



# North Carolina's Mountain Region

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**T**he mountain region of North Carolina (North American Bird Conservation Initiative region 28) has many distinctive biotic features resulting from the moist, cooler climate of high and mid-elevations. This characteristic of the region has a pronounced influence on the region's bird life, in that many nesting species abound whose centers of distribution are in New England and Canada. Of particular interest are the endemic taxa that nest in the mountains. An excellent review of the area's bird life is provided by M. B. Simpson, Jr. (1992, *Birds of the Blue Ridge Mountains*, University of North Carolina Press).

Glaciated climate conditions have predominated in North America for more than 80 percent of the past 900,000 years. During this time, the never-glaciated southeast region of North America, including all of North Carolina, was occupied by spruce-fir and northern hardwood forest. A tree line probably existed at the elevation where spruce-fir now starts. The last tree line and alpine meadow vegetation disappeared from the South only about 12,000 years ago. The

warmer and dryer period that the region is now experiencing is one of near maximum deglaciation and has been in existence for only about the last 500 years. Thus, bird communities that we consider in the Southeast to be montane are actually relicts from the Pleistocene and recent period, when they were the dominant species throughout the Southeast. While these distinctive features of the North Carolina mountains are currently linked to species of the boreal and transition forest of northern North America, this pattern of distribution is actually very recent. These are in fact southeastern species that have invaded the northern portion of the continent in the wake of retreating glaciers. The Piedmont and coastal plain fauna are the recent invaders, with the relict mountain biota giving us a good idea of what the plant and animal communities were like across the state until very recent times.

## Geology and Geography

While a number of southeastern states have portions of the unglaciated southern Appalachians within their political borders, only in southwestern Virginia and western North Carolina does this mountain range cover extensive areas and

## North Carolina's Mountain Region

reach high elevations. This province is based mostly on pre-Cambrian crystalline gneisses and schists and covers about 12 percent of the state (ca. 15,539 km<sup>2</sup> [6,000 square miles]), and all or a significant portion of 17 of North Carolina's counties. South of the Roanoke River this physiographic province shifts from a narrow, high ridge to a broad, steep-sided plateau covered with ridges, knobs, and scattered mountains. Elevations on the plateau generally range from 610 to 762 m (2,000 to 2,500 feet), and across the plateau are a series of transverse ridges with some of the highest elevations in eastern North America. There are over 200 named mountains that exceed 1,524 m (5,000 feet) and nearly 50 that exceed 1,829 m (6,000 feet). Mt. Mitchell, at 2,037 m (6,684 feet), is the highest point east of the Rocky Mountains. Mean annual temperature drops about two to three degrees for every increase of 305 m (1,000 feet) of elevation. This is accompanied by an increase in precipitation. Thus, 305 m (1,000 feet) of elevation is equivalent to about two hundred to two hundred and fifty miles of similar climatic change in latitude. The average July temperatures for Mt. Mitchell are 59°F and for January 28°F. The variation in perception is more complex. Higher areas are generally wetter, but areas of fog, condensation, rain, and rain shadow vary, and slope exposure results in differential drying. Some areas get as little as 102 cm (40 inches) of precipitation. These climatic conditions result in avifauna that contrast sharply from what is found in the Piedmont and coastal plain regions of the southeast, with considerable variation within the province. The Appalachians is one of the oldest mountain ranges on earth and the actual topography of the region has not changed since early Pleistocene (although a number of the river systems in existence today flow differently than they did even 15,000 years ago).

### Birds and Habitats

The mountain region supports two major upland communities, but these communities vary considerably in soil type, moisture, exposure, and the timing and extent of human disturbance. The transition zones between these forest types are normally narrow.

**Upland Mesophytic Forest:** Various seral stages of the middle-latitude deciduous forest occur throughout most of the state up to elevations of nearly 1,829 m (6,000 feet). The following plant associations dominate in subcommunities that occur in North Carolina's mountains. Typically a subcanopy of trees, shrubs, and shade-tolerant herbs exists. Extreme variation in the appearance of the community results from local differences in elevation, soil fertility, and maturity of forest.

- > Rhododendron-alder: mountain balds
- > Red oak: chiefly between 1,219 and 1,524 m (4,000 and 5,000 feet)
- > American chestnut-black oak: chiefly between 762 and 1,524 m (2,500 and 5,000 feet), with chestnut no longer a dominant tree
- > White oak-southern red oak: fertile soils below 914 m (3,000 feet)
- > River birch-American sycamore: flood plains
- > Black willow-alder: stream borders
- > Red maple-beech: climax community below 1,676 m (5,500 feet) on fertile soils.
- > Black jack oak-post oak: sterile soils

Characteristic breeding birds of these forests and ones that are primarily restricted to the mountains at our latitude include Broad-winged Hawk, Ruffed Grouse, Black-billed Cuckoo, Yellow-bellied Sapsucker, Alder, Willow and Least Flycatchers, Common Raven, Veery, Blue-headed Vireo, Warbling Vireo, Golden-winged Warbler, Chestnut-sided Warbler, Black-throated Blue Warbler (also in spruce-fir), Cerulean Warbler, Swainson's Warbler, Scarlet Tanager, Rose-breasted Grosbeak, and Vesper Sparrow.

Within these forests are several subcommunities that are important to various assemblages of mountain birds. These include hemlock stands, cove hardwoods, and mountain bogs. In many cases these communities support fauna that are more characteristic of those found at higher elevations.

**Boreal Forest:** Boreal spruce-fir forests are found above 1,524 m (5,000 feet) on cold mountain summits in the extreme western portion of the state. The characteristic flora consist of Fraser's fir, red spruce, mountain ash, mountain rosebay, and a dense, damp ground cover dominated by mountain fern moss and common wood sorrel.

Characteristic breeding birds which at our latitude are species restricted to the mountains include Northern Saw-whet Owl, Olive-sided Flycatcher, Black-capped Chickadee, Red-breasted Nuthatch, Brown Creeper, Winter Wren, Golden-crowned Kinglet, Hermit Thrush, Magnolia Warbler, Blackburnian Warbler, Canada Warbler, Dark-eyed Junco, Red Crossbill, and Pine Siskin.

### Visiting the Area

The North Carolina portion of the Blue Ridge Parkway bisects a good representative cross-section of the high and middle elevations of the region. The various overlooks along



the parkway are good for observing breeding-season birds, and linked to the parkway are a number of the Important Bird Areas discussed here (Grandfather Mountain, Mt. Mitchell, Bull Creek, and Chimney Rock, for example). The parkway terminates near the entrance for the Smoky Mountain National Park. For people not familiar with the region, traveling the length of the parkway with side excursions to various Important Bird Areas would provide an excellent introduction to the region's biotic communities and bird life. From a bird-watching perspective, this route is not recommended during the fall because of the large number of parkway visitors coming to see fall colors. The only habitats not represented in this 241-mile north-to-south transect (the North Carolina stretch) are the ancient-growth forest of Joyce Kilmer and some of the mountain valley habitats, best represented by the New River Flood Plain.

The 19 Important Bird Areas in the mountain region contain representative habitats of all the key natural communities of the region. They also support breeding populations of all the species indigenous to the region, with a concentration among high-elevation communities. Important populations of all the mountain specialties breed in the various Important Bird Areas.

### Historical Perspectives

Much of the present-day distributions of breeding birds are a direct result of human activities. A number of factors are responsible. In large, relatively undisturbed tracts the avifauna

has remained stable, both in species composition and relative dominance of species. The combination of extensive National Forests, National Parks, wilderness areas, State Parks, and the Blue Ridge Parkway provides a mosaic of protected habitats, which in turn creates a landscape for a wide variety of breeding birds. The various land management techniques on these federal lands allows for a continuum of successional communities and ecotonal communities. The parkway provides linear and easily accessible habitats for edge and early-successional species across a wide range of elevations, while forestry practices provide extensive areas of early- and mid-succession plant communities in the national forest.

The removal of grazing rights on National Forest land in the eastern United States had a dramatic effect on the vegetation of most of our forested public lands. For the most part this should be viewed as a good decision for conservation, but, compared to lands along the Blue Ridge where grazing continues, it is clear that a number of communities and rare species, including some birds, benefit from allowing grazing on public lands. Old-growth forest and virgin forest occur in patches in a number of gorges, coves, and wilderness areas. While these latter forest types are fragmented, they do provide glimpses into the composition of the precolonial avian community. To some degree, where original forest or old-growth forests persist, species that are now regarded as high-elevation specialists occur in densities that are similar to what they are in high-elevation spruce-fir forests. This suggests that prior to logging these species had much broader distributions and occurred in a wider variety of habitats than they do today, with many "high-elevation" species breeding as low as 610 m (2,000 feet) in old-growth communities.

Historically and presently most of the land clearing has been in mountain valleys. Here, open areas cleared for agriculture, golf courses, and similar uses provide habitat for a number of species that would not be expected in the region. The clearing of land and subsequent succession, which is often held in check by current land use, has allowed at least 20 breeding species to invade the region. These are all species that were not present 100 years ago. At the same time only seven montane species have exhibited declines in their current distribution within the region. Thus, the faunal diversity is much higher today than in historical times. This gives an inflated impression that all is well with the avian community and that conditions are actually improving. This is not the case. Many of the recent arrivals are "weed" species, species dependent on human activities or structures. In all cases this increase in diversity is a result of loss of natural habitats, and

## North Carolina's Mountain Region

the creation of artificial ones at the expense of our indigenous fauna.

### Present-Day Threats

Natural communities on floodplains of major and secondary rivers, and other low alluvial areas have suffered the greatest loss through development. Terraces of low-order streams are the major corridors of roads resulting in the loss of wetlands and riparian habitats found on these terraces. The construction of a vast reservoir system by the Tennessee Valley Authority resulted in the flooding of large sections of lowland habitats. This was accomplished before any specific information could be gathered on the natural communities that these lands supported. Mountain bogs are the rarest of wetland habitats in the southeastern United States, due to the effects of road construction following stream terrace corridors, flooding for reservoirs, and direct drainage of small isolated wetlands. Christmas tree farms cover vast acreages on lower and mid-elevation slopes. The extent to which these tree farms are used by native songbird communities is unclear.

The Brown-headed Cowbird is a species that only recently invaded the region. This nest parasite is not a factor in large forested blocks or old growth, but it is common in fragmented and early-succession landscapes. To what degree it influences population dynamics of breeding birds in the southern Appalachians is unknown, but its impacts for some species must be considerable. Natural canopy gaps caused by minor wind throw or hurricanes do not appear to provide inroads for nest predators and nest parasites such as cowbirds, but artificial, abrupt edges often have twice the nest loss.

Past land use consisted of logging and general clearing of lowlands. A surge of real-estate demand for mountainside second homes, and an increase in the Christmas tree industry is resulting in loss of forested lands.

The balsam woolly adelgid was accidentally introduced to the United States and spread to the Mt. Mitchell area by the late 1950s. They are now present in almost all fir stands in the southern Blue Ridge. By the 1970s acid rain and other pollutants began affecting the red spruce in our region. This combination has had a devastating effect on many spruce-fir forests and secondary impacts on the bird communities. The American chestnut, which once made up about 40 percent of the hardwood forest of the southern Appalachians, was infected with a blight that caused the complete disappearance of this species as an important component of our forest before the mid-1900s. The chestnut disappeared before any systematic studies on the bird life of the region could be

conducted, and while the impact on the bird life is unknown, the effect on Cerulean Warblers and other mid- and upper-canopy hardwood dependent species must have been considerable.

The loss of mature hemlocks from the landscape was pronounced during the late 1800s and early 1900s because the bark of this tree was extremely important to the tanning industry. Mature stands of these trees provide habitat for many species of birds that are dependent on old-growth or high-elevation forests. If the stands that persist today had been allowed to achieve maximum size and age (hemlock is one of the longest-lived trees of the region) many coniferous species (Blackburnian Warblers, Golden-crowned Kinglets, and Red-breasted Nuthatches, to name a few) would have been able to expand their currently restricted distributions back into low- and mid-elevation forests, but the arrival of the hemlock woolly adelgid has eliminated that possibility. Now in most areas of the mountain region, hemlock is dying off at alarming rates and none seem immune to the destruction. Aggressive eradication and maintenance efforts are under way, but with limited success.

Various human-made structures (communication towers, wind turbines, etc.), particularly those constructed on or near ridge tops, are known to intercept large numbers of fall migrant songbirds. While this phenomenon has not been monitored in the mountains, information obtained in the Piedmont and coastal plain of North Carolina suggests that loss of migrants in the mountains is even higher, due to the elevation of the landscape and the extent of nocturnal songbird migration through the southern Appalachians. With the aggressive growth of wind energy generation projects



expected to occur in western North Carolina in the next decade, this situation requires diligence and oversight. Audubon North Carolina has been very active in the wind energy debate and will continue to participate.

Current conservation plans for the most part are not taking into consideration long-term issues such as fragmentation of the landscape, restoration of habitats, or the need for tracts of old-growth forest (minimum 275 years) and have focused mostly on single-species recovery efforts. While the symptoms of the problems such as decline of specific species are being addressed, the issues that drive these symptoms are not being corrected.

### Other Influences and Issues for Management

The role of Native Americans in the region's landscape is not clear. We know that pre-Columbian peoples were responsible for the removal of much of the mammalian megafauna. This fauna included a wide variety of browsers and grazers that must have had a major impact on various plant communities. We also know that Native Americans used fire as a means of game management and this too must have altered the landscape. The colonial period and the American frontier preceded documentation of the bird life of the region so it is not clear what elements of the indigenous fauna remained or how it was distributed prior to forest clearing. The forests of the southern Appalachians were all but eliminated by the 1800s, with only fragments of what could be considered natural landscapes. It was in this fragmented landscape that we obtained our first glimpses of the ornithology of the region. Many of the present-day efforts directed toward conservation and management for our avian community are based on misconceptions from the postfrontier period.

The loss of grazing animals, for example, clearly affected understory composition and key habitats such as bogs and mountain balds. With the major browsing and grazing species removed by Native Americans, and secondary ones eliminated by Europeans, we can expect habitats were permanently altered. This in turn affected natural fire suppression. Land clearing probably buffered this shift for some community types, and subsequent grazing by domestic animals probably also played a key role in keeping the landscape open. This has now changed; livestock is now contained and occurs in far lower numbers than even half a century ago.

There are 11 endemic taxa of breeding birds in the southern Appalachians and many achieve their highest densities and broadest range of geographic occurrence in North Carolina's mountains. These endemics are mostly subspecies of wider

ranging "northern" birds. They include Appalachian Ruffed Grouse, Appalachian Black-capped Chickadee, Southern Brown Creeper, Appalachian Bewick's Wren, Southern Winter Wren, Mountain Blue-headed Vireo, Wayne's Black-throated Green Warbler (also with a disjunct population on the outer coastal plain), Cairn's Black-throated Blue Warbler, a sibling species of the Red Crossbill, Carolina Dark-eyed Junco, and a genetically distinct, but yet unnamed, population of the Northern Saw-whet Owl.

Our knowledge of the birds of the region is not complete. A number of species occur occasionally in the mountains of North Carolina that probably represent isolated breeding birds. Yet breeding is often not suspected and frequency of occurrence not documented. It took nearly two decades to document the breeding of hermit thrushes in our mountains despite numerous summer reports. Recent reports for breeding season records of Swainson's Thrush, Virginia Rail, Yellow-rumped Warbler, and others require further investigation and monitoring.

In addition to the breeding birds of the region the southern Appalachians is a major flyway for fall migrant landbirds, with the migrant waves often following ridge tops. Autumn hawk migration is also pronounced along the ridge tops, and because of their diurnal migration behavior hawk watching has become a popular pastime at a number of well-known mountain sites.

A number of conservation-oriented programs have been suggested. The most promising include the restoration of specific habitat types, such as spruce-fir forest, mountain bogs, and balds. Less impressive are single-species efforts where land management for certain birds would be at the expense of other indigenous species. For example, recent efforts to enhance populations of Golden-winged Warblers have suggested removal of forest to promote the early stages of succession required by this wood warbler. While this would be an interesting experiment in management, there is little indication that Golden-winged Warblers have decreased in the region (at least compared to the pre-lumbering period) or that making saturated populations is a desirable or obtainable goal. More important, a majority of territories for this species currently occur on private lands. An effort to learn how to best maintain these private lands habitats for Golden-winged Warblers and other early-successional species that are underrepresented in the region would seem more appropriate than the removal of existing forest on public lands.

## Amphibolite Mountains



**Location:** Ashe and Watauga Counties

**Total Size:** 36,647.3 ha (90,557.5 acres)

**Site Description:** The Amphibolites are a series of mountains composed of amphibolite gneiss; they include the Peak, Bluff, Rich and Snake Mountains, Mt. Jefferson, Phoenix Mountain, Three Top, and Elk Knob. Peak elevations are about 1,525 m (5,003 feet) for most of the mountain tops; Snake Mountain reaches 1,697 m (5,566 feet) at its highest point. The area also includes the State Significant Natural Area of Long Hope Valley, lying between Elk Knob and the Peak.

**Habitats:** Northern hardwood forest, xeric oak forest, mixed mesophytic forest, grassy balds, mountain bogs, spruce forest.

**Land Use:** Conservation, recreation, hunting, fishing, residential development, grazing, and Christmas tree production.

**Primary Threats:** Water quality, logging, and residential and commercial development on private lands, loss of early-successional habitats.

**Protection Status:** The site includes Mt. Jefferson State Natural Area, Elk Knob State Park, and tracts on Paddy and Bluff Mountains protected by The Nature Conservancy. The North Carolina Plant Conservation Network also has significant holdings in the range. A significant portion of the land is in private ownership (over 90 percent).

**Conservation Issues:** Loss of important habitats to residential or commercial development is a key issue. Reforestation of agricultural areas will result in declines of some high-priority species, such as Golden-winged Warbler.

**Birds:** This site supports significant populations of neotropical migrant songbirds, species of conservation concern, and watchlist species. The site supports the largest concentration of Vesper Sparrows in North Carolina. A remnant stand of spruce forest (*Picea rubens*) supports Northern Saw-whet Owl, Magnolia Warbler, Red-breasted Nuthatch, and Golden-crowned Kinglet and is an excellent example of this habitat type (Criterion NC4). Golden-winged Warblers and their hybrids (and a recent second breeding season record of Blue-winged Warbler) occur here in the western drainages of Watauga and Ashe Counties. This site was recently recognized as a Globally Significant Important Bird Area for Golden-winged Warblers.

**Monitoring and Research:** Portions of this Important Bird Area fall in three Christmas Bird Count circles (Mt. Jefferson, New River, Grandfather Mountain). Data from Elk Knob State Park and Mount Jefferson State Natural Area are included in the North Carolina State Parks Natural Resource Inventory Database. Audubon North Carolina established point counts in 2005 and continues to expand the number of these permanent points, now including locations on Rich Mountain, Elk Knob, Snake Mountain, Long Hope Valley, and lowland portions of the Important Bird Area. A long-term research project on the Golden-winged Warbler is also continuing.

### Key Bird Species

Criterion	Species	Season	Number	Year
1	Northern Saw-whet Owl	B	20	2007
2a	Yellow-bellied Sapsucker	B	25	2006
3a	Least Flycatcher	B	27	2008
2b	Veery	B	55	2008
2a	Golden-winged Warbler	B	65	2009
2b	Chestnut-sided Warbler	B	93	2008
2a	Magnolia Warbler	B	10	2008
3a	Rose-breasted Grosbeak	B	35	2008
2b	Field Sparrow	B	58	2008
2a	Vesper Sparrow	B	38	2008

B = breeding

## Black Mountains – Great Craggy Mountains



**Location:** Buncombe and Yancey Counties

**Total Size:** 40,215.8 ha (99,375.3 acres)

**Site Description:** The Black and Great Craggy Mountains Important Bird Area is located northeast of Asheville. This site includes primarily high-elevation forests above 1,373 m (4,505 feet). The key feature in this Important Bird Area is Mt. Mitchell, which, at 2,039 m (6,690 feet), is the highest point in the eastern United States. Six peaks within the Black Mountains have elevations over 1,830 m (6,004 feet). The highest point in the Craggies is Craggy Dome at 1,856 m (6,089 feet). The site is one of the most significant examples of high-elevation forest and natural communities in the southern Appalachians.

**Habitats:** Northern hardwood forest, mountain bald, rich cove forest, hemlock forest, montane oak-hickory forest, mountain cliff, spruce-fir forest.

**Land Use:** Conservation, water supply, recreation and tourism, hunting, fishing.

**Primary Threats:** Air pollution, introduced disease and pests, deforestation and tree cutting, residential and commercial development on private lands.

**Protection Status:** Portions of the Important Bird Area are within the Pisgah National Forest, Pisgah Game Lands, Mt. Mitchell State Park, National Park Service (Blue Ridge Parkway), and private ownership. The state and federal lands are afforded at least some degree of protection.

**Conservation Issues:** Acid rain threatens many of the high-elevation spruce-fir forests (*Abies fraseri* and *Picea rubens*), weakening the trees and making them susceptible to disease and pests such as the balsam woolly adelgid (*Adelges piceae*). Air quality is also likely impacting calcium uptake as in other high-elevation areas. Changes in the forest caused by acid rain and insect infestation has resulted in the disappearance of species (Black-throated Green, e.g.) from some areas, and possibly increases in others (Hermit Thrush).

**Birds:** This site includes a great diversity of birds associated with high-elevation forests. Ninety-one species of nesting birds have been recorded. Yellow-bellied Sapsucker, Northern Saw-whet Owl, and Alder Flycatcher are significant species at the site. This is one of the few places where Hermit Thrushes occur during the breeding season. In 2007, multiple individual singing Swainson's Thrushes were discovered and were again present in 2008 and 2009. The high-elevation forests and balds are significant and represent a classic high-elevation assemblage of birds (Criterion NC4).

**Monitoring and Research:** An Adopt an Important Bird Area program is in place within this site, with point counts, spring bird counts, and other surveys conducted by the Elisha Mitchell Audubon Society and Carolina Field Birders beginning in 2006. Mt. Mitchell State Parks records are included in the State Parks Natural Resource Inventory Database.

### Key Bird Species

Criterion	Species	Season	Number	Year
1	Northern Saw-whet Owl	B	10	2007
3a	Blue-headed Vireo	B	96	2007
3a	Common Raven	all	15	2007
2a	Red-breasted Nuthatch	all	62	2007
2a	Brown Creeper	all	12	2006
2a	Winter Wren	B	66	2007
2a	Golden-crowned Kinglet	all	234	2007
3a	Swainson's Thrush	B	5	2007
2a	Hermit Thrush	B	19	2007
2b	Black-throated Blue Warbler	B	69	2007
2b	Blackburnian Warbler	B	49	2006
2a	Black-throated Green Warbler	B	98	2007
2b	Canada Warbler	B	76	2007
2a	Red Crossbill	B, W	18	2006
3f	raptors	FM	3,600–9,000	—

B = breeding; FM = fall migration; W = winter

## Blue Ridge Escarpment Gorges



**Location:** Transylvania and Jackson Counties

**Total Size:** 7,627.9 ha (18,848.9 acres)

**Site Description:** This site extends from the Toxaway River to the Whitewater River and includes the Horsepasture River and the Thompson River east of Highlands. These rivers descend rapidly through steep gorges over a few miles, from an elevation of 915 to 366 m (3,002 to 1,201 feet). Like many other similar areas in the North Carolina mountains, much of the area was logged decades ago. Some xeric ridges contain pine stands, but most uplands are dominated by second-growth oak-hickory forests with dense understories of rhododendron and mountain laurel.

**Habitats:** Cove hardwood forests, oak forests, and coniferous forests, mixed forests.

**Land Use:** Recreation and tourism and conservation.

**Primary Threats:** Residential and commercial development on private lands, damming, poaching, erosion.

**Conservation Issues:** Off-road vehicle usage and disturbance of sensitive areas are primary concerns.

**Protection Status:** More than 4,000 ha (9,884 acres) of this Important Bird Area are in state and federal ownership. Portions are within the Nantahala National Forest, Pisgah National Forest, Nantahala Game Land, Toxaway Game Land, Gorges State Park, and land in private ownership. Efforts are under way to acquire additional private lands for conservation. More surveys of landbirds during breeding season, migration periods, and winter are needed.

**Birds:** The site probably supports the largest population of Swainson's Warblers in North Carolina and significant populations of Worm-eating, Black-throated Green, and Black-and-white Warblers. The cove hardwood forests support a significant diversity and abundance of birds associated with this habitat type (Criterion NC4).

**Monitoring and Research:** Gorges State Park records are entered into the North Carolina Division of State Parks Natural Resource Inventory Database, including the 2000 initial survey by State Parks and the North Carolina Natural Heritage Program.

### Key Bird Species

Criterion	Species	Season	Number	Year
2a	Black-throated Green Warbler	B	35+	2000
2b	Worm-eating Warbler	B	25+	2000
2b	Hooded Warbler	B	27+	2000

B = breeding

## Bull Creek



**Location:** Buncombe County

**Total Size:** 2,025.2 ha (5,004.2 acres)

**Site Description:** This site includes an 8.4 km (5.2 mile) section of the Blue Ridge Parkway from about Lane Pinnacle Overlook (milepost 372.1) to Craven Gap (milepost 377.3). The elevation varies from about 945 m (3,100 feet) along the parkway to about 1,160 m (3,806 feet) on the upper slopes of Swan Mountain and Bull Mountain. Public access to the area is available along the parkway and one can stop at any of several overlooks. The Blue Ridge Parkway is one of the most popular National Parks in the United States with more than 3 million visitors annually.

**Habitats:** Mixed hardwoods dominated by tulip poplar (*Liriodendron tulipifera*), oak (*Quercus spp.*), hickory (*Carya spp.*), and locust (*Robinia pseudo-acacia*).

**Land Use:** Conservation, recreation.

**Primary Threats:** Logging, residential and commercial development on private lands.

**Protection Status:** The section of this site along the Blue Ridge Parkway is protected by the National Park Service. Private lands are also included in this Important Bird Area.

**Conservation Issues:** Loss of important habitats to logging and residential or commercial development is a primary threat and key issue. Permanent protection of tracts not currently protected should be a priority. Surveys for Cerulean Warblers should be continued and expanded away from the Blue Ridge Parkway to better determine the extent of habitat occupied by this population.

**Birds:** This site supports one of North Carolina's most significant populations of Cerulean Warblers. The species has been documented between Craven Gap and Lane Pinnacle Overlook along the Blue Ridge Parkway for at least 20 years. The first record of ceruleans at this site was published in *The Chat* in 1983 (vol. 48, p. 101). The population appears to be stable or increasing. Numerous other neotropical species breed here as well, including many priority neotropical species, and the site is especially good for Blackburnian Warbler.

**Monitoring and Research:** An Adopt an Important Bird Area program is in place with Elisha Mitchell Audubon Society. A volunteer, Charlotte Goedsche, has been monitoring this population of Cerulean Warblers since 2000. In 2006, she began using individual recording and analysis to determine territory boundaries. Audubon North Carolina also established point count locations within the Important Bird Area in 2006. This area is included in a portion of a Breeding Bird Survey route and the Buncombe County Christmas Bird Count circle.

### Key Bird Species

Criterion	Species	Season	Number	Year
1	Cerulean Warbler	B	17	2007
2b	Blackburnian Warbler	B	20	2006
2b	Hooded Warbler	B	28	2007

B = breeding

## Bullhead Mountain–Mahogany Rock



**Location:** Alleghany and Wilkes Counties

**Total Size:** 1,472.1 ha (3,637.7 acres)

**Site Description:** The Bullhead Mountain–Mahogany Rock Important Bird Area runs along the Blue Ridge Parkway in Alleghany and Wilkes Counties. Elevations range from 425 to 1,190 m (1,394–3,904 feet). The highest point is the peak of Bullhead Mountain, which is one of the most prominent landscape features in this region of the state. The Mahogany Rock overlook on the Blue Ridge Parkway, located at milepost 234, has been one of North Carolina’s most popular hawk-watching sites for more than three decades.

**Habitats:** Hardwood forest, mixed forest, cove hardwood forest.

**Land Use:** Conservation, recreation and tourism, residential development.

**Primary Threats:** Residential and commercial development on private land.

**Protection Status:** Most of the site is in state or federal ownership and is protected. Bullhead Mountain was recently acquired and is now part of Stone Mountain State Park. The Mahogany Rock area is on the Blue Ridge Parkway and is protected and managed by the National Park Service.

**Conservation Issues:** Lower elevations remain in private ownership. Some have been cleared and replanted in pines. Cell-phone towers have been proposed in previous years, but were defeated due to local opposition. Surveys of landbirds during the breeding season, migration periods, and winter are needed.

**Birds:** The mountain ridges, beginning at Bullhead Mountain and continuing southwest, serve as a significant migration corridor for raptors. Spring and fall migration counts have been undertaken for more than a decade and will continue. A Kirtland’s Warbler was sighted on Bullhead Mountain in 1999 and a Northern Goshawk was observed in 2001, both of which are extremely rare in North Carolina.

**Monitoring and Research:** Annual spring and fall raptor migration counts are conducted at adjacent Mahogany Rock, with some spring counts occurring on Bullhead itself.

### Key Bird Species

Criterion	Species	Season	Number
3f	migrating raptors	FM	2,943–6,531
	Turkey Vulture	FM	274–786
	Black Vulture	FM	104–245
	Broad-winged Hawk	FM	2,292–5,333
	Sharp-shinned Hawk	FM	85–203
	Cooper’s Hawk	FM	34–72

FM = fall migration

\*“Number” represents the range of annual totals for the period 2003–8, as reported at the Hawk Migration Association of North America web site (<http://hawkcount.org>).

## Chimney Rock–Hickorynut Gorge



**Location:** Rutherford and Henderson Counties

**Total Size:** 5,873.2 ha (14,513.1 acres)

**Site Description:** Chimney Rock and Hickorynut Gorge are located about 40 km (25 miles) southeast of Asheville, near the village of Bat Cave. The site sits on the Blue Ridge Escarpment, which separates the foothills from the mountains. Key features of this site are Chimney Rock, a 92 m (302 feet) monolith that rises above the gorge. Hickorynut Gorge rises about 425 m (1,394 feet) above the Broad River. The mountain cliffs at Chimney Rock rise abruptly from an elevation of 305 m (1,001 feet) to nearly 915 m (3,002 feet).

**Habitats:** Northern hardwood forest, mixed forest, cove hardwood forest, rocky cliff, riparian, lake.

**Land Use:** Recreation and tourism, wildlife conservation, forestry, residential development.

**Primary Threats:** Residential and commercial development, recreational development and overuse, soil erosion and degradation, introduced plants.

**Conservation Issues:** Residential and commercial development on private land is the key issue that could result in the loss of habitat. Additional surveys of landbirds during breeding season, migration periods, and winter are needed.

**Protection Status:** Chimney Rock Park, a heavily visited tourist attraction, was acquired by the North Carolina State Park system in 2007. In addition, the World’s Edge tract has recently been acquired by the state for inclusion in the park. The Nature Conservancy maintains Bat Cave as a preserve. The Broad River Watershed Protection Committee is working to secure buffer zones and conservation easements along the Broad River watershed. Much of the Pool Creek Area, although privately owned, is also maintained as a natural area.

**Birds:** The site supports a great diversity of mid-elevation forest birds. Eighteen species of warblers, including Cerulean Warbler, are known to breed within the site, and others are common during migration. This is one of the few places where Peregrine Falcons can be found nesting in North Carolina.

**Monitoring and Research:** Now that Chimney Rock is part of the North Carolina State Parks system, bird data will be entered into the State Parks Natural Resource Inventory Database. Original survey work with birds has been done by Simon Thompson, who produced a checklist (last updated in 2007). More quantitative surveys are needed on state lands as well as other portions of the Important Bird Area. Peregrine Falcon nesting is monitored by North Carolina Wildlife Resources Commission.

### Key Bird Species

Criterion	Species	Season	Number	Year
1	Peregrine Falcon	B	1 pr.	2009
2a	Black-throated Green Warbler	B	25	2007

B = breeding

## Grandfather Mountain



**Location:** Avery, Caldwell, and Watauga Counties

**Total Size:** 5,130.9 ha (12,678.8 acres)

**Site Description:** The rugged peaks and profile of Grandfather Mountain are among the most recognized landmarks in western North Carolina. Located near the town of Blowing Rock, the ancient peaks of Grandfather are the highest in the Blue Ridge. Calloway Peak reaches an elevation of 1,819 m (5,968 feet) and several other prominences have elevations above 1,600 m (5,249 feet). The site has an exceptional diversity of habitats, from rocky cliffs and balds to spruce-fir and cove forests, which support 60 rare plants and animals.

**Habitats:** Spruce-fir forest, northern hardwood forests, cove hardwoods, balds, rocky cliff.

**Land Use:** Wildlife conservation, recreation and tourism, second-home development.

**Primary Threats:** Air pollution (acid and mercury deposition), introduced pests.

**Protection Status:** The core of the site is protected as a new State Park (2008). The Blue Ridge Parkway receives federal protection as a National Park, including Price Park and Moses H. Cone Memorial Park. The site is buffered to the south by the Wilson Creek-Linville Gorge Important Bird Area (Pisgah National Forest).

**Conservation Issues:** The key conservation issue is the loss of spruce-fir forest and hemlock cove forest due to invasive insect pests and acid rain.

**Birds:** The diversity of breeding birds at this site (coupled with surrounding lowlands) is probably the highest of any site in North Carolina and probably the second-highest in the United States. At least 118 breeding season species have been recorded and others are expected. The site is significant for species of conservation concern, such as Northern Saw-whet Owl, Peregrine Falcon, Golden-crowned Kinglet, Yellow-bellied Sapsucker, Red-breasted Nuthatch, and Brown Creeper. It is one of North Carolina's key sites for Northern Saw-whet Owl. Significant spruce-fir forest exists on Grandfather Mountain and supports the suite of species associated with this habitat type (Criterion NC4).

**Monitoring and Research:** Audubon North Carolina established point counts in 2004 and Grandfather Mountain staff conduct these on a regular basis. The National Park Service conducts Northern Saw-whet Owl surveys, and the Grandfather Mountain Stewardship Foundation checks Northern Saw-whet Owl nest boxes. The North Carolina Wildlife Resources Commission coordinates annual Peregrine Falcon nest monitoring. An intensive four-year study of Yellow-bellied Sapsucker ecology was conducted from 2003 until 2006 (North Carolina Museum of Natural Sciences and Audubon North Carolina). Portions of a Breeding Bird Survey Route (Linville) traverse this Important Bird Area, and the area is wholly contained within the Grandfather Mountain Christmas Bird Count circle.

### Key Bird Species

Criterion	Species	Season	Number	Year
1	Peregrine Falcon	B	1 pr.	2009
1	Northern Saw-whet Owl	all	4-8 prs.	2007
2a	Yellow-bellied Sapsucker	all	34 prs.	2009
2a	Red-breasted Nuthatch	all	19+	2007
2a	Winter Wren	B	18+	2007
2a	Golden-crowned Kinglet	all	33+	2007
2a	Hermit Thrush	B	6	2009
2a	Magnolia Warbler	B	3	2009

B = breeding

## Great Smoky Mountains National Park



**Location:** Haywood and Swain Counties

**Total Size:** 118,625.5 ha (293,129.9 acres)

**Site Description:** Great Smoky Mountains National Park is located on the border of North Carolina and Tennessee. The park was established in 1934 and encompasses more than 200,000 ha (494,211 acres) of contiguous and relatively undisturbed forest in both states, making it the largest such forest in the eastern United States. Approximately one-fifth of the park comprises old-growth forest and represents the largest tract of old-growth forest in the southern Appalachians. The diverse and expansive forest is one of the world's most significant temperate deciduous forests and has been designated an International Biosphere Reserve and World Heritage Site. Peak elevation is 2,026 m (6,647 feet) on Clingman's Dome.

**Habitats:** Spruce-fir forest, mountain bald, cove hardwood forest, northern hardwood forest, mixed mesophytic forest.

**Land Use:** Conservation, recreation and tourism.

**Primary Threats:** Air pollution, natural pests and disease, introduced plants and animals, residential and commercial development (outside park), recreational development, and overuse.

**Protection Status:** The site is in federal ownership and is protected and managed by the National Park Service.

**Conservation Issues:** The combination of air pollution and exotic insect infestations threaten the spruce-fir forests. Introduced plants and animals have caused significant changes in habitat.

**Birds:** The park includes over 80 percent of the spruce-fir forest in the southern Appalachians and associated bird species (Criterion NC4). The site likely holds the largest concentration of Northern Saw-whet Owls in the Southeast and a majority of the Black-capped Chickadees breeding in the Blue Ridge.

**Monitoring and Research:** The Discover Life in America project has documented species and population estimates for the park across taxa. It should be noted that the numbers presented below are for the entire park and so include points outside North Carolina. Researchers are also looking at the effects of mercury and other air pollutants on bird species within the park. Bird monitoring also includes Monitoring Avian Productivity and Survivorship banding and other projects directed by the Appalachian Highlands Science and Learning Center at Purchase Knob. Nests of Peregrine Falcon are monitored in the park.

### Key Bird Species

Criterion	Species	Season	Number	Criterion	Species	Season	Number
1	Peregrine Falcon	B	2	2a	Winter Wren	all	2,640
2b	Ruffed Grouse	all	61	2b	Northern Parula	B	1,280
2a	Black-billed Cuckoo	B	20	2b	Black-throated Blue Warbler	B	3,112
2b	Acadian Flycatcher	B	1,366	2b	Blackburnian Warbler	B	472
2a	Olive-sided Flycatcher	B	4	2a	Black-throated Green Warbler	B	6,907
3a	Blue-headed Vireo	B	3,126	2b	Worm-eating Warbler	B	1,096
2a	Black-capped Chickadee	all	839	2a	Swainson's Warbler	B	30
2a	Red-breasted Nuthatch	all	1,010	2b	Louisiana Waterthrush	B	147
2a	Golden-crowned Kinglet	all	1,378	2b	Canada Warbler	B	599
2a	Brown Creeper	B	634	2b	Hooded Warbler	B	3,131
2b	Wood Thrush	B	1,167	3a	Scarlet Tanager	B	2,899
2a	Hermit Thrush	B	32	2a	Red Crossbill	all	61

B = breeding

"Number" represents maximum number detected on over 4,000 point counts made from 1996 to 1999 as part of the Discover Life in America project and available online at [www.dlia.org/atbi/species/Animalia/Chordata/Aves/survey.shtml](http://www.dlia.org/atbi/species/Animalia/Chordata/Aves/survey.shtml).

## Highlands Plateau



**Location:** Jackson and Macon Counties

Total Area: 38,099.7 ha (94,146.4 acres)

**Site Description:** The Highlands Plateau is situated at the southernmost end of the Blue Ridge Mountain Range and includes the towns of Highlands and Cashiers. The plateau covers an area with a range in altitude from 915 to 1540 m (3,002–5,053 feet). Rivers to the west of the plateau, such as the Cullasaja, flow to the Mississippi River, while rivers to the south and east flow to the Savannah River. The old-growth and virgin hemlock forest that once was widespread throughout the area has largely disappeared, but the area continues to support a rich and diverse assemblage of birds.

**Habitats:** Mixed forest, deciduous forest, and coniferous forest, riparian, mountain cliff.

**Land Use:** Forestry, recreation and tourism, and suburban and undeveloped areas.

**Primary Threats:** Residential and commercial development, predation, invasive pests, air pollution, drought.

**Protection Status:** The site includes portions of the Nantahala National Forest, Nantahala Game Lands, Chattooga Wild and Scenic River, Ellicott Rock Wilderness, and significant private land holdings. Both The Nature Conservancy and the Highlands-Cashiers Land Trust have been active in acquiring land for conservation in the area.

**Conservation Issues:** Rapid growth is encroaching on natural areas, creating loss of habitat, fragmentation of forests, and introduction of edge species in formerly interior forests. In addition, air pollution, golf course run-off, and sedimentation of waterways are of concern.

**Birds:** The assemblage of bird species found here is more typical of northern forests and many species are at the southern limit of their range. The Highlands Plateau supports a significant diversity and abundance of migratory landbirds and is one of North Carolina's most important sites for species such as Blackburnian Warbler, Black-throated Blue Warbler, Canada Warbler, Brown Creeper, Golden-crowned Kinglet, and Rose-breasted Grosbeak (NC Criterion 4). Peregrine Falcons were reintroduced to the area and nest on the sheer cliffs of Whiteside Mountain.

**Monitoring and research:** The site includes the Highlands Biological Station, where studies of birds and their habitats have been conducted since the 1940s. Repetitive plot studies have been conducted since the 1950s. The Highlands Plateau Audubon Society has adopted this Important Bird Area and conducts point counts established by Audubon North Carolina in 2006. The Highlands Christmas Bird Count circle and the Highlands Breeding Bird Survey route are located within this Important Bird Area. Point counts are conducted on Nantahala National Forest lands as part of the Region 8 bird-monitoring program. The North Carolina Wildlife Resources Commission coordinates annual Peregrine Falcon nest monitoring.

### Key Bird Species

Criterion	Species	Season	Number	Year
1	Peregrine Falcon	B	1 pair	2009
2a	Red-breasted Nuthatch	all	41	2006
2a	Golden-crowned Kinglet	all	28	2006
2a	Black-throated Green Warbler	B	22	2009
2b	Hooded Warbler	B	21	2009
2a	Red Crossbill	all	25	2009

B = breeding

## Joyce Kilmer–Slick Rock Wilderness



**Location:** Graham County

Total Size: 30,352.1 ha (75,001.5 acres)

**Site Description:** The Joyce Kilmer Memorial Forest is the largest single stand of virgin hardwood forest in the North Carolina mountains. The forest, which is surrounded by a wilderness area, includes yellow pine (*Pinus spp.*), hemlock (*Tsuga canadensis*), sycamore (*Platanus occidentalis*), basswood (*Tilia spp.*), dogwood (*Cornus florida*), beech (*Fagus grandifolia*), and oak (*Quercus spp.*). Much of the forest adjacent to Slickrock Creek and Little Santeelah Creek, while spectacular, was logged from 1915 to the early 1920s. Time and management have largely healed the scars from early logging.

**Habitats:** Old-growth cove hardwood forests, northern hardwood forests, mixed forests (mostly hemlock), and mountain balds.

**Land Use:** Conservation, recreation, and tourism.

**Primary Threat:** Air pollution.

**Protection Status:** The site is in federal ownership, managed by the United States Forest Service.

**Conservation Issues:** Long-term consequences of air quality decline need to be monitored.

**Birds:** The site supports a significant diversity and abundance of birds associated with cove and northern hardwood forest types (Criterion NC4). It is part of a large area of public lands that support an assemblage of birds typical of the southern Appalachians. In particular, it gives insight into what regional avian communities looked like in the pre-Columbian period. A number of “high-” and intermediate-elevation species occur at this site despite its modest elevation. At least 43 breeding species have been recorded. The site has a significant diversity of neotropical migrant landbirds.

**Monitoring and Research:** Point counts are conducted within the National Forest portion of the Important Bird Area. Additional surveys of landbirds during breeding season, migration periods, and winter are needed.

### Key Bird Species

Criterion	Species	Season	Number
2a	Ruffed Grouse	all	—
3a	Blue-headed Vireo	B	—
2a	Brown Creeper	B	—
2a	Winter Wren	B	—
2a	Golden-crowned Kinglet	B	—
2b	Wood Thrush	B	—
2b	Black-throated Blue Warbler	B	—
2a	Black-throated Green Warbler	B	—
2b	Worm-eating Warbler	B	—
3a	Rose-breasted Grosbeak	B	—
3a	Scarlet Tanager	B	—

B = breeding

## Max Patch



**Location:** Haywood and Madison Counties

**Total Size:** 2,145.8 ha (5,302.5 acres)

**Site Description:** The Max Patch region includes the Harmon Den and Hurricane Mountain roadless areas (just east of Interstate 40). Several grassy balds extend from Max Patch northward to the Bald Mountains roadless areas. Mixed forest, potential old-growth areas within the roadless areas and extensive early-succession habitats make this a diverse site. The Southern Appalachian Forest Coalition includes the area in its Bald Mountains Conservation Region.

**Habitats:** Northern hardwood forest, mixed forest, grassy balds, and early-succession agricultural areas

**Land Use:** Cattle grazing, recreation, forestry, and second-home development.

**Primary Threats:** Reforestation, residential and commercial development on private lands.

**Protection Status:** Much of the area is included in Pisgah National Forest. The Appalachian Trail passes through the area and across Max Patch Mountain itself. The lower sections, where most of the Golden-winged Warbler population is found, is in private ownership.

**Conservation Issues:** As with most Golden-winged Warbler habitat, forest regeneration is a primary threat to the site. Housing has begun to develop in the private areas and the eventual decline of cattle grazing may allow reversion to forest over time. The United States Forest Service also actively manages the high-elevation areas with fire. More information is needed on burning schedules, extent and other factors to gauge the impacts to the birds in this Important Bird Area.

**Birds:** This area is little known for its birds, except for the large numbers of Golden-wings that nest on the approach to the Max Patch area. Most of the large numbers of Golden-wings are found on the slightly lower Hurricane and Meadow Fork Mountains to the south of Max Patch proper. Naked Place Mountain (an extension of Hurricane Mountain) is the center of this population. Surveys in 2002 and again in 2009 suggest a total population of 50 or more pairs, but much more study is needed to determine densities in the area. Other early-successional species are present as well, including Field Sparrow, Least Flycatcher, Alder Flycatcher, and Chestnut-sided Warbler.

**Monitoring and Research:** Members of the Carolina Field Birders (a local bird club), as well as some members of the Elisha Mitchell Audubon Society, conduct annual spring counts in the area and specifically track Golden-winged Warbler numbers. Their data is being entered into the eBird system. Point counts are also conducted in the area managed by the United States Forest Service. Audubon North Carolina has also conducted Golden-winged Warbler surveys in the area as part of the larger Golden-winged Warbler Atlas Project coordinated by the Cornell Laboratory of Ornithology.

### Key Bird Species

Criterion	Species	Season	Number
2a	Alder Flycatcher	B	—
3a	Least Flycatcher	B	—
2a	Golden-winged Warbler	B	25 prs. (2009)
2b	Chestnut-sided Warbler	B	—
2b	Black-throated Blue Warbler	B	—
2a	Swainson's Warbler	B	—
3a	Ovenbird	B	—
2b	Field Sparrow	B	—
2a	Vesper Sparrow	B	—

B = breeding

## Nantahala Mountains



**Location:** Macon, Clay, and Cherokee Counties

**Total Size:** 54,621.2 ha (134,971.9 acres)

**Site Description:** The Nantahala Mountains Important Bird Area extends from the Georgia–North Carolina line northward to the northern boundary of Macon County and west to the Valley River Mountain–Tusquitee Mountain area. Many peaks exceed 1,525 m (5,003 feet) in elevation.

**Habitats:** Cove forest, mountain bald, and northern hardwood forest.

**Land Use:** Conservation, hunting, and fishing.

**Primary Threats:** Logging, recreational and commercial development on private lands.

**Protection Status:** The Important Bird Area includes portions of Nantahala Game Lands, Nantahala National Forest, and privately owned land.

**Conservation Issues:** Much of the Nantahala National Forest in this Important Bird Area has been logged in the past. Additional surveys of landbirds during breeding season, migration periods, and winter are needed.

**Birds:** This is an excellent site for mid- to high-elevation birds and probably one of the most important nesting areas for Yellow-bellied Sapsuckers in the Southern Appalachians. Cove forests and northern hardwood forests are extensive and support bird assemblages typical of these habitats (Criterion NC4). Other species that are common in the area include Ruffed Grouse, Black-throated Blue Warbler, Rose-breasted Grosbeak, Red-breasted Nuthatch, Winter Wren, Ovenbird, Golden-crowned Kinglet, and Golden-winged Warbler.

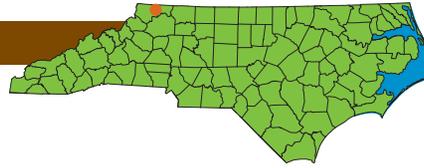
**Monitoring and Research:** Point counts are conducted annually within the Nantahala National Forest.

### Key Bird Species

Criterion	Species	Season	Number
2a	Yellow-bellied Sapsucker	B	—
2a	Red-breasted Nuthatch	all	—
2a	Winter Wren	B	—
2a	Golden-crowned Kinglet	all	—
2b	Wood Thrush	B	—
2a	Golden-winged Warbler	B	—
2b	Black-throated Blue Warbler	B	—
3a	Ovenbird	B	—
2b	Louisiana Waterthrush	B	—
3a	Rose-breasted Grosbeak	B	—

B = breeding

## New River Corridor



**Location:** Ashe and Alleghany Counties

**Total Size:** 12,806.0 ha (31,644.2 acres)

**Site Description:** The New River Corridor Important Bird Area includes a relatively narrow floodplain and adjacent slopes along the lower portions of the South Fork and North Fork of the New River in northwestern North Carolina. It is thought to be the oldest river system in North America and one of the oldest in the world. Much of the area along the river is highly modified by humans and has been converted to agricultural fields in the past. Residential housing is quite common. A narrow fringe of shrubs and trees between the river and farmland or housing remains, however, and this is the area of primary significance for birds.

**Habitats:** Riparian, agricultural, mixed forest, and river.

**Land Use:** Conservation, recreation and tourism, agriculture, and residential development.

**Primary Threats:** Agriculture and conversion, recreational development, residential and commercial development.

**Protection Status:** Portions of the site are protected and managed by the State of North Carolina as part of New River State Park and North Carolina Wildlife Resources Commission game lands. The South Fork of the New River has been designated a National Wild and Scenic River and a State Wild and Scenic River.

**Conservation Issues:** The clearing of vegetation down to the stream bank for pasture, Christmas tree plantations, and croplands are significant concerns. Residential and

commercial development on and in close proximity to the stream bank threaten habitat. The site has become very popular among recreationists, which has led to concern for streamside habitats.

**Birds:** It supports a significant portion of the state populations of breeding Warbling Vireos and Baltimore Orioles. The riparian zone supports a significant number of Willow Flycatchers and Yellow Warblers. The state's first breeding record for Tree Swallow was found along the river around 1980. Orchard Oriole and Yellow-throated Vireo are found on the site, as well as Golden-winged Warbler, Blue-winged Warbler, and Chestnut-sided Warbler. In all, over 100 breeding species are present along the river, making it one of the most diverse Important Bird Areas in the state. This area was recently recognized as a globally significant site for Golden-winged Warblers.

**Monitoring and Research:** Audubon North Carolina established permanent point count locations along both the North and South Forks beginning in 2005 that are being continued by Adopt an Important Bird Area volunteers from the Audubon Society of Forsyth County, including counts within New River State Park. These data are entered into the State Parks Natural Resource Inventory Database. In addition, Audubon North Carolina conducts regular monitoring of the known Golden-winged Warbler locations.

### Key Bird Species

Criterion	Species	Season	Number	Year
3a	Willow Flycatcher	B	21	2005-6
3a	Eastern Kingbird	B	58	2005-6
2a	Warbling Vireo	B	2	2005-6
2b	Yellow-throated Vireo	B	45	2005-6
3a	Tree Swallow	B	80	2005-6
2b	Wood Thrush	B	38	2005-6
2b	Northern Parula	B	46	2005-6
2a	Golden-winged Warbler	B	27	2009
3a	Yellow Warbler	B	64	2005-6
2b	Hooded Warbler	B	42	2005-6
2b	Field Sparrow	B	50	2005-6
2a	Bobolink	B	8	2005-6
3a	Baltimore Oriole	B	68	2005-6

B = breeding

## Northern Escarpment



**Location:** Wilkes, Watauga, and Caldwell Counties

**Total Size:** 63,958.8 hectares (158,045.6 acres)

**Site Description:** This site lies along the steep escarpment areas that comprise the eastern edge of the Blue Ridge. Ranging in elevation from about 1,220 m (4,003 feet) to as low as 305 m (1,001 feet) in upper Wilkes County, this diverse area supports piedmont and mountain species. Most of the area is densely wooded. The area is under tremendous development pressure as there is little public land in the area, with the exception of fragments of the Pisgah National Forest in the community of Globe, N.C.

**Habitats:** Dry oak forest, cove hardwood forest, xeric pine, xeric hardwood, residential development, and agricultural lands (mostly grazing).

**Land Use:** Hunting and fishing, recreation, forestry, second-home development, agriculture.

**Primary Threats:** Second-home development, resort development, timbering, water pollution, invasive species.

**Protection Status:** Much of this Important Bird Area is privately held. The southern end of the Important Bird Area is composed of small patches of Pisgah National Forest lands and some North Carolina Wildlife Resources Commission game land tracts (Mingo tract, Buffalo Cove, Big Ivy). Some development projects are placing significant tracts into conservation easement.

**Conservation Issues:** Since a large portion of this Important Bird Area is privately owned, it has been under tremendous development pressure, with several large development projects

that exceed 1,200 ha (2,965 acres). Some of them have experienced significant declines in sales with the economic conditions at the time of this writing. Residential development, apart from direct habitat change, is also adversely affecting water quality. The area hosts many N.C. Outstanding Resource Waters. The hemlock adelgid is another threat to these watersheds, as is the spread of invasive plants following logging and development. Other issues include continuing timber harvesting as these areas reach marketable age, which can lead to erosion in this high-relief terrain.

**Birds:** Most of the area is forested and, given the range of elevations, supports a diverse array of forest interior species, including Cerulean, Swainson's, Worm-eating, Kentucky, Hooded, and Blackburnian Warblers and Northern Parula. It also contains habitat for Yellow-bellied Sapsuckers, Red Crossbills, and populations of Dark-eyed Juncos and Red-breasted Nuthatches at lower-than-normal elevations (670 m [2,198 feet]). The base of the escarpment is also an important area for Whip-poor-wills and other nightjar species.

**Monitoring and Research:** Audubon North Carolina and its partners conducted point count surveys at several locations throughout the Important Bird Area from 2004 to 2008. Audubon North Carolina conducts annual monitoring of the primary Cerulean Warbler site on the Blue Ridge Parkway.

### Key Bird Species

Criterion	Species	Season	Number
2b	Whip-poor-will	B	44
2b	Acadian Flycatcher	B	21
2b	Wood Thrush	B	61
2b	Black-throated Blue Warbler	B	21
2a	Black-throated Green Warbler	B	73
2b	Worm-eating Warbler	B	26
3a	Black-and-white Warbler	B	49
3a	Ovenbird	B	90
2b	Hooded Warbler	B	57
3a	Scarlet Tanager	B	42

B = breeding

"Number" represents maximum singing males detected on point counts made from 2004 to 2008.

## Plott and Great Balsam Mountains



**Location:** Transylvania, Haywood, Jackson, Henderson, and Buncombe Counties

**Total Size:** 49,246.2 ha (121,690.0 acres)

**Site Description:** The Plott and Great Balsam Mountains stretch along the Blue Ridge Parkway near the towns of Sylva, Brevard, and Waynesville. The site is significant for high-elevation birds, including several Special Concern and watchlist species. The Important Bird Area consists of spruce-fir and mixed spruce forests above 1,370 m (4,495 feet). Maximum elevation is 1,955 m (6,414 feet), at Richland Balsam. Additional features include steep and rugged slopes, bogs, and balds.

**Habitats:** Northern hardwood forest, cove hardwood forest, spruce-fir forest, heath balds, bogs.

**Land Use:** Conservation, recreation, and privately owned lands.

**Primary Threats:** Air pollution, logging, introduced pests, and residential and commercial development on private lands.

**Protection Status:** Portions of the Important Bird Area are within the Nantahala National Forest, Pisgah National Forest, Nantahala Game Lands, Pisgah Game Lands, and National Park Service areas, and include the Shining Rock

and Middle Prong Wilderness areas. The site also includes lands in private ownership.

**Conservation Issues:** Much of the lower-elevation forest has been logged. Acid rain threatens many of the high-elevation spruce-fir forests, weakening the trees and making them susceptible to the balsam wooly adelgid and disease.

**Birds:** The northern hardwoods and cove hardwoods provide excellent habitat for high-elevation species (Criterion NC4). The site is a key area for species such as Northern Saw-whet Owl, Red Crossbill, Black-throated Blue Warbler, and Brown Creeper. It is also among the state's most important sites for Alder Flycatcher, Black-capped Chickadee, Common Raven, and Red-breasted Nuthatch.

**Monitoring and Research:** Spring counts are conducted by Adopt an Important Bird Area participants, with the Elisha Mitchell Audubon Society and Carolina Field Birders. The National Park Service conducts regular Northern Saw-whet Owl surveys.

### Key Bird Species

Criterion	Species	Season	Number	Year
1	Northern Saw-whet Owl	all	1	2009
1	Peregrine Falcon	B	5	2007
2a	Yellow-bellied Sapsucker	B	30	2005
2a	Alder Flycatcher	B	14	2009
2a	Black-capped Chickadee	all	27	2007
2a	Red-breasted Nuthatch	all	31	2007
2a	Brown Creeper	B	31	2008
2a	Winter Wren	B	34	2006
2a	Golden-crowned Kinglet	all	163	2006
2b	Wood Thrush	B	20	2008
2b	Veery	B	118	2009
2a	Hermit Thrush	B	5	2008
2b	Northern Parula	B	27	2006
2b	Black-throated Blue Warbler	B	141	2006
2b	Blackburnian Warbler	B	36	2006
2a	Black-throated Green Warbler	B	100	2006
2b	Canada Warbler	B	105	2006
2b	Hooded Warbler	B	36	2008
3a	Rose-breasted Grosbeak	B	47	2008

B = breeding

## Roan Mountain



**Location:** Mitchell County

**Total Size:** 8,449.2 ha (20,878.4 acres)

**Site Description:** Roan Mountain is located in Mitchell County, near the Tennessee border. The peak of Roan rises 1,917 m (6,289 feet) above sea level at Roan High Knob. Roan is probably most recognized for its balds (high-elevation grassy meadows) and for its rhododendron (*Rhododendron catawbiense*) "gardens," but the site also includes significant stands of northern hardwoods and spruce-fir forests. Roan Mountain's aesthetic value was recognized as early as 1836 by Elisha Mitchell, who called it "the most beautiful of all the high mountains," and in 1841 by the pioneer botanist Asa Gray, who called it "without doubt, the most beautiful mountain east of the Rockies."

**Habitats:** Grassy balds, rhododendron thickets, northern hardwood forest, and spruce-fir forest.

**Land Use:** Conservation, forestry, and recreation

**Primary Threats:** Invasive pests, air pollution, reforestation and loss of bald habitats, and residential development.

**Protection Status:** Much of Roan Mountain is within the Pisgah National Forest in North Carolina and, on the Tennessee side, Cherokee National Forest and Roan Mountain State Park. Additional land has been purchased by The Nature Conservancy and the Southern Appalachians Highlands Conservancy and transferred to the United States Forest Service. Recently, North Carolina State Parks has added the Little Yellow Mountain State Natural Area to its holdings. The site also includes private lands.

**Conservation Issues:** Efforts are under way to maintain the balds through direct management to prevent these areas from being overtaken by trees and shrubs. The Southern Appalachian Highlands Conservancy, The Nature Conservancy, and North Carolina State Parks are all actively acquiring land in the Important Bird Area. A location in the southwestern corner of the Roan Mountain area is under study for commercial-scale wind energy development, near the town of Spruce Pine.

**Birds:** Roan Mountain has among the greatest diversity of birds of any site in the North Carolina mountains. It is one of North Carolina's most important sites for Northern Saw-whet Owls and one of the most significant sites in the southern Appalachians for Magnolia Warbler. The site supports a significant diversity and abundance of birds associated with spruce-fir forest, northern hardwood forest, and mountain bald habitats (Criterion NC4). This Important Bird Area was recently designated a globally significant site for Golden-winged Warbler.

**Monitoring and Research:** A migration banding station is established at Carver's Gap. The Southern Appalachian Highlands Conservancy regularly monitors the site. They are also working with Audubon North Carolina on restoration of Golden-winged Warblers and their habitats. Surveys for Yellow-bellied Sapsucker and Golden-winged Warbler continue to be conducted.

### Key Bird Species

Criterion	Species	Season	Number
1	Northern Saw-whet Owl	all	—
2a	Alder Flycatcher	B	—
2a	Brown Creeper	all	—
2a	Winter Wren	B	—
2a	Golden-crowned Kinglet	all	—
2a	Golden-winged Warbler	B	26
2b	Chestnut-sided Warbler	B	—
2a	Magnolia Warbler	B	—
2b	Worm-eating Warbler	B	—
3a	Ovenbird	B	—
2b	Canada Warbler	B	—
2b	Hooded Warbler	B	—
2a	Red Crossbill	all	—

B = breeding

## Stone Mountain–Doughton Park



**Location:** Alleghany and Wilkes Counties

**Total Size:** 16,623.6 ha (41,077.7 acres)

**Site Description:** The site runs along the Blue Ridge Parkway in Alleghany and Wilkes Counties. Elevations range from 425 to 1,190 m (1,394–3,904 feet) along this part of the escarpment. From the Blue Ridge Parkway it continues east to Stone Mountain and southwest to the southern boundary of Thurman–Chatham Game Lands. The area includes deep cove forests, streams, cleared fields, habitats, and birds that are typical of mid-elevation hardwood forests.

**Habitats:** Hardwood forest, mixed forest, steep and rocky outcrops, hardwood cove forest, and numerous small streams.

**Land Use:** Conservation, recreation and tourism, hunting, fishing.

**Primary Threats:** Invasive species, residential and commercial development, timbering.

**Protection Status:** Doughton Park is protected and managed by the National Park Service. North Carolina State Parks manages Stone Mountain, and the North Carolina Wildlife Resources Commission manages the Thurmond–Chatham Game Lands. Isolated tracts within this Important Bird Area are privately owned and are not afforded protection.

**Conservation Issues:** Privately owned tracts should be acquired for conservation. Additional surveys of landbirds during breeding season, migration periods, and winter are needed.

**Birds:** The site supports species typical of mid-elevation forests, including several watchlist species, and a significant concentration and diversity of landbirds. Much of the area is unbroken hardwood and cove forests and supports the suite of species typically associated with these habitats (Criterion NC4).

**Monitoring and Research:** Bird data from Stone Mountain State Park are entered into the State Parks Natural Resource Inventory Database. The Thurman–Chatham Game Lands are monitored by the North Carolina Wildlife Resources Commission using a series of permanent point counts.

### Key Bird Species

Criterion	Species	Season	Number
2a	American Woodcock	B	—
2b	Ruffed Grouse	all	—
2b	Whip-poor-will	B	—
2b	Acadian Flycatcher	B	—
3a	Blue-headed Vireo	B	—
2b	Wood Thrush	B	—
2b	Northern Parula	B	—
2b	Black-throated Blue Warbler	B	—
2a	Black-throated Green Warbler	B	—
2b	Worm-eating Warbler	B	—
2a	Swainson's Warbler	B	—
2b	Louisiana Waterthrush	B	—
3a	Scarlet Tanager	B	—
2a	Red Crossbill	all	—

B = breeding

## Wilson Creek–Linville Gorge



**Location:** Avery, Caldwell, and Burke Counties

**Total Size:** 43,442.8 hectares (107,349.4 acres)

**Site Description:** Bordered by Grandfather Mountain on the north and the Black Mountains (including Mt. Mitchell) on the west, these steep, high-relief gorge areas support a diverse assemblage of breeding birds. The Linville Gorge area is a designated Wilderness Area. Three roadless areas (Wilson Creek, Lost Cove Cliffs, and Harpers Creek), include over 12,140 ha (29,999 acres) of intact forest. Abundant water resources add to the diversity of the area, and many Outstanding Resource Waters are contained in this IBA, as well as several North Carolina Natural Heritage Program Significant Natural Areas.

**Habitats:** Mixed mesophytic forest, cove hardwood, hemlock cove, and xeric oak-pine forests, with smaller components of cliff face, heath bald, bottomland forest (riverine), grassland, and other early successional habitats.

**Land use:** Wildlife management, timbering, and recreation (including off-road vehicle areas).

**Primary Threats:** Invasive species, disturbance to birds (Peregrine Falcon), and water pollution.

**Protection Status:** Most of this Important Bird Area is in federal ownership as part of the Pisgah National Forest. Some inholdings occur, especially along Wilson Creek, from the community of Edgemont to Mortimer, and along the ridge between Wilson Creek Gorge and Linville Gorge (the east rim) that includes the community of Jonas Ridge. Much of the Wilson Creek and Linville Gorge area is also managed as

North Carolina Wildlife Resources Commission Game Lands, especially the Daniel Boone Bear Sanctuary area in Wilson Creek Gorge.

**Conservation Issues:** While the area is largely under public ownership, concerns remain over multiple use, invasive plant species (especially following fire), and permanent protection for wilderness study and designated roadless areas.

**Birds:** This area supports a variety of high priority species. Its proximity to Grandfather Mountain also makes it key for seasonal movements of other higher-elevation species (for example Northern Saw-whet Owls). Point count surveys of the breeding birds in 2002 found more than 80 breeding-season species. Several species occur in higher relative numbers in Wilson Creek than in the mountain region overall (Criterion NC4). Most of these are woodland species, as would be expected: Broad-winged Hawk, several woodpecker species, Black-throated Green Warbler, Ovenbird, Hooded Warbler, Worm-eating Warbler, Swainson's Warbler, Scarlet Tanager, and others.

**Monitoring and Research:** Audubon North Carolina conducted the first comprehensive bird surveys in the region, and these continue to be monitored by Adopt an Important Bird Area volunteers from the High Country Audubon Society. The North Carolina Wildlife Resources Commission conducts annual monitoring of Peregrine Falcons.

### Key Bird Species

Criterion	Species	Season	Number	Year
1	Peregrine Falcon	B	2 prs.	2009
2b	Acadian Flycatcher	B	20	2003
2b	Wood Thrush	B	44	2003
2b	Northern Parula	B	12	2003
2b	Black-throated Blue Warbler	B	53	2003
2a	Black-throated Green Warbler	B	147	2003
2b	Worm-eating Warbler	B	34	2003
2b	Canada Warbler	B	16	2003
2b	Hooded Warbler	B	58	2003
2a	Red Crossbill	B	10	2003

B = breeding

## Yellow Creek–Cheoah Mountains



**Location:** Swain County

**Total Size:** 35,015.6 hectares (86,525.3 acres)

**Site Description:** This rugged area of the Nantahala National Forest includes deep coves and valleys and mid- to high-elevation areas just east of Fontana Lake. The area boasts some of the best birding spots in the region, including the well-known Stecoah Gap. A history of forest management, coupled with private agricultural inholdings, has created a mosaic of habitats that have supported populations of both Golden-winged Warblers and Cerulean Warblers. Recreational opportunities include motorbiking, hiking the Appalachian Trail, and visiting popular nearby areas (such as Joyce Kilmer Memorial Forest, Fontana Village, and Great Smoky Mountains National Park).

**Habitats:** Mixed forest, cove hardwood forest, early successional lands, and agricultural lands.

**Land Use:** Recreation, timbering, agriculture, and residential development.

**Primary Threats:** Invasive pests, invasive plant species, residential development.

**Protection Status:** River and creek valleys tend to be in private ownership. The Talulla Wetlands laboratory of Western Carolina University is located here. Much of the area is within the Nantahala National Forest.

**Conservation Issues:** The area has become popular with motorcyclists from all over the country, who come to ride the winding roads around Fontana Lake. This impact on birds has not been measured, but the traffic would likely affect

roadside nesters, which in some areas include Cerulean Warblers. The decrease in cutting on National Forest lands also likely reduces available Golden-winged Warbler habitat. The area around Stecoah Gap will be impacted by road-widening projects in the near future (Corridor K). The road construction may create additional Golden-winged Warbler habitat, but possibly to the detriment of forest interior species. The hemlock woolly adelgid (*Adelges tsugae*) is severely damaging riparian and cove forests in the area.

**Birds:** This area of rich forest, high-relief topography, and active forest management creates a diversity of forest types. This mix of high-density areas suits both early-successional species like Golden-winged Warbler, and Kentucky Warbler, as well as forest interior species like Cerulean Warbler, Swainson's Warbler, and Northern Parula. During point counts in 2005–6, 59 breeding species were encountered. An additional 15 species were recorded outside of point counts and some other priority species including Ruffed Grouse and Red Crossbill were noted. Although not a priority species, Great Blue Herons were found to be nesting along an impoundment of the Little Tennessee River in this area.

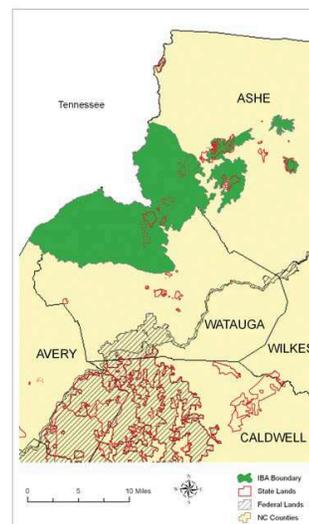
**Monitoring and Research:** Research on Golden-winged Warblers and Golden-winged Warbler Atlas Project surveys has been conducted. Point counts are conducted within the Nantahala National Forest. In 2005 and 2009, the Nantahala National Forest undertook Cerulean Warbler surveys.

### Key Bird Species

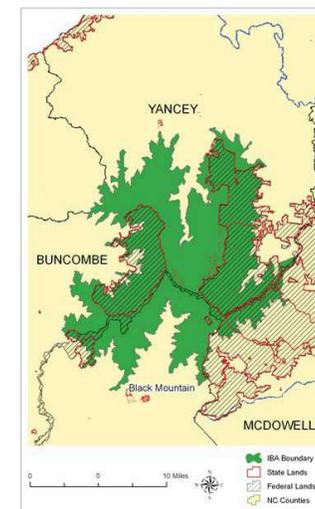
Criterion	Species	Season	Number	Year
1	Cerulean Warbler	B	30	2005
2a	Golden-winged Warbler	B	15	2007
2a	Black-throated Green Warbler	B	36	2007

B = breeding

### Amphibolite Mountains



### Black Mountains–Great Craggy Mountains



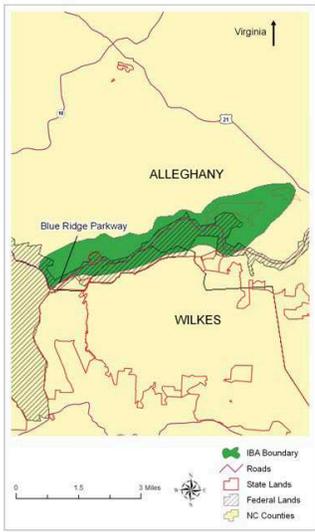
### Blue Ridge Escarpment Gorges



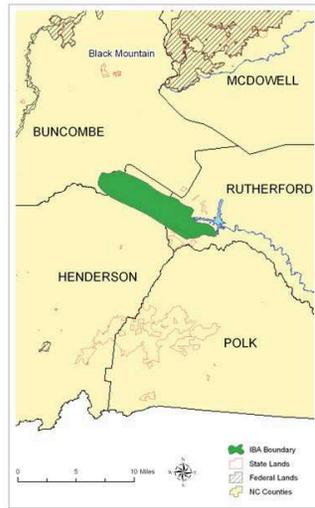
### Bull Creek



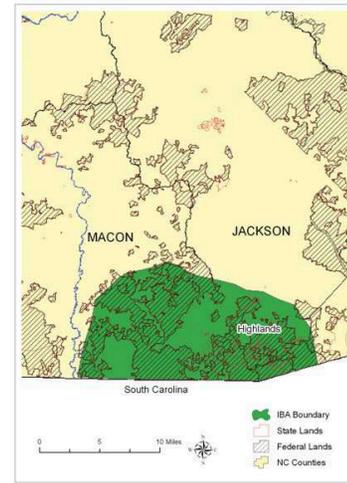
**Bullhead Mountain–Mahogany Rock**



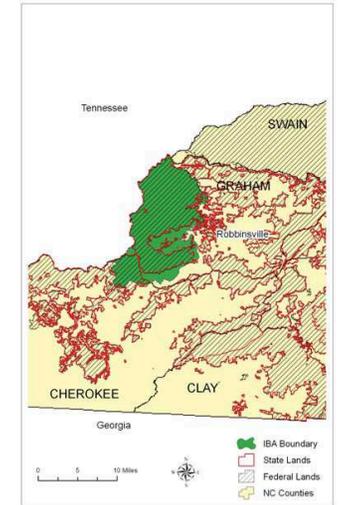
**Chimney Rock–Hickorynut Gorge**



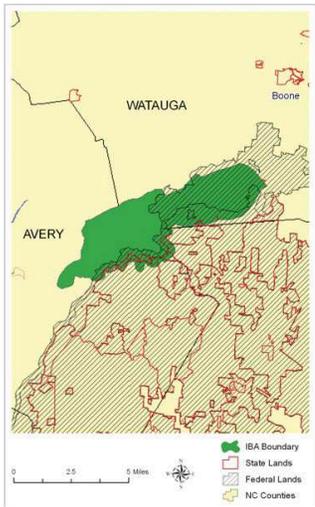
**Highlands Plateau**



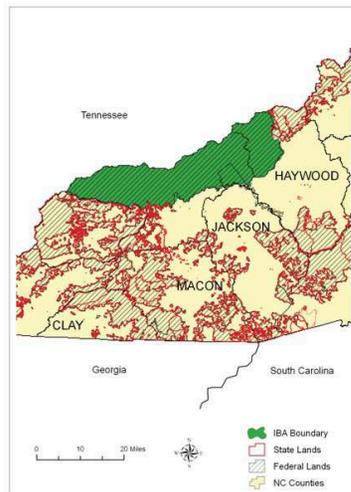
**Joyce Kilmer–Slick Rock Wilderness**



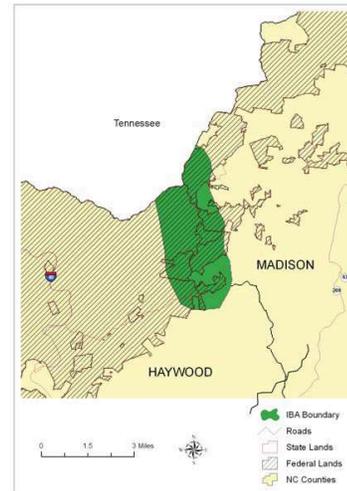
**Grandfather Mountain**



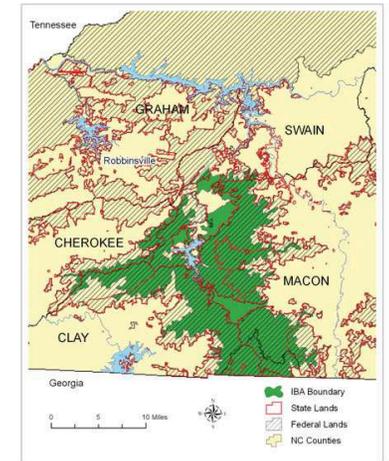
**Great Smoky Mountains National Park**



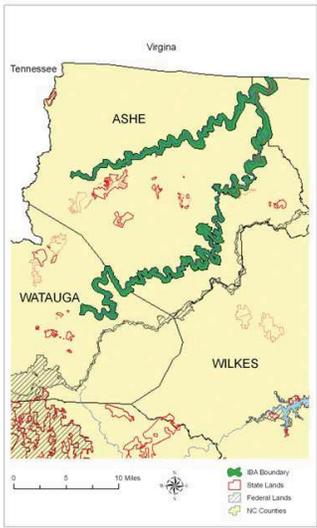
**Max Patch**



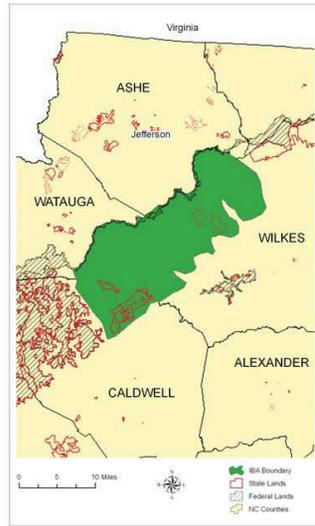
**Nantahala Mountains**



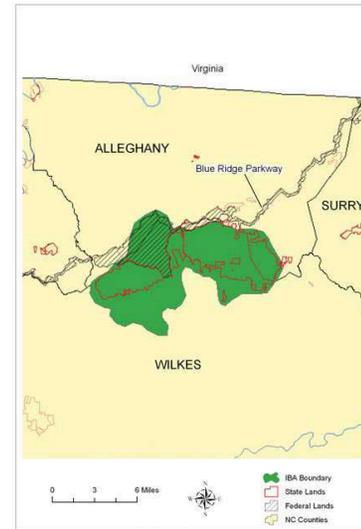
**New River Corridor**



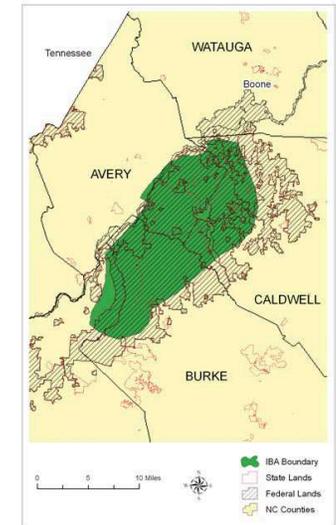
**Northern Escarpment**



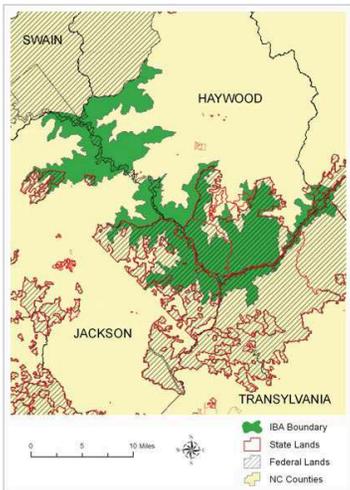
**Stone Mountain–Doughton Park**



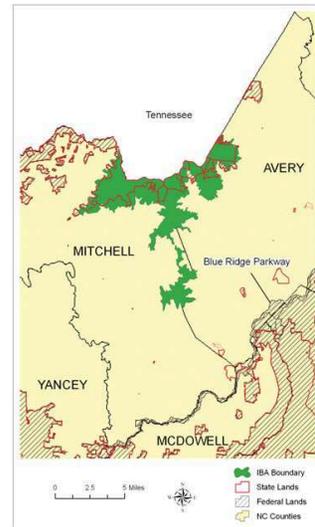
**Wilson Creek–Linville Gorge**



**Plott and Great Balsam Mountains**



**Roan Mountain**



**Yellow Creek–Cheoah Mountains**

