

# Chapter 8

## Ecologically Significant Habitats

The French Broad River basin once had one of the most diverse assemblies of aquatic fauna in the state; now it is one of the most heavily altered basins in western North Carolina. Flat, low elevation areas such as floodplains and wetlands have been especially affected. Despite changes in the basin due to the conversion of forest and agricultural lands to residential and commercial development, many aquatic and wetland communities in the basin are Nationally or State significant and continue to support a diversity of species.

### North Carolina Natural Heritage Program

The Natural Heritage Program (NHP) is a part of the Office of Conservation, Planning, and Community Affairs. The Program inventories, catalogues, and supports conservation of the rarest and the most outstanding elements of the natural diversity of our State. These elements of natural diversity include those plants and animals which are so rare or the natural communities are so significant that they merit special consideration as land-use decisions are made.

NHP follows methodology developed by The Nature Conservancy and shared by the Natural Heritage Network and NatureServe. By consolidating information about hundreds of rare species and natural communities, NHP is able to ensure that the public can access information that is needed, to weigh the ecological significance of various sites and to evaluate the likelihood and nature of ecological impacts. This information supports informed evaluations of the trade-offs associated with biological diversity and development projects before plans are finalized. Finally, this information facilitates the establishment of priorities for the protection of North Carolina's most significant natural areas.

For more information visit the [\*North Carolina Natural Heritage Program web site\*](#).

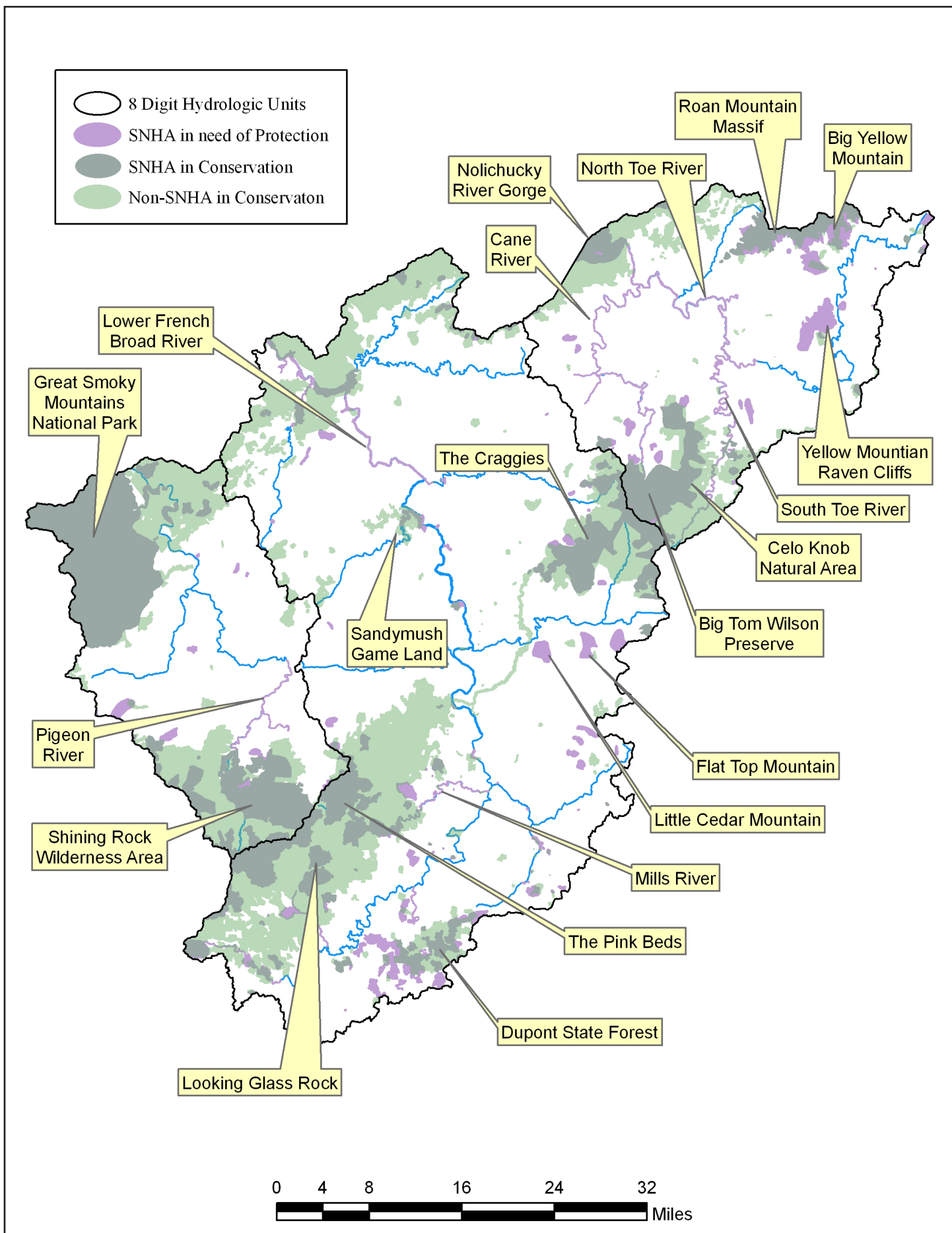
### Significant Natural Heritage Areas in the French Broad River Basin

NHP compiles a list of Significant Natural Heritage Areas as required by the Nature Preserves Act based on the program's inventory of natural diversity. Natural areas are evaluated based on the number and quality occurrences of rare plant and animal species, rare or high quality natural communities, and special animal habitats. The global and statewide rarity of these elements and their quality at a site is compared with other occurrences to determine a site's significance. Sites included are the best representatives of the natural diversity of the State and, have priority for protection. However, inclusion on the list does not imply that any protection or public access to the site exists. Sites that directly contribute to the maintenance of water quality in the basin are highlighted on the map (Figure 8-1) and in the following text. The NHP has identified more than 240 terrestrial natural areas in the French Broad River basin. Many sites have been added through recently completed inventories in Avery, Yancey, and Transylvania counties. Some of the more important sites are discussed below, and the locations of several are shown in Figure 8-1.

#### **Black and Craggy Mountains**

This extensive region of high mountains includes Mount Mitchell and several other peaks over 6,000 feet. It is one of the largest NHP areas in the basin and contains many rare plant and animal species associated with high elevations. Much of the site is in public ownership and many of the identified natural areas are contiguous and of high quality. The Craggy Mountains, in particular, include large stands of old-growth forest.

FIGURE 8-1: SIGNIFICANT NATURAL HERITAGE AREAS IN THE FRENCH BROAD RIVER BASIN



## **Buck Forest**

Much of Buck Forest is protected by DuPont State Forest and includes a large collection of rare natural communities, including: Southern Appalachian bogs; swamp forest-bog complexes; and several swamp pink populations. Many of the rare plants in Buck Forest are associated with its wetland communities.

## **Escarpment Gorges**

This is an area of extremely rugged topography with numerous waterfalls and river gorges on the Blue Ridge Escarpment. A combination of topography and regional winds gives this area the highest rainfall in eastern North America. The deep, south-facing gorges contain large numbers of rare plant species, including several disjunct from tropical regions.

## **Great Balsam Mountains/Pisgah Ridge**

This area includes sites in the higher parts of the Great Balsam Mountains and Pisgah Ridge. Many high quality, natural communities are found in the area, as well as rare communities such as bogs and granitic domes. A large number of regional endemic and northern disjunct species are present, along with several globally rare species.

## **Hickory Nut Gorge**

Hickory Nut Gorge supports outstanding biodiversity largely to its unique geology that combines extensive amphibolite rock with exfoliated granitic faces, fissure caves, and extremely rugged topography. The area contains some of the best sites for rare plants, including the Endangered white irisette and several species of bats and salamanders.

## **Hot Springs Window**

The French Broad River flows through the Hot Springs Window, a geologic “window” through which two rock types unusual for the state, dolomites and mudstones, are exposed. Associated with the unusual rock types are many plants and natural communities rare in North Carolina.

## **Pigeon River Gorge**

The Pigeon River Gorge contains a number of rare species. Here, cove forests support a population of the globally imperiled pirate bush and the mock orange and yellowwood. This area was heavily impacted by construction of Interstate 40 through the length of the gorge.

## **Plott Balsams**

The narrow Plott Balsam range contains an excellent collection of high elevation rare communities, including spruce-fir forest and high elevation rocky summits, which support several rare species including the Endangered Carolina northern flying squirrel and saw-whet owl.

## **Roan Mountain Massif**

The Roan Mountain Massif is one of the most biologically rich areas in the Southern Appalachians. The eastern part of the site contains a series of grassy balds that is collectively the largest and best example remaining in the Southern Appalachians. Numerous rare plant and animal species are found in the balds and associated communities, such as high elevation seeps. The western part of the site contains one of the few large remnants of Southern Appalachian spruce-fir forest. Also present are numerous high elevation rocky summits, that support a large number of rare plants. High quality northern hardwood forests, boulderfield forests, beech gaps, and other forest communities are present lower on the slopes.

## **Southern Appalachian Bogs**

This basin contains a number of Southern Appalachian bogs and swamp forest-bog complexes, many of them nationally significant. Examples of these wetlands include: Cedar Mountain Bog; Bat Fork Bog; East Flat Rock

Bog Remnant; Franklin Bog; King Creek Bog; McClure's Bog; Sevenmile Ridge Swamp Forest-Bog Complex; and Sugar Mountain Natural Area. Before the Hendersonville area was extensively developed, it was probably the largest expanse of mountain wetlands in North Carolina. Although most of the remaining sites are now just remnants, very significant wetlands still exist at Buck Forest and Pink Beds. Many of the rare and, Federally listed plants in the French Broad River basin are associated with these wetlands.

### **Significant Aquatic Habitats in French Broad River Basin**

NHP also collaborates with other agencies and organizations to identify Significant Aquatic Habitats which are stream segments or other bodies of water that contain significant natural resources, such as a high diversity of rare aquatic animal species. The impact from lands adjacent to and upstream of these reaches determines their water quality and the viability of their aquatic species. The identification of a natural area conveys no protection as these lands are the responsibility of the landowner.

#### **Cane River Aquatic Habitat**

The State-significant Cane River Aquatic Habitat contains a diversity of rare aquatic species, including: Hellbender; Wounded Darter; Olive Darter; Stonecat; Banded Sculpin; American Brook Lamprey; Striped Shiner; River Carpsucker; and Quillback. Additionally, the Nolichucky system, of which Cane River is a major tributary, contains the only known population of Sharphead Darter in North Carolina. Cane River also serves as habitat for two mussel species, Wavy-rayed Lampmussel and the Federal and State Endangered Appalachian Elktoe.

#### **Cataloochee Creek Aquatic Habitat and Catheys Creek Aquatic Habitat**

These habitat areas are regionally significant waterways, important for their assemblages of rare stream insects. Cataloochee Creek is in the Great Smoky Mountains National Park, while Catheys Creek is in Transylvania County.

#### **Little River Aquatic Habitat**

Little River Aquatic Habitat in Transylvania County is a site of State significance and provides habitat to several rare mussel species, including the Federal and State Endangered Appalachian Elktoe, which was first discovered in Little River in 2000. Other rare species include: American Brook Lamprey, Tennessee Clubshell, Creeper, Long-solid, and the French Broad Crayfish.

#### **Lower French Broad River Aquatic Habitat**

This regionally significant site extends from the confluence of Ivy Creek downstream to the Tennessee border. The river supports a large diversity of fish species, including several rare species: Mountain Madtom, Freshwater Drum, River Carpsucker, Quillback, Mooneye, Ohio Lamprey, Smallmouth Buffalo, American Brook Lamprey, and Logperch. Historically, it also provided habitat for species such as Lake Sturgeon, Dusky Darter, and Paddlefish, although there have been no observations of these species in recent years.

#### **Mills River/South Fork Mills River Aquatic Habitat**

This State significant site provides habitat for a variety of rare aquatic species including: Hellbender, American Brook Lamprey, Appalachian Elktoe, Slippershell mussel, Creeper, Tennessee heelsplitter, and French Broad Crayfish. Additionally, all but approximately two miles of this aquatic habitat are designated Outstanding or High Quality Resource Waters by DWQ.

#### **North Toe River/Nolichucky River Aquatic Habitat**

This is a Nationally significant aquatic habitat and supports numerous rare species, including the Hellbender, Olive Darter, Striped Shiner, Quillback, Smallmouth Buffalo, Appalachian Elktoe, and Wavy-rayed Lampmussel. Additionally, the Nolichucky system contains the only known population of Sharphead Darter in North

Carolina.

### **Pigeon River Aquatic Habitat**

This State significant aquatic habitat supports Hellbender, Olive Darter, Appalachian Elktoe, and Wavy-rayed Lampmussel.

### **South Toe River Aquatic Habitat**

The South Toe River drains the east slopes of the Black Mountains and west slopes of the Blue Ridge. This Nationally significant aquatic habitat provides habitat for Hellbender, Olive Darter, Appalachian Elktoe, and Wavy-rayed Lampmussel. The entire watershed with the exception of the lower approximately six miles is designated Outstanding Resource Waters by DWQ.

### **Spring Creek Aquatic Habitat**

Spring Creek and its tributaries drain most of western Madison County before emptying into the French Broad River at Hot Springs. This State significant aquatic habitat supports several rare species, including Ohio Lamprey, American Brook Lamprey, Logperch, Mountain Blotched Chub, Olive Darter, and French Broad Crayfish. Fish species thought to be extirpated from Spring Creek include Spottfin Chub, Dusky Darter, and Wounded Darter.

### **West Fork French Broad River Aquatic Habitat**

This State significant aquatic habitat contains a diversity of rare aquatic species, including Hellbender, French Broad Crayfish, two rare stoneflies, and a caddisfly. The lowermost five miles of West Fork French Broad river is designated High Quality Waters DWQ.

### **West Fork Pigeon River Aquatic Habitat**

This State significant site is a tributary to the Pigeon River and supports Hellbender and Appalachian Elktoe.

## **Rare and Endangered Species**

Many rare and endemic species have been cataloged by the NHP in the basin. There are currently eight species on the USFWS list of Endangered species, another three are considered Threatened, and 43 more are Species of Concern. The state of North Carolina lists 27 Endangered species, 17 Threatened species, 49 Significantly Rare species, and 38 Species of Concern in the French Broad River basin. A list of these species is provided in Tables 8-1 for animals and 8-2 for wetland/aquatic plants. While not all of the animal species are aquatic dwelling, all of them directly or indirectly rely on clean sources of water. There are 52 species of animals in the

**TABLE 8-1: RARE AND ENDANGERED ANIMAL SPECIES IN THE FRENCH BROAD RIVER BASIN**

SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS
<i>Accipiter striatus</i>	Sharp-shinned Hawk	Significantly Rare	None
<i>Aegolius acadicus pop. 1</i>	Southern Appalachian Northern Saw-whet Owl	Threatened	Species of Concern
<i>Aimophila aestivalis</i>	Bachman's Sparrow	Species of Concern	Species of Concern
<i>Alasmidonta raveneliana*</i>	Appalachian Elktoe	Endangered	Endangered
<i>Alasmidonta viridis*</i>	Slippershell Mussel	Endangered	None
<i>Ambystoma talpoideum</i>	Mole Salamander	Species of Concern	None
<i>Aneides aeneus</i>	Green Salamander	Endangered	Species of Concern
<i>Apalone sinifera spinifera*</i>	Eastern Spiny Softshell	Species of Concern	None
<i>Aploidinotus grunniens*</i>	Freshwater Drum	Species of Concern	None
<i>Attaneuria rualis*</i>	A Stonefly	Significantly Rare	None



SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS
<i>Autochton cellus</i> *	Golden Banded-Skipper	Significantly Rare	None
<i>Barbaetis benfieldi</i> *	Benfield's Bearded Small Minnow Mayfly	Significantly Rare	None
<i>Bolotoperla rossi</i> *	Smoky Willowfly	Significantly Rare	None
<i>Cambarus ruberrus</i> *	French Broad Crayfish	Significantly Rare	Species of Concern
<i>Carpiodes carpio</i> *	River Carpsucker	Species of Concern	None
<i>Carpiodes cyprinus</i> *	Quillback	Significantly Rare	None
<i>Catharus guttatus</i>	Hermit Thrush	Significantly Rare	None
<i>Celastrina nigra</i>	Dusky Azure	Significantly Rare	None
<i>Certhis americana</i>	Brown Creeper	Species of Concern	None
<i>Clinostomus sp. 1</i> *	Smoky Dace	Species of Concern	Species of Concern
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	Significantly Rare	None
<i>Olive-sided Flycatcher</i>	Olive-sided Flycatcher	Species of Concern	Species of Concern
<i>Corynorhinus rafinequii rafinequii</i>	Rafinesque's Big-eared Bat	Threatened	Species of Concern
<i>Cottus caroliniae</i> *	Banded Sculpin	Threatened	None
<i>Crotalus horridus</i>	Timber Rattlesnake	Species of Concern	None
<i>Cryptobranchus alleganiensis</i> *	Hellbender Salamander	Species of Concern	Species of Concern
<i>Dendroica cerulea</i>	Cerulean Warbler	Species of Concern	Species of Concern
<i>Dendroica magnolia</i>	Magnolia Warbler	Significantly Rare	None
<i>Desmognathus wrighti</i>	Pigmy Salamander	Significantly Rare	Species of Concern
<i>Discus bryanti</i>	Sawtooth Disc	Species of Concern	None
<i>Drunella lata</i> *	A Mayfly	Significantly Rare	None
<i>Empidonax Alnorum</i>	Alder Flycatcher	Significantly Rare	None
<i>Ephemerella beneri</i> *	A Mayfly	Significantly Rare	None
<i>Erimonax monachus</i> *	Spotfin Chub	Threatened	Threatened
<i>Erimystax insignis eristigma</i> *	Southern Blotched Chub	Significantly Rare	Species of Concern
<i>Erora laeta</i>	Early Hairstreak	Significantly Rare	None
<i>Etheostoma acuticeps</i> *	Sharphead Darter	Threatened	Species of Concern
<i>Etheostoma jessiae</i> *	Blueside Darter	Species of Concern	None
<i>Etheostoma vulneratum</i> *	Wounded Darter	Species of Concern	Species of Concern
<i>Eulonchus marialiciae</i>	Mary Alice's Small-headed Fly	Significantly Rare	None
<i>Eumeces anthracinus</i>	Coal Skink	Significantly Rare	None
<i>Euphydryas phaeton</i>	Baltimore Checkerspot	Significantly Rare	None
<i>Eurycea longicauda</i> *	Longtail Salamander	Species of Concern	None
<i>Flaco peregrinus</i>	Peregrine Falcon	Endangered	None
<i>Fumonelix orestes</i>	Engraved Covert	Threatened	None
<i>Fusconaia subrotunda</i> *	Long-solid	Significantly Rare	None
<i>Glaucomys sabrinus coloratus</i>	Carolina Northern Flying Squirrel	Endangered	Endangered
<i>Glyptemys mühlenbergii</i> *	Bog Turtle	Threatened	Threatened (S/A)
<i>Helicodiscus triodus</i>	Talus Coil	Significantly Rare	None
<i>Hemidactylius scutatum</i> *	Four-toed Salamander	Significantly Rare	None
<i>Hiodon tergisus</i> *	Mooneye	Significantly Rare	None
<i>Hypochilus coylei</i>	A Lampshade Spider	Significantly Rare	None
<i>Hypochilus sheri</i>	A Lampshade Spider	Significantly Rare	None
<i>Ichthyomyzon bdellium</i> *	Ohio Lamprey	Significantly Rare	None
<i>Ictiobus bubalus</i> *	Smallmouth Buffalo	Significantly Rare	None

SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS
<i>Ictiobus niger</i> *	Black Buffalo	Significantly Rare	None
<i>Inflectarius ferrissi</i>	Smoky Mountain Covert	Threatened	None
<i>Inflectarius frisoni</i>	Velvet Covert	Species of Concern	None
<i>Isoperla fisoni</i> *	A Stonfly	Significantly Rare	None
<i>Lampertra appendix</i> *	American Brook Lamprey	Threatened	None
<i>Lampsilis fasciola</i> *	Wavy-rayed Lampmussel	Species of Concern	None
<i>Lasmifona holstonia</i> *	Tennessee Heelsplitter	Endangered	Species of Concern
<i>Loxia curvirostra pop. 1</i>	Southern Appalachian Red Crossbill	Species of Concern	Species of Concern
<i>Luxilus chrysocephalus</i> *	Striped Shiner	Species of Concern	None
<i>Macdunnoa brunnea</i> *	A Mayfly	Significantly Rare	None
<i>Macromia margarita</i> *	Mountain River Cruiser	Significantly Rare	Species of Concern
<i>Matrioptila jeanae</i> *	A Caddisfly	Significantly Rare	None
<i>Mesodon andrewsae</i>	Balsam Globe	Significantly Rare	None
<i>Microhexura montivaga</i>	Spruce-fir Moss Spider	Significantly Rare	Endangered
<i>Microtus chrotorrhinus carolinensis</i>	Southern Rock Voly	Species of Concern	Species of Concern
<i>Moxostoma breviceps</i> *	Smallmouth Redhorse	Significantly Rare	None
<i>Mustela nivalis</i>	Least Weasel	Significantly Rare	None
<i>Myotis grisescens</i>	Gray Myotis	Endangered	Endangered
<i>Myotis leibii</i>	Eastern Small-footed Myotis	Species of Concern	Species of Concern
<i>Myotis sodalis</i>	Indiana Myotis	Endangered	Endangered
<i>Necturus maculosus</i> *	Common Mudpuppy	Species of Concern	None
<i>Neotoma magister</i>	Appalachian Woodrat	Species of Concern	Species of Concern
<i>Noturus flavus</i> *	Stonecat	Endangered	None
<i>Pallifera hemphilli</i>	Black Mantleslug	Species of Concern	None
<i>Paravitrea andrewsae</i>	High Mountain Supercoil	Species of Concern	None
<i>Paravitrea ternaria</i>	Sculpted Supercoil	Threatened	Species of Concern
<i>Paravitrea varidens</i>	Roan Supercoil	Threatened	Species of Concern
<i>Percina burtoni</i> *	Blotchside Logperch	Endangered	Species of Concern
<i>Percina caprodes</i> *	Logperch	Threatened	None
<i>Percina sciera</i> *	Dusky Darter	Endangered	None
<i>Percina squamata</i> *	Olive Darter	Species of Concern	Species of Concern
<i>Percina williamsi</i> *	Sickle Darter	Species of Concern	Species of Concern
<i>Phyciodes batesii maconensis</i>	Tawny Crescent	Significantly Rare	Species of Concern
<i>Pilsbryna vanatai</i>	Honey Glyph	Species of Concern	None
<i>Plethodon amplus</i>	Blue Ridge Gray-cheeked Salamander	Significantly Rare	None
<i>Plethodon ventralis</i>	Southern Zigzag Salamander	Species of Concern	None
<i>Plethodon welleri</i>	Weller's Salamander	Species of Concern	None
<i>Plethodon yoahlossee pop. 1</i>	Crevice Salamander	Species of Concern	None
<i>Pleurobema oviforme</i> *	Tennessee Clubshell	Endangered	Species of Concern
<i>Poecile atricapillus practica</i>	Southern Appalachian Black-capped Chickadee	Species of Concern	Species of Concern
<i>Polygonia progne</i>	Gray Comma	Significantly Rare	None
<i>Polyodon spathula</i> *	Paddlefish	Endangered	Species of Concern
<i>Poocetes gramineus</i>	Vesper Sparrow	Species of Concern	None
<i>Puma concolor cougar</i>	Eastern Cougar	Endangered	Endangered
<i>Riparia riparia</i>	Bank Swallow	Significantly Rare	None

SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS
<i>Sander canadensis</i> *	Sauger	Significantly Rare	None
<i>Satyrium caryaevorus</i>	Hickory Hairstreak	Significantly Rare	None
<i>Sciurus niger</i>	Eastern Fox Squirrel	Significantly Rare	None
<i>Sorex dispar</i>	Long-tailed Shrew	Species of Concern	None
<i>Sorex palustris punctulatus</i> *	Souther Water Shrew	Species of Concern	Species of Concern
<i>Speyeria idalia</i>	Regal Fritillary	Significantly Rare	Species of Concern
<i>Sphyrapicus varius applalachiensis</i>	Appalachian Yellow-bellied Sap-sucker	Species of Concern	Species of Concern
<i>Strophitus undulatus</i> *	Creeper	Threatened	None
<i>Stygpbromus carolinensis</i> *	Yancey Sideswimmer	Significantly Rare	Species of Concern
<i>Sylvilagus obscurus</i>	Appalachian Cottontail	Significantly Rare	Species of Concern
<i>Thryomanes bewickii altus</i>	Appalachian Bewick's Wren	Endangered	Species of Concern
<i>Trimerotropis saxatilis</i>	Rock-loving Grasshopper	Significantly Rare	None
<i>Triodopsis tennesseensis</i>	Budded Threetooth	Significantly Rare	None
<i>Ventridens coelaxis</i>	Bidentate Dome	Species of Concern	None
<i>Ventridens collisella</i>	Sculptured Dome	Significantly Rare	None
<i>Ventridnes Lasmodon</i>	Hollow Dome	Significantly Rare	None
<i>Vermivora chrysoptera</i>	Golden-winged Warbler	Species of Concern	Species of Concern
<i>Vireo gilvus</i> *	Warbling Vireo	Significantly Rare	None

\*Denote an aquatic or wetland species

**TABLE 8-2: RARE AQUATIC AND WETLAND PLANTS IN THE FRENCH BROAD RIVER BASIN**

SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS
<i>Aconitum reclinatum</i>	Trailing Wolfsbane	Significantly Rare (T)	None
<i>Arethusa bulbosa</i>	Bog Rose	Endangered	None
<i>Arisaema triphysllum ssp. steardsonii</i>	Bog Jack-in-the-Pulpit	Significantly Rare (P)	None
<i>Bryoxiphium norvegicum</i>	Sword Moss	Significantly Rare (O)	None
<i>Caltha palustris</i>	Marsh-marigold	Significantly Rare (P)	None
<i>Campanula aparinoides</i>	Marsh Bellflower	Significantly Rare (P)	None
<i>Cardamine clematitidis</i>	Mountain Bittercress	Significantly Rare (T)	None
<i>Caramine rotundifolia</i>	Mountain Watercress	Significantly Rare (P)	None
<i>Carex baileyi</i>	Baily's Sedge	Significantly Rare (P)	None
<i>Carex barrattii</i>	Barratt's Sedge	Endangered	None
<i>Carex buxbaumii</i>	Brown Bog Sedge	Significantly Rare (P)	None
<i>Carex oligosperma</i>	Few-seeded Sedge	Endangered	None
<i>Carex projecta</i>	Necklace Sedge	Significantly Rare (P)	None
<i>Carex trichocarpa</i>	Hairy-fruit Sedge	Significantly Rare (P)	None
<i>Carex trisperma</i>	Three-seeded Sedge	Significantly Rare (P)	None
<i>Carex verrucosa</i>	Warty Sedge	Significantly Rare (P)	None
<i>Cephalozia pleniceps var. caroliniana</i>	A Liverwort	Significantly Rare (L)	None
<i>Chelone cuthbertii</i>	Cuthbert's Turtlehead	Significantly Rare (L)	Species of Concern
<i>Chelone obliqua</i>	Red Turtlehead	Significantly Rare (T)	None
<i>Cladium mariscoides</i>	Twig-rush	Significantly Rare (O)	None
<i>Dalibarda repens</i>	Robin Runaway	Endangered	None
<i>Danthosia epilis</i>	Bog Oatgrass	Significantly Rare (T)	Species of Concern
<i>Dichodontium pellucidum</i>	Transparent Fork Moss	Significantly Rare (P)	None



SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS
<i>Dicranum undulatum</i>	Bog Broom-moss	Significantly Rare (D)	None
<i>Ephebe solida</i>	A Rockshag Lichen	Significantly Rare (P)	None
<i>Epilobium ciliatum</i>	Purpleleaf Willowherb	Significantly Rare (P)	None
<i>Filipendula rubra</i>	Queen-of-the-prairie	Endangered	None
<i>Geum geniculatum</i>	Bent Avens	Threatened	Species of Concern
<i>Glyceria laxa</i>	Lax mannagrass	Significantly Rare (P)	None
<i>Glyceria nubigena</i>	Smoky Mountain Mannagrass	Threatened	Species of Concern
<i>Helenium brevifolium</i>	Littleleaf Sneezeweed	Endangered	None
<i>Helonias bullata</i>	Swamp Pink	Threatened (SC)	Threatened
<i>Huperzia porophila</i>	Rock Fir-clubmoss	Significantly Rare (P)	None
<i>Ilex collina</i>	Long-stalked Holly	Threatened	None
<i>Juncus caesariensis</i>	New Jersey Rush	Endangered	Species of Concern
<i>Lilium canadense ssp. editorum</i>	Red Canada Lily	Significantly Rare (P)	None
<i>Lilium grayi</i>	Gray's Lily	Threatened (SC)	Species of Concern
<i>Lonicera canadensis</i>	American Fly-honeysuckle	Significantly Rare (P)	None
<i>Lycopodiella inundata</i>	Bog Clubmoss	Significantly Rare (P)	None
<i>Marsupella emarginata var. latiloba</i>	A Liverwort	Significantly Rare (L)	None
<i>Megaceros aenigmaticus</i>	A Hornwort	Significantly Rare (L)	None
<i>Myrica gale</i>	Sweet Gale	Endangered	None
<i>Oenothera perennis</i>	Perennial Sundrops	Significantly Rare (P)	None
<i>Parnassia granifolia</i>	Large-leaved Grass-of-parnas	Significantly Rare (P)	None
<i>Phegopteris connectilis</i>	Northern Beech Fern	Significantly Rare (P)	None
<i>Plagiochila sullivantii var. sullivantii</i>	A Liverwort	Significantly Rare (T)	Species of Concern
<i>Platanthera flava var. herbiola</i>	Northern Green Orchid	Significantly Rare (P)	None
<i>Platanthera grandiflora</i>	Large Purple-fringed Orchid	Significantly Rare (P)	None
<i>Platanthera integrilabia</i>	White Fringeless Orchid	Endangered	C
<i>Platanthera peramoena</i>	Purple Fringeless Orchid	Significantly Rare (P)	None
<i>Padula sullivantii</i>	A Liverwort	Significantly Rare (L)	None
<i>Rhododendron vaseyi</i>	Pink-shell Azalea	Significantly Rare (L)	None
<i>Rhynchospora alba</i>	Northern White Beaksedge	Significantly Rare (P)	None
<i>Sagittaria fasciculata</i>	Bunched Arrowhead	Endangered	Endangered
<i>Sarracenia jonesii</i>	Mountain Sweet Pitcher Plant	Endangered (SC)	Endangered
<i>Solidago uliginosa</i>	Bog Goldenrod	Significantly Rare (P)	None
<i>Sphagnum angustifolium</i>	Narrowleaf Peatmoss	Significantly Rare (D)	None
<i>Sphagnum capillifolium</i>	Northern Peatmoss	Significantly Rare (P)	None
<i>Sphagnum flavicomans</i>	Peatmoss	Significantly Rare (T)	None
<i>Sphagnum squarrosum</i>	Squarrose Peatmoss	Significantly Rare (P)	None
<i>Sphagnum subsecundum</i>	Orange Peatmoss	Significantly Rare (P)	None
<i>Spiraea virginiana</i>	Virginia Spiraea	Endangered	Threatened
<i>Stachys cordata</i>	Heartleaf Hedge-nettle	Significantly Rare (P)	None
<i>Thalictrum macrostylum</i>	Small-leaved Meadowrue	Significantly Rare (L)	Species of Concern
<i>Vaccinium macrocarpon</i>	Cranberry	Significantly Rare (P)	None
<i>Veronica americana</i>	American Speedwell	Significantly Rare (P)	None

## State Species Status Definitions

Endangered - “Any native or once-native species of wild animal whose continued existence as a viable component of the State’s fauna is determined by the Wildlife Resources Commission to be in jeopardy or any species of wild animal determined to be an ‘endangered species’ pursuant to the Endangered Species Act.” (Article 25 of Chapter 113 of the General Statutes; 1987).

Threatened - “Any native or once-native species of wild animal which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the Endangered Species Act.” (Article 25 of Chapter 113 of the General Statutes; 1987).

Species of Concern - “Any species of wild animal native or once-native to North Carolina which is determined by the Wildlife Resources Commission to require monitoring but which may be taken under regulations adopted under the provisions of this Article.” (Article 25 of Chapter 113 of the General Statutes; 1987).

Significantly Rare - Any species which has not been listed by the N.C. Wildlife Resources Commission as an Endangered, Threatened, or Special Concern species, but which exists in the state in small numbers and has been determined by the N.C. Natural Heritage Program to need monitoring. (This is a N.C. Natural Heritage Program designation.) Significantly Rare species include “peripheral” species, whereby North Carolina lies at the periphery of the species’ range (such as Hermit Thrush). The designation also includes marine and estuarine fishes identified as “Vulnerable” by the N.C. State Museum of Biological Sciences (Ross et al., 1988, Endangered, Threatened, and Rare Fauna of North Carolina. Part II. A Reevaluation of the Marine and Estuarine Fishes).

(D) - The species is disjunct to NC from a main range in a different part of the country or world.

(L) - The range of the species is limited to North Carolina and adjacent states (endemic or near endemic). These are species which may have 20-50 populations in North Carolina, but fewer than 50 populations rangewide. The preponderance of their distribution is in North Carolina and their fate depends largely on conservation here. Also included are some species with 20-100 populations in North Carolina, if they also have only 50-100 populations rangewide and declining.

(P) - The species is at the periphery of its range in NC. These species are generally more common somewhere else in their ranges, occurring in North Carolina peripherally to their main ranges, mostly in habitats which are unusual in North Carolina.

(O) - The range of the species is sporadic or cannot be described by the other Significantly Rare categories.

(T) - These species are rare throughout their ranges (fewer than 100 populations total).

(S/A) - The Endangered Species Act authorizes the treatment of a species (subspecies or population segment) as threatened even though it is not otherwise listed as threatened if: (a) The species so closely resembles in appearance a threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species; (b) the effect of this substantial difficulty is an additional threat to a threatened species; and (c) such treatment of an unlisted species will substantially facilitate the enforcement and further the policy of the Act. The Bog Turtle (southern population) has this designation due to similarity of appearance to Bog Turtles in the threatened northern population.

## Public Conservation Land

The basin contains significant public lands, both in terms of area and ecological value. The National Park Service manages Great Smoky Mountains National Park and the Blue Ridge Parkway, both of which have substantial acreage in the French Broad River basin, and the Carl Sandburg Home National Historic Site. The US Forest Service manages the Pisgah National Forest, which include the 7,500-acre Middle Prong and 18,600-acre Shining Rock Wilderness Areas. State-owned lands include the DFR's 10,350-acre DuPont State Forest, which is an area very popular with naturalists and recreational users. The DPR manages the 1,662-acre Mount Mitchell State Park, and the WRC manages the 3,307-acre Cold Mountain Game Land. Two other state agencies, the Department of Transportation and the Plant Conservation Program (within the Department of Agriculture), have been working to preserve wetlands in the basin, such as Southern Appalachian bogs. The Plant Conservation Program owns portions of Bat Fork Bog and Ochlawaha Bog, while DOT has been working on Franklin Bog, Mud Creek and other sites.

Key partners in some of these and future protection efforts are private, nonprofit land trusts, such as the Southern Appalachian Highlands Conservancy, the Carolina Mountain Land Conservancy, and The Nature Conservancy. Although not shown on the map, these organizations have protected significant areas in the basin. A good example of the value of conservation easements in protecting water quality is the Asheville Watershed project in which the Conservation Trust for North Carolina helped the City protect its water supply in perpetuity. The American Farmland Trust has also helped protect the Big Tom Wilson Preserve, which is an area of 8,517 acres adjacent to Mount Mitchell State Park and encompasses the upper part of the Cane River watershed.

Land trusts may also purchase and manage land as nature preserves. The Nature Conservancy owns and manages much of McClure's Bog and the Southern Appalachian Highlands Conservancy owns multiple preserves in the Roan Mountain area. These organizations work with landowners in a number of ways to protect important natural areas, working lands (including farms and forests), and open space. Thirteen land conservancies in western North Carolina formed the coalition Blue Ridge Forever with the five-year goal of protecting an additional 50,000 acres. Many of their priority sites are within the French Broad River basin.

## Prioritizing Areas in Need of Conservation

When selecting areas to purchase for conservation, both State and non-governmental organizations are encouraged to select land that has significant natural heritage areas and protects water quality. The NHP has developed a map viewer that prioritizes the conservation value of land based on biodiversity and habitat called the *One NC Naturally Conservation Planning Tool*. It also shows which lands are currently protected, which helps to identify where the need for conservation is the greatest.