

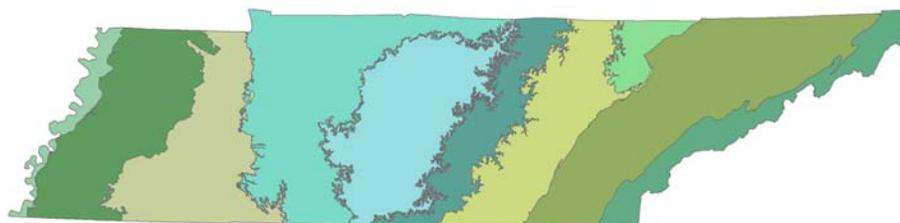
# Appendix A: Tennessee

## Introduction and Overview

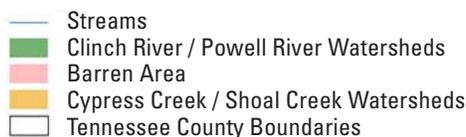
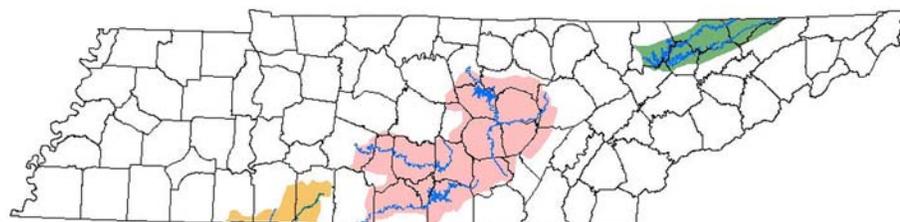
The State of Tennessee extends from the Blue Ridge Mountains in the east to the Mississippi River Alluvial Plain in the west, encompassing parts of ten physiographic provinces within its borders. Historically, hardwood forests dominated the landscape across Tennessee. Bottomland hardwood forests predominately occurred in the Coastal Plain and Mississippi River Alluvial Plain regions in west Tennessee.

Tennessee has over 60,000 miles of streams that occur within 13 major basins. The State's streams support over 300 species of fish. Additionally, over 40 percent of the 300 species of freshwater mussels known to occur within the United States, occur (or occurred) within the State.

Aquatic stream systems in Tennessee exhibit the most diverse assemblage of aquatic fauna in the country. Human population growth and associated development, along with changes in land use practices, have resulted in significant changes in the State's natural resources. Over 50 percent of the State's wetlands have been lost, most streams in west Tennessee have been channelized, and 20 percent of the streams across the State have been impounded. Also, over 30 percent of the river miles within the State are either partially or not supporting their designated uses, with only 50 percent having been assessed. In addition, approximately 155 miles of rivers are posted due to high bacterial levels hazardous to humans, and 120 miles are posted due to contaminated fish. Aquatic resources are a very important though somewhat degraded resource in Tennessee.



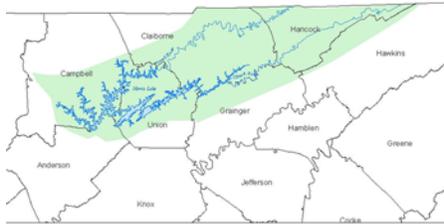
*Physiographic provinces of Tennessee*



## Overview of Geographic Focus Areas

We have established three geographic focus areas in Tennessee. These are the Clinch River/Powell River Watershed, the Barrens, and the Cypress Creek/Shoal Creek Watershed. These areas were chosen based on stakeholder interest, species of greatest concern as listed in the Tennessee Comprehensive Wildlife Conservation Strategy, and the presence of federally listed species. Two of these three focus areas, Clinch River/Powell River Watershed and the Barrens, are areas in which past Partners Program work is concentrated, there is significant stakeholder interest, and there is an expected likelihood of successful accomplishments. The other focus area, Cypress Creek/Shoal Creek Watershed, is an area in which little program work has taken place, and in which we plan to increase our work to address priority species.

Habitat improvement activities applicable to all riparian areas are designed to addressing the on-going problem of erosion and bank failure. Practices such as livestock exclusion fencing, alternate water supplies, hardened heavy-use areas, and streambank stabilization will be implemented to reduce the amount of sediment entering the targeted watersheds. Bioengineering methods, which require the use of naturally occurring material (e.g., root wads, logs, etc.), will be utilized to stabilize eroding banks. Trees and native grasses will be planted to restore degraded riparian zones which, in turn, will provide nesting and resting habitat for neotropical migratory birds and small game species such as bobwhite quail and cottontail rabbits.



*Clinch River and Powell River Watershed Focus Area*

**Clinch River/Powell River Focus Area**

This focus area will be composed of the Clinch River and Powell River and their tributaries. An existing effort to improve water quality was started in fiscal year 2001 and has continued through fiscal year 2006. This area, based on its abundant aquatic species both rare and common, will continue to be an area targeted by the Partners Program. The main objective of the plan is to improve degraded water quality and aquatic habitat for the numerous federally listed species which inhabit this watershed.

*Priority Habitat*  
Riparian

*Five-Year Target (FY 2007-2011)*  
Five miles riparian; upland: 18 acres

*Focus Species\**  
Birdwing pearl mussel (E); spectaclecase (C); fanshell (E); dromedary pearl mussel (E); cumberlandian combshell (E); oyster mussel (E); spotfin chub (T); slender chub(T); shiny pigtoe (E); finerayed pigtoe (E); cracking pearl mussel (E); pink mucket pearl mussel (E); slabside pearl mussel (C); gray bat (E); yellowfin madtom (T); pygmy madtom (E); sheepsnose mussel (C); rough pigtoe (E); fluted kidneyshell(C); rough rabbitsfoot (E); cumberland monkeyface pearl mussel (E); Appalachian monkeyface pearl mussel (E); purple bean (E)

*Threats*  
Degraded water quality resulting from agriculture, urbanization, silviculture, and coal mining activities is the main threat to this watershed



USFWS

*A diverse mussel community inhabits the Clinch River's vanishing riparian*



USFWS

*Clinch River's vanishing riparian zone*

*Action Strategies*  
Degraded riparian habitat will be identified and targeted for restoration by the Partners Program staff and The Nature Conservancy which has dedicated a staff member to the area. By utilizing available funding and working with partners and landowners, activities such as streambank restoration, fencing livestock out of streams, providing alternative water sources, hardening heavy-use areas, and revegetating riparian areas with native trees, shrubs and grasses will be implemented in needed areas throughout the watershed.



*Barrens Focus Area*

**The Barrens Focus Area**

This focus area encompasses the headwaters of the Elk, Duck, Collins, and Caney Fork Rivers and the area is generally referred to as the "Barrens." Over 25 federally listed species occur within this focus area, in addition to many other rare species. Our main objective for this focus area is to improve degraded spring, stream, and riparian habitat for the suite of rare species occurring within these watersheds.

Practices such as livestock exclusion fencing, alternate water supplies, hardened heavy-use areas, stream bank stabilization, and native grass and tree plantings will be implemented to reduce the amount of sediment entering these springs and their runs, improving aquatic habitat. If necessary, sediment will be removed from spring sites to restore pool habitat for the rare aquatic species which inhabit them.

*Priority Habitat*  
Riparian

*Five-Year Target (FY 2007-2011)*  
Five miles riparian; upland: 18 acres

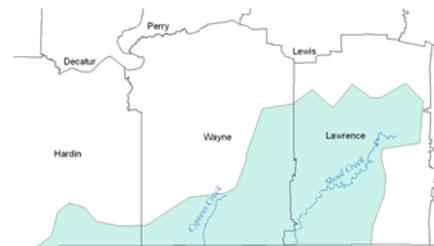
*Focus Species\**  
Birdwing pearl mussel (E); cumberland rosemary (T); spectaclecase (C); fanshell (E); cumberlandian combshell (E); oyster mussel (E); tan riffleshell (E); bluemask darter (E); barrens darter (SOC); boulder darter (E); barrens topminnow (SOC); fine-rayed pigtoe ((E); flame chub (SOC); barrens heelsplitter (SOC); slabside pearl mussel (C); gray bat (E); littlewing pearl mussel (E); cumberland pigtoe (E); fluted kidneyshell (C); cumberland monkeyface pearl mussel (E); Virginia spiraea (T); pale lilliput pearl mussel (E); rayed bean (C)



One of many head-water springs in the Barrens Area Watershed



A protected riparian zone along Hickory Creek, a tributary within the Caney Fork



Cypress Creek and Shoal Creek Watersheds Focus Area

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**Threats**

Water quality degradation resulting from suspended sediments and nutrient enrichment from agriculture, silviculture, and urban expansion is a problem affecting aquatic species habitat

**Action Strategies**

The Partners Program will identify degraded sites in need of restoration and available fund sources (e.g., Partners Program, Landowner Incentives Program, and Farm Bill Programs) will be used to initiate restoration activities. Existing partnerships with Tennessee Wildlife Resources Agency, The Nature Conservancy, World Wildlife Fund, and Natural Resources Conservation Service will be used to leverage funding for these efforts. Working with partners and landowners, activities such as streambank restoration, fencing livestock out of streams, providing alternative water sources, developing hardened heavy-use areas, and revegetating riparian areas with native trees, shrubs and grasses will be implemented throughout the watershed.

**Cypress Creek/Shoal Creek Watershed Focus Area**

This focus area is composed of Cypress Creek, Shoal Creek, and their tributaries in Lawrence, Wayne, and Hardin counties. Our goal is to develop partnerships with government agencies and local landowners to restore and protect riparian habitat for rare species, specifically the slackwater darter, spotfin chub, and boulder darter, within the Cypress/Shoal Creek watersheds.

All permanent and intermittent streams with flowing water from December to June which are within the Cypress and Middle Cypress Creek watersheds in Wayne County are identified as Critical Habitat for the slackwater darter.

In order to protect and improve critical habitat for the slackwater darter, our effort will focus on erosion and bank failure. Practices such as livestock exclusion fencing, alternate water supplies, streambank stabilization, and hardened heavy-use areas will be implemented to reduce the amount of sediment entering Cypress Creek and its tributaries. Bio-engineering methods, which require the use of naturally occurring material (e.g. root wads, logs, etc.), will be utilized to stabilize eroding banks. Trees and native grasses will be planted to restore degraded riparian zones which, in turn, will provide nesting and resting habitat for neotropical migratory birds and small game species such as bobwhite quail and cottontail rabbits.

The federally endangered gray bat will also benefit from the restoration of the riparian zone.

**Priority Habitat**  
Riparian

**Five-Year Target (FY 2007-2011)**  
2.5 miles riparian; 0.5 mile instream; upland: 9 acres

**Focus Species\***  
Slackwater darter (T); gray bat (E); spotfin chub (T), and boulder darter (E)

**Threats**

Suspended sediments and nutrient enrichment from agriculture, silviculture, and urban expansion are problems affecting this watershed. Bank erosion related to livestock or instream scour also contribute to the sedimentation problem.

**Action Strategies**

The Partners Program will identify degraded sites in need of restoration, and available fund sources (e.g., Partners Program, Landowner Incentives Program, and Farm Bill Program) will be used to initiate restoration activities. Existing partnerships with Tennessee Wildlife Resources Agency, World Wildlife Fund, and Natural Resources Conservation Service will be used to leverage funding for these efforts. Working with partners and landowners, activities such as streambank restoration, fencing livestock out of streams, providing alternative water sources, creating hardened heavy-use areas, and revegetating riparian areas with native trees, shrubs and grasses will be implemented throughout the watershed.

## Stakeholders Involved

Three of these stakeholders have provided comments and recommendations concerning the program for the next five years. The stakeholders are involved in carrying out program activities in varying degrees; however, to some extent all participants support the program. Support is by providing technical assistance, locating potential projects, managing finances, and general promotion of the program.

- Private landowners (approximately 120)
- Tennessee Wildlife Resources Agency
- Tennessee Department of Agriculture
- Tennessee Department of Environment and Conservation
- Tennessee Chapter of The Nature Conservancy
- Tennessee Valley Authority
- Tennessee Tech University
- The Tennessee Aquarium
- National Fish and Wildlife Foundation
- Virginia Chapter of The Nature Conservancy
- Georgia Chapter of The Nature Conservancy
- Southeast Aquatic Research Institute
- Coffee County Soil Conservation District
- Coffee County Soil and Water Conservation Board
- The Friends of the Clinch-Powell Rivers
- Clinch Valley Program
- Clinch-Powell Resources Conservation and Development Council
- Five Rivers Resource Conservation and Development Council
- Southern Middle Tennessee Resource Conservation and Development Council
- Duck/Buffalo Resource Conservation and Development Council
- Duck River Initiative
- Hiawassee River Coalition
- The National Wild Turkey Federation
- Quail Unlimited
- Farm Services Agency
- Blount County Soil Conservation District
- Nashville Metropolitan Board of Parks and Recreation
- City of Columbia
- City of Pulaski
- City of Smithville
- City of Manchester
- City of Tullahoma
- City of Chattanooga, Department of Parks and Recreation
- Natural Resources Conservation Service
- Department of Defense, Arnold Air Force Base
- U.S. Forest Service
- U.S. Geological Survey
- Environmental Protection Agency
- Greene County Soil Conservation District
- Moore County Soil Conservation District
- Warren County Soil Conservation District
- Van Buren County Soil Conservation District
- Central Basin Resource Conservation and Development Council
- Smoky Mountain Resource Conservation and Development Council
- Putnam County Soil and Water Conservation District
- Conservation Fisheries, Incorporated
- World Wildlife Fund
- International Paper
- Tennessee Wildlife Federation
- North Chickamauga Creek Conservancy

## References

- Tennessee Comprehensive Wildlife Conservation Strategy [Online]. Tennessee Wildlife Resources Agency.  
<http://www.state.tn.us/twra/wildlife/cwcs/cwcsindex.html>
- Habitat Information Tracking System [Online]. U.S. Fish and Wildlife Service.  
<http://ecos.fws.gov/habits/Welcome.do>  
(Accessed 25 Aug. 2006)