

U.S. Fish & Wildlife Service

The Kuralt Trail

*Roanoke River
National Wildlife
Refuge*



Introduction

Welcome to the Roanoke River National Wildlife Refuge and the Kuralt Trail! This leaflet is designed as a self-guided tour, providing numbered paragraphs that correspond to the numbered posts on the trail. As you walk the trail, you will also see interpretive plaques identifying a few common species of trees found on the floodplain.

This trail is approximately 1.5 miles roundtrip. If you have no further need of this leaflet after your walk, please return it to the leaflet dispenser for others to use and enjoy. Thank you!



Eastern mud turtle

History

Until the mid-1600's, the Tuscarora Indians lived along the Roanoke River for over 12,000 years. They used the resources along the river with great care and respect so that the forest and river would always be able to supply them with the resources they would need to survive.

European settlement in this area began as early as 1657, with commercial fishing, forestry and agriculture as the primary industries. As human populations increased over the centuries, so did the demand for the river's resources.

The expansive timber resources found in the bottomlands along the Roanoke River became a target. The forest industry began playing an

increasing role in the Roanoke River floodplain, as old-growth bald cypress and other hardwoods were harvested for their highly valued wood.

Historic logging on Roanoke River



In 1990, the U.S. Fish and Wildlife Service joined The Nature Conservancy and the North Carolina Wildlife Resources Commission and began acquiring land in an effort to protect the fish and wildlife resources for present and future generations. Today, the Roanoke River National Wildlife Refuge manages over 20,000 of the more than 70,000 acres protected along the Roanoke River.

What is a bottomland hardwood forest?

Bottomland hardwood forests are the wettest types of hardwood forests found in North America. They are usually, but not always, associated

with a river. Over hundreds of years, flood waters along the Roanoke River have deposited sediments and carved out creeks creating features such as ridges, sloughs

and levees on its floodplain. These features differ in elevation, which determine how wet they get when the river floods and where certain tree species will grow.



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Crayfish

The result is a bottomland hardwood forest that supports different forest communities with a high diversity of plant and wildlife species. A floodplain is simply the area adjacent to a river that is subject to recurring floods as the river spreads its bank during times of high water flow.

Flood waters carry nutrients and deposit them on the floodplain, fertilizing the trees. This natural fertilization promotes rapid growth of trees and provides fertile soil for agriculture. This is one reason bottomland hardwood forests are cleared and converted to farmlands and used for timber production.

Such activities are why bottomland hardwood forests are one of the most endangered ecosystems in the United States. The bottomland hardwood forest you are standing in is dominated by laurel oak, red maple, sweetgum and sycamore trees. The Roanoke River is approximately 1.5 miles south of the Kuralt Trail and the floodplain here is approximately 3.5 miles wide.



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Great egret

Some Important Rules

- The refuge and the Kuralt Trail are open daylight hours only year-round, but are subject to closure for managed hunts during certain times of the year. Please contact refuge headquarters for hunt dates and closure information.
- Off-road motorized vehicles are not allowed on the Kuralt Trail.
- Pets must be kept on a leash and under owner control at all times.
- Collecting, disturbing or feeding plants or wildlife is against the law. Please view them from a safe distance.
- Don't litter. No one wants to look at litter, but more importantly it harms wildlife who attempt to digest non-edible items such as wrappings and containers.



Spring peeper

Wildlife Viewing Tips

- Start early and stay late. You are more likely to see wildlife activity if you come early in the morning or late in the day.
- Bring your binoculars and field guides. Binoculars provide an up-close view without disturbing wildlife. Wildlife identification guides will help you learn the various flora and fauna of the refuge.



Many bird species can be observed along the trail.

- Bring insect repellent. Biting insects can be a disturbance to your enjoyable walk.
- The Kuralt Trail occasionally floods. Bring appropriate footwear and clothing for muddy conditions. Be advised: the trail may be impassable at times.

- Please stay on the established trail to minimize environmental damage and prevent accidents.
- Check yourself carefully for ticks during and after completing the trail. Ticks can transmit serious diseases and can be active year-round.
- Enjoy your visit!

Stop 1: Bald Cypress Knees

Bald Cypress “knees” are the woody protrusions scattered within a few feet of a cypress tree’s base. These knees are connected to each other and the tree they extend from by an extensive network of woody veins

located underground. The true function of cypress knees is not well understood, but scientists do know that knees do not grow into cypress trees. Some believe they help the tree get oxygen as an adaptation to living in water, while others believe knees increase the tree’s stability during high wind storms.



Bald Cypress knees

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Stop 2: The Wealth of Wetlands

The floodplain of the Roanoke River is the largest, intact, least disturbed bottomland forest system remaining in the southeastern United States. It covers over 200,000 acres providing benefits to many species of fish and wildlife. Many songbirds use these wetlands as a resting and feeding site on their migratory journeys further north while others stay here for the entire nesting season. North Carolina’s largest inland colony of nesting great blue herons and great egrets can also be found here. The extensive wetlands found along the Roanoke River provide valuable spawning and nursery habitat for migratory and resident fish species such as river herring, flier and hickory shad. Amphibians, reptiles and mammals make these wetlands



Barred owl

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their home as well. As you walk the trail, you will learn the roles wetlands play in creating a diverse landscape that provide valuable resources we all rely on.

Stop 3: Girdling: A Tree's Death Sentence

The bark of a tree serves as a feeding tube which transports essential food and nutrients from the tree's roots to its branches, enabling growth and seed production. When beavers or other animals partially remove bark by chewing or scratching a tree, its capacity to transport food and nutrients is diminished. This process is referred to as girdling. When the bark is completely removed from around the tree's circumference, the feeding tube has been broken, and the tree will not survive. Look around you. Do you see evidence of girdling here?



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A girdled tree

Stop 4: Climbers of the Forest

Vines give the appearance of choking trees as they twist and turn around their trunks. But vines only use the tree for support to climb to the forest's canopy in search of sunlight, usually doing no harm to the tree itself. Many types of vines are found in the forests along the Roanoke River, providing food for many species of wildlife. The fruit of the grapevine provides tasty treats for

birds or mammals passing by. The red tubular flower of the trumpet vine provides much needed food for hummingbirds while the berries from the pepper and rattan vines are eaten by many species of birds. The



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Trumpet vine

wildlife attracted to the vines may provide benefits to the tree as well, as they can spread the tree's seeds to other parts of the forest when they depart.

Stop 5: Tree Fall Gaps

Tornados and hurricanes are usually viewed as destructive and unwanted, but habitat and wildlife benefits can rise out of their chaos. In fact, nature employs weather events like these to

create a diverse landscape, particularly in forests. Strong winds can topple large trees, and the resulting hole in the forest's roof, or canopy, lets patches of sunlight reach the forest floor. New grasses and young trees soon begin to sprout and grow,

providing food and shelter for insects, birds and other wildlife. The fallen tree gets devoured by hungry insects, which in turn attract birds and mammals that prey on them. When a young tree finally reaches the canopy years later, the canopy's gap begins to close. Many of these places exist in various growth stages throughout a forest, creating a patchwork of different habitats that support many varieties of wildlife.

Stop 6: Pits and Stumps

Look all around you. Two distinct, human-created features dominate this stop. The first is the large pit in the ground to one side of the road. You've passed several of these already. These pits were created when logging companies needed access to this area to log the valuable trees that once stood around you.



The prothonotary warbler is a migratory summer breeder on the refuge.



Cypress stump

The dirt taken out of these holes, called barrow pits, was piled up, creating the logging road you are standing on. If you look around again, you'll notice many cypress tree stumps. The wood from cypress trees was used to build homes, while other hardwood trees were harvested to make items such

as baseball bats, tool handles and furniture. While most of the old growth trees along this trail were harvested long ago, various federal, state and non-profit partners are conserving sensitive bottomland forest communities along the Roanoke River.

Stop 7: Water Stains

Look closely at the trees around you. Do you see a line on the trees one or two feet from the ground?

Approximately 100 miles upriver from where you are standing is the first of three man-made dams that regulate the Roanoke River's water flow. This human-altered flow regime

floods the forest for weeks or months at a time, and the stagnant water forms the water lines you see on the trees. If the river was allowed to rise and fall naturally, this waterline



Waterline visible on the trees.

wouldn't be so obvious. This bottomland hardwood community around you evolved with the river's variable water levels depending on rain and drought cycles. Biologists are currently studying what long-term effects the prolonged flooding will have on the future of this bottomland forest community along the Roanoke River.



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A decomposing log

Stop 8: Life in a Log

A dead tree lying on the ground may seem wasteful, but instead it teems with life. An entire army of organisms busy themselves breaking down the log, recycling its components and nutrients

back into the soil. The decomposition process begins with fungi and bacteria and continues as insects consume leaves and wood.

Woodpeckers may stop by to enrich their diet with protein by eating ants and beetles. Cavities in the wood collect water that quenches the thirst of passing mice and lizards. As work progresses, snakes or raccoons may take up residence in hollows created in the center of the log. Refuge managers usually don't remove dead trees or logs because of the many benefits they provide to wildlife.

Stop 9: Inches Make All the Difference

Subtle elevation changes in a bottomland hardwood forest community often determine the type of trees found there. Water has carved out sloughs, guts and swales in some areas while depositing sediments in others that create ridges and levees. These different habitat types vary by just inches and

are found in close proximity to one another. Some trees are more tolerant of wet soils, while other trees need slightly drier, well-drained soils to survive. Trees such as sycamore, water pecan and laurel oak are found at elevations just inches above wetter soils that support species such as bald cypress, overcup oak and red maple. This diverse landscape supports many species of birds, mammals, reptiles and amphibians that rely on the different benefits each forest community provides.

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The cedar waxwing is a winter visitor.

Stop 10: Putting it All Together

Apply all you've learned so far about the bottomland hardwood ecosystem at this final stop. What features do you see here that you learned about or saw earlier? Do you see waterlines, cypress knees or vines? What kinds of wildlife do you see or hear? And how do you think they use this area? Read more about wetland values at this stop and enjoy the sights and sounds of your Roanoke River floodplain.

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Thank You!

Congratulations! You've completed the Kuralt Trail and learned about the valuable wetland resources of the Roanoke River floodplain. We thank you for

visiting and hope you enjoy your trip back to the trail entrance. Continue to keep your eyes and ears open, as there is always something different to see.

Please contact Refuge headquarters, Monday through Friday, 8:00 am to 4:30 pm or visit our website at: <http://roanokeriver.fws.gov> for more information. We also encourage you to visit other national wildlife refuges across the country. Visit <http://refuges.fws.gov> to learn more.



Roanoke River National Wildlife Refuge
114 West Water Street
P.O. Box 430 (mailing address)
Windsor, NC 27983
252/794 3808
<http://roanokeriver.fws.gov>
roanokeriver@fws.gov

U.S. Fish and Wildlife Service
1-800/344-WILD

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