

# Diversity and Development

WILDLIFE ACTION PLAN KEEP COMMON ANIMALS COMMON



North Carolina's Piedmont, located in the heart of the state, contains a vast array of wildlife habitat that must be protected from haphazard development.

This is the third of a five-part series about North Carolina's Wildlife Action Plan. Each successive story will discuss how the plan is being implemented in a different region, culminating with a final piece about statewide initiatives.

MARCH	INTRODUCTION TO THE PLAN
MAY	MOUNTAIN REGION
<b>JULY</b>	<b>PIEDMONT REGION</b>
SEPTEMBER	COASTAL PLAIN REGION
NOVEMBER	STATEWIDE PROJECTS AND PARTNERSHIPS

Sunlight dapples the ground with molten gold beneath a canopy of oak and hickory trees. A sweet, soft breeze tickles the leaves into a twisting dance, lifting their edges to reveal the brilliant colors of an Eastern bluebird who sings with the unrestrained joy of newfound love. Skittering around the base of the tree is a brown Carolina anole, snapping up ants on the bark. He pauses, startled by the sudden reflection of light off the surface of a clear stream running nearby. Beneath its cool waters plays a rainbow of brightly colored native minnows gathering over clean gravel patches in search of this year's spawning mate. They are ever watchful, though, for the shadow of a hungry

Roanoke bass that lurks behind larger rocks, waiting for the perfect moment of minnow inattention.

Is this idyllic scene in one of North Carolina's state parks or a nature preserve? No, this could be in your own back yard or across the street from where you live. Not only are these treasures of the Piedmont region a recreational and scenic amenity to your community, their presence near you is vital to your quality of life and the health of your family.

The Piedmont includes roughly two-fifths of our state. It stretches from the foothills of the southern Appalachian mountains to the fall line demarking the beginning of the Coastal Plain. Its incredible diversity of

habitats includes elevations ranging from 150 to 1,000 feet above sea level. These include rolling slopes draped with rich oak-hickory forests like the one described above, low floodplain forests rippling with the calls of gray treefrogs, large rivers hiding secretive fish of unguessable size, and wetlands stalked by bright-eyed night herons.

Within North Carolina's Wildlife Action Plan, each of the eight terrestrial habitat types and eight river basins that exist wholly or in part in the Piedmont is described, along with its associated species, problems and necessary conservation actions. While the species composition and unique efforts required varies for each habitat, a theme begins to

emerge. It is a picture of a single, overarching threat that hovers over the entire region: the insatiable monster that is poorly planned, sprawling development.

But this is not an unavoidable cost of doing business in our rapidly growing state. Organized, carefully planned, thoughtful development can coexist with a healthy environment and functional wildlife habitat. These habitats and creatures cannot be allowed to fade quietly into extinction for one simple reason—we can't live without them.

## ESSENTIAL ELEMENTS FOR LIFE

It all boils down to if you'd like to have clean water and clean air. Water supports populations of humans and wildlife, and it feeds the

plants that make our oxygen. Healthy streams and intact forests are the most efficient, least expensive, most feasible way to ensure that people continue to have access to clean water to drink, healthy air to breathe, rivers to fish and boat on, and a myriad of beautiful fish, wildlife and plants to enjoy and sustain us. Humanity has known throughout history that clean water is essential for survival because it is needed for drinking, washing, irrigation and a host of other necessities.

Think of your natural surroundings like a living body with waterways as the circulatory system. Headwaters and small streams are the capillaries, indispensable passageways for water, energy and organisms such as fish and aquatic insects. They connect to the larger

veins and arteries of rivers. These vessels connect and nourish forests and other upland habitats, which in turn serve as the kidneys and liver for the streams, trapping toxins such as sediment and other pollutants before they enter water supplies. Without your circulatory system to carry energy and oxygen, your organs will quickly fail, and your entire body will suffocate and perish. So too would the natural world without its analogous circulatory system.

We often think of things like wildlife and habitat as disconnected from our daily lives, but the reality is quite the opposite. The evidence comes right out of your kitchen faucet—that water we take for granted comes directly from North Carolina streams, rivers and

**CENTER OF CONSERVATION** This is a sampling of the many Wildlife Diversity projects occurring in North Carolina's Piedmont. Some are N.C. Wildlife Resources Commission projects, while others are cooperative ventures.

- 1 **SPOTTED TURTLE RESEARCH**  
CARY, WAKE COUNTY  
BIOLOGISTS ARE STUDYING HOW THIS AQUATIC REPTILE USES UPLAND HABITAT.
- 2 **CAPE FEAR SHINER RESEARCH**  
DEEP RIVER, MOORE COUNTY  
HAS THIS IMPERILED FISH RETURNED TO ITS HISTORIC RANGE FOLLOWING REMOVAL OF A DAM?
- 3 **EASTERN HOGNOSE SNAKE RESEARCH**  
SANDHILLS REGION, MOORE COUNTY  
WHAT EFFECT HAS PRESSURE FROM URBAN DEVELOPMENT HAD ON NATIVE SNAKES?
- 4 **BACHMAN'S SPARROW RESEARCH**  
SANDHILLS GAME LAND, RICHMOND COUNTY  
INTENSIVE LONGLEAF PINE MANAGEMENT MAY HAVE INCREASED POPULATIONS OF THIS BIRD.



written by **BRENA JONES**

## NOT ALL OPEN SPACE IS CREATED EQUAL

Many people in the rapidly developing Piedmont are recognizing the importance of protecting undeveloped areas that provide wildlife habitat, scenic vistas and opportunities for outdoor recreation. This wide range of unpaved areas, often called "open space" or "green space," can be private or public and may be managed in different ways. Many counties and municipalities protect open space as working farms, public parks and greenways, or as undeveloped portions of private lands. Some local governments require developers to help buy open space or set aside an undeveloped portion of new subdivisions.

However, not all undeveloped land will contribute equally to wildlife conservation or wildlife-related recreation. Some entities define open space to include golf courses and soccer fields. The Wildlife Action Plan provides guidance to help maximize the conservation bang for the open space buck.

### LOCATION MATTERS

- Open-space protection should be steered toward intact natural habitats of significant size. With the guidance of the Wildlife Action Plan and the aid of many partners, Wildlife Commission biologists are consolidating maps of priority species and habitats in the Piedmont to assist natural-area protection.
- Placement of protected open space along streams and rivers often helps achieve multiple conservation benefits for terrestrial and aquatic habitats.
- Open space should be clustered. It is often better for wildlife to have one large block of natural habitat than several smaller, fragmented blocks. Likewise, wider greenways are better than narrow ones. However, even small protected areas provide some value.
- Open space should be connected. Wildlife needs to be able to travel between habitat patches. Linking protected areas with corridors also creates an opportunity for a greenway or recreation path. This often requires planning across jurisdictional boundaries.

### MANAGEMENT MATTERS

- Within open space, managers should maximize the amount of natural vegetation and minimize the amount of frequently mowed area.
- Many municipalities think that parks should include ball fields and recreation centers. Outdoor recreation opportunities such as hiking, bird watching and canoeing are important, too.
- Management should be appropriate to the natural habitats present. Managers and landowners should look for habitat-restoration opportunities.

Just as it is important to plan housing, roads and businesses so people can function well, it is equally important to plan for green infrastructure to ensure that wildlife species and natural systems will continue to function well. The Wildlife Action Plan helps to promote this proper planning for wildlife.

—Jeff Marcus

reservoirs. Under the surface of these waters, freshwater mussel populations filter enormous amounts of water, feeding on algae and bacteria and keeping streams clear. These mussels have their limits, though. Continuous inputs of sediment, ammonia, pesticides and other chemicals can strain these sensitive organisms to the breaking point, making mussels an excellent barometer of our waterways' conditions. Current declines in our native mussel populations are a red flag signaling to us that all is not well in our waters.

Sport fish such as bass, bluegills and crappies depend on the presence of abundant aquatic insects and smaller forage fish in order to survive. These insects in turn depend on pollutant-free water. Are you beginning to see a pattern? Let's look at those forests surrounding the streams.

Creatures underwater depend on leaves and woody debris dropping from nearby trees, providing food and places to hide. But why should it matter to us if a stream bank is forested or not? For one thing, wide buffers on streams dramatically abate flooding problems in several ways. Tree roots and vegetation stabilize the stream channel, preventing the erosion that creates tall, cliff-like banks and cuts off a stream from its floodplain. When a stable channel with low banks fills with water, it quickly spills over into the floodplain, where water spreads out and slows down. This slow water can be much more easily absorbed into the soil. Slow water also readily drops what it is carrying: sediment and debris that can be deposited in the riparian forest before it reaches a river or reservoir.

A flooding stream trapped in a deep, eroded channel has no way to slow down, and as we know, fast water is powerful. It will simply cut away at its own banks even further, and when it reaches the end of its mad race, it will dump all of its dirt and debris into a reservoir. In addition, this fast-moving water will have no chance to filter back into the soil and replenish the groundwater, the consequence of which will be clear to anyone who relies on a well for water.

**Counterclockwise from top right: Rapid residential development threatens water-loving creatures such as the wood frog (shown in mid-transformation) and the Carolina heelsplitter. This clear-cut around a creek makes it more difficult for birds such as the yellow-crowned night heron to live in the Piedmont.**



NCWRC

JONATHAN MAYS/NCWRC



KEN TAYLOR/NCWRC

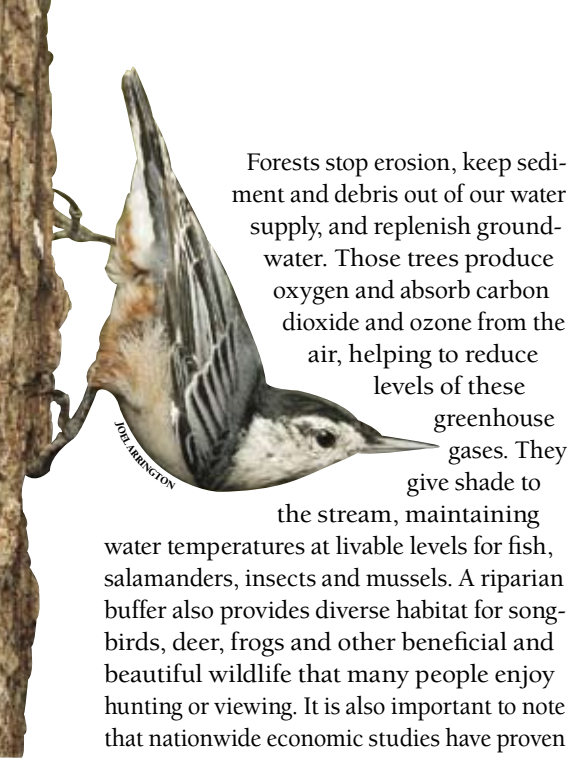


KEN TAYLOR/NCWRC

*These habitats and creatures cannot be allowed to fade quietly into extinction for one simple reason—we can't live without them.*

MELISSA MCGAW





Forests stop erosion, keep sediment and debris out of our water supply, and replenish groundwater. Those trees produce oxygen and absorb carbon dioxide and ozone from the air, helping to reduce levels of these greenhouse gases. They give shade to the stream, maintaining water temperatures at livable levels for fish, salamanders, insects and mussels. A riparian buffer also provides diverse habitat for songbirds, deer, frogs and other beneficial and beautiful wildlife that many people enjoy hunting or viewing. It is also important to note that nationwide economic studies have proven that living within reach of such amenities as this natural bounty of recreational and scenic opportunities raises your own property values.

And it does all this for free. Conserving natural forests, wetlands, streams and prairies is exponentially cheaper than paying for engineered stormwater treatment, multi-stage drinking water purification, repair of flood damage, environmental mitigation and pricey sediment retention practices that are only a fraction as effective as natural processes.

#### MAKING OPPORTUNITIES

But aren't North Carolina's numerous parks and preserves enough? (See "Not all open

space is created equal," page 12). The sad truth is that the human population across our state is exploding while available natural resources continue to shrink. Many Piedmont streams are already listed as degraded and unable to support recreation or aquatic life, and forests are being lost daily. If we are to continue to have access to clean water and air, we must do better at protecting the diversity and habitats that we still have. Isolated parks won't do the trick — these habitats must be large enough and connected enough for animals to move freely from system to system.

As communities struggle to keep pace with off-the-charts growth, scrambling for water, sewer, space and roads, they lose control of how this growth occurs and where it settles its bulky footprint. In a rush to cash in on the housing boom, developers stripped massive tracts of land of vegetation, causing tons of sediment to flood into streams and rivers. As forested stream buffers fall to bulldozers, flooding increases in severity and frequency, water becomes increasingly polluted by runoff, and the threat to municipal water supplies grows.

Tentacles of scrape-and-build subdivisions extended out from cities, unchecked by site-specific planning, proactive stormwater control or effective resource conservation measures. Where they landed, much has been lost and communities are paying the price in traffic congestion, ozone warnings and contaminated streams.

**The white-breasted nuthatch and the marbled salamander suffer from the loss of Piedmont habitat such as this wetland.**

The sad story is long and filled with missed opportunities. The developers, residents and municipalities that contributed to this sprawling growth were certainly not driven by bad intentions. Most of the new home buyers were simply seeking an affordable house in a safe, peaceful neighborhood away from the concrete jungle of the city center. Ironically, the pursuit of a natural haven away from the city has brought the pavement and traffic with it. The cumulative impacts of poorly planned sprawl now threaten many of the important wildlife species and habitats in the Piedmont and diminish the values many homeowners were pursuing.

Piedmont residents have a chance to push the pendulum the other way, to change how we grow and to build communities that are livable and attractive without sacrificing essential natural resources. And the Wildlife Action Plan gives us one tool to help get it done. ♦

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#### READ AND LEARN MORE

**Cary's riparian buffer ordinance:**  
[www.townofcary.org/depts/dsdept/engineering/engproj/stormwater/bufferfacts.htm](http://www.townofcary.org/depts/dsdept/engineering/engproj/stormwater/bufferfacts.htm)

**Low-impact development:**  
[www.epa.gov/owow/nps/lid/](http://www.epa.gov/owow/nps/lid/)

**Minimizing impervious surfaces:**  
[www.stormwaterauthority.org](http://www.stormwaterauthority.org)

**Smart Growth for communities:**  
[www.smartgrowth.org](http://www.smartgrowth.org)

**Cluster development and conservation subdivisions:**  
[www.uwsp.edu/cnr/landcenter/tracker/summer2002/consubdiv.html](http://www.uwsp.edu/cnr/landcenter/tracker/summer2002/consubdiv.html)

**Bioretention areas and rain gardens:**  
[www.bae.ncsu.edu/topic/raingarden/](http://www.bae.ncsu.edu/topic/raingarden/)

**Tools for land-use planning:**  
[www.smartcommunities.ncat.org/landuse/tools.shtml](http://www.smartcommunities.ncat.org/landuse/tools.shtml)

#### GETTING AHEAD OF GROWTH

*The Greater Uwharries Conservation Partnership works to preserve a pristine patch of the Piedmont*

Life in the Uwharries is different. People know their neighbors, many of whom still make a living from the land. There are more than 50,000 acres of national forest and game lands where most rivers and streams have high water-quality ratings. Rare North Carolina freshwater mussels and fish are supported by diverse aquatic insects and systems. Despite this, the region faces the same growth issues as cities and suburbs because the infrastructure and development ordinances that spur sprawl exist there, too.

The greater Uwharries region is one of North Carolina's greatest opportunities. For now development is manageable, and lifestyles and culture are rural, but the health of the region's wildlife habitat depends largely on private land management and planning. Haphazard growth leads to degradation of terrestrial and aquatic wildlife habitat, but there can be responsible development if local governments encourage open space conservation, and growth is based on land-use plans.

To that end, the Greater Uwharries Conservation Partnership is focused on helping the region harness its opportunity for balanced land use and growth founded in high-quality wildlife habitat and a high-quality of life. Comprised of 12 conservation- and economic-based organizations and agencies working together, the partnership targets funding for conservation and sustainable economic growth in the region and brings information in North Carolina's Wildlife Action Plan to the counties and landowners of the south central Piedmont.

Until recently, the greater Uwharries thrived mainly on agriculture and manufacturing. The region now has the opportunity to expand and revitalize its economy by inviting new residents, retirees, tourists and recreationists who appreciate the natural, tranquil character of the area. The possibilities are exciting. By planning with conservation and place-based economics in mind, community leaders can secure the way for economic growth and

needed jobs, many of which are attracted by an aesthetically and culturally pleasing environment.

Failure to conserve these natural and cultural assets while the region grows will likely relegate this region to the sprawling suburban development of strip malls, traffic congestion and poor water quality which are common symptoms of unplanned growth in neighboring counties. Without comprehensive planning, this unique rural area could begin to look and feel the same as its metropolitan neighbors.

#### WHAT YOU CAN DO

- Sign on as a supporter of Teaming with Wildlife, the coalition which secures State Wildlife Grant funding from the U.S. Congress.
- Be informed about land-use and planning policies and ordinances affecting your county and municipality. Obtain information from your local, state and federal government offices. County commission board meeting minutes can usually be found on the county's Web site. Sign up for newsletters from your state legislators. It's surprising how informative meeting minutes and legislation can be.
- Write your county commissioners and state representatives to share your opinion and constructive ideas.
- Contact your local land trust, the Wildlife Commission or the N.C. Department of Environment and Natural Resources for technical guidance if you are interested in trying to conserve resources. These organizations are less interested in regulating landowners and development than they are in working cooperatively with landowners and government to find win-win solutions.
- Pay attention to road and development infrastructure plans and land sales so you have time to weigh in on any planning decisions.

—Kacy Cook

#### TOWN PLANNING WITH CONSERVATION IN MIND

When determining how any area should be developed, it is important to consider not only where new homes and businesses will be located, but how they should fit into the overall fabric of the landscape. This is where watershed and regional planning comes into play. Ecologically sound decisions can save money, increase property values and expedite permit processes and sales. A land use plan that addresses growth needs and conservation needs can be a powerful tool in guiding a community forward without sacrificing natural resources and the quality of life.

Each town also has the ability to protect important resources and habitat by controlling stormwater and preserving floodplains, forested areas and headwaters using tools such as ordinances and zoning. Overlay and cluster zoning gives local governments the tools to grow while preserving the integrity of their watershed. For example, the Town of Cary has enacted an ordinance stating that the riparian zones along streams may not be included in platted lots, preserving these natural areas for public enjoyment and watershed health.

—Brena Jones



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