Greater Uwharries Region Appendix

The Greater Uwharries (pronounced, 'URE') region contains some of the largest remaining tracts of wildlife habitat in the Piedmont. The region includes Anson, Cabarrus, Davidson, Davie, Iredell, Montgomery, Moore, Randolph, Richmond, Rowan, and Stanly counties. This regional appendix provides information specific to local governments in these counties. The Uwharrie Mountains are among the oldest mountain ranges in North America; one reason they are home to a diversity of species and habitats in need of conservation and stewardship. Counties in the region rank third in the number of the Outstanding and High-Quality Resource Waters within the Yadkin River Basin. The rivers of the Uwharries contain seven irreplaceable aquatic species as classified by The Nature Conservancy. The Pee Dee River is ranked among the top four priorities for conservation in the Southeast U.S. by the Southeast Aquatics Resources Partnership, while the Little River is one of only a few places in the world where the Carolina redhorse fish is found. We share the Uwharries with more than 100 wildlife species and habitats that range in state conservation status from Vulnerable (S3) to Critically Imperiled (S1), along with three federally endangered species.

Important Habitats in the Uwharries

- Although the habitats listed below are not a complete list of important habitats in the Uwharries, these are some of the highest priorities for conservation.[1] We identify habitats that can be environmental assets for your community and that can help ensure resources for future generations.
- The Uwharries still contain many large areas of connected habitat, which support healthy wildlife populations and allow animals to move through the landscape. These landscapes also provide the beautiful views that bring tourism's economic benefits to the region. As the region grows, it is important to maintain these large patches of habitat and wildlife corridors.
- The Pee Dee River, the Little River and many streams in the Uwharries have high water quality and are home to some of the healthiest and highest priority aquatic wildlife and habitats.

Local governments in the Uwharries can target these and other important habitats with conservation strategies.

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Rivers, streams and native forest buffers

- The Uwharries are home to streams among the highest in freshwater mussel and fish species diversity in the Piedmont.
- The Pee Dee River is inhabited by the robust redhorse, thought to be extinct until the 1980s. The Carolina redhorse is found in the Uwharries in the Yadkin-Pee Dee and the Cape Fear River basins and no other place in the world.

What are headwaters and river or stream buffers?

Headwaters are the beginning of streams where water is drained from the land during rains. Headwater streams act as a vessel for water entering perennial streams. These streams drain up to 90 percent of the land area of eastern North America, and buffers of native forests along these and all streams are important for filtering pollutants from our water. Buffers of native forests along streams can slow down water, allowing vegetation and soil to filter pollutants—including sediment from the water—before it reaches our streams and waterways. The tree canopy also shades and cools streams helping to support the aquatic life that cleans our water and provides our fisheries resource.

Small Wetland Communities

- This habitat type includes vernal pools, ephemeral wetlands, small depression ponds, bogs and seeps.
- These wetlands provide breeding habitat for important amphibian species—frogs and salamanders—as well as nesting and feeding areas for wading birds and waterfowl.

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Rock Outcrops

There are many types of rock outcrops. These areas typically provide good habitat for reptiles, salamanders and small mammals, and can support rare plant communities.

Floodplain Forests

- Unfragmented floodplain forests are important wildlife movement corridors, and arguably provide some of the best habitat for nesting birds in the state.[2]
- Ephemeral floodplain pools are especially important sites for breeding amphibians.

Piedmont "Early Successional" Habitat

- These include meadows, prairies, grasslands, shrublands, fields, and other open areas that contain native plants and few mature trees.
- When managed properly, these habitats are important for a variety of birds, mammals, and reptiles.
- Golf courses, lawns, and high-production agricultural fields are not typically good early successional habitats.

Natural Hardwood and Native Pine Forests

- Many different types of mature hardwood and pine forests are found in the Uwharries, but remnant large tracts with "old growth" conditions are becoming increasingly rare.
- To exist, many wildlife species need large areas of native forest that are not fragmented by other land uses. Mature oak-hickory forests and native pine forests, particularly large tracts, provide food sources and good habitat for forest-interior birds, mammals, reptiles, and amphibians.
- The best native forest wildlife habitats are those that are exposed to fire. Low-intensity fires are part of a natural process that benefits wildlife and soils. Fire opens up the vegetation under the canopy and allows wild flowers, grasses and shrubs to grow. These plants are important wildlife food sources.

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Wildlife Corridors

The wildlife corridors mapped in the Greater Uwharries are based on the best current information from the scientific literature about the dispersal habitat needs of wildlife that inhabit hardwood forests.

Sparsely-Settled Habitat

- These areas include a variety of non-developed habitats, including working forests and farmland. These large areas support certain wildlife species that sometimes travel long distances by ground, such as box turtles, long-tailed weasels, bobcats and some snakes.
- For wildlife populations in sparsely-settled habitat to remain healthy, they require areas without extensive development or major highways. As an added benefit, such areas also provide good habitat for many game species, and can offer quality hunting opportunities.

NCWRC ERICA NEWMAN

The importance of large tracts of habitat, wildlife corridors and unfragmented habitat.

Wildlife uses habitat in four main ways: to obtain food, water, shelter and places to raise their young. Large tracts or patches of habitat that are connected are best for wildlife because habitat connectivity helps wildlife to avoid traveling through unsuitable areas and to avoid predators. Connecting many types of habitats is important to species survival. Wildlife corridors are those areas where wildlife can travel between habitats. When habitat patches are not connected, are distant from one another and relatively small, they are said to be fragmented. Barriers such as roads with heavy traffic and large areas without habitat can prevent wildlife from reaching feeding areas or other members of their species. Over time, wildlife populations decline in health and number if habitats are not large enough or connected.

Uwharries Region GIS Data

Section 2 of the Green Growth Toolbox presented conservation data sources that apply to all communities across the state. This appendix describes additional GIS data that is available only for the Greater Uwharries counties.

The data below are divided into tiers, which include state-wide and Uwharries data, to summarize our general recommendations for effective conservation of wildlife habitat and natural resources. These are general recommendations intended to simplify our guidance. Your county or municipality may wish to group map layers in ways that work best for you.

Resource Tier 1: Sensitive Wildlife and Natural Resource Areas

These wildlife habitats are the most sensitive to development. These areas tend to be relatively small in size and there is a high degree of knowledge about the value of the resources. We recommend setting aside these areas from development as much as possible. If development does occur in these areas, we recommend that conservation development design principles (refer to Sections 4 and 5 of the Green Growth Toolbox Handbook) be used to minimize impact to these areas.

Resource Tier 2: Wildlife Habitat Landscapes

These areas contain quality wildlife habitat, wildlife corridors, and important habitat buffers. These habitats exist within a greater variety of land uses and tend to be larger than the Tier 1 habitats. We recommend that working lands be encouraged for the areas in Tier 2. Wildlife in these habitats are sensitive to extensive development and highways and are less sensitive to rural land uses. Additionally, these areas provide an important buffer from lands where wildlife-management activities such as prescribed burning, take place.

Please Note: We recommend that less than 10 percent of all watersheds be made up of impervious surfaces such as pavement and roofs.[3]

Resource Tier 1 Map Layers

Significant Natural Heritage Areas (N.C. Natural Heritage Program)
Please see Section 2 of the Green Growth Toolbox Handbook

- Significant Natural Heritage Areas (SNHAs) are sites that support rare and high-quality native plants, animals, and natural communities. SNHAs that contain species and habitats which have been judged by experts to have the best chance of persisting as our state grows, if they are conserved in the Uwharries, are noted as, 'Significant in the Uwharries.'

Natural Heritage Element Occurrence Representations (NHEO Reps, N.C. Natural Heritage Program) Please see Section 2 of the Green Growth Toolbox Handbook

- Natural Heritage Element Occurrence (NHEO) data identify locations of plants, animals, their habitats and unique natural communities.

- You will notice that a few of the "EO-Representations" can be very large. These representations have an estimated accuracy "ESTI-ACCR" of "very low" or "low" and these species may be found somewhere in these large areas, but the locations are not known exactly. Please see page 43 of the Handbook for recommendations about use of NHEO data.

Recommended Stream and River Buffers

- We recommend that waterways that contain federally threatened and endangered wildlife have a natural forested buffer of 200 feet, and waterways with state-listed species have a buffer of 100 feet. This map layer represents these buffers on waterways in watersheds with these designations.

- We recommend a 200-foot buffer on the Pee Dee River. This river is ranked among the top four rivers in the Southeast for conservation priority due to the diverse array of aquatic life that still inhabits its waters.

    - These species include freshwater mussel beds and the federally endangered shortnose sturgeon. We recommend that utility lines be placed 1). outside of these buffer areas along rivers and streams or 2). that the lines cross watercourses minimally, perpendicular to the waterway and paired when possible with other infrastructure, such as roads. Please refer to Section 5 of the Green Growth Toolbox Handbook.

Focal Wildlife Habitats

These include a variety of habitats identified by experts and based on field observations by wildlife biologists. We do not recommend development in these habitats. If possible, avoid land-clearing activities immediately adjacent to these habitats. These areas should not be completely surrounded by lots.

Small Wetland Communities

- These are small depressions in elevation that are known to or are likely to contain wetlands, which are not mapped in the National Wetlands Inventory (USF&WS). They are important habitats to many imperiled amphibians and reptiles.

- We recommend that the applicant check conditions on site to verify whether small wetlands are present, especially for potential small wetlands. Water pools in these areas for at least part of the year. To verify that these sites are wetlands even during dry periods (dry periods are typically during summer), check for the presence of water marks on trees and the substrate, wetland-associated plants and the presence of wetland animals such as fingernail clams in the soil. Additional information on identification of small wetlands can be found in the N.C. Wildlife Action Plan[4].

- If wetlands are present, we recommend connecting wetlands and streams by leaving undeveloped forested corridors between wetlands on site and toward adjacent parcels with wetlands or streams. Corridors between wetlands and wetlands and streams should be as wide as possible. These wetlands should not be completely surrounded by development. We recommend a buffer of 100 feet (pool envelope) that is set aside from all land use and development surrounding the water's edge of small wetlands. We recommend a further 460-foot buffer (core area) on the pool envelope, which can contain up to 25 percent developed area for unconnected wetlands and 75 percent developed area for connected wetlands.[5, 6, 7]

Bald Eagle Nest Data
This data layer identifies the location of bald eagle nesting sites across the state of North Carolina and is updated yearly by the N.C. Wildlife Resources Commission. Bald eagle nesting sites can change yearly, which is why we present it as a regional data layer.

- Bald Eagle Nest Layer may be obtained by contacting the North Carolina Wildlife Resources Commission at: (910) 638-4887.
- This data layer contains sensitive information, and it should not be displayed and labeled on public maps.
- If you need to share information about bald eagle nest locations, please first contact the N.C. Wildlife Resources Commission at (252) 448-1546.
- Note that bald eagle nests are also tracked by the Natural Heritage Program as "Element Occurrences," but the Commission's file may be more up-to-date.
- Bald eagles are federally protected by the Bald and Golden Eagle Protection Act, which is administered by the US Fish and Wildlife Service. Federal recommendations on management and conservation buffers can be found at: http://www.fws.gov/midwest/eagle/guidelines/index.html.

High-Quality Fish Habitat
- These rivers and streams were identified by aquatic wildlife experts in the region as waterways that contain a diversity of aquatic life, which have a high conservation need making their conservation important to water quality for our communities and wildlife.
- Streams that are within watersheds with high-quality fish habitat are of primary importance for water quality measures, including the buffers recommended for streams and rivers below.

Floodplains
Please see Section 2 of the Green Growth Toolbox Handbook.

National Wetland Inventory
Please see Section 2 of the Green Growth Toolbox Handbook. The NWI layer is generally inaccurate and the presence of wetlands needs to be verified by inventories and surveyed on site ahead of planning actions.


NCWRC JOE MICKEY

Heron Nesting Colonies
- These are riparian or wetland areas that contain colonies of nesting herons and potentially other wading birds such as egrets. A colony contains two or more nests. Herons typically use the same colonies each year unless disturbed.
- Note that heron nesting colonies are also tracked by the Natural Heritage Program as Element Occurrences, but the Commission's file may be more up-to-date.
- These areas are likely to be seasonal or permanent wetlands that also provide habitat to amphibians and reptiles.
- We recommend a 330-foot buffer around colonies set aside from development and that development or logging activities do not take place within 980 feet of the colony during the breeding season from February 15–July 31.

Rock Outcrops
We recommend that rock outcrops not be completely surrounded by lots or roads to allow passage of wildlife to and from this habitat. Trees should not be cleared around rock outcrops and rock outcrops should be buffered from development as much as possible. The presence of rock outcrops should be verified on the site.

Resource Tier 2 Map Layers


NCWRC JEFF MARCUS

Uwharries Prescribed Fire Locations
Conducting prescribed burns is an important resource-management activity that occurs on NCWRC game lands, Uwharrie National Forest, and other managed natural areas in the Greater Uwharries.

- On game lands, burning typically takes place once every two to four years in designated "burn blocks" displayed in this layer.
- On other managed natural areas, the timing will vary.
- A data layer showing the places where prescribed burning occurs in your region can be found within the Greater Uwharries GIS data package.

What is prescribed fire?

Prescribed fire, also known as 'prescribed burning' or 'controlled burning,' is defined as the "the controlled application of fire to achieve specific objectives. It is used to maintain ecosystems in place of natural fires and to reduce fuel loads, which decrease the likelihood and intensity of wildfires." (NC Prescribed Fire Council) Many of North Carolina's natural ecosystems require periodic fire to flourish. Therefore, prescribed burning is essential to the perpetuation, restoration, and management of many of the plant and animal communities found across the state. For more information on prescribed fire in North Carolina, see http://ncprescribedfirecouncil.org/id27.html

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Uwharries Smoke-Management Buffers

- Smoke associated with prescribed burns poses a risk to people adjacent to burn areas, due to smoke exposure. Fires are controlled so that they do not escape onto adjacent areas. Additionally, prescribed fires take place only over a few days every few years.
- The greatest risk occurs within a half-mile radius of a burn, which is known as a "smoke- sensitive area."
- The smoke-management buffer layer displays this "smoke-sensitive area" and can assist local governments in minimizing any conflicts within the buffer. Since smoke exposure can cause problems in residential areas, we recommend that working lands be encouraged within this buffer area.

Native Forests Over 50 acres

- Large patches of native forest are crucial to the persistence of many species of wildlife sensitive to development and to habitat fragmentation.
- We recommend that any development in these habitats take place as close to the edge of the forest patch as possible. We also recommend that the parcel and lots remain forested, that lots do not completely surround forest patches, and that cutting of trees is kept to a minimum during and after the development process.

Wildlife Corridors

These wildlife corridors are for forest wildlife and have been verified by species locations and the scientific literature. Corridors enable wildlife movement and help to maintain healthy wildlife populations.

Sparsely Settled Habitat

These areas contain records of wildlife that have large territories, such as box-turtles, bobcats and timber rattlesnakes, whose populations can decline if there are too many roads or extensive developments. Limiting extensive development in these areas will reduce encounters between rattlesnakes and people.

"Piedmont Prairie" Landform

These areas contain many conditions necessary for restoring "Piedmont Prairies." Prairies were once extensive in our region. Small fragments of these prairies still exist here. We recommend encouraging working lands in these areas so that natural resource agencies may have the opportunity to restore this ecosystem.

Regional Conservation Plans

Sustainable Sandhills

Sustainable Sandhills is a nonprofit organization with a focus in the eight-county region surrounding Fort Bragg. This region contains the entire Sandhills Longleaf Pine Ecosystem; one of the 21 most endangered ecosystems in the nation. Some of the counties included in the Uwahrries are also covered by this plan.

http://www.sustainablesandhills.org/LandPlanning.html

Regional Contacts for Green Growth and Land Conservation in the Uwharries

Primary Contact N.C. Wildlife Resources: (910) 638-4887 or (910) 281-4388, Piedmont Cooperative Land Conservation Project

Organization	Primary Expertise	Contact
Your Council of Government (COG)	• Technical assistance on local planning issues and growth and conservation strategies • Water resources planning	Contact your county COG
N.C. Wildlife Resources Commission Technical Guidance Biologists	• Technical guidance on wildlife management and conservation to private landowners, government and the public • Provide cost-share program enrollment to qualified private landowners to assist with costs of enhancement and management of wildlife habitats on private lands	NCWRC Wildlife Management: (704) 637-2400, (704) 474-7202, (704) 982-1600 Forestry: (336) 562-5066 Fisheries: (336) 449-7625
The Land Trust for Central North Carolina (LTCNC) or The Piedmont Land Conservancy (PLC)	• Local land trust with expertise in protection of important natural areas and cultural resources. • Guidance on local conservation planning, land protection, and stewardship of conservation properties	LTCNC Uwharries Office: (336) 633-0143 LTCNC Salisbury Office: (704) 647-0302 PLC: (336) 691-0088
The N.C. Zoo	• Wildlife and botanical surveys, conservation planning, and conservation	(336) 879-7000
The US Fish and Wildlife Service (USF&WS)	• Wildlife and habitat surveys, cost-sharing to assist with the cost of enhancing or restoring priority wildlife habitats	(910) 695-3303
Soil and Water Conservation Disctricts (SWCD)	• Technical assistance with conservation and low-impact development design • Conservation easements	Contact your county SWCD office
Environmental Impact Resource Conservation and Development	• Technical assistance on environmental conservation and community development	http://www.nc.nrcs.usda.gov/contact/directory/rcd.html
Greater Uwharrie Conservation Partnership	• Habitat enhancement and restoration, conservation planning, land conservation, private lands cost-share programs for habitat enhancement and restoration	(910) 638-4887 additional contact numbers above for the land trusts, USF&WS, and the N.C. Zoo

Greater Uwharries Region GIS Data Reference Chart

This table presents reference information on data layers that are specific to counties within the Greater Uwharries of North Carolina: Anson, Cabarrus, Davidson, Davie, Iredell, Montgomery, Moore, Randolph, Richmond, Rowan, and Stanly.

The data below is available at the bottom of the following Web page, http://www.ncwildlife.org/greengrowth/Conservation_Data.htm, under 'Regional Data Downloads', 'Greater Uwharries Region.' The statewide data not listed below needs to be added to your Greater Uwharries Region Green Growth GIS.

Resource Tier 1 Map Layers

REFERENCE INFORMATION				LEVELS OF PLANNING		
Data Layer	Layer Label	Where to Download Directly	Update Frequency	Visioning and Plan-Making	Ordinance and Rule-Setting	Development Review
Significant Natural Heritage Areas	Significant _ Natural_Heritage_ Areas	Green Growth Web site	Quarterly	X	X	X
Recommended Stream and River Buffers	Recommended_ tream_ river buffers	Green Growth Web site	Irregular	X	X	X
Focal Wildlife Habitats	Focal_wildlife_ habitats	Green Growth Web site	Yearly	X	X	X
Small wetland communities	Known_small _wetlands Potential_ small_wetlands	Green Growth Web site	Yearly	X	X	X
Bald Eagle Nest Locations and Buffers	Baea_nest_spm (nest locations) Bald Eagle nest buffers	Contact the NCWRC at (910) 638-4887	Yearly	X	X	X
High-quality Fish Habitat	High_quality_fish _habitat	Green Growth Web site	Irregular	X	X	X
Heron Nesting Colonies	Inland_heron_ olonies_year-round_buffer Inland_heron_ colonies_breeding _season_buffer	Green Growth Web site	Irregular	X	X	X
Rock Outcrops	Rock_outcrops	Green Growth Web site	Yearly	X	X	X

Resource Tier 2 Map Layers

REFERENCE INFORMATION				LEVELS OF PLANNING		
Data Layer	Layer Label	Where to Download Directly	Update Frequency	Visioning and Plan-Making	Ordinance and Rule-Setting	Development Review
Uwharries Prescribed Fire Locations	Uwharries_ prescribed_fire	Green Growth Web site	Irregular	X	X	X
1/2 mile Smoke-Management Buffer	Uwharries_ smoke_buffer	Green Growth Web site	Irregular	X	X	X
Native Forests Over 50 acres	Native_forest_ wildlife_habitat	Green Growth Web site	Irregular	X	X	X
Wildlife Corridors	Wildlife_corridors	Green Growth Web site	Yearly	X	X	X
Sparsely-Settled Habitat	Sparsely_settled _habitat	Green Growth Web site	Yearly	X	X	
"Piedmont Prairie" Landform	Piedmont_prairie _landform	Green Growth Web site	Yearly	X	X	

1 These habitat types were listed as priorities during the development of the North Carolina Wildlife Action Plan. See box 1, pg. 65.
2 "Floodplain forests," Piedmont Eco-region. (2005). North Carolina Wildlife Action Plan, pgs.177-183.
3 These recommendations were drawn primarily from the NC Wildlife Resources Commission's (2002) Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality. (http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3.htm)
4 "Small Wetland Communities" Piedmont Eco-region (2005). North Carolina Wildlife Action Plan, pgs. 185-188.
5 Semlitsch, R.D. and J. R. Bodie. 2003. Criteria for Buffer Zones around Wetlands and Riparian Habitats for Amphibians and Reptiles. *Conservation Biology* 17, 1219-1228(2003).
6 Calhoun, A.J.K., N.A Miller, and M.W.Klemens. 2005. Conserving pool-breeding amphibians in human-dominated landscapes through local implementation of Best Development Practices. *Wetlands Ecology and Management* 13, 291-304(2005).
7 Baldwin, R.F., A.J.K. Calhoun and P.G.deMaynadier. 2006. Conservation Planning for Amphibian Species with Complex Habitat Requirements: A Case Study Using Movements and Habitat Selection of the Wood Frog Rana Sylvatica. *Journal of Herpetology* 40, 442-453(2006).

i For more information about the benefits of prescribed burning in North Carolina, see the N.C. Prescribed Fire Council website, located at http://ncprescribedfirecouncil.org/index.html
ii Conversation with Kevin Harvell, N.C. Division of Forest Resources, September 2007.