

# Biodiversity (Sub-model 2 of 3) Assessment Map

# Linking Lands and Communities in the Land-of-Sky Region



Which Lands are Valuable for  
Maintaining Biodiversity?

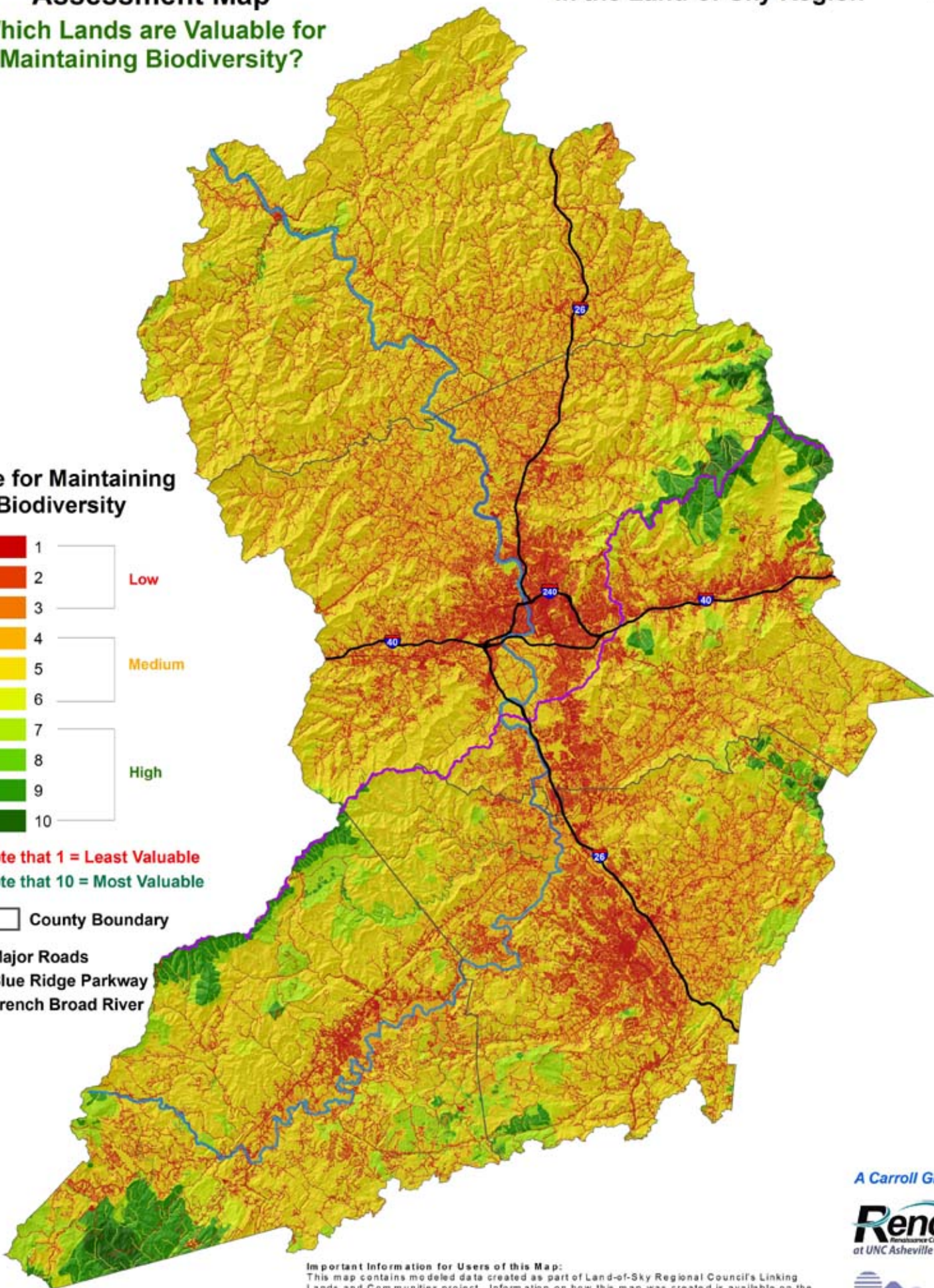
### Value for Maintaining Biodiversity



Note that 1 = Least Valuable  
Note that 10 = Most Valuable

County Boundary

- Major Roads
- Blue Ridge Parkway
- French Broad River



**Important Information for Users of this Map:**  
This map contains modeled data created as part of Land-of-Sky Regional Council's Linking Lands and Communities project. Information on how this map was created is available on the project website. To access this information, visit [www.linkinglands.org](http://www.linkinglands.org) and click on "Resource Assessments" in the left-hand menu. The web page for each assessment explains how the assessment model was created, and includes links to a fact sheet, conceptual model, data sources & definitions, ranking scheme and input data layers. LOSRC, RENCi and A Carroll GIS consider all of this information to be an integral part of this map, and essential to understanding what this map represents and how to interpret it properly.

A Carroll GIS





## Wildlife Habitat and Biodiversity Assessment Sub-model 2: Terrestrial and Aquatic Biodiversity

The Wildlife Habitat and Biodiversity Assessment is one of three resource assessments conducted as a part of the Linking Lands and Communities (LLC) project, and aims to capture the inherent ecological health and functioning of the region’s ecosystems. It was created by combining and assigning weights to three separate sub-models: habitat; biodiversity; and priority ecological systems.

### Sub-model 2: Terrestrial and Aquatic Biodiversity

The biodiversity sub-model identifies lands and waters that support high levels of biodiversity as indicated by available data on species and the natural communities that support them. Terrestrial and aquatic datasets were ranked separately and then combined to create the final sub-model. The methodology used was based on the North Carolina Department of Environment and Natural Resources (NCDENR) Biodiversity & Wildlife Habitat Assessment developed as a part of the One NC Naturally Conservation Planning Tool. The rankings of some datasets were adjusted to better represent the values and important species in the mountain region. Significant Natural Heritage Areas of Regional and Local Significance, Element Occurrences, Wetlands, and Priority watersheds all ranked higher in the LLC assessment than in the statewide assessment. The model incorporates lands within 100 feet of all streams.

The datasets used in the independent aquatic and terrestrial models and their rankings are listed below:

Aquatic Biodiversity Model	Ranking	Terrestrial Biodiversity Model	Ranking
Federally or State Important ASNHA	10	Federally or State Important SNHA	10
Native Brook Trout	9	Regionally Important SNHA	9
DWQ Outstanding Resource Waters	9	TNC Portfolio Sites	8
Excellent Bioclass (Benthos and Fish)	8	County Important SNHA	7
DWQ High Quality Waters	8	A /B-Ranked Natural Heritage Element Occurrence	7
Regional or Local Important ASNHA	8	C- Ranked Natural Heritage Element Occurrence	6
Good Bioclass (Benthos and Fish)	7	Important Bird Areas	6
T&E Streams	7	Wetlands	6
Priority Watersheds	6	All other areas	5
All Other Streams	5	Cropland	4
303(d) Impaired	2	Developed Open Space (20-79% impervious)	2
		Impervious Surfaces (>80% impervious)	1

See brief descriptions of acronyms and datasets on the following page. For more detailed descriptions of datasets and their sources, ranking decisions, and general methodology, please go to <http://www.linkinglands.org>

The model contains only data that were collected through direct surveys, sampling, and on the ground research. Thus lands in the region that have not been surveyed do not show up on the model as high priority areas. As a result, many privately owned lands end up ranking much lower than publically managed lands, though species and/or communities of interest may actually occur in both areas. This is considered a limitation for the model, and should be considered when interpreting the results. In an effort to address this sampling bias, and minimize unfair comparisons between private and public lands to the extent possible, biodiversity areas were calculated separately for both public and private areas and then combined for the final model.

The Biodiversity sub-model comprised 25% of the total Wildlife Habitat and Biodiversity Assessment.

*The Biodiversity sub-model was created by A Carroll GIS, staff from Land-of-Sky Regional Council, and a working group of regional partners, including NCDENR Natural Heritage and One NC Naturally Programs, NC Wildlife Resources Commission, WNC Alliance, Open Space Institute, Southern Appalachian Forest Coalition, Mars Hill College, Southern Appalachian Highlands Conservancy, NC Wildlife Federation, Blue Ridge Forever, Friends of DuPont State Forest, and USDA Forest Service.*

Datasets and Brief Descriptions	Source
<b>303(d) Impaired Streams</b> - Section 303(d) of the Clean Water Act (CWA) requires states to develop a list of waters not meeting water quality standards or which have impaired uses. Listed waters must be prioritized, and a management strategy or total maximum daily load (TMDL) must be developed for all listed waters.	<i>NCDENR Division of Water Quality (DWQ)</i>
<b>Aquatic Significant Natural Heritage Areas (ASNHA)</b> – represent the waters that are of most importance to North Carolina’s biodiversity; based on the actual presence of rare species. There are 4 levels of significance: Federal, State, Regional, and County.	<i>NCDENR Natural Heritage Program (NHP)</i>
<b>High Quality Waters (HQW)</b> - supplemental classification intended to protect and recognize waters that are rated excellent based on biological and physical/chemical characteristics through DWQ monitoring or special studies.	<i>NCDENR Division of Water Quality (DWQ)</i>
<b>Important Bird Areas (IBA)</b> - sites important to the long-term viability and conservation of naturally occurring bird populations	<i>Audubon Society</i>
<b>National Land Cover Dataset (NCLD, 2001)</b> - data derived from 2001 LANDSAT 5 Imagery and includes estimates of percent imperviousness and percent tree canopy and 36 total classes of land-cover data and derivatives of these classes. Classes used in this sub-model include cropland, developed lands, and impervious surfaces.	<i>The Multi-Resolution Land Characteristics (MRLC) Consortium</i>
<b>National Wetlands Inventory (NWL)</b> - areas of land where hydric conditions are a dominant environmental factor. This dataset covers remaining wetlands not covered by SNHAs and community EOs.	<i>U.S. Fish &amp; Wildlife Service</i>
<b>Native Trout Streams</b> - waters that contain the naturally occurring and reproducing strains of Northern and Southern Appalachian Brook Trout, which serve as indicators of the health of the watersheds they inhabit.	<i>NC Wildlife Resources Commission (NC WRC)</i>
<b>Natural Heritage Element Occurrences (EO)</b> - areas of land or water where elements of biodiversity - rare species or significant natural communities - occur. Two levels were used in the sub-model: <ul style="list-style-type: none"> <li>• <i>A or B Ranked</i> = excellent or good viability and considered critically imperiled or imperiled at the global or state level</li> <li>• <i>C Ranked</i> = fair viability and considered vulnerable at the global or state level</li> </ul>	<i>NCDENR Natural Heritage Program (NHP)</i>
<b>Outstanding Resource Waters (ORW)</b> - subset of High Quality Waters. This supplemental classification is intended to protect and recognize unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance.	<i>NCDENR Division of Water Quality (DWQ)</i>
<b>Priority Watersheds</b> - designated by several resource groups: NHP priority watersheds were based on all 14-digit HUCs (hydrologic unit codes) that touch an Aquatic Significant Natural Heritage Area; WRC priorities based on areas identified for habitat conservation and restoration; TNC priorities based on occurrences of target species and ecological systems that experts identified as conservation priorities.	<i>NC Wildlife Resources Commission; The Nature Conservancy; and NCDENR Natural Heritage Program</i>
<b>Significant Natural Heritage Areas (SNHA)</b> - contain one or more high quality or rare natural communities, rare species, and/or special animal habitats.	<i>NCDENR Natural Heritage Program (NHP)</i>
<b>Stream Bioclass: Benthos and Fish Community -Good and Excellent</b> provide locality and collection information for benthic macro invertebrates (aquatic bugs). These macroinvertebrates are sensitive to water pollution, and can be important indicators about the quality of a stream over long periods of time.	<i>NCDENR Division of Water Quality (DWQ)</i>
<b>Streams and Buffers in Watersheds containing Federally Listed Threatened and Endangered Species</b> – areas rated based on their critical importance for rare species and high quality aquatic communities and contribution to water quality.	<i>NCDENR Natural Heritage Program (NHP)</i>
<b>The Nature Conservancy (TNC) Portfolio Sites</b> - sites whose protection would ensure the long-term survival of sensitive species and natural communities in the ecoregions.	<i>The Nature Conservancy</i>