Blue Ridge

Ecoregional Overview

The Blue Ridge ecoregion of Georgia covers approximately 1,694,412 acres. This total includes approximately 659,894 acres in conservation ownership. Georgia DNR manages 19,960 acres owned in fee simple by the State of Georgia and an additional 34,620 acres in leases or management agreements. Most of the conservation land (612,954 acres) in the region is owned by the federal government and managed by the USDA Forest Service. Other federal land managers include the Department of Defense (8,605 acres) and the Tennessee Valley Authority (5,066 acres). This ecoregion has a higher percentage of land in conservation use (39%) than all other ecoregions combined.

Landforms of the Blue Ridge range from narrow ridges to hilly plateaus to more massive mountainous areas with high peaks. The mostly forested slopes, high-gradient, cool, clear streams, and rugged terrain occur on a mix of igneous, metamorphic, and sedimentary geology. High peaks in this region may have annual precipitation of over 70 inches. The southern Blue Ridge is one of the richest centers of biodiversity in North America. Characteristic vegetation includes northern hardwood forest, submesic oak forests, heath thickets, shrub balds, hemlock-hardwood-white pine forests, cove hardwood forests, and mountain bogs. The three subdivisions of the Blue Ridge ecoregion in Georgia are the Southern Crystalline Ridges and Mountains, the Southern Metasedimentary Mountains, and the Broad Basins.

The Southern Crystalline Ridges and Mountains include the highest and wettest mountains in Georgia. These occur primarily on Precambrian igneous and metamorphic rocks. The common crystalline rock types include gneiss, schist, and quartzite. Soils are well-drained, acidic, and loamy. Mafic and ultramafic rocks also occur, contributing to circumneutral soils. Elevations of this rough, dissected region range from approximately 1800 feet to over 4000 feet; Brasstown Bald, the highest point in Georgia is 4,784 feet above mean sea level. Although there are a few small areas of pasture, orchards, and other clearings, this region is mostly forested.

The Southern Metasedimentary Mountains contain rocks that are generally not as strongly metamorphosed as those in the Southern Crystalline Mountains. The geologic materials are mostly late Precambrian and include slate, conglomerate, phyllite, metagraywacke, metasiltstone, metasandstone, and quartzite, with some schist and gneiss. Although the highest peaks are lower than in the preceding region, there are some isolated rugged mountains, such as the Cohuttas, Rich Mountain, and Fort Mountain.

The Broad Basins region is drier, and has lower elevations and less relief than the two preceding regions. Soils in this region are generally deep, well-drained, and loamy to clayey. Although this rolling foothills region is mostly forested, it has more pasture than adjacent regions as well as areas of row crops and truck crops on terraces and floodplains. Much of the pasture and corn crops support local cattle, hog, or poultry operations.

The predominant land cover types in the Blue Ridge ecoregion are deciduous/mixed forest and evergreen forest (Kramer and Elliott, 2004). An analysis of land use changes from 1974 to 1998 based on satellite imagery indicate the following general trends:

- A decrease in row crop/pasture (from 7.31% of total land cover to 6.66%)
- An increase in high-intensity and low-intensity urban (from 1.26% of total land cover to 4.81%)
- An increase in clearcut/sparse vegetation (from 1.20% of total land cover to 3.16%)
- A decrease in evergreen forest (from 17.25% of total land cover to 12.12%)
- A very slight increase in deciduous/mixed forest (from 71.25% of total land cover to 71.69%)

These trends indicate a slight decline in the total acreage devoted to active agricultural uses, a significant increase in residential and commercial development, an increase in disturbance related habitats (probably representing harvest or loss of pine-dominated stands) and essentially no change in the predominant land cover type, deciduous/mixed forest.

<u>High Priority Species and Habitats</u>

The technical teams identified 67 high priority animal species in the Blue Ridge ecoregion. These included 7 birds, 11 mammals, 3 reptiles, 8 amphibians, 27 fish, and 11 aquatic arthropods. These species are listed in Table 3, with information on global and state rarity ranks, protected status (if any) under federal or state law, and habitat and range in Georgia. In addition, 73 species of high priority plants were identified for the Blue Ridge. These are listed in Table 4.

High priority habitats for the Blue Ridge ecoregion are described below:

1. Boulderfield Forests
High elevation mesic hardwood forest; dominated by broadleaf deciduous trees, occupying north-facing areas with angular rocks or blocks of rock and little visible soil. Includes rich flora with northern affinities. Typically very mesic, with trees such as yellow buckeye, sweet birch, yellow birch, rosebay rhododendron. A rare community of the Blue Ridge; only a few examples are known.

2. Canebrakes
Thickets of native river cane found along rivers and creeks under sparse to full tree cover. Canebrakes represent important wildlife habitat for a variety of neotropical birds and insects. These habitats require fire or other form of periodic disturbance for maintenance. Most examples in this ecoregion are small and fire-suppressed.

3. Caves, Rock Shelters, Talus Slopes
These habitats share characteristics, such as a bedrock component with a variety of microhabitats that provide cover for priority animal species. These habitats are usually

embedded in a larger matrix of forest habitats. The Blue Ridge contains relatively few caves; these are typically fracture-type caves rather than solution caves. Rock shelters can be found under cliffs (vertical exposures of rock). Talus slopes are accumulations of rock beneath cliffs and steep slopes.

4. Floodplain Hardwood Forests
Forested wetlands characterized by a diverse association of deciduous hardwood trees, including both montane and low-elevation species. Generally lacking in the more flood-adapted oaks and hickories prevalent in Piedmont bottomland hardwood forests. Many of these floodplain forests were converted to agricultural uses early in the history of settlement of this region.

5. Hemlock-Hardwood-White Pine Forests
Mesic and submesic forests dominated by a mixed canopy of hardwoods and hemlock and/or white pine. Hemlock forests are typically found along small to medium streams, in sheltered valleys and ravines. Thickets of rhododendron and mountain laurel frequently form a dense understory, which is important for many neotropical migratory birds. White pine may share dominance with oak-dominated forests in low- to mid-elevation slopes and sheltered low ridges. A serious threat to this forest type is the hemlock wooly adelgid, which is spreading from east to west across the region. A rare subtype of this forest type containing Carolina hemlock is found in scattered locations in the lower Blue Ridge.

6. High-Elevation Early Successional Habitats
Includes a variety of vegetation types found at high elevations that are maintained by periodic natural or anthropogenic disturbance. Many high priority species are dependent on this habitat type, including the golden-winged warbler, Appalachian Bewick's wren, star-nosed mole, pygmy shrew, and fringed gentian.

7. High Elevation Forested Heath Thickets
High elevation habitats characterized by dense thickets of ericaceous shrubs under an open canopy of hardwood trees. Herbaceous layer is sparse to patchy. Typical shrubs include huckleberry, mountain laurel, and rosebay rhododendron.

8. High Elevation Rocky Summits and Shrub Balds
These are small patch habitats typically found only on the highest peaks of the Blue Ridge in association with northern hardwood forest. Characterized by a mosaic of exposed rock and patches of shrub or herb-dominated vegetation. Trees are mostly dwarfed northern red oak. Shrubs may include Catawba rhododendron, mountain laurel, huckleberry, mountain ash, viburnum, and hawthorn.

9. Low Elevation Seepy Thickets and Wet Woods
Seasonally inundated or spring-fed wetland habitats. Thickets are dominated by a variety of shrubs. Includes forested habitats along seepage slopes and at the edge of mountain bogs, some of which are maintained by the actions of beaver.

10. Medium to Large Rivers
Moderate to high gradient rivers with cold, clear riffles, pools, and runs. Substrates may include boulders, bedrock, gravel, and pebbles. Many of these rivers traverse steep gorges. These aquatic habitats are low in productivity compared to streams of the Southwestern Appalachians/Ridge & Valley.

11. Mixed Pine-Hardwood Forests
Mesic to submesic forests of hardwoods and pines, typically at middle to low elevations over a broad range of topographic conditions. A large patch habitat that comprises a major forest type of the Blue Ridge. Dominants may include yellow-poplar, sweetgum, various oaks, and loblolly, white, and/or shortleaf pine.

12. Moist Cliff Faces and Spray Cliffs
Vertical to gently sloping rock faces located adjacent to waterfalls or seepage zones. These are wetlands dominated by mosses, liverworts, vascular herbs, and sparse shrubs or scrubby trees adapted to thin soils and high humidity. These small patch habitats represent unusually stable environments, where temperatures are moderated by the constant spray or seepage. Include many bryophytes and ferns representing disjunct occurrences from tropical regions as well as Southern Appalachian endemics.

13. Mountain Bogs and Wet Meadows
A mosaic of wetland communities usually dominated by shrubs or emergent herbs, with scattered trees. May occur as elongate bands along stream valleys, or in much smaller and more compact patches on flats or slopes. Includes wetlands maintained by beaver activity as well as small, sheltered seepage areas along the headwaters of mountain creeks.

14. Northern Hardwood Forests
High elevation mesic forests found in upper coves, flats and slopes with northerly aspects, usually at elevations above 3,500 ft. Dominant canopy species include American beech, yellow birch, sugar maple, and yellow buckeye, with white basswood, northern red oak, white ash, and black cherry also present. These forests are subject to broad scale disturbances such as ice storms. Old growth examples are rare and usually restricted to steeply sloped, inaccessible areas.

15. Oak Forest and Woodlands
This vegetation type includes a wide variety of upland forests dominated by Appalachian oaks. Composition and complexity of oak forests vary with elevation, slope and moisture. In more mesic sites, canopy dominants may include red oak, white oak, and black oak, along with hickories and mesophytic hardwoods. Canopy dominants of more xeric sites may include mountain chestnut oak, scarlet oak, southern red oak, and northern red oak. Also includes subxeric or xeric oak woodlands found on ridges and upper slopes at high elevations. These oak-dominated forests and woodlands represent the most extensive natural vegetation type of the Blue Ridge.

16. Pine-Oak Woodlands and Forest
Relatively open subxeric forest to xeric woodland, typically dominated by shortleaf pine, pitch pine, Virginia pine, and post and blackjack oaks, often with a diverse grass and shrub layer. A rare subtype is found on serpentine soils. Pitch pine, Virginia pine, red maple and post oak are the dominant canopy trees in this rare community; understory trees of sourwood, dogwood and sassafras are usually thinly scattered and shrubs are sparse to dense.

17. Rich Mesic Hardwood Forests (Cove Hardwoods)
The mixed mesophytic hardwood forests of the Southern Appalachians are the most biologically diverse habitats in the United States. Variations of this forest type can be found in the Blue Ridge at elevations from 1,000 to 3,800 ft. They are typically found in mesic sites on concave landforms and ravines, or on protected north and east-facing slopes at low elevations. A diverse mixture of mesophytic trees dominates the canopy, including yellow poplar, white basswood, sugar maple, yellow and sweet birch, cucumber magnolia, yellow buckeye, black cherry, eastern hemlock, white ash, blackgum, American beech, red maple, and various oaks and hickories.

18. Rocky Bluffs and Streambanks
Plant composition of these rocky streamside habitats is variable, depending on stream size, amount of rock, and extent of flooding. These periodically scoured rocky habitats typically support few trees and sparse to moderate shrubs (sometimes thickets). A diverse stratum of light-loving herbs may be present.

19. Springs and Spring Runs; Gravelly Seeps
Springs are highly localized groundwater expressions. The waters of springs and associated habitats can be highly variable, depending on hydrology (hydroperiod and volume) and edaphic factors. These cool clean waters provide important habitat to a number of animal species, particularly salamanders.

20. Streams
Cold, clear, high gradient streams typically containing riffles, plunge-pools, cascades, and waterfalls. Substrata dominated by bedrock and boulders, but sand and gravel may also be present in depositional areas. These streams have low productivity and aquatic vegetation is rarely present.

21. Xeric Pine Woodlands
A heterogeneous group of xeric pine-dominated woodlands found on ridges and steep slopes with southerly aspects, knobs, and low-elevation peaks. Below 2,400 ft. shortleaf pine is a dominant, with Virginia pine a common associate. From 2,400 to 2,800 ft. on the driest ridges pitch pine dominates. Above 2,800 ft. on slopes and ridges, Table Mountain pine dominates. All of these habitats require periodic fire for maintenance.

Problems Affecting Wildlife Diversity

One of the primary factors impacting habitats and species in the Blue Ridge region is the rapid pace of residential and commercial development along major highways and on the outskirts of metropolitan areas. Much of this development is occurring as a result of an influx of people from other areas of the state as well as immigrants from other states. New industrial and commercial sites have been developed along recently improved highways, including Georgia Highways 515 and U.S. Highways 19, 76, 129, and 441, and 575. Metropolitan areas experiencing significant growth in this region include Clayton, Jasper, Dawsonville, and Blue Ridge.

In the Blue Ridge, valleys and river bottoms have been employed for a wide variety of agricultural uses, including row crops, pasture, and hay fields. In some watersheds vegetated stream buffers are too narrow to provide adequate erosion control, and in some areas livestock have unrestricted access to streams. These practices result in a general degradation of water quality and habitat for aquatic species. Expanding vegetated stream buffers and restricting livestock access to streams would provide significant benefits to imperiled aquatic species.

Conversion of upland hardwood and pine-hardwood forests to pine plantations has also resulted in impacts to wildlife diversity. Specific problems associated with this forest conversion include loss of vegetative structure and nesting sites, decline in hard and soft mast production, loss of understory and groundcover diversity, and physical disturbance of habitat for organisms found in leaf litter or soil.

Fire suppression is also a significant problem in this region. Extension of residential and commercial development from urban centers into surrounding suburbs has resulted in many fire-dependent habitats being surrounded by highways, subdivisions, or retail centers. Concerns about smoke management, air quality, and damage to structures make it difficult to implement prescribed burn plans for some of these important habitats. Throughout the region, a lack of fire has resulted in the decline in the extent and quality of habitats such as canebrakes, oak woodlands, and table mountain pine woodlands. Difficulties in implementing prescribed fire programs in the interface between residential and conservation lands present obstacles for restoration of these important habitats.

Invasive/alien species pose significant problems to habitats in this region. Feral hogs are a particularly noxious problem, due to their fecundity and indiscriminant use of habitats. Exotic plant species of concern include Nepalese browntop, Chinese privet, Japanese honeysuckle, oriental bittersweet, royal paulownia, kudzu, and autumn olive. A particularly important exotic forest pest is the hemlock wooly adelgid, which has invaded the Blue Ridge of Georgia, sweeping from east to west and causing significant losses of eastern hemlock. The hemlock wooly adelgid also poses a direct threat to the few populations of Carolina hemlock. In addition to impacts on forest communities, this pest threatens adjacent stream communities by causing loss of streamside vegetation. The USDA Forest Service is currently implementing various control measures against this invasive organism.

For some high priority species and habitats, unmanaged recreational use represents a serious problem. High levels of use by rock climbers and hikers may threaten habitats such as high elevation summits and spray cliffs/gorge walls. Similarly, exploration by unethical or inexperienced cavers can result in significant impacts to cave formations and species such as the eastern small-footed myotis. Indiscriminant use of all-terrain vehicles (ATVs) and other vehicles in or adjacent to streams or wetlands or on steep side slopes can result in significant impacts to aquatic habitats.

Construction of dams or other structures altering stream flow represents another significant problem for aquatic species in this region. These impacts, from impoundments such as Rabun Lake, Hiawassee Lake, and Lake Seed, include impaired water quality, barriers to migration, and isolation of subpopulations of aquatic species.

Incompatible road and utility corridor management represent problems for some high priority plants such fringed gentian, large-flowered skullcap, persistent trillium, and Carolina hemlock. For these species, use of herbicides and other vegetation management tools should be planned and implemented in a way that minimizes impacts to rare plant populations occurring in the road right-of-way or utility corridor.

High Priority Sites and Landscape Features

The current assessment and previous conservation planning efforts have identified a number of important sites and landscape features in this region of the state. A recent assessment of the Blue Ridge ecoregion conducted by The Nature Conservancy in cooperation with state natural heritage programs in Georgia, Tennessee, North Carolina, South Carolina, and Virginia identified 33 high priority conservation areas in Georgia representing approximately 149,300 acres (The Nature Conservancy, 2000). The following are some of the most important sites and landscape features that have been identified in the Blue Ridge ecoregion.

Amicalola Creek Watershed/Dawson Forest WMA

This site contains a number of rare species, including the Etowah darter (*Etheostoma etowahae*), holiday darter (*Etheostoma brevirostrum*) and eastern turkeybeard (*Xerophyllum asphodeloides*). Much of the immediate Amicalola Creek corridor is protected by state ownership (Dawson Forest WMA), but residential development is adversely impacting terrestrial and aquatic habitats in the watershed. This site lies on the border of the Blue Ridge and Piedmont ecoregions. A portion of Amicalola Creek has been proposed for study as a potential State Scenic River.

Blood Mountain/Coosa Bald/Sosebee Cove

This 3,200-acre site, found within the Chattahoochee National Forest, includes important examples of shrub bald, northern hardwood forest, and boulderfield forest habitats. These high-elevation habitats are rare in Georgia, and are recognized as important habitats in the Chattahoochee-Oconee National Forest Plan. Other examples of priority

high-elevation habitats can be found at Tray Mountain, Brasstown Bald, and Rabun Bald. Perhaps the most significant long-term threat to these habitats is global warming.

Chattooga/Highlands Plateau

This l19,600 acre conservation landscape spans the upper Chattooga watershed in Georgia and South Carolina and the Highlands Plateau region in North Carolina. In Georgia, this area includes Cedar Cliffs, Buzzard Rock Cliffs, and the Ellicott Rock Wilderness Area. Numerous rare species and significant natural communities are contained within this landscape unit. While most of the area in Georgia is protected by special designation within the Chattahoochee National Forest, habitats in privately owned tracts within this area are being impacted by residential development. Another threat to this and many other conservation sites in the Blue Ridge is the hemlock wooly adelgid.

Etowah River Watershed

The Etowah River has its headwaters in the Blue Ridge Mountains. The upper portion of the Etowah River watershed provides habitat for numerous rare species, including a dozen species of imperiled fish and freshwater mussels. Several rare plants have also been documented from the Etowah River corridor. This watershed is threatened by residential and industrial development. A Habitat Conservation Plan is being developed to provide protection to the watershed and its imperiled species. In addition, a portion of the Etowah River has been proposed for study as a potential State Scenic River.

Fort Mountain

This 2,500-acre site encompasses the western edge of the Cohutta Mountains, and includes a number of important habitats including cove hardwood forest, mixed pine-hardwood forest, rock shelters, xeric pine-oak woodlands, and rocky bluffs/streambanks. Abandoned mines in the area provide suitable habitat for several species of bats. Most of this site is in state or federal ownership.

Hiawassee Seeps

This site, which straddles the Georgia-North Carolina border, includes important seep/wet meadow habitats that support the green pitcherplant (*Sarracenia oreophila*) and other bog species. It is threatened by residential development and associated hydrologic alterations in the landscape. While this is the only extant population of green pitcherplant in Georgia, similar low elevation seeps and bogs are found in scattered locations in the Hiawassee River drainage and elsewhere in the Blue Ridge of Georgia.

Tallulah Gorge

Tallulah Gorge is a deep (600 ft.), narrow quartzitic rock gorge with sheer, almost vertical walls. The Tallulah River has been dammed to create a series of reservoirs, but much of the gorge and surrounding land is in relatively undisturbed condition. Important natural communities in this area include mesic cove hardwood forests, xeric pine-oak forests, and quartzitic cliffs. Rare species known from this area include *Trillium*

persistens, Platanthera integrilabia, Tsuga caroliniana, Lindernia saxicola, and *Aneides aeneus*. Much of the gorge is now managed as a State Park.

Toms Swamp

This site on the Chattahoochee National Forest includes mountain bog habitat containing mountain purple pitcherplant (*Sarracenia purpurea*) and Carolina bog-myrtle (*Kalmia carolina*). Habitat at this site has been enhanced through cooperative efforts of the U.S. Forest, Georgia Department of Natural Resources, Atlanta Botanical Gardens, and other members of the Georgia Plant Conservation Association.

Upper Tallulah River Watershed

The headwaters of the Tallulah River contain several important habitats including hemlock-white pine-hardwood forest, rich mesic hardwood forests, and mountain streams and rivers. High priority species known from the sheltered coves and valleys of the upper Tallulah River watershed include water shrew (*Sorex palustris*), hairy-tailed mole (*Parascalops breweri*), and red squirrel (*Tamiasciurus hudsonicus*).

Woody Lake Bog

This small privately owned conservation site provides habitat for the state- and federally-protected bog turtle (*Glyptemys muhlenbergii*). This and other mountain bog/wet meadow habitats in the Blue Ridge are threatened by surrounding residential or commercial developments, hydrologic alterations, and encroachment by woody vegetation. Mountain bogs and wet meadows require periodic management. Under conditions prevalent in earlier times these habitats would be maintained by a combination of fire and the action of beaver.

<u>High Priority Waters</u>

Figure 10 shows the high priority streams and watersheds identified by the CWCS Fishes and Freshwater Invertebrates team for this ecoregion. These streams were chosen on the basis of documented occurrences of high priority aquatic species, high water quality rankings based on Index of Biotic Integrity scores, and designation as exemplary streams in a previous study by The Nature Conservancy. Examples of high priority stream in the Blue Ridge include Sumac Creek, Holly Creek, Mountaintown Creek, Cartecay River, Talking Rock Creek, Toccoa River, Amicalola Creek, Long Swamp Creek, Shoal Creek, Cochrans Creek, Chestatee Creek, Brasstown Creek, Chattahoochee River, Etowah River, Chattooga River, and Little Tennessee River. Refer to Table 1 of the Fishes and Freshwater Invertebrates Technical Team report in Appendix B for details on the factors that contribute to the significance of individual streams.

Conservation Goals

- Maintain known viable populations of all high priority species and functional examples of all high priority habitats through land protection, incentive-based habitat management programs on private lands, and habitat restoration and management on public lands.
- Increase public awareness of high priority species and habitats by developing educational messages and lesson plans for use in environmental education facilities, local schools, and other facilities.
- Encourage restoration of important wildlife habitats through reintroduction of prescribed fire, hydrologic restoration, and revegetation efforts.
- Combat the spread of invasive/noxious species in high priority natural habitats by identifying problem areas, providing technical and financial assistance, developing specific educational messages, and managing exotic species populations on public lands.
- Minimize impacts from residential and commercial development on high priority species and habitats by providing input on environmental assessments
- Continue efforts to recover federally listed species by implementation of recovery plans and restore populations of other high priority species.

Strategies and Partnerships to Achieve Conservation Goals

- Support efforts by the U.S. Forest Service to implement prescribed burns to restore high priority habitats, including oak woodlands, table mountain pine stands, and shortleaf pine-post oak woodlands.
- Provide fire training and equipment to WRD and PRHS staff and encourage participation in interagency fire teams.
- Work with NRCS staff to identify high priority habitats and sites for implementation of habitat enhancement/restoration projects through Farm Bill programs (e.g., restoration of canebrakes, xeric pine woodlands, pine-oak woodlands/forest, and oak forest/woodlands)
- Prioritize control efforts for exotic species on public lands and provide technical assistance to private landowners to discourage use of invasive exotics
- Use state parks and other public lands to showcase habitat restoration efforts (e.g., control of exotic species at Amicalola Falls State Park, reduction of deer herd at Red Top Mountain State Park).
- Work with GDOT and local governments to minimize direct impacts to high priority species and habitats from road development projects
- Work with Georgia Power and private landowners to identify and conserve populations of rare species in and adjacent to utility corridors
- Develop educational materials on high priority species and habitats in the ecoregion and provide these to environmental educators at WRD facilities (e.g., Smithgall-Dukes Creek Conservation Area) and other facilities
- Utilize Landowner Incentive Program (LIP) funds to implement programs to establish or expand vegetated stream buffers along high priority streams.

- Work with the Georgia Land Trust Service Center to apply monies from the Georgia Wetlands Trust Fund to provide protection for high priority wetlands and stream corridors.
- Share data on rare species and significant natural communities with staff of the Chattahoochee National Forest and provide input into forest management plans and biological evaluations.
- Provide enforcement to limit illegal ATV use. Work with ATV groups and ATV manufacturers to promote responsible use.
- Continue efforts to monitor ginseng trade through the Ginseng Management Program, and investigate illegal trade in nongame plants and animals.

Highest Priority Conservation Actions

Highest priority conservation actions (actions ranked "Very High" or "High") identified by the technical teams, Steering Committee, and other stakeholders specifically for this ecoregion include the following (see Appendix L for details):

- Conduct surveys of potential habitat for bog turtle and associated species, and evaluate this methodology for use in other habitats. Use GAP landcover data, GIS analysis, and other resources to develop predictive models that will help researchers locate mountain bog habitats for conservation.
- Continue and expand monitoring of rare species throughout the Coosa Basin and evaluate this approach for use in other basins. Participate in TNC's "Measures of Success" for the Etowah River. Continue DNR's Stream Team surveys throughout the Coosa Basin. Complete and implement the Etowah River Habitat Conservation Plan.
- Restore mountain bog habitats. Restore or enhance populations of rare bog plants. Continue bog turtle headstart and population enhancement efforts and use non-releasable turtles for education/outreach efforts.

For highest priority conservation actions of a statewide scope, see Section V.

OAK WOODLAND RESTORATION ON CHATTAHOOCHEE-OCONEE NATIONAL FORESTS

Restoring oak woodlands is the largest single restoration acreage objective of the Land and Resource Management Plan for Chattahoochee-Oconee National Forests. The 2004 revised plan has an objective to restore 10,000 acres of open oak woodland on the Chattahoochee and 1,000 acres on the Oconee within the first 10 years of Plan implementation. Other objectives call for additional acreage for restoration of pine, pine-oak, or oak-pine forests that share ecological characteristics with oak woodland.

Bartram (1791) and Brewster (1885) described extensive open oak and pine woodlands in their travels through the southern Appalachians, which supported a unique assemblage of plant and wildlife species. The presence of significant grass and herbaceous cover in these forests has been documented for the past 10,000 years in the pollen record (Delcourt and Delcourt 1997). Some of the wildlife species, such as northern bobwhite and golden-winged warbler, that have been recorded as common in these forest types (Brewster 1885, 1886) have decline significantly in the region (Sauer et al. 2001). Since the end of annual woods burning and the end of free-ranging herbivores in the late 1920's to early 1930's, there has been a precipitous decline in this habitat type as forest succession first closed the canopy then provided conditions for the development of dense shade tolerant but fire intolerant mid-story. Current forests are typically densely stocked, closed-canopied stands with little or no herbaceous understories.

Woodland restoration is envisioned as recreating complexes of open habitat with tree densities varying irregularly from grassland to woodland condition, often grading into surrounding open forest conditions. This irregular density is meant to mimic historical conditions created and maintained by variation in fire intensities due to slope, aspect, landform, and soil type. In general, the most open parts of these complexes would occur on drier upper slopes and ridges and on south and west aspects. Using a single upslope fire run as a 'template,' intensity is lowest at the base of the slope, builds rapidly with progress upslope, and reaches its peak at the 'shoulder' of the ridgeline at the top of the slope. Similarly, top kill of woody vegetation shows a gradient with larger stems being killed as one ascends the slope. Ridgecrests themselves are variable in intensity with greatest intensity occurring on narrow crests. Fire intensity drops off rapidly with increasing distance away from the point of maximum intensity, changing into a backing fire of relatively low intensity on the lee slopes. Where fires burned at large scales of thousands to tens of thousands of acres, a mosaic of conditions resulting from variable fire behavior resulted.

There are four primary treatment types needed for woodland restoration: (1) thinning (reduction) of overstory canopy, (2) largely eliminating the midstory canopy, (3) reducing the sprouting of hardwood rootstocks, especially of the fire intolerant species, and (4) reduction in the litter and duff layer depth. This will involve a combination of selective timber removal, prescribed fire, and the use of herbicides to control vigorous re-sprouting of fire intolerant hardwoods.

The Chattahoochee-Oconee National Forests is currently developing several large-scale oak woodland projects with a goal of restoring this important community to the landscape.

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Table 3. Blue Ridge High Priority Animals (67 Records)

Group	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Habitat in Georgia	Range in Georgia
AA	Acroneuria petersi	Etowah stonefly	G3	S3			Known in GA only from adults, Etowah River near Ball Ground	Known only from the Etowah River near Ball Ground
AA	Beloneuria Georgiana	Georgia beloneurian stonefly	G2	S2			Apparently known in GA from single adult record (holotype) in GA	Known in GA from Rabun Co.
AA	Cambarus chaugaensis	Chauga River crayfish	G2	S1			Lotic habitats with rocky substrates	Savannah drainage
AA	Cambarus coosawattae	A crayfish	G1	S1			Riffle habitats in the Coosawattee River system	Coosawatee catchment; Gilmer County
AA	Cambarus fasciatus	A crayfish	G2	S2			Lotic habitats under rocks in flowing water	Lumpkin, Dawson, Pickens, Cherokee, Bartow, & Polk Counties in Etowah River
AA	Cambarus georgiae	Little Tennessee crayfish	G1	S1			Flowing parts of medium size rivers with sandy-clay substrate	Few localities in Little Tennessee River system
AA	Cambarus parrishi	Rock crayfish	G1	S1			Rocky areas between riffles in clear headwater streams	Headwaters of Hiwassee River system
AA	Cambarus speciosus	A crayfish	G2	S2			Medium-sized streams with clear water and moderate to swift current with rock-littered substrate	Murray, Gilmer, and Pickens Counties
AA	Heterocloeon berneri	Berner's two-winged mayfly	G1	S1			Small to large fast flowing streams	Exact range uncertain
AA	Ophiogomphus edmundo	Edmund's snaketail	G1G2	S1	LE		Clear, moderately flowing streams and rivers	Species range is southern Appalachians only, known from GA, TN and NC
AA	Remenus duffieldi	Georgia springfly	G2	S2			Small to mid-sized montane Appalachian streams in GA	Reported only from small streams in Towns, Union, and White Counties, GA
AM	Aneides aeneus	Green salamander	G3G4	S2		R	Moist rock crevices; new information suggests Aneides also frequents canopies of trees; within hardwood forests	Restricted distribution in GA; CU and BR
AM	Cryptobranchus alleganiensis	Hellbender	G3G4	S2*		R	Clear, cool, mountain streams and rivers with large rocky substrates	TN drainage steams in BR, RV, CU
AM	Desmognathus aeneus	Seepage salamander	G3G4	S3			Seepage areas within hardwood forested ravines	Primarily BR and RV, but also PD
AM	Desmognathus folkertsi	Dwarf blackbelly salamander	G1G3	S1			Rocky streams and seeps in montane hardwood forests	Nottely River system in Union Co., BR
AM	Plethodon metcalfi	Southern graycheek salamander	G3	S2*			Mesic, high elevational forests	Eastern BR
AM	Plethodon oconaluftee	Southern appalachian salamander	G3Q	S2*			Logs & rock crevices in mesic forests	BR; > 1500 ft in elevation
AM	Plethodon shermani	Red-legged salamander	G2	S1*			Mesic, high elevational forests	Towns Co. & possibly Rabun Co. in BR
AM	Pseudacris brachyphona	Mountain chorus frog	G5	S2*			Hardwood forests with fishless breeding pools	BR, RV, PD
BI	Catharus bicknelli	Bicknell's thrush	G4	S2			Wide variety of forest and scrub habitats	Only 6 confirmed records for GA: CP (coast) - 2 spring and 1 fall; PD - 3 fall
BI	Dendroica cerulean	Cerulean warbler	G4	S3?	SAR		Mature deciduous forest with gaps	BR for breeding; PD, CU, RV migration
BI	Dendroica kirtlandii	Kirtland's warbler	G1	S1	LE	E	Scrub habitats during spring and fall; may be associated with pines	Isolated reports could occur anywhere in the northern half of state or coast
BI	Haliaeetus leucocephalus	Bald eagle	G4	S2	(PS:LT,PDL)	E	Edges of lakes & large rivers; seacoasts	Primarily CP and reservoirs and rivers in PD, BR, RV
BI	Limnothlypis swainsonii	Swainson's warbler	G4	S3	SAR		Dense undergrowth with heavy litter (CP,M); canebrakes in swamps and river floodplains (CP)	Although found widespread, bulk of population restricted to river floodplains of CP and PD; small BR population

Group Codes: AA = aquatic arthropod; AM = amphibian; BI = bird; FI = fish; MA = mammal; MO = mollusk; RE = reptile

Table 3. Blue Ridge High Priority Animals (67 Records)

Group	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Habitat in Georgia	Range in Georgia
BI	Sphyrapicus varius	Appalachian yellow-bellied sapsucker	G5	S1	SAR	U	High-elevation hardwood forests, open with dead trees	BR above 3,000 feet; only records from Union and Rabun counties
BI	Vermivora chrysoptera	Golden-winged warbler	G4	S2	SAR		Mixture of seedling and sapling forest interspersed with herbaceous patches; open oak woodland	Fannin, Union, Rabun counties
FI	Cyprinella caerulea	Blue shiner	G2	S1	LT	E	Flowing runs and pools in streams with cool water and firm substrates	Current range is confined to upper Conasauge River system; historically known from Coosawattee and Etowah systems
FI	Erimystax insignis	Blotched chub	G3G4	S2		T	Medium to large clear streams in moderate current with substrate of gravel to cobble	Toccoa, Nottely, and Hiwassee River systems (Tennessee drainage)
FI	Etheostoma brevirostrum	Holiday darter	G2	S2		T	Small creeks to moderate sized rivers in gravel and bedrock pools	Four disjunct restricted populations: Con, Coosawattee, Etowah mainstem, Amicalola; range may be much smaller if new taxa recognized (all A's)
FI	Etheostoma chlorobranchium	Greenfin darter	G4	S1		T	Cool to cold high elevation creeks and rivers in swift current with boulder to bedrock substrate	No records in GNHP database or TVA Heritage data; Atlas shows 1 dot in NE corner of state (BR, Tennessee River System, Rabun Co.)
FI	Etheostoma etowahae	Etowah darter	G1	S1	LE		Small to medium-sized streams over cobble to gravel in areas of swift current	Main channel and tributaries of Etowah River upstream of Allatoona dam
FI	Etheostoma jordani	Greenbreast darter	G4	S2			Medium-sized creeks to rivers in riffle areas over gravel to bedrock substrate	Upper Coosa only
FI	Etheostoma rupestre	Rock darter	G4	S2			Swift rocky riffles often associated with attached vegetation such as Podostemum	Etowah and Conasauga
FI	Etheostoma scotti	Cherokee darter	G2	S2	LT	T	Small to medium-sized creeks with moderate current and rocky substrates	PAB; 3 ESUs: lower, middle, and upper Etowah (map from Freemans)
FI	Etheostoma sp. cf. E. rufilineatum	Undescribed redline darter	G1	S1			Swift rocky riffles	Upper Toccoa
FI	Etheostoma vulneratum	Wounded darter	G3	S1		E	Fast rocky riffles of small to medium rivers	Restricted to Toccoa River system (Tennessee drainage)
FI	Etheostoma zonale	Banded darter	G5	S1S2			Swift riffles in medium-sized rivers over large gravel, cobble, or boulder substrate	Toccoa and Chickamauaga systems likely only pops in GA; periphery of range
FI	Hybopsis amblops	Bigeye chub	G5	S2		R	Small to medium rivers over silty-sandy substrates in slow to moderate current	Many records in Chickamauga Cr. System; also known from Lookout, Nottely, and Hiwassee systems
FI	Hybopsis winchelli	Clear chub ("Etowah chub")	G5	S1			Generally in creeks and small to medium rivers over sand-silt bottom, usually in pools adjacent to riffle areas. Tends to occupy smaller streams in east than in west.	Narrow portion of the Etowah
FI	Macrhybopsis sp. cf. aestivalis	Coosa chub		S2			Swift currents over gravel substrates	Mainstem upper Etowah, mainstem Conasauga
FI	Moxostoma carinatum	River redhorse	G4	S2		R	Swift waters of medium to large rivers	Oostanaula, Etowah below Allatoona, Conasauga, and Brasstown Cr of Hiwassee system

Group Codes: AA = aquatic arthropod; AM = amphibian; BI = bird; FI = fish; MA = mammal; MO = mollusk; RE = reptile

Table 3. Blue Ridge High Priority Animals (67 Records)

Group	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Habitat in Georgia	Range in Georgia
FI	Moxostoma sp. 2	Sicklefin redhorse	G2G3Q	S1			Pools, runs, and riffles of rivers and downstream portion of their major tribs (and into lower headwaters of Brasstown Cr)	5 miles of Brasstown Creek (Hiwassee System)
FI	Notropis hypsilepis	Highscale shiner	G3	S3		T	Flowing areas of small to large streams over sand or bedrock substrates	Primarily PD of Apalachicola (Flint and Chattahoochee); a few CP records from Apalachicola; also know from 1 tributary in BR of Savannah
FI	Notropis photogenis	Silver shiner	G5	S1		E	Large creeks to small rivers in riffles to flowing pools over firm substrates	Only current record (1996) is from Brasstown Cr (Hiwassee system); 1 record from Little Tennessee system (1966)
FI	Noturus sp. Cf munitus	Coosa madtom	G3	S1		E	Shoals and riffles of moderate to large streams and rivers	Mainstem of Etowah (upstream of Allatoona) and mainstem of Conasauga River
FI	Percina antesella	Amber darter	G1G2	S1	LE	E	Riffles & runs of medium-sized rivers	Primarily mainstem of Etowah and Conasauga; also known from Holly Cr. (Conasauga), Shoal Cr. (Etowah system) and Sharp Mountain Creek (Etowah system)
FI	Percina aurantiaca	Tangerine darter	G4	SH		T	Deep riffles and runs with boulders, cobble, or bedrock in large to moderate headwaters of Tennessee River	Only known from Toccoa River System
FI	Percina aurolineata	Goldline darter	G2	S1	LT	T	Shallow rocky riffles with swift current in medium-sized rivers	Coosawattee system above Carters, Talking Rock, one spm. Below Carters re-reg
FI	Percina lenticula	Freckled darter	G2	S1		E	Swift deep runs of main river channels probably over a rocky substrate	Primarily mainstem of Etowah and Conasauga; also known from Coahullah Cr. (Conasauga system)
FI	Percina sciera	Dusky darter	G5	S1S2		R	Large creeks and rivers in moderate current associated with woody debris, undercut banks, or vegetation	Listed for Lookout Creek, Chickamauga Creek, and Toccoa systems in protected animal book; only GNHP record is from Chattanooga Creek
FI	Percina sp. 9	Upland bridled darter	G1Q	S1			Runs and flowing pools of medium-sized rivers	Etowah, Talking Rock, Conasauga
FI	Percina squamata	Olive darter	G3	S1		T	High gradient upland rivers with large rocky substrate in moderate to swift current	Only population in Toccoa
FI	Phenacobius crassilabrum	Fatlips minnow	G3G4	S1		E	Riffle areas in small to medium rivers	Only known from Little Tennessee River system in Rabun Co.
MA	Condylura cristata	Star-nosed mole	G5	S2?			Moist meadows; woods; swamps	Known only from Charlton, Chatham, Clinch, Effingham, Jackson, and Union counties
MA	Corynorhinus rafinesquii	Rafinesque's big-eared bat	G3G4	S3?		R	Pine forests; hardwood forests; caves; abandoned buildings; bridges; bottomland hardwood forests and cypress-gum swamps	Range in state is disjunct--C.r.rafinesquii found in northern BR and C. r. macrotis found in lower CP. Not known from PD, but either subspecies might occur there.
MA	Mustela nivalis	Least weasel	G5	S1			Extreme northern Georgia, meadows, fields, brushy areas, open woods	Only Georgia specimen from north of Blairsville

Group Codes: AA = aquatic arthropod; AM = amphibian; BI = bird; FI = fish; MA = mammal; MO = mollusk; RE = reptile

Table 3. Blue Ridge High Priority Animals (67 Records)

Group	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Habitat in Georgia	Range in Georgia
MA	Myotis leibii	Eastern small-footed myotis	G3	S2?			Caves; mines; abandoned buildings, bridges, rock shelters in mountainous areas; high elevation talus fields	Known only from Rabun, Dade, and Union counties in Georgia
MA	Parascalops breweri	Hairy-tailed mole	G5	S1			Deciduous woodlands with thick humus; prefers well-drained light moist soil (sandy loams)	Known only from Rabun County
MA	Sorex cinereus	Masked shrew	G5	S2S3			High-elevation mesic forests; field edges; swamps; mountain bogs	Known from Rabun, Towns, White and Union counties. Species is widespread, but range barely reaches into NE GA. Has been found in the Cherokee NF in Polk County, TN in and around Big Frog Mtn, but efforts to collect one in the Cohuttas or Rich Mtn area have been unsuccessful.
MA	Sorex dispar	Long-tailed or rock shrew	G4	S1			Mountainous, forested areas (deciduous or evergreen) with boulderfields, cliffline breakdown, loose talus - may also occur in and along high-gradient mtn streams	Only known from one location--Rabun bald. Other areas of potentially suitable habitat present in a few other high elevation sites Probably more widespread in Blue Ridge off of high mtns along North Carolina line than we know or might be limited to Rabun
MA	Sorex palustris	Water shrew	G5	S1			Mountainous, along small cold streams with thick overhanging riparian growth	Only 1 record from extreme NE GA -- Rabun Co
MA	Sylvilagus obscurus	Appalachian cottontail	G4	S1S2			Heath (Vaccinium, Kalmia) thickets within high elevation forests	High elevation (>3000ft) shrub cover in Rabun, Towns, Union, and Fannin counties. Has been found at much lower elevations in AL and SC
MA	Synaptomys cooperi	Southern bog lemming	G5	S1			Bogs, marshes, meadows, and upland forests with thick humus layer	One record from Rabun Co near NC line
MA	Tamiasciurus hudsonicus	Red squirrel	G5	S3	(PS)		Northern hardwood - Cove hardwood - Hemlock forests	Fannin, Towns, Habersham, Rabun, and White counties in NE GA
RE	Eumeces anthracinus	Coal skink	G5	S2			Mesic forests; often near streams, springs or bogs	Very little known about range especially in CP
RE	Glyptemys muhlenbergii	Bog turtle	G3	S1	(LT,T(S/A))	T	Mountain bogs; wet meadows; edges of mountain streams	BR, Tennessee and Savannah drainages
RE	Pituophis melanoleucus melanoleucus	Northern pine snake	G4T4	S2			Dry pine or pine-hardwood forests	BR, PD, RV

Table 4. Blue Ridge High Priority Plants (73 Records)

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Habitat in Georgia	Range in Georgia
Acer spicatum	Mountain maple	G5	S2			High elevation boulder fields	BR
Agastache scrophulariifolia	Purple giant hyssop	G4	S1			Forested floodplains; river terraces	BR
Berberis Canadensis	American barberry	G3	S1			Cherty, thinly wooded slopes	BR, PD; few sites from Towns Co. sw. to Meriwether Co.
Buchnera Americana	American bluehearts	G5?	S1			Wet meadows; seasonally moist barrens and limestone glades	BR, CU, RV, UCP; only coastal plain site on Ft. Benning, Chattahoochee Co.
Carex biltmoreana	Biltmore sedge	G3	S1		T	High elevation ledges and rock faces	BR
Carex manhartii	Manhart's sedge	G3	S2S3		T	Cove hardwood forests; other mesic deciduous forests	BR
Carex misera	Wretched sedge	G3	S1		T	Grassy balds	BR
Carex purpurifera	Purple sedge	G4?	S3		T	Mesic hardwood forests over limestone	CU, RV, BR
Carex roanensis	Roan Mountain sedge	G2	S1			Boulderfields and exposed granite ledges	BR
Carex ruthii	Ruth's sedge	G3	S2S3			Montane wet meadows, seeps, gravel bars; often with Carex scabrata	BR (only?)
Cephaloziella obtusilobula	Roundleaf cephaloziella	GHQ	SH			Moist cliff faces	BR
Chelone cuthbertii	Cuthbert's turtlehead	G3	S1			Bogs and wet meadows	BR, Rabun Co.
Coreopsis latifolia	Broadleaf tickseed	G3	S1			Mature deciduous forests with open understory	BR
Cymophyllus fraserianus	Fraser's sedge	G4	S1		T	Mixed hardwood-hemlock forests along mountain streams	BR
Cypripedium acaule	Pink ladyslipper	G5	S4		U	Upland oak-hickory-pine forests; piney woods	CU, RV, PD, UCP
Cypripedium parviflorum var. parviflorum	Small-flowered yellow ladyslipper	G5	S3		U	Upland oak-hickory-pine forests; mixed hardwood forests	BR, RV, PD, possibly CU?
Cypripedium parviflorum var. pubescens	Large-flowered yellow ladyslipper	G5	S3		U	Upland oak-hickory-pine forests; mixed hardwood forests	BR, CU, PD, RV
Danthonia epilis	Bog oat-grass	G3?	S1?			Moist, grassy depressions on granite outcrops	PD, confirmed in Georgia only from granite outcrops
Diplophyllum andrewsii	Andrews' diplophyllum	G3	S1S2			Usually found near streams, as a pioneer on partly or strongly shaded (rarely quite sunny) open mineral soil, especially on loamy soil of roadside banks or on eroding banks along streams, more rarely on soil and th	BR
Frullania appalachiana	Appalachian frullania	G1?	SR			On tree trunks and decaying wood above 3800 ft.	BR, if present
Gentianopsis crinita	Fringed gentian	G5	S1		T	Grassy roadsides and old fields over circumneutral soils	BR, mostly around base of Brasstown Bald
Gymnoderma lineare	Rock gnome lichen	G2	S1	LE	E	Moist cliff faces	BR, Rabun Co.
Helianthus glaucophyllus	Whiteleaf sunflower	G3	S1			Moist, humic soils in full to light shade, at elevations usuallty above 2500 ft.	BR
Helianthus smithii	Smith's sunflower	G2Q	S1			Dry open woods and thickets	BR, PD
Helodium blandowii	Blandow's helodium	G5	SH			A calciphile found in wet habitats, in brushy thickets along streams, at roadsides at the edges of swamp forests, or in open fens.? Only GA collection by J.K. Small in 1893 from [some unspecified habitat at] Stone	PD, if report valid; Georgia out of normal range; perhaps a mixup, or possible cryptic undescribed taxon??
Helonias bullata	Swamp-pink	G3	S1	LT	T	Open swamps	BR, Rabun Co.

Table 4. Blue Ridge High Priority Plants (73 Records)

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Habitat in Georgia	Range in Georgia
Hydrastis Canadensis	Goldenseal	G4	S2		E	Rich woods in circumneutral soil	BR, CU, RV, PD with some sites now naturalized from original cultivated stands
Hymenophyllum tayloriae	Taylor's filmy fern	G1G2	S1			Wet ledges along the Chattooga River	BR, along Chattooga River, and perhaps Big Creek, Rabun Co.
Hypericum buckleii	Blue Ridge St.-John's-wort	G3	S1			High elevation rocky crevices	BR
Hypnum cupressiforme var. filiforme	Filiform cypress-moss	G5T?	S2?			Hanging as green threads from rocks or bark, perhaps above 3800 ft.	BR
Isotria medeoloides	Small whorled pogonia	G2	S2	LT	T	Mixed hardwood- pine forests with open understory; history of nearby heavy logging, homesite or road clearing activity	BR, widely scattered sites all east of the Cohuttas
Juglans cinerea	Butternut	G3G4	S1S2			Floodplain forests, cove hardwoods	RV, BR, PD (barely); known from a few isolated stands; mostly in mountains, southern stations disjunct on Sharp Top Mountain, Pickens Co.and south of C
Kalmia carolina	Carolina bog myrtle	G4	S1			Open swamps and wet meadows; mountain bogs and Atlantic white-cedar swamps	BR, UCP; less than 3 or 4 sites in mountains and Fall Line Sandhills
Leiophyllum buxifolium	Sand-myrtle	G4	S1			High altitude rocky ledges	BR, on single clifftop, Rabun Co.
Lejeunea blomquistii	Blomquist's lejeunea	G1G2	SH			Waterfall spray zones	BR
Lindernia saxicola	Rock false pimpernel	G1?Q	SH		E	Rocky streamsides, sometimes submerged	BR, formerly Tallulah Gorge area
Lysimachia fraseri	Fraser's loosestrife	G2	S1S2		R	Moist, open, bouldery gravel bars and streambanks; edges of sandstone and granite outcrops	CU, BR, PD, RV; widely scattered sites from Currahee Mountain, Stephens Co. To top of Pigeon Mountain, Walker Co.
Monotropsis odorata	Sweet pinesap	G3	S1			Upland forests	PD, BR; few reports from Fulton Co. northeastward to Rabun Co.
Oncophorus raui	Rau's oncophorus	G3	S2?			On damp or wet, acid rocks, mostly on cliffs and near waterfalls in the mountains.	BR
Panax quinquefolius	American ginseng	G3G4	S3			Mesic hardwood forests; cove hardwood forests	BR, RV, CU, PD, UCP; found, at least formerly, well into the coastal plain; now mostly in PD and across North Georgia
Panax trifolius	Dwarf ginseng	G5	S1			Mesic hardwood-coniferous forests	BR, PD
Pedicularis lanceolata	Swamp lousewort	G5	S1			Bogs and wet woods	BR
Plagiochila caduciloba	Brittle-lobed plagiochila	G2	S1?			Moist cliff faces	BR
Plagiochila floridana	Florida plagiochila	G2?	S1?			In beech-magnolia forests on the bark of Magnolia grandiflora; CP. May be present in mts., over damp, shaded ledges, with Trichomanes petersii and Lejeunea flava.	CP
Plagiochila sharpie	Sharp's plagiochila	G2G3	S1?			Moist cliff faces and spray zones; BR	BR
Plagiochila sullivantii	Sullivant's plagiochila	G2	SH			Seepy rock cliffs	BR, if present
Plagiomnium carolinianum	Carolina mnium	G3	S2?			Moist cliff faces	BR
Platantanthera flava var. herbiola	Pale green orchid	G4T4Q	S1?			Hardwood swamps	BR
Platanthera grandiflora	Large purple fringed-orchid	G5	S1			Wet thickets along, bouldery,; seepy streamsides above 2500 ft.	BR

Table 4. Blue Ridge High Priority Plants (73 Records)

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Habitat in Georgia	Range in Georgia
Platanthera integrilabia	Monkeyface orchid	G2G3	S1S2	C	T	Red maple-gum swamps; peaty seeps and streambanks with Parnassia asarifolia and Oxypolis rigidior	CU, BR, PD ; few sites from Tallulah Gorge to Cumberland Plateau, south to Carroll Co.
Platanthera peramoena	Purple fringeless orchid	G5	S1			Wet meadows, openings among bottomland hardwoods	BR
Platanthera peramoena	Purple fringeless orchid	G5	S1			Wet meadows, openings among bottomland hardwoods	BR
Platyhypnidium pringlei	Pringle's platyhypnidium	G2G3	S1			Seepy rock cliffs	BR
Sanguisorba canadensis	Canada burnet	G5	S1		T	Seepy meadows and thickets	BR, Rabun Co.
Sarracenia oreophila	Green pitcherplant	G2	S1	LE	E	Wet meadows; upland bogs	BR, Towns Co.; known historically from CU and UCP
Sarracenia purpurea ssp. venosa var. Montana	Mountain purple pitcherplant	G5T1T3	S1			Mountain bogs	BR, now found in only one site, extirpated from other known Georgia sites
Scutellaria serrata	Smooth skullcap	G4G5	S1			Cove hardwood and northern hardwood forests	BR, Rich Mountain, Gilmer Co.
Senecio millefolium	Blue Ridge golden ragwort	G2	S1		T	High elevation rock outcrops	BR
Shortia galacifolia	Oconee bells	G2	SE1?		E	Mesic forests with mountain laurel and rhododendron	BR, Rabun Co.; perhaps not native
Sibbaldiopsis tridentate	Three-toothed cinquefoil	G5	S1		E	Rocky summits	BR
Silene ovata	Mountain catchfly	G2G3	S1S2			Mesic deciduous or beech-magnolia forests over limestone; bouldery, high elevation oak forests	BR, RV, UCP; widely scattered in mountains; disjunct in southcentral and SW Georgia
Solidago simulans	Cliffside goldenrod, Highlands goldenrod	G1	S1			Seepy summits of granite domes; moist, steep, rocky slopes and cliffs	BR
Sorbus Americana	American mountain-ash	G5	S1			Grassy balds; northern hardwood forests	BR
Streptopus roseus	Rosy twisted-stalk	G5	S1			High elevation boulderfields	BR
Thalictrum coriaceum	Appalachian meadowrue	G4	S1?				BR
Thermopsis fraxinifolia	Ash-leaved bush-pea	G3?Q	S2?			Oak and oak-pine ridge forests	BR (only?), perhaps adjacent RV, PD, need summary from Mike Ivey.
Thermopsis villosa	Aaron's rod, Carolina golden-banner	G3?	S1?			Mesic forests, floodplains and roadsides; mostly in sandy soils	CU (only?)
Trientalis borealis	Northern starflower	G5	S1S2		E	Rocky, northern hardwood forests	BR
Trillium persistens	Persistent trillium	G1	S1	LE	E	Mesic hardwood forests, upland forests	BR, PD; limited to 7-mile stretch of Tallulah River
Triphora trianthophora	Nodding pogonia	G3G4	S2?				
Tsuga caroliniana	Carolina hemlock	G3	S1			Rocky bluffs	BR, in Tallulah Gorge and along Chattooga River
Waldsteinia lobata	Piedmont barren strawberry	G2	S3		T	Stream terraces and adjacent gneiss outcrops	BR (barely), PD, UCP (barely); mostly piedmont foothills
Xerophyllum asphodeloides	Eastern turkeybeard	G4	S1		R	Xeric oak-pine forests	BR, PD

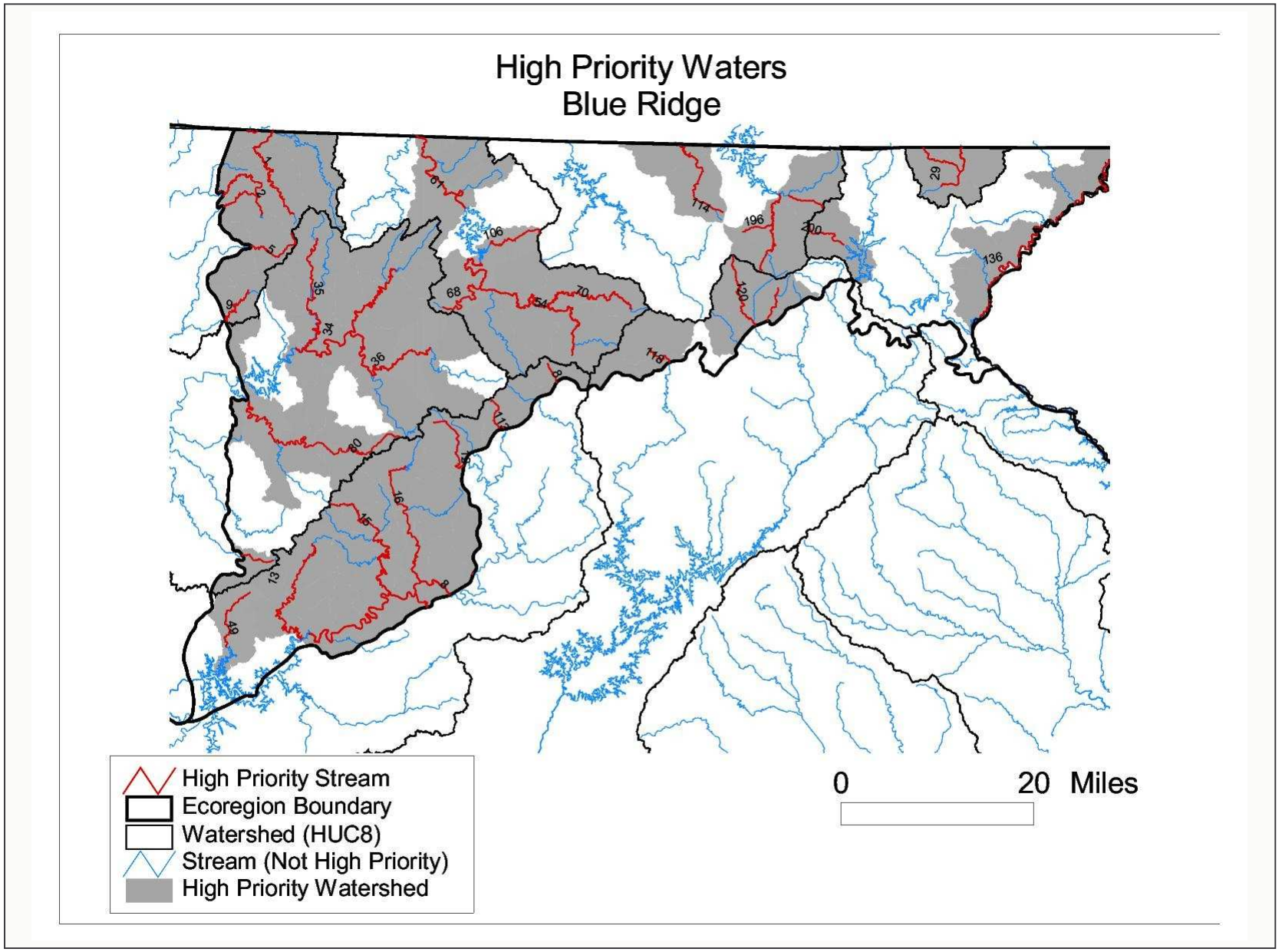

Figure 10. High Priority Waters, Blue Ridge Ecoregion