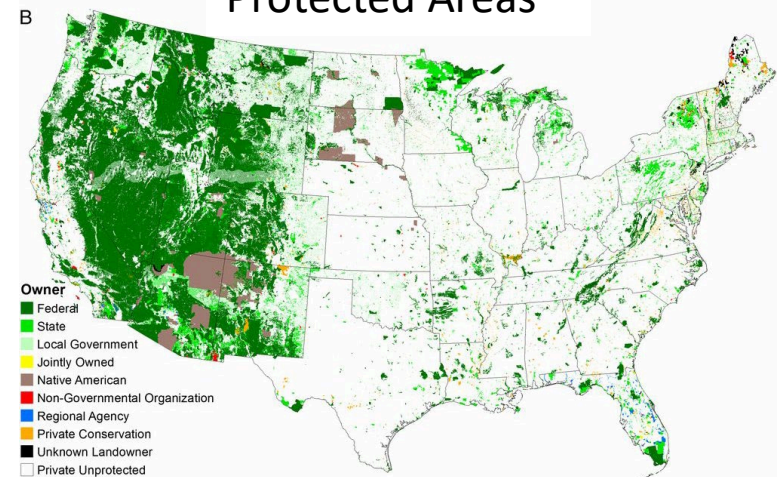


Mismatched Conservation

Biodiversity



Protected Areas



Source: *How the USA protects biodiversity*

Clinton N. Jenkins, Kyle S. Van Houtan, Stuart L. Pimm, Joseph O. Sexton
Proceedings of the National Academy of Sciences Apr 2015, 112 (16) 5081-5086; DOI: 10.1073/pnas.1418034112



Land Cover Change

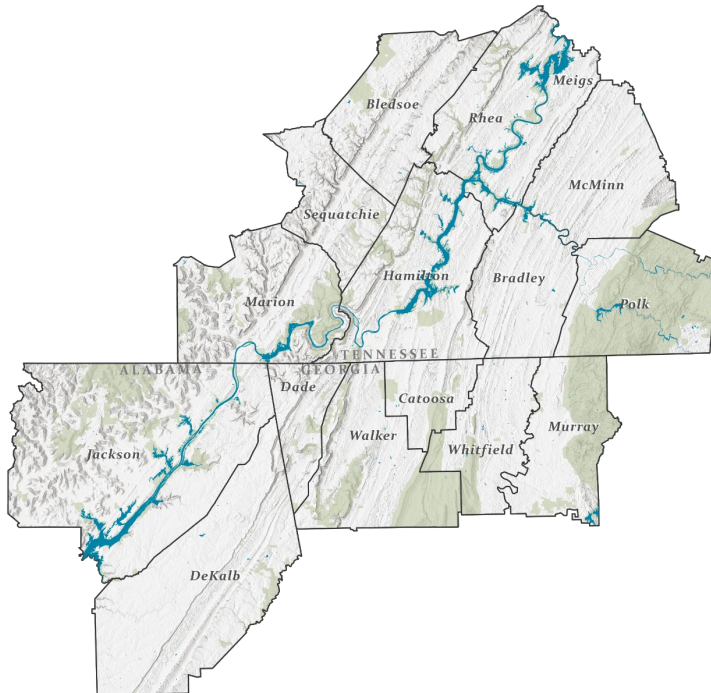


- **Current Chattanooga Population:** 1,093,524
- **Chattanooga Area Total:** 6,846 sq. miles
- **Forest Loss:** -14.5 sq. miles
- **Farmland Loss:** -95 sq. miles
- **Developed Land Gain:** 48 sq. miles

Source: Esri 2020 demographics & NLCD



Thrive Regional Partnership Natural Treasures Alliance



- Conservation partnership
- 30+ land trusts, watershed conservancies, agencies, outdoor recreation organizations and others
- Focused on conservation
- Facilitated by Thrive Regional Partnership



Regional Conservation Goals by 2050

- Preserve at least 50% of (unprotected) existing habitat cores and corridors
- Maintain 90% of Species of Greatest Conservation Need (SGCNs.)
- Delist 50% of 303d streams
- Connect People to Nature



Regional Conservation Goals by 2050

- Approximately 13% of the total Thrive region is protected
 - Goal of Protecting **50%** of habitat in the Thrive region means we need to protect approx. **1,000,000** acres of land!
- There are an estimated 294 “at risk” species found in the region (NatureServe 2020)
- 1000+ miles of polluted streams listed by the EPA
 - Main Sources of Pollution
 - Agriculture
 - Erosion and runoff



Creating a Regional Conservation Priority Model

Goal: *Spatially identify conservation priorities that meet the conservation partnership's goals and promote collaboration to pursue funding for land protection.*



Creating a Regional Conservation Priority Model

- Use data that is accepted in the scientific and conservation communities
- Use readily available and easy to access data
- Create a model that is easy to update as data updates occur and better data become available
- Easy to understand, use, and distribute for internal planning, public outreach, and fundraising.



Creating a Regional Conservation Priority Model

- Partnered with Open Space Institute
- Formed a Committee from the Natural Treasures Alliance to Guide the Work
- Consulted with other stakeholders
- Adopted the model as part of a comprehensive plan and strategy



Data

- **Esri Green Infrastructure**
 - Maps and ranks lands habitat Cores, corridors, & fragments
- **The Nature Conservancy Resilient Lands Data Set**
 - Climate Resilience model based on landscape diversity and connectivity
- **USGS Protected Areas Database**
 - Created a Euclidian Distance Model for protected lands
- Reclassified and overlaid these data using a weighted sum approach
- Working with alliance committee members to determine data and weightings was key



Data

Layer	Key Attribute	Source	Weight
Intact Habitat Cores	Core Score	Esri Green Infrastructure Initiative	1
Intact Habitat Cores by Connectivity Importance	Centrality (Above average values)	Esri Green Infrastructure Initiative	0.5
Habitat Fragments	Present/absent	Esri Green Infrastructure Initiative	0.5
Habitat Cost Surface (wildlife corridors)	Value of cost service, lower value, higher priority for conservation	Esri Green Infrastructure Initiative	1
Climate Resilience	Final Resilience Score (above average values only)	The Nature Conservancy	1
Proximity to Protected Lands	Distance to Protected Lands	IGTlab Regional Resource Inventory	1



Preserving the Cradle of Southern Appalachia

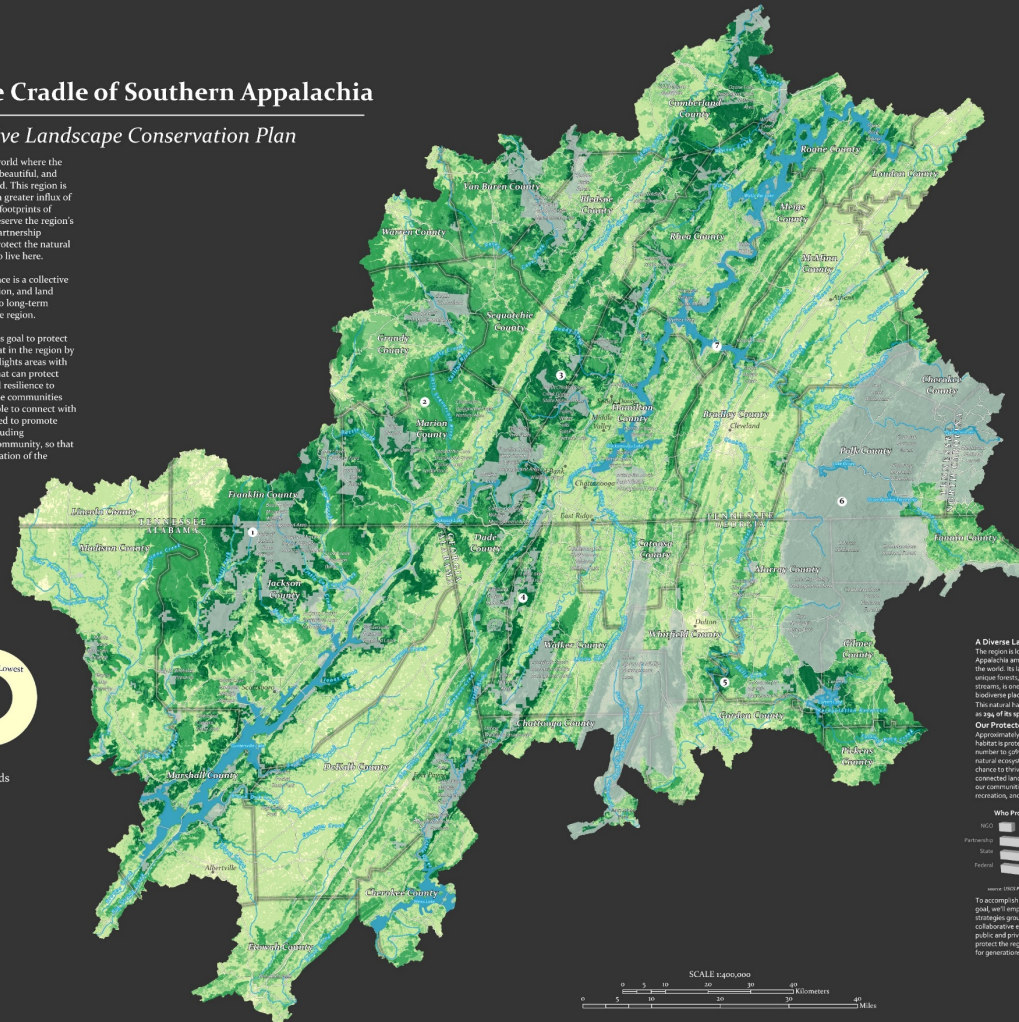
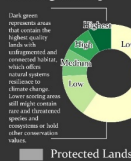
A Collaborative Landscape Conservation Plan

There are few places in the world where the landscape is as storied and beautiful, and the biodiversity as rich and varied. This region is attractive, and as it experiences a greater influx of people, it will bear the resulting footprints of growth and development. To preserve the region's quality of life, Thrive Regional Partnership advances a concerted effort to protect the natural treasures cherished by those who live here.

Thrive's Natural Treasures Alliance is a collective of conservation, outdoor recreation, and land management groups dedicated to long-term landscape preservation across the region.

The Alliance has set an ambitious goal to protect at least 50% of the wildlife habitat in the region by 2035. To that end, this map highlights areas with high quality terrestrial habitat that can protect biodiversity and enhance natural resilience to climate change, as well as provide communities with public open spaces for people to connect with the outdoors. The map is designed to promote collaboration across sectors, including conservation and the business community, so that all may play a role in the preservation of the region's natural legacy.

Reading the Map



A Diverse Landscape
The region is located in southern Appalachia among the oldest mountains in the world. Its landscape, composed of unique forests, canyons, and pristine streams, is one of the most rich and biodiverse places remaining on the planet. This natural haven is in jeopardy, however, as 70% of its species risk extinction.

Our Protected Landscape
Approximately 20% of the region's wildlife habitat is protected, increasing this number to 50% by 2035, the region's natural resources will have their best chance to thrive. In return, these protected lands will continue to provide our communities with clean water, food, recreation, and carbon sequestration.



To accomplish the ambitious 50% by 2035 goal, we're joining a combination of strategies grounded in partnerships. This collaborative effort to expand existing public and private conservation lands will protect the region's legacy and way of life for generations to come.

Habitat Anchors

Using Geographic Information Systems (GIS), the areas below were identified as the most important to protect based on their size and amount of high quality habitat.

1 The Paint Rock Watershed

A biodiversity hotspot containing numerous species of mammals, fish, and birds facing threat of extinction. Many of these species are found in other places on the planet.

2 Cumberland Plateau

Carved over time by flowing water, the plateau today is a labyrinth of rocky ridges and ravines dropping steeply into gorges lined with waterfalls and caves, ferns, and rhododendrons. The world's longest hardwood forested plateau harbors many plants and animals found nowhere else.

3 Walden Ridge

This 74-mile long plateau is a prominent feature in the Chattanooga landscape as well as the many other communities along the Tennessee River Valley. Though its mountainous terrain is still recovering from historic coal mining operations from over 100 years ago, Walden Ridge hosts a wealth of intact Appalachian forests creating a safe haven for numerous unique ecosystems. It is home to several State Natural Areas and the renowned Cumberland Trail.

4 Lookout and Pigeon Mountains

Lookout Mountain stretches 15 miles from its northern tip near Chattanooga, Tennessee, across northwest Georgia, to its southern boundary near Gadsden, Alabama.

Its unique water and rock formations contribute to the remarkable diversity of habitats and wildlife that are found here. Pigeon Mountain, a spur of Lookout, is named for the flocks of passenger pigeons which once roosted within the mountain's forest while foraging on chestnuts and acorns. The deepest crevice of the mountain and the longest free-flowing mountain-top river in North America are both located on this scenic landscape. Lookout Mountain is a renowned destination for tourists, recreationists, and history buffs.

5 The Appalachian Connector

This "natural highway" connects the Cumberland Plateau and the Blue Ridge Mountains through an existing network of intact forests, giving species options for adaptation and migration.

6 The Southern Blue Ridge Mountains

These iconic mountains contain the Cherokee and Chatahoochee National Forests covering hundreds of thousands of acres of the western portion of the Cradle of Southern Appalachia. This area is home to some 20,000 known species, with new plants and animals being regularly discovered by scientists.

7 The Hiwassee River

The Hiwassee contains a range of biodiversity and recreational opportunities as it flows 174 miles through Georgia, North Carolina, and Tennessee to the confluence of the Tennessee River. Designated as a State Scenic River, it serves as an important wildlife corridor and its watershed contains at least 45 species of plants and animals that are considered at risk of extinction.



The plan was created primarily by the Landform Partnership in partnership with the Thrive Regional Partnership. The plan was created by the University of Tennessee's Center for Geographic Information Technology and Analytics (IGT Lab) in partnership with the Thrive Regional Partnership. The plan was created by the University of Tennessee's Center for Geographic Information Technology and Analytics (IGT Lab) in partnership with the Thrive Regional Partnership. The plan was created by the University of Tennessee's Center for Geographic Information Technology and Analytics (IGT Lab) in partnership with the Thrive Regional Partnership.



Outcomes

- Land trusts are using the model for conservation
- Fundraising
- Outreach
- Collaboration
- Model replication in other geographies
- Creation of a \$5.3 million conservation fund by the Open Space Institute – Appalachian Land Protection Fund



Outcomes - Appalachian Conservation Fund

- Accelerate the pace of conservation in the Chattanooga, TN Region
- Preserve land for biodiversity and clean air and water
- Promote carbon sequestration
- Create new areas for sustainable outdoor recreation

The Cradle of Southern Appalachia is one of three focus areas of the ALPF, which aims to conserve 50,000 acres along the spine of the Appalachian Mountains — home of the world's largest broadleaf forest is responsible for a majority of US forest carbon sequestration, and serves as an essential climate refuge for plants and animals. The other identified target areas of the ALPF are located in the Middle-Atlantic and Northern Appalachians. Altogether, the ALPF seeks to distribute \$18 million across the three focus areas, of which \$12.5 million has been raised to date. —Open Space Institute



Questions?

