



" In the (Southern Appalachian mountains) occur that marvelous variety and richness of plant growth which have led our ablest business men and scientist to ask for its preservation by the Government for the advancement of science and for the instruction and pleasure of the people of our own and of future generations.."

— Theodore Roosevelt, 1902



Return the Great Forest

A Conservation Vision for the Southern Appalachian Region

" I am very impressed by this bold vision of how to restore and preserve the Southern Appalachian Forest, and hope that it can be realized."

— Jimmy Carter, 2002



SOUTHERN APPALACHIAN
Forest Coalition



Return the Great Forest

A Conservation Vision for the Southern Appalachian Region

By: Hugh Irwin
Susan Andrew
Trent Bouts



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About the Southern Appalachian Forest Coalition

Protecting and restoring the wildlands, waters, native forests and ecosystems of the Southern Appalachian landscape

The Southern Appalachian Forest Coalition unites national, regional, state, and local environmental organizations from Alabama to Virginia to protect the public lands and heritage of the Southern Appalachian region. SAFC formed in 1994 to respond to our recognition that the Southern Appalachian legacy – high mountains and forests, rivers and rural countryside – is at risk from mismanagement, excessive road building and irresponsible land development.

Together, we have created a regional conservation vision and campaign to protect and restore lands, native species, and ecological processes of natural landscapes. The SAFC regional headquarters provides GIS mapping, scientific analysis, financial support and campaign assistance to our members and dozens of conservation initiatives throughout the region.

SAFC envisions a future where the landscape serves and sustains all communities, from the microscopic recyclers of the forest floor to our largest urban centers. Such a landscape would sustain healthy populations of native species, generate clean water and clean air, and satisfy the increasing demand for fulfilling backcountry recreation. SAFC calls not only to the conservationist and the activist but to every citizen to engage in the discussions and take the actions that can lead us in the direction of health for our forests, our lands, and our people.

SAFC Activities

Great Forest Campaign. Promoting conservation of the region's most ecologically significant and scenic natural areas, and educating citizens, civic groups, business associations, agencies and law makers about our natural heritage.

Conservation Vision. Bringing the insights and analysis from conservation biology to bear on conservation protection and recovery for the Southern Appalachians.

Forest Planning. Pursuing the protection and restoration of special areas on national forest lands through agency planning and policy initiatives, and working to steer the Forest Service toward sound conservation and citizen involvement.

Forest Defense. Monitoring and defending key areas within each state and ensuring ecosystem protection and restoration of national forest lands. Activities include special area ground truthing, biological field surveys, and timber sale challenges.

Watershed Protection. Seeks protection for critical watersheds on the national forests, in part by establishing a "time out" for extraction and other destructive management practices in critical watersheds.



SAFC Member and Affiliate Groups

Alabama Environmental Council
Appalachian Voices
Chattooga Conservancy
Cherokee Forest Voices
Citizens Task Force on National Forest Management
Coalition For Jobs & The Environment
Forest Service Employees For Environmental Ethics
Georgia Forest Watch
Nantahala Forest Watch
National Audubon Society-NC
Sierra Club
South Carolina Forest Watch
Southern Appalachian Biodiversity Project
Southern Environmental Law Center
The Wilderness Society
Virginia Forest Watch
Western North Carolina Alliance
Wild Alabama

Partner Groups

Eastern Forest Partnership
Heritage Forest Campaign
Pacific Rivers Council
Pew Wilderness Center
Southwings
Wilderness Support Center

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Preface

On behalf of the members of the Southern Appalachian Forest Coalition, we proudly introduce *Return the Great Forest: a Conservation Vision for the Southern Appalachian Region*.

Return the Great Forest invites you to envision the Southern Appalachians whole again – as the diverse, and vibrant ancient forest that lies at its heart. We call upon the region's caretakers – its citizens, agencies, and lawmakers – to reject the path that would deliver a dismal future where its natural heritage is barely recognized.

This vision combines the efforts of scientists, conservationists and naturalists over a six-year period, to gather the best available research on the region's remaining biological diversity, cultural and historical significance, and economic future. Most importantly, it delivers a blueprint for protecting and recovering an ever-diminishing natural landscape on which our lives, health and serenity depend.



Amy Belanger
SAFC
Campaign Director

At its core is the protection of our national forest lands, namely their roadless areas, municipal and high biodiversity watersheds, old growth forests, and unprotected cultural areas. At its periphery are areas that we would like to acquire from willing sellers to add to the protected land base. In between are numerous other public lands that deserve permanent protection from logging, road building, and development. Together, these areas form a chain of unbroken wildlife habitat, unbroken drinking watersheds, unbroken future old growth forest, and human communities nourished by a beautiful and vibrant landscape.

We live in a rapidly changing world, perhaps moreso here in the Southern Appalachians than anywhere else in the nation. Urbanization of our rural landscapes, increasing global demand on our region's timber, escalating environmental problems, and the loss of significant cultural heritage are problems that eventually add up to irreversible loss. What remains constant in our lives however, is the need for clean water, clean air, the fellowship of other species, and solitude in wild places – all of the reasons we call these beautiful mountains home.

More than 100 million Americans live within a half-day drive of these forests, and rely on them for clean air, clean water, vibrant wildlife, and outstanding recreation. As these numbers continue to grow, and more open lands disappear under asphalt and concrete, the value of our public forests and all they provide grows ever greater. From the standpoint of the last hundred years, the return of the Great Forest may seem a pipe dream. The growth curve of our region predicts a future of rolling hills of pavement and mountains of high-rise condominiums. Yet, in spite of this growth, the Southern Appalachians retain many of their natural ecosystems. Perhaps just as importantly, this region enjoys a cultural heritage that celebrates and understands our



dependence on the rugged and bountiful terrain. Indeed, in this land of folk ballads, vine baskets, and the Appalachian Trail, daily life is infused with reminders of how the mountains have shaped and supported our heritage, culture, economy and the overall health of the region and its people. Unless we secure their future, we will lose what we value most about this precious mountain homeland.

It took 500 years to fragment the Great Forest. Yet even now, in the dark of the night, an orbiting satellite reveals the Southern Appalachian mountain chain as a dark region in the center of a string of lights, revealing a sanctuary that is relatively protected from urban intrusion. Demographic studies reveal rural areas in these mountains that are less populated now than a generation ago.



Brent Martin
SAFC Chair

In many ways, this region still functions as a natural landscape. Bears still travel from Alabama to Northeast Tennessee, and from Southwest Virginia to West Virginia, through a connected chain of forests. In the forest, to the bear and the drifting pollen, the streams and the eagle, the hiker and the rain, boundaries are meaningless. To a degree, they are still part of a single and ancient Great Forest.

We can build on the wholeness that remains to fully return the Great Forest. It will take a new era, a new vision, and a lot of time and effort to make it whole again. We are on the cusp of that era. And we are forming that vision.

We are fortunate to live in a society where we can make such visions reality. You can help by bringing this message to your family, your community, your school, your church, and your political leaders. Join us today as we chart the future for a sustainable Appalachian landscape.

Amy Belanger,
SAFC Campaign Director

Brent Martin,
SAFC Chair

Amy Belanger is Campaign Director for Southern Appalachian Forest Coalition. She brings 15 years' experience leading national, regional and local conservation organizations. Brent Martin is Chairman of the SAFC Steering Committee and Director of Georgia Forest Watch, with 15 years conservation leadership experience.

Forward

Restoring the Health of the Land

by Michael Dombeck

On the brink of the 20th century, in 1899, a diverse group of local people met in the mountain city of Asheville to chart a course for the restoration of the Southern Appalachian forests. That gathering was fueled by widespread concern for the once tremendous forests that had been felled in the name of progress and prosperity. The mountainsides had been clear-cut, rich topsoil was gone - washed downstream by flash floods. The land was devastated. Watersheds could no longer perform their normal functions. The quality of life in one of the most beautiful parts of the country had suffered.



Michael Dombeck

That gathering of concerned citizens a century ago marked the beginning of the restoration of these once great forest ecosystems. As momentum built, the Weeks Act of 1911 was passed, ultimately bringing some 24 million acres of Eastern forestlands into the National Forest system to be restored and protected for all Americans. Those citizens and the energy they inspired left this generation a great legacy of some of the most treasured and valuable forest resources in the country. But more work lies ahead. Our generation must continue that legacy of restoring the health of the land.

Today more people are placing more demands on the land than ever. Population growth has placed new pressures on the land. Increasing numbers of people want to experience the way of life, the unique culture, the beauty and adventure found in the Southern Appalachians. Rapidly growing cities such as Atlanta are just a brief drive away. In less than a decade, some predict an increase of 150 percent for recreational activities such as rock climbing, rafting, kayaking, back country hiking and camping. Recreation is important to local economies, enhances the quality of life, and is good for body and soul. Our challenge is to live within the limits of the land in everything we do. We must continue the work started by our forebearers 100 years ago, the work of protecting and restoring the health of these forest ecosystems, ensuring their sustainability for future generations.

On a global scale the Southern Appalachian forests are noted for their great biological diversity. For example, they harbor some 8.2 million acres of key habitat for neotropical migratory birds, species that require large blocks of contiguous forest for nesting. Half are estimated to be on national forests. The Conasauga and the Clinch-Powell River drainages provide habitat for more species of fish than any other rivers in North America. In all, the rivers of the Southern Appalachians support some 190



aquatic species that are endangered, threatened, or of special concern. The region contains more than 33,000 miles of wild trout streams.

Today the discussions of forest management ought to begin and end with water. Too much of the debate is still fought over commodities and short-term economic outputs of forests. The Southern Appalachian forests are the headwaters of major rivers including the Chattooga, Chattahoochee, Savannah, French Broad, Clinch-Powell, Little Tennessee and the New. These watersheds and others provide drinking water for an estimated 2,200 communities and 10 million people. Human population has grown tenfold since the turn of the century while per capita water use has increased thirty-fold. Water is perhaps the most under-valued and under-appreciated forest product. One of our current challenges is that too few people value wild forestlands as a crucial source of clean water.

Eastern national forests require a unique style of cooperation with local and state governments, communities, and private landowners. Unlike the West, where the federal government manages vast areas of public lands, the national forests of the East are inter-mingled with multiple private land owners. Today, the public – private partnerships are needed more than ever. The healthy forests we enjoy today in the Southern Appalachians were restored with the help of interested citizens who understood that by working together to secure the health of the land they were preserving their culture and enhancing their livelihoods. We must use this spirit of collaborative stewardship to address the problems we face today. Collaboration must include communities of interest and communities of place and result in healthier, more diverse, and richer landscapes. Collaboration is not something we should do because it is trendy or in vogue. Rather, it is the right way to carry the torch that has been passed to us.

At the dawn of this new century, a new generation of conservationists gathered in the Southern Appalachians to take stock of the land and lay out a vision for the future. We celebrate their effort and their intention. Our every action, and inaction, will have a direct influence on the health of the land at the turn of the next century. We cannot delay our efforts. The health of the land is at stake.

Mike Dombeck is Pioneer Professor of Global Environmental Management at the University of Wisconsin – Stevens Point and UW System Fellow of Global Conservation. He served as the Acting Director of the Bureau of Land Management, 1994 -1997, and Chief of the U.S. Forest Service, 1997-2001.

I.

Executive Summary

The 20th century dawned across a Southern Appalachian region that had been cut, burned and left barren after a century of exploitation and several decades of rapacious industrial timbering. In the wake of devastating floods that raced down denuded mountainsides, the population began to question the costs of wholesale forest removal. Out of that concern grew a movement, first articulated in Asheville, North Carolina, that eventually led to the establishment of the national forests of the eastern United States.

It is those forests, many of which grew back around the stumps and the rubble of early timbering, that hold the promise of new growth and forest health for the 21st century and beyond. But even though a green covering has returned to the slopes, peaks and valleys of the Southern Appalachians, today's forest canopy is only one component of a complex picture. In many ways this new canopy masks problems that are every bit as pressing and intricate as those of a century ago.

Our region is home to a biological diversity found in few places on Earth. Yet this rich tapestry of life is frayed and in danger of unraveling as roads, timbering, urban development, acid rain and other encroachments take their toll. Imprudent human activities threaten not only wildlife and habitat; we humans, too, rely on the forests to provide clean drinking water, filter our air, and provide healthy settings for recreation and renewal.

The Southern Appalachian Forest Coalition believes that the dawning of the new century finds our region at an environmental, economic and social crossroads. It is time to pool our best knowledge and effort as a society to reverse this steady decline and to follow a new vision toward forest health and the human benefits our forests provide.



What we propose...

The Southern Appalachian Forest Coalition (SAFC) envisions a future where the landscape serves and sustains all communities, from the microscopic recyclers of the forest floor to our largest urban centers. Such a landscape would sustain healthy populations of native species, generate clean water and clean air, and satisfy the increasing demand for fulfilling backcountry recreation.

To move us closer to this vision, SAFC proposes a network of linked conservation areas centered on public lands, especially national forests, across the Southern Appalachian region. These areas would:

- Provide sufficient area and connectivity to sustain the habitat and ecological processes necessary to all native plant and animal species.
- Stand permanently protected from development and other uses that destroy their biological and ecosystem values and ruin the human benefits and enjoyment that these natural areas hold.
- Offer a landscape suitable for the reintroduction of species lost to the region.
- Lie protected within a landscape that affords gradual transitions from natural to urban regions providing quality of life benefits to humans as well as native species.

Why...

Those of us who treasure the rugged yet bountiful terrain of the Southern Appalachians celebrate the ways in which it has shaped our regional character and heritage. As populations and cities continue to grow, and more and more open lands disappear under asphalt and concrete, the value of our public forests and all they provide grows ever greater. Our bequest to future generations can and must be a vigorous and well-conceived effort to provide a landscape of sustainable forests that are healthy, diverse and resilient.

How...

Many of the building blocks for a regional network of conservation areas already exist in public ownership. Individually, however, none of these blocks is large enough to serve as an ecologically complete native forest. The opportunity before us is to fulfill the potential of existing protected areas by linking them across the landscape with the critical blocks of land – 2.8 million acres of existing national forest lands in all – that SAFC proposes for protection. In this way the conservation building blocks are far more effective than the sum of

their component parts in protecting and recovering habitat and ecological processes. Such a network can be realized through protection and conservation management of our public lands, along with a careful combination of land acquisitions from willing sellers and conservation easements by individual property owners.

Why now...

No one knows how many species were lost while industry ran its heavy hand over the Southern Appalachians. Even now, after decades of research, the best we know is that we still do not know enough. Scientists have estimated that more than 90 percent of all invertebrate, plant, fungi, and vertebrate species in Great Smoky Mountains National Park remain undocumented. But even as scientists race against time to inventory the remaining species, there is no guarantee that the parts of the puzzle that survive today will be here tomorrow. Dozens of species that once flourished in the region have already vanished. Now is the time to conserve the wealth that remains in the areas described in this proposal. If this is done, citizens and legislators will have the time to institute a land ethic for the years to come and to write the laws that implement this ethic for the Southern Appalachians.



What you can do...

Each of us has the opportunity to help ensure a sustainable future for the Southern Appalachian region. These are the lands of every citizen; the fate of our natural resources and natural heritage rests in the hands of the public. We each have a duty to become informed, while our scientists and other experts have a duty to share their knowledge and advocate accordingly. Our politicians and public land managers have a duty to listen and to do their own learning. This proposal can only succeed with the support of the entire community. We call not only to the conservationist and the activist but to every citizen – to engage in the discussions and take the actions that can lead us in the direction of health for our forests, our lands, and our people.



II.

Overview: A Vision for Lasting Protection in the Southern Appalachians

The Southern Appalachian mountains support one of the most biologically diverse temperate forests in the world. Native to the region are at least 3,000 species of plants, including some 150 trees. With habitats ranging from warm, sheltered valleys to the highest mountains of the eastern U.S., the landscape is home to creatures of both tropical and boreal origins. Its streams and rivers are world renowned for their aquatic diversity, supporting vast numbers of fish, mussels, snails, and crayfish. Much of this diversity depends on waters that fall on and flow out of the mountains.

At first glance, the natural areas of the Southern Appalachians appear as healthy and stable as they are biologically rich. Yet a careful look beneath the forest canopy reveals that the biological health of the region is declining and vulnerable. Today, more than 50 species of plants and animals are formally listed as endangered

or threatened with extinction. Many more species are in decline and face an uncertain future. The spread of exotic species, habitat destruction, habitat fragmentation, and air pollution threaten the continuing loss of species and species diversity. Key species and groups, such as native predators, are almost entirely missing, and presently lack adequate habitat and prey for successful recovery.



While some natural areas are protected through legislation or strict management practices, they are generally small and isolated from each other. For a region that hosts plant and animal diversity of global significance, these islands of nature are necessary but not sufficient; they must be linked by a connected network of natural areas that will protect ecological processes and native species

into the future. Additional area must be added to provide for intact ecological units. Such ecosystems perform critical ecological processes, including air and water purification, nutrient recycling, soil renewal and climate stabilization. They are essential to the continued viability of plants and animals and, by extension, to our own quality of life, whether we live in suburban Atlanta, GA, or rural Damascus, VA.

The Southern Appalachian Forest Coalition advocates a new way of understanding the region that employs both regional and landscape-scale analysis and planning.

In parts of the Southeast, urban areas are expanding as fast and aggressively as anywhere in the United States. Increasing development is of special concern in such a heavily populated region; close to 50 percent of the national population lives within a day's drive of the Southern Appalachians. The alteration of natural habitats by human encroachment threatens the quality of the air, land and water on which all of us depend. The time is ripe for a comprehensive vision for the protection and restoration of this invaluable resource.

The Southern Appalachian Forest Coalition advocates a new way of understanding the region that employs both regional and landscape-scale analysis and planning. Regional analysis has already played a key role in protecting the heritage of the region. A landmark study at the beginning of the twentieth century (Wilson 1902) led to initiatives that resulted in our rich legacy of public lands. Nearly a century later, a thorough regional assessment (SAMAB 1996(a)) has provided an excellent current snapshot of environmental and social conditions. Reliable understanding of our rapidly changing region, however, requires more than a snapshot. If we are to achieve the ambitious objective of protecting and restoring the essential natural qualities of the Southern Appalachians, a regional perspective must become a fundamental element of all analysis and planning.

In addition, landscape analysis, which addresses relatively large areas without being confined by

political or ownership boundaries, is not yet part of most management decisions, plans, and projects. Most analysis is limited to discrete sites, special areas, ownership units, counties, or states. Piecemeal analysis and planning, while essential, cannot adequately embrace the biological needs and relationships of whole landscapes. A landscape perspective can relate decisions and plans to biological habitats for wide-ranging species as well as breeding populations of less mobile species, and it provides a framework to maintain connectivity between these habitats. The use of landscape analysis to identify and plan for conservation areas is necessary to sustain the long-term biological and ecological health of the region.

Fortunately, landscape analysis in the Southern Appalachians is aided by the ownership pattern of public lands, which are more consolidated here than in any other region of the eastern United States.



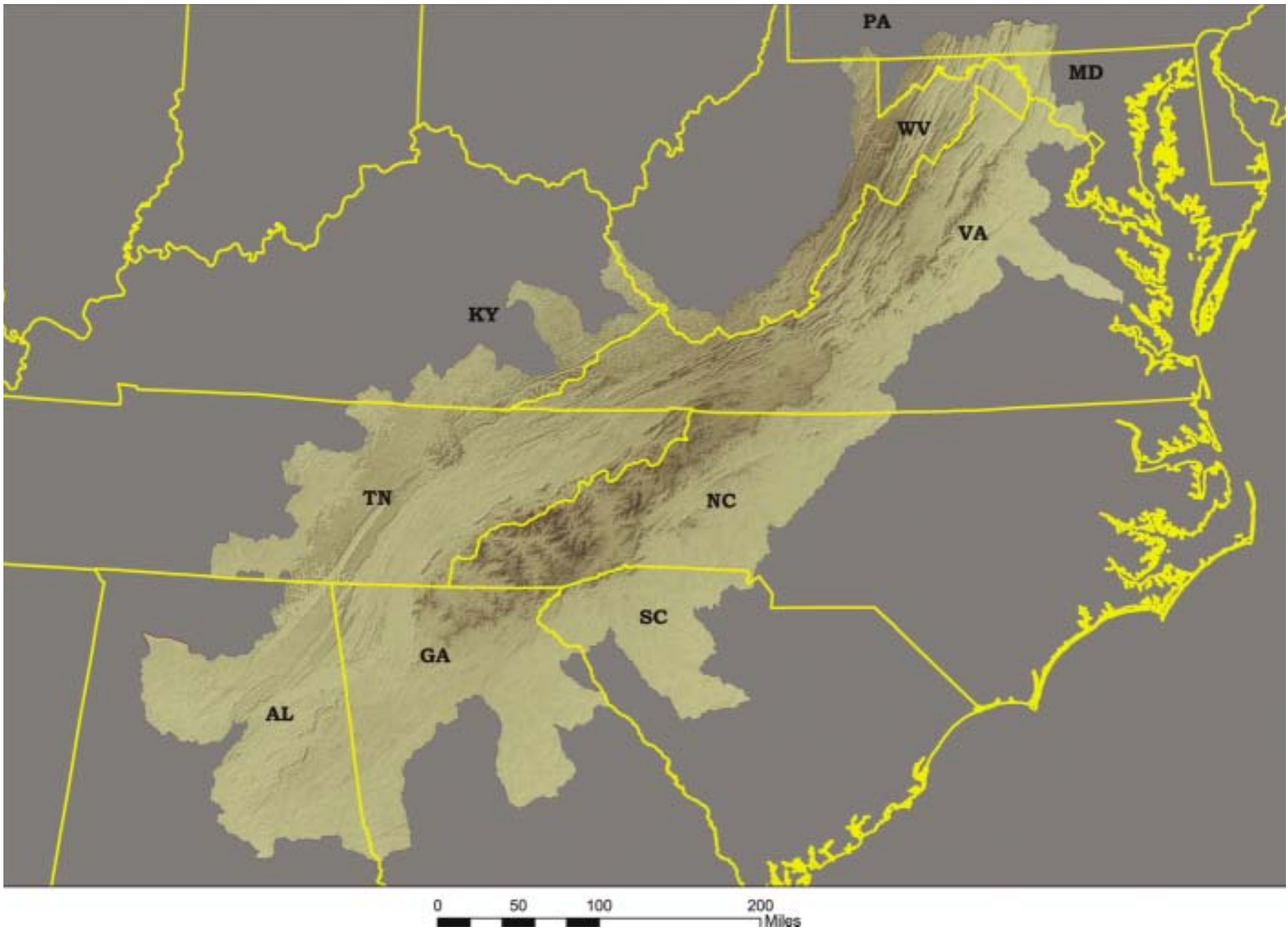
More than 5.6 million acres lie within national forests, while another 0.95 million acres are owned by national parks and national recreation areas. Significant expanses of land are held under various state, federal, and other conservation ownership. Significant amounts of the public lands are permanently protected through wilderness designation or management. In addition, substantial roadless areas and lands with low road density remain in the region. These remnants of the natural landscape, coupled with other lands that could be dedicated to conservation, form a firm foundation for the long-term recovery and protection of the region's natural wealth.

Conservation groups throughout the region have worked for years to identify valuable natural areas and means by which they can be restored and sustained. SAFC has worked with these groups to integrate their proposals with additional biological and watershed inventories and generate a regional overview. A variety of such special areas (see Section VI F) constitute the "building blocks" for larger landscape conservation areas which, taken together, could function as a regional conservation network. The landscape and regional perspectives together provide a powerful framework to determine how our public lands are managed and priorities for public acquisition. This framework can also demonstrate to private landowners the important role they can voluntarily play in helping to achieve conservation and ecological integrity.

Many of these lands have spent most of a century recovering from decades of abuse, and are ready to assume their role in a regional conservation network. The people of the region are also receptive to conservation initiatives. They exhibit tremendous pride and support for the protection of their natural areas. The Southern Appalachian economy today relies more heavily on wealth generated by healthy natural systems than on traditional harvesting of timber and other products from public lands. SAFC's report *Our Green is Our Gold* (Barnhill 1998) documents, for example, that the economic benefits of tourism and recreation outweigh those of timber production by more than 30 times.

For these reasons, then, SAFC and its constituent groups envision a biologically diverse region sustained by a connected network of large natural areas. This vision can be realized by permanently protecting critical areas of our public lands, supplementing them with new public acquisitions and encouraging the conservation management of private lands on a voluntary basis. As the following pages demonstrate, sustaining and linking the building blocks of our region can simultaneously promote both ecological and economic health – and provide an action model for other regions of the world. SAFC's conservation strategy identifies those building blocks and the "mortar" of actions and policies that can hold them together.





The Southern Appalachian region encompasses more than 70 million acres in the mountainous portion of eight states, from Alabama to Virginia.

III.

The Biological Heritage of a Unique Region

A. An Ancient Forest Refuge

Scientists are just beginning to document and understand the extent of the biological diversity of the Southern Appalachians. It is estimated that less than 10 percent of a projected 100,000 species, excluding bacteria, have been identified in the Great Smoky Mountains National Park (Kaiser 1999). An intensive species inventory is planned in this relatively small portion of the region, and discoveries of new invertebrates, nonvascular plants, and fungi are expected to be particularly successful.

These vast natural riches exist because of the Southern Appalachians' role as a biological refuge through much of the Earth's history. Our mountains are some of the oldest on Earth, forming over 260 million years ago (Pittillo, Hatcher, and Buol 1998). They have been sculpted by repeated cycles of

uplift and erosion, continental collision and separation.

The Southern Appalachians have been continuously vegetated at least since the Cretaceous extinction of species 65 million years ago, and most likely much longer. Most areas of North America and the world, have been covered by seas or scoured by glaciers within this time period. This protracted history, in conjunction with favorable climatic and geologic conditions, has allowed the region to play a primary role as a refuge for species during periods of climate change.



B. The Early Development of Southern Appalachian Forests

Our ecological understanding of the Southern Appalachians began to emerge as long as two centuries ago, when early naturalists discovered the first clues

about the origins of modern plant and animal communities. They noted that many plant species in eastern North America have close relatives in eastern Asia, even though the two continents are now separated by major oceans and many thousands of miles (Boufford and Spongberg 1983). This species distribution pattern, known as a disjunction, was discussed by pioneer botanists, including Asa Gray, and figured in the discussions surrounding Darwin's theory of evolution. This pattern of plant distribution implied that the Southern Appalachians and areas of East Asia share a common forest ancestry, despite their current separation (Li 1952).



Another clue arose from work in the 20th century, when Cain (1943) documented that over 90 percent of the trees in Great Smoky Mountains National Park were closely related to species found as fossils of the warm and humid Tertiary Period 12-65 million years ago. This relationship is

especially strong for the shrubs, flowering herbs, and ferns within cove hardwood forests. Fossils dating from this period in Europe and Greenland demonstrate that plants of the Great Smokies had close relatives on now-distant land masses.

These two lines of evidence strongly point toward the existence of a once-great temperate forest that included the Southern Appalachians and stretched across North America, Europe, and Asia before the continents completely separated 50-65 million years ago (Kious and Tilling 1996). This vast forest, known as the Arcto-Tertiary forest, thrived on the warm and moist climate that existed during the Tertiary Period. It was reduced during the later Tertiary (beginning about 12 million years ago) by the drier conditions that converted much of the interior of North America to grasslands.

The dominance of the Arcto-Tertiary forest faded with the beginning of the Pleistocene Epoch about 2 million years ago. This period was characterized by long periods of cold that lasted some 100,000 years each and by immense ice sheets that moved southward from northern latitudes. The Pleistocene

ice ages were separated by periods of relative warmth lasting 10,000 to 30,000 years. According to Davis (1983), four to ten such cycles occurred in a climatic shift that brought an end to most of the Arcto-Tertiary forest. The Southern Appalachian mountains, however, are one of the few regions of the world that retain a vital remnant of this forest.

C. The Role of the Southern Appalachians During and After Glaciation

During the cold Pleistocene Epoch, glaciers covered much of the northern hemisphere. At its maximum extent, the Laurentide glacier reached as far south as northern Pennsylvania in the Appalachians and permafrost spread to southern Pennsylvania (Flint 1945). Indirect evidence indicates that the higher peaks of the Southern Appalachians may have supported environments of tundra (Cogbill, White, and Wisner 1997), although the mountains were never scoured by glaciers. The north-south orientation



of the Appalachians provided routes for southward migration of plants and animals, while their complex topography offered numerous microclimates with varying elevations, aspects, slopes, and soils. In the Southern Appalachians, as well as in eastern Asia, plants were able to survive even under the harsh conditions of the Pleistocene by retreating southward as the climate cooled. On the European continent, by contrast, plants forced southward by changing climate and advancing glaciers were blocked from further migration by the east-west trending mountain ranges, so that many species were exterminated by the cold.

During this dynamic epoch of plant migration, boreal species migrated from the north as the Pleistocene climate cooled; pollen data show that spruce and jack pine were the dominant trees during glacial maximum (Delcourt and Delcourt 1985). Deciduous species probably migrated out of the mountains and down river corridors during cooling periods (Delcourt and Delcourt 1975). This process was reversed during warming periods.



In the Southern Appalachians, habitat existed in a favorable continuum throughout the region from north to south and from the headwaters of streams to the bottom extent of rivers. This continuum of habitat conditions also characterized adjacent regions, allowing species to migrate out of the mountains to the southeast and southwest. Finer habitat adaptations were possible for species that moved from the tops to the bottoms of mountains and from northern to southern slopes.

As a result, many species found refuges even during maximum glaciation. The last glacial maximum occurred as recently as 18 thousand years ago. When the glaciers finally receded, these “refugees” were able to return through the Southern Appalachians to repopulate barren areas to the north. As the last period of glaciation ended approximately 10,000 years ago, the region’s role as refuge and corridor resulted in the current complex mix of species. This view of the past explains disjunct populations as those that were left behind as the main population returned northward. For example, high islands of spruce-fir communities resembling those now found in Canada survive on the highest mountains of North Carolina, Tennessee, and Virginia. The southern mountains are also rich in endemic species—plants and animals that are native to only a limited geographic area, and are found nowhere else in the world. Finally, a large number of species whose lineage can be traced back to the great Arcto-Tertiary forest find habitat in the Southern Appalachians. These forests, along with their eastern Asian counterparts, today represent the best global remnants of species from that ancient forest. Few regions on Earth outside the tropics comprise such a significant repository of biological diversity. This biological significance heightens the importance of conservation initiatives in the region.



IV.

The History of the Southern Appalachians

A. American Indian History (Hatley 2001)

According to recent archaeological discoveries, humans are thought to have settled in the southern portion of North America more than 17,000 years ago. These revelations are forcing a reexamination of assumptions about human antiquity in all parts of the region, including the Southern Appalachians. For example, just who were these early peoples? We increasingly suspect that their origins were diverse and reflect multiple movements into the "new world." The distance in time smooths the reality of that long-ago past, so that change appears gradual. Most likely, life at the time

of first settlement was turbulent and called for great adaptability in responding to rapid changes in every aspect of life, from climate to social structure.

Certain megatrends of the past 10,000 years have become clear: warming and drying weather, which favored the pinelands and forced the spruce-fir and northern hardwood forests onto the higher ridges; expanding agriculture, first practiced with native plants and then with imported cultigens, like corn; expanding human settlement, which extended from the river floodplains and terraces to the uplands; and fluctuating, though increasing, human population.



*Paleoindian Period
(17,000 years ago - 8000 B.C.)*

*Archaic Period
(8000 B.C. - 1000 B.C.)*

The habitats occupied by humans were almost always relatively narrow strips of the landscape—mainly along rivers and also in some upland areas. Clearing and occasional burning was accompanied by more subtle modifications, such as selecting and trading varieties of hickory trees and collecting medicinal herbs. Riverbeds were modified by weirs to capture the spring surges of anadromous fish, and other “soft engineering” technologies were employed elsewhere. Hunting was continuous, initially keying on special habitats, such as the soil-licks and balds favored by mega-fauna in peri-glacial, Paleo-Indian times. Early inhabitants may also have practiced infrequent forest management by fire.



About a thousand years ago, the “Thanksgiving version” of native agriculture—corn, beans, pumpkins—supplanted but did not erase an older mountain agriculture based on crops that were more or less domesticated. Some of these, such as sumpweed,

little barley, and maygrass, are forgotten as crops and languish as weeds under highway abutments and the edges of fields; others are still commonplace, such as sunflowers and perhaps even trees like the pecan and persimmon. More recently, the human influence on the valley bottoms of major rivers became distinct as a “new” farming that featured fire as a common tool to renew the abandoned, successional “old fields,” the signature habitat of farming peoples, and the canebrakes that ringed the openings. Hindsight offers insight to successful and less successful habits of living in the southern mountains over thousands of years, and clues to the sustainability of culture in the face of climate change. Some landscape artifacts of the deep past—balds, vestigial river-bottom farming sites, canebrakes, middens, fish weirs, innumerable occupation sites,

and petroglyphs—survive. They are, however, only partially inventoried, and far from fully understood.

While population is the most important variable in the landscape history of the region, we have few concrete facts to guide us until the Historic period. We know only that life was characterized by steep upward and downward swings in population. The Spanish expeditions of the early 16th century reported indirect evidence of a large population decline two centuries earlier. This decline and the consequent land abandonment has been suggested as one cause of the apparent radiation of woodland-adapted bison into surrounding basins and Appalachian valleys. This population decline also presaged the “contact catastrophe” of European diseases that erased some tribes after 1500 and decimated others. By 1730, native populations roughly equaled those of whites and blacks across the entire South from the Mississippi River to Virginia. During this period and through the early 19th century, trade in deerskins and herbs, together with rapid agricultural change, increased the pressure on local landscapes.

By this time, the Cherokees had been growing peaches for two hundred years, and the Creeks had raised cowpeas of African origin for three hundred years, testifying to a tri-racial southern population of red, white, and black members.

Reconstructing the long-term or even more recent influence of native Americans on the land is difficult for several reasons. Acid soil and high rainfall have eroded the materials of stone and soil which archaeologists need to read the historical record. Key sites of human activity have been plowed into oblivion, mined for their road-building gravels, drowned by reservoirs that produce electricity, and paved to create housing tracts and parking lots. Like the historical materials on which they are based, written descriptions from the Historic period are unsatisfactory as well, sometimes biased, often in conflict. Colonial observations of native land management in the Southern Appalachians reflect the conqueror’s tendency to discredit native peoples

*Woodland Period
(1000 B.C. - 900 A.D.)*

as unskilled farmers and forest arsonists; at the other extreme, sympathetic writers depicted a paradise of noble savages in easy harmony with nature. Somewhere between, or to the side, lies the truth.

What is undeniable is that forest conditions in the region today have been most obviously shaped by the agricultural instability and removal of timber and minerals over the last 200 years. This richly documented, more recent past must be better elucidated to inform our understanding of both the wildlands and cultural landscapes of the region. Restoring the Appalachian landscape means recognizing the social and ecological damage that has been done over the past 10 generations—and then undoing it. It also means discovering and protecting small pieces of landscape that reflect the life and land during the last 800 generations of human residence in the Southern Appalachians.

To a remarkable degree, the native peoples of early settlement times still inhabit the area and seek to play a role in determining its future. The Cherokees and Creeks held out against European immigration



*Mississippian Period
(900 A.D. - 1550 A.D.)*

throughout the 18th century, remaining the majority culture on their land. Finally, in the 1830s, dispossession and finally the tragic Removals displaced many but not all of them. Today, the Poarch Band of Creek Indians and the Eastern Band of the Cherokee Nation both remain in the Southeast; the Creek (Muskogee) Nation and Western Band of the Cherokee Nation are both based in Oklahoma, having been relocated there after removal. They operate with sovereign status today. Many other inhabitants of the Southern Appalachians identify themselves as Cherokees; others claim Creek, Catawba, Sioux or other indigenous heritage, as in the case of the Melungeons. Each lineage has its own ancestral claim to portions of the mountains. The Eastern Band of the Cherokee Nation, the part of the nation that escaped the Trail of Tears, still holds to Cherokee language, traditions, and land in western North Carolina. They remain uniquely “at home,” near the creation site identified in their legends, and maintain an important claim on the history and future of the Southern Appalachians.

Gradually, the recognized native peoples of the Southern Appalachians are reasserting their moral, historical and legal rights or sovereignty over ancestral landscapes. They provide their own questions and answers to the riddles of the past and of the landscapes we have all inherited. Indeed, the concept of conservation is by no means a new one to native peoples. The first such strategy on record was practiced by the Creek villages south of the Appalachians, along the Tallapoosa River in Alabama, where 30 miles of Line Creek were once reserved as “beloved bear ground.”

The pressures on the land continue, and have increased with affluence and human numbers—whether red, white or black. As the social, climatic, and other changes of the future reveal themselves, we shall have opportunities to make the use of lessons learned by native and immigrant peoples alike. A better understanding of those lessons and a willingness to share them offer the chance to protect the forests of Southern Appalachia and the people who reap their countless benefits.

*Historic Period
(After 1550 AD)*

B. Early European History

The first European pioneers to arrive in the region were eager to tame and change nature for their own purposes. At first their numbers were few and their tools primitive. But soon a growing population of settlers with rifles, axes, traps and slash-and-burn agricultural practices began to kill off and displace important elements of the region's diversity. Beavers were trapped to very low numbers by the early 1800s. The last buffalo was killed in 1797; the last elk died in 1854 (Bass 2000a). The wolf and cougar, because of their secretive natures, held on into the twentieth century before they were eliminated as an ecological presence. Even bear and deer were driven to the brink of extinction.

Increasingly more efficient technologies began to threaten the forests themselves in the late 1900s, and by shortly after the turn of the century rapacious logging had wrought such devastation that the entire nation began to take notice. The establishment of national forests and national parks slowed forest destruction and initiated a slow process of recovery. The forests of the region were blessed with remarkable resilience, and its rich biological heritage was given new promise. But today, a century after the height of the logging frenzy, wide-scale industrial and urban development once again jeopardize the ecological health of the region.

C. Extending the Legacy

Protection and restoration of the Southern Appalachians began more than 100 years ago, when devastating floods and wildfires resulting from large-scale clear-cutting prompted cries of alarm locally and nationally. Soon thereafter, President Theodore Roosevelt's *A Message from the President*, authored by Secretary of Agriculture James Wilson (1902), gave official voice to the leading conservationists of the day. These individuals saw that a course of unbridled exploitation of the forests created enormous wealth for a few while leaving economic and ecological destruction in its wake.

Convinced of the need to halt the onslaught and repair the damage, a handful of visionary citizens initiated a movement and made their voices heard in Washington. As a result, the first national forests of the East were established in 1911. Great Smoky Mountains National Park followed in 1934 and Shenandoah National Park was established a year later. Current conservation efforts have their roots in this century-old tradition of protecting and restoring the Southern Appalachian forest.



It is not enough for the current generation merely to preserve what our ancestors held in public trust. Their initial goal of protecting the forests of the region remains far from being realized. They envisioned reserves that would restore and protect the region's biological heritage, but even as the early conserva-

tionists began their work, many species had already vanished. Others, like the cougar, were soon to be driven from the region or banished so deep into the remote forests that they are little more than ghosts today. Still other species, such as the American chestnut, fell as an early victim to globalization. In an evolutionary blink of an eye, an exotic pest introduced by emerging world commerce destroyed a mighty and dominant species of the Southern Appalachians that had evolved over millions of years.

If the full extent of the destruction and its implications were not readily apparent 100 years ago, neither were the conservation tools fully available. Still, these pioneers of forest protection did save many critical tracts of forest – tracts that today can serve as the building blocks for a new ecological vision. Modern conservation biology provides new knowledge and new tools for tying those pieces together in order to restore the web of life. It is our charge to make use of those tools and to bring what exists on the ground in line with what science has taught us.

D. The Struggle to Maintain Recovery and Conservation Progress

Even after efforts were initiated to protect the forests of the region, the pace of destruction continued at a rapid rate for an additional twenty or thirty years. Major logging operations moved through the Smoky Mountains until the establishment of Great Smoky Mountains National Park in 1934. As land speculators foresaw an end to easily available timber in the South, logging operations moved ahead even more heedlessly, often causing erosion and devastating fires (Lillard 1947). The first decades of the twentieth century witnessed a race between the gathering momentum of protection and the destructive forces already in full swing. By the 1930s, most areas had either been

acquired as public lands – or logged. After that, the acquisition of national forest lands continued with the addition of these already-logged lands.

In the decades following the 1930s came a period of recovery for the forests of the Southern Appalachians. Many reports state that all the forests had been cut during the period of industrial logging at the beginning of the twentieth century, but this statement goes too far. Recent surveys (e.g., Messick 2000) have demonstrated that old growth remnants survived this period. It would be more accurate to say that most of the easily accessible timber had been logged. The lack of mature, marketable timber, along with an operating mandate within the Forest Service to promote the recovery of the Southern Appalachian forests, combined to halt the commercial-scale logging and open the period of recovery. After World War II, the process of recovery was interrupted. The post-war economic boom spurred a demand for timber just as many trees on national forest lands were approaching maturity. These forces triggered another cycle of heavy logging from the 1950s until the early 1980s.

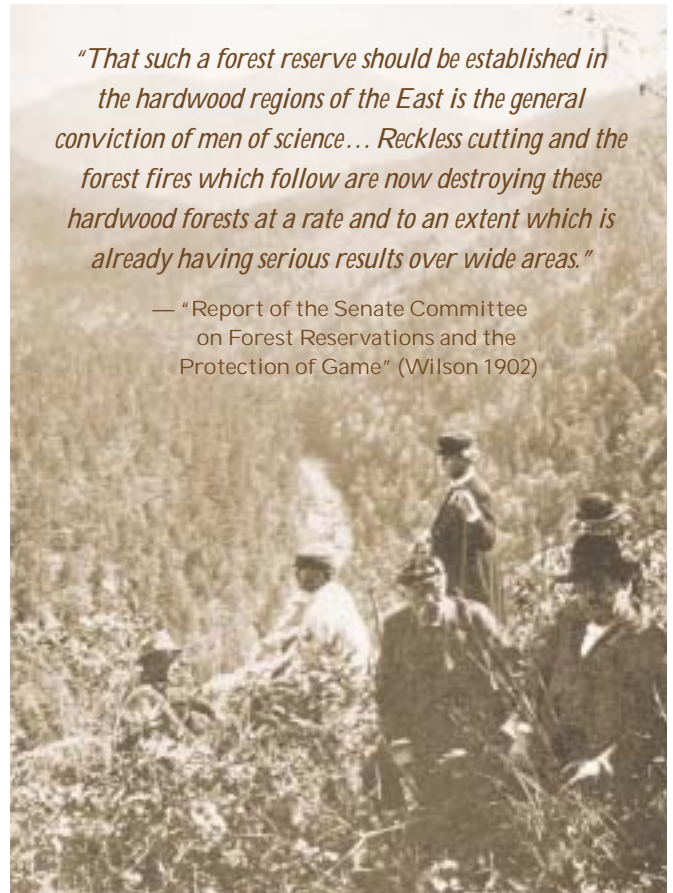
By that time, environmental and conservation groups had formed, in response to a variety of environmental challenges, and they worked to suppress this increase in logging. At the same time, the wilderness protection effort was gaining momentum. The Wilderness Act, which established the nation's Wilderness Preservation System, was passed in 1964. At first, the Forest Service refused to consider areas in the eastern U.S. for wilderness recommendations, insisting that previous logging and other uses had "disqualified" all eastern forest candidates (Frome 1989). Then the Eastern Wilderness Areas Act of 1975 confirmed the legitimacy of wilderness designation in the East and several wilderness areas were designated within the Southern Appalachians. New areas have since been added to the Wilderness Preservation System in the region, amounting to 500,000 acres or 9 percent of its national forest ownership; an additional 80,000 acres of wilderness have been designated in National Parks. Other legislative categories, including national recreation area and national scenic area, have been applied to sections of national forest of the Southern Appalachians.

In addition to federal legislation that designated national forest areas for protection, the National Forest Management Act of 1976 mandated the development of management plans for all national forests. Forest planning efforts were begun in the early 1980s for forests of the Southern Appalachians and finalized in the mid-1980s. All these management plans were

appealed by citizen conservation groups and, through negotiation, administrative review, and lawsuits, resulted in reduced harvest levels, creation of administrative protection areas, recommendations for wilderness, and a variety of other management improvements. These plans slowed the rate of logging, but they were still unsatisfactory to many conservationists. One of the most serious flaws was that many roadless areas and areas of important biological and recreational value were put into the timber base and made available for road building and timber harvest.

"That such a forest reserve should be established in the hardwood regions of the East is the general conviction of men of science... Reckless cutting and the forest fires which follow are now destroying these hardwood forests at a rate and to an extent which is already having serious results over wide areas."

— "Report of the Senate Committee on Forest Reservations and the Protection of Game" (Wilson 1902)



National forest management plans have a lifespan of ten to fifteen years. As of this writing, the plans that were finalized in the mid-1980s are now approximately fifteen years old and are currently being revised. The revised plans will determine how the Southern Appalachian national forests are managed for at least the next decade. Administrative actions, notably a roadless area protection rule and a new transportation policy, provide additional protection and guidelines for national forest lands in the Southern Appalachians. However, such decisions can be reversed by changes in Administration. Ongoing efforts to plan in a context of restoration and protection will be necessary in order to recapture the momentum of conservation efforts a century ago and propel them into the long-term future.



V.

Threats to the Biological Diversity of the Southern Appalachians

Road building

From logging roads pushed into roadless areas to Interstate highways that cut gigantic swaths across the landscape, road building is highly destructive to forests. Logging roads fragment natural areas, creating routes that permit additional logging, off-road vehicle use, and penetration by exotic species. Water flow is frequently altered and animal movements are disrupted, at least temporarily. Highway construction and upgrading are even more destructive, dividing the landscape into smaller and smaller ecological units so that the habitats of many species, especially wide-ranging animals such as the black bear, are reduced below viable limits. In addition, movement corridors are

destroyed. Yet major highways continue to be planned and built through some of the wildest parts of the mountains with little or no provision for wildlife overpasses and underpasses to maintain migration corridors.

Destructive logging of natural areas

The Southern Appalachians have experienced more than a century of industrial logging. Forests take generations to be restored and we are fortunate to have remnants of old growth in many of our natural areas. Much of the forest in the region that was leveled a century ago is once again reaching maturity. These forests are now at a critical juncture, particularly



those with few roads. Timber companies and some employees of public resource agencies advocate the inappropriate logging of these areas. Old growth forests are an invaluable resource that should be conserved, and many maturing forests should be allowed to mature to become old-growth forests of the future.



Air pollution

Ground-level ozone, acid precipitation and fog, sulfur and nitrogen oxides, and other air pollutants are degrading the health of our ecosystems. Strong evidence indicates that these pollutants directly harm trees and other plants. In the Smokies, for example, studies indicate that some 60 species, including such commercially important species as black cherry trees, suffer reduced growth when exposed to air pollution. Meanwhile, the fog that



blankets the slopes and trees of Mount Mitchell has become more acidic than lemon juice. Data also indicate that pol-

lutants introduced through acid precipitation change the chemical balance of soils and streams, harming aquatic species and possibly soil organisms.

Exotic species and pests

Forests evolved in circumstances where natural barriers (oceans, deserts, vast distances) isolated different ecosystems and virtually prevented the introduction of foreign organisms. When foreign organisms did arrive, they usually found few opportunities to adapt to a new habitat far from home. When intrusions did occur, they generally did so slowly, allowing native species and ecosystems to adapt. However, globalization, with its worldwide trans-

portation and commerce, has accelerated the mixing of species from different parts of the world, often with catastrophic results. Introduced species without natural predators or other controls frequently out-compete and displace native species. Native species are assaulted by exotic pests to which they have no resistance. The chestnut blight was an early example of how quickly an exotic pest can virtually exterminate a native species (see page 55). Other non-native pests are today attacking native firs, hemlocks, dogwoods, oaks, butternut, and other important species, threatening to remove them from Southern Appalachian ecosystems.

Development and sprawl

Many portions of the Southern Appalachians are experiencing unprecedented growth. Urban sprawl is spilling beyond metropolitan areas such as Atlanta to encroach on public lands and natural areas. Roads, home development, and urbanization are fragmenting and eliminating habitat and severing wildlife movement corridors. Rings of man-made structures are rapidly circling many natural areas, such as the Smokies, which are becoming islands of nature amid seas of development.





VI.

Working Toward a Solution

A. SAFC's Vision for Conservation Lands

Protecting and restoring the biological diversity and ecological health of the Southern Appalachians will require the collaboration of many groups and individuals. And the full recovery of the region's species and their networks of relationships will take decades – if not centuries – to accomplish.

The success of this effort depends on the wise management of large core areas of habitat, much of which is already in public ownership. The most critical of these lands are those that retain a high degree of their natural ecological function. These areas provide the healthy and stable sanctuaries from which recovery and restoration can proceed. They can also furnish the best reference data to guide the recovery of more-damaged ecosystems. Key conservation lands include forests with few or no roads, tracts of old-growth

forest, biological hotspots, and critical watersheds, all of which must be wisely managed over the long term to protect and enhance their natural value (see section VI. E, Principles of Conservation Biology). These and other conservation lands form the key components of SAFC's conservation proposal and are discussed in more detail in the "Building Blocks for Recovery," page 40.



Using these conservation building blocks, SAFC and its member groups have identified landscape-scale conservation areas throughout the Southern Appalachian region; sixteen of these areas are described in detail in the second part of this document. These large areas, if offered strategic protection and restoration, can serve to protect both individual native species and complex ecological processes. Their health can be further enhanced through

robust landscape connections (“linkages”) between these areas and by securing adequate representation of habitat types. The success of this work depends on promptly securing the integrity of those core areas that have the highest degree of ecological integrity.

The job of protecting landscape-scale conservation areas is not yet complete. Many potential landscape conservation areas have fragmented ownership that leaves natural areas scattered like the pieces of an unfinished jigsaw puzzle. In other cases, landscape conservation areas are isolated from one another so they cannot function as parts of an integrated network. Opportunities exist for both public and private landholders to bring such pieces together to form a complete picture.

This opportunity is especially evident in some of the region's largest tracts of land. Utilities, lumber companies, and private citizens with large holdings often manage land for conservation purposes and play a vital role in maintaining habitats for wildlife. Yet corporate restructuring, new technologies, and soaring real estate values are pushing more private lands onto the open market. The conservation movement must be alert to windows of opportunity opened by willing sellers so that valuable lands can be added to the conservation landscape before they are lost to development.



Securing the natural value of privately owned lands need not always require large sums of money or change in ownership. Many landowners voluntarily decide that they want their property to perform important conservation functions. Through conservation easements, which limit development rights in exchange for tax benefits or other incentives, landowners can exercise their conservation ethic in perpetuity.



Two major problems confront the current portfolio of public lands in the Southern Appalachians. The first is inadequate protection. The initial period of responsible stewardship after national forests were established was followed by several decades of intense road building and logging. Within both the U.S. Forest Service and Congress, there are efforts to return to such intense management even though it fragments core areas of habitat and severely reduces their effectiveness. Second, public agencies have devoted little energy to finding the means to connect existing reserves through corridors that would allow essential movement of wildlife.

Haney, Wilbert, Degrood, Lee, and Thompson (1999) investigated just how small a reserve could be in the Southern Appalachians and still remain ecologically functional. The results are somewhat troubling. They found that most existing wilderness areas were too small to maintain basic ecological structure in the wake of large natural disturbances such as catastrophic fire or hurricanes. Only the largest reserves such as Great Smoky Mountains National Park were of sufficient size to be resilient in the face of such disturbances and sustain the natural mix of old growth and early succession that is expected in a natural forest ecosystem.

Almost all lands identified in this document are already in public ownership or subject to private conservation management. Even so, some crucial habitat types, such as bottomland hardwoods and wetlands, are not yet represented. Filling those gaps through public acquisition or voluntary conservation easements is a primary objective as we work to restore the full ecological functioning of a connected network of natural areas.

B. Building Landscape Conservation Areas from Conservation Elements

The Southern Appalachian region encompasses more than 70 million acres in the mountainous portions of ten states, from Alabama to southern Pennsylvania. The features of this region have been depicted in many ways. We have chosen to use a combination of ecoregion divisions and watershed boundaries to delineate and describe the important features of the region.

As we have discussed, establishing a network of landscape conservation areas in a developed region like the Southern Appalachians depends on protecting and restoring conservation building blocks within core areas of habitat and linking these core areas together. The important first step is to ensure the integrity of the existing and restorable large conservation areas of the region.

SAFC has concentrated its efforts on identifying conservation building blocks where national forest ownership offers opportunities for protection. Conservation building blocks include (1) currently



protected natural areas, (2) unprotected natural areas, (3) old-growth areas, (4) biological hotspots, (5) aquatic watersheds, (6) high-priority areas for public acquisition, (7) conservation easement areas, and (8) cultural and heritage areas.

Management of these components to achieve their highest conservation potential will help establish and restore landscape-scale conservation areas in much of the region.

SAFC's protection efforts have focused on these eight national forests in and around the Blue Ridge and Ridge and Valley portions of the region, including portions of the Cumberlands.

Inventory of potential building blocks is far from complete. In fact, many of the landscape conservation areas have not yet been widely recognized as conservation areas, and therefore they are not managed with clear knowledge of their landscape or regional importance. The essential building blocks within these landscape areas must be identified and the larger areas themselves must be acknowledged for their conservation values.

At the same time, sufficient work has been done to structure the basic outline of a regional conservation system. It is important to begin work on the areas that are already known, even as we continue the search for other critical components of a regional network. It is clear that the landscape areas already identified in this document will form the heart of any future regional conservation network. Without them, any future system would lack the integrity that is needed to ensure the health and continuity of habitats.

The accompanying table and chart show the acreage of conservation elements within national forest lands that SAFC proposes for dedicated conservation management in George Washington-Jefferson, Cherokee, Pisgah, Nantahala, Sumter (Andrew Pickens District), Chattahoochee, Talladega, and Bankhead National Forests. These forests represent a total of 4.7 million acres of federal ownership.

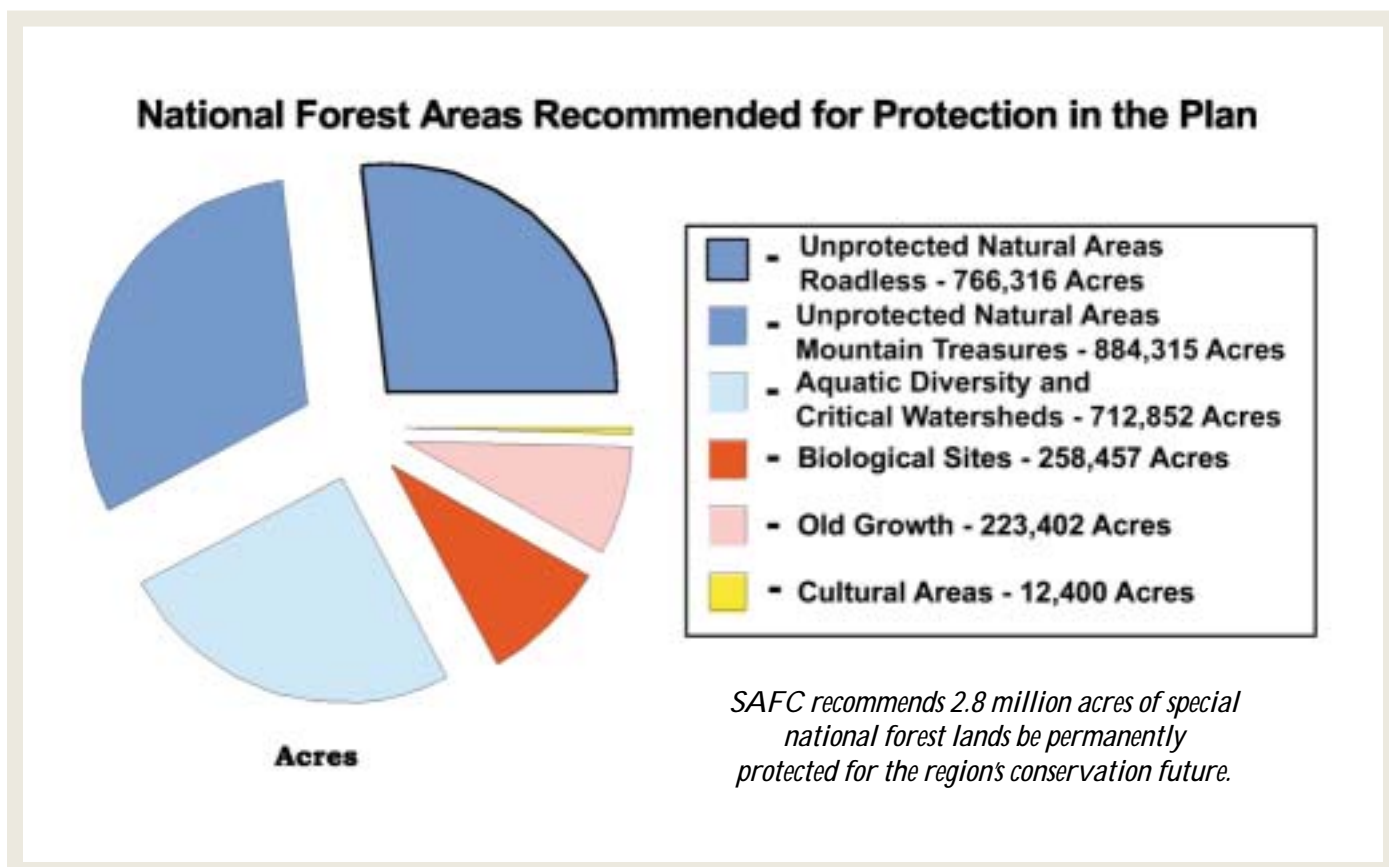
Within this total we have identified 2.8 million acres of unprotected natural areas, old growth, biological hotspots, special watersheds, and cultural areas that we propose for some form of permanent protection. These lands, added to the 382,000 acres of existing wilderness, are the key elements to maintaining and restoring the biological and ecological integrity of large landscape conservation areas. Additional acquisitions, conservation easements, ecological management of remaining public lands, and addressing man-made barriers can enhance the effectiveness of these lands as functioning conservation core areas.

SAFC's protection efforts have focused on these eight national forests in and around the Blue Ridge and Ridge and Valley portions of the region, including portions of the Cumberlands. To better understand the context of these areas, we have also studied a larger region defined along ecological and watershed boundaries and conducted some landscape analysis for this region. Our detailed proposals do not address this entire region in a single comprehensive proposal, however. Conservation areas do not have distinct boundaries, and conservation networks will not truly succeed unless



they are connected to other conservation networks. It is our hope that other conservation initiatives will join ours along the margins of our region where our view is necessarily incomplete.

The regional map in this document shows the landscape conservation areas that have been identified so far. Profiles of 16 landscape conservation areas provide a closer look at many of the proposed areas and the conservation values within them.



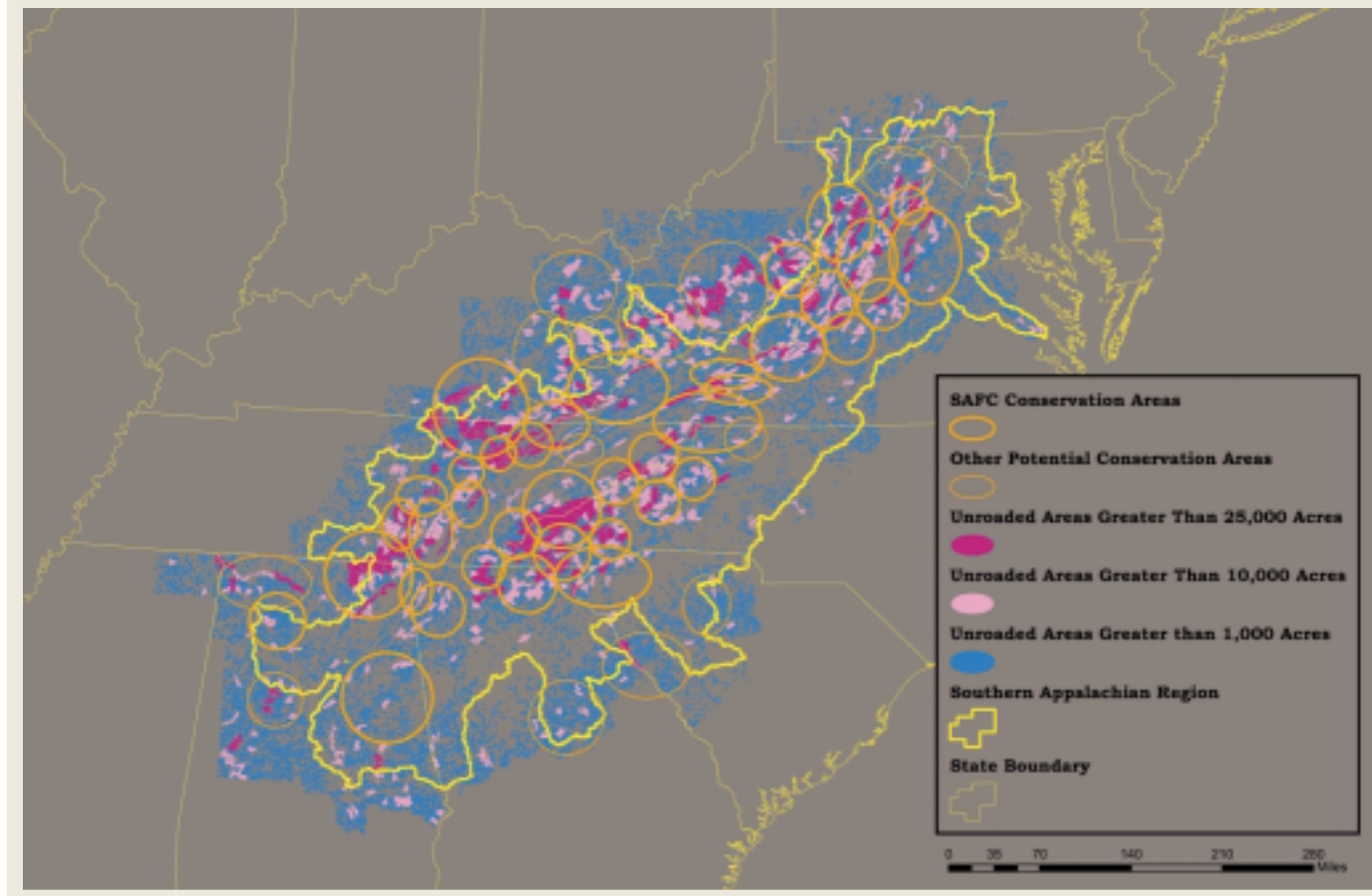
C. Conservation Areas Include Clusters of Unroaded Areas

Since roads are the conduits for both direct and indirect fragmentation, the absence of roads is one of the primary prerequisites for landscape conservation areas. In order to evaluate the conditions of the region's conservation areas and to evaluate the potential for connectivity between them, SAFC identified and analyzed remaining unroaded areas in the Southern Appalachians. During this process, SAFC verified that the Forest Service's roadless inventory failed to identify many unroaded areas relevant to ecological functioning. The Forest Service inventory, while identifying many important areas, omits important areas of the national forest that are unroaded. In addition, the agency's inventory of roadless areas was confined to public lands. In fact, many unroaded areas that do not satisfy official size, configuration, and ownership constraints still provide significant habitat and ecological connectivity. Even the smallest

such areas can serve as vital "stepping stones" that provide connections between larger areas.

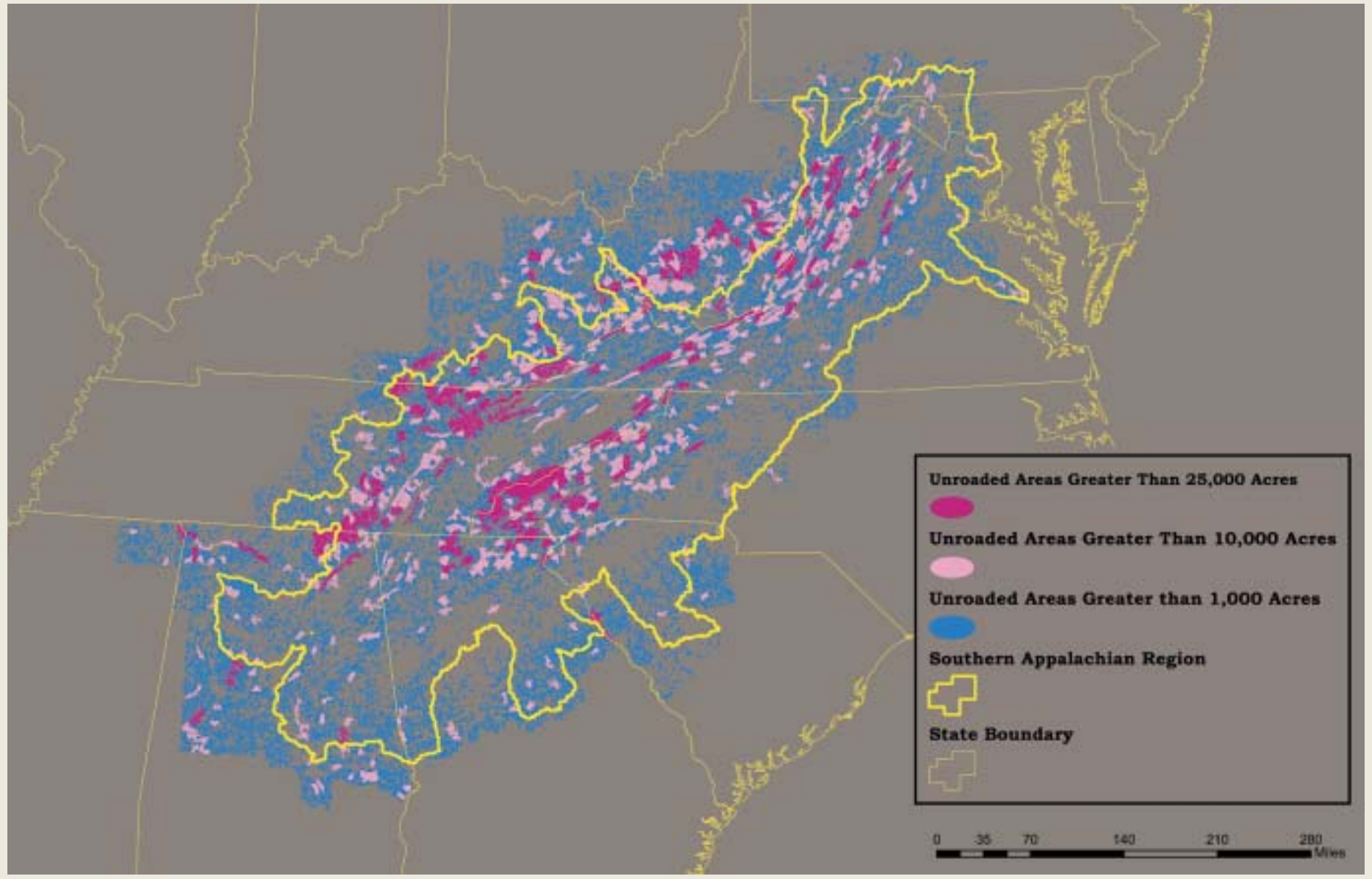
SAFC adapted the methodology used by the Pacific Biodiversity Institute (Morrison 2001), identifying unroaded areas greater than 1,000 acres throughout the Southern Appalachians. Information on roads came from a combination of USFS and census data. These areas were categorized by size on the conservation biology principle that larger areas generally provide greater ecological value than smaller areas (see figure page 35). The areas ranged in size from the 1,000-acre minimum to more than 272,000 acres, with their distribution heavily weighted to the smaller sizes. This unroaded area analysis verifies that landscape conservation areas identified by SAFC contain some of the most significant clusters of unroaded areas, particularly larger unroaded areas (see figure below). The broad outline of additional landscape conservation areas can also be identified in the concentrations of remaining unroaded areas.

Unroaded Areas in Relationship to Landscape Conservation Areas



SAFC's landscape conservation areas would protect most of the regions largest unroaded areas.

Southern Appalachian Unroaded Areas



Numerous unroaded areas, including significant numbers of relatively large ones, remain in the Southern Appalachian region.

D. Linking Conservation Areas to Create an Integrated Network

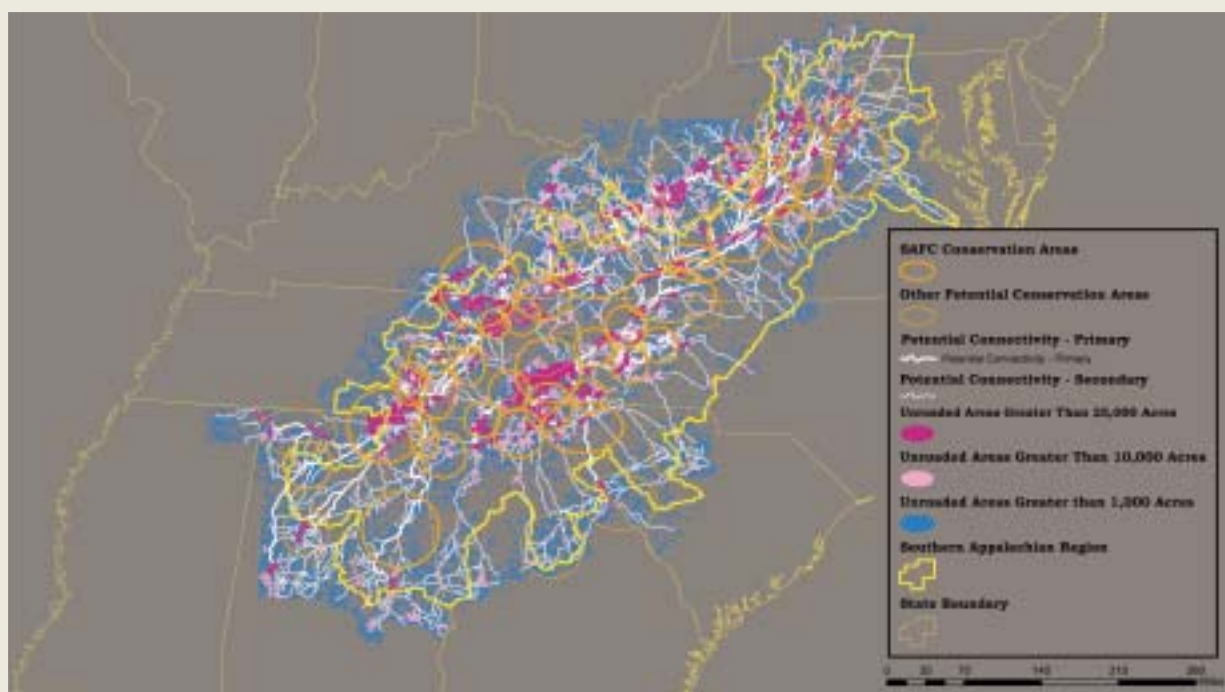
In order for landscape conservation areas to function as a regional conservation network, there must be ecological connectivity between the areas. This requirement is difficult to fulfill in a region that has been roaded and developed as much as the Southern Appalachians. However, there currently remain many viable connections across the landscape, and in the long term the potential for connectivity is great -- if we as a culture understand its value and give it the high priority it deserves.

Connectivity between unroaded areas was assessed for its value to large, wide-ranging species, using parameters that specifically suit black bears. However, the analysis also applies generally to other wide-ranging predators that need large territories and depend on connections across the landscape. Larger unroaded blocks (generally greater than 25,000 acres) were assumed to provide primary habitat and were considered to be "source areas" for animals. Potential landscape connections between these largest areas were considered primary connectivity while connections between the largest roadless areas and a second tier of unroaded areas between 10,000 acres and 25,000 acres were considered secondary connectivity. The assessment used a weighted distance in which proximity to roads was considered to cause greater resistance to animal movement. A GIS "least cost path analysis" modeled the routes that would incur the least biological cost for

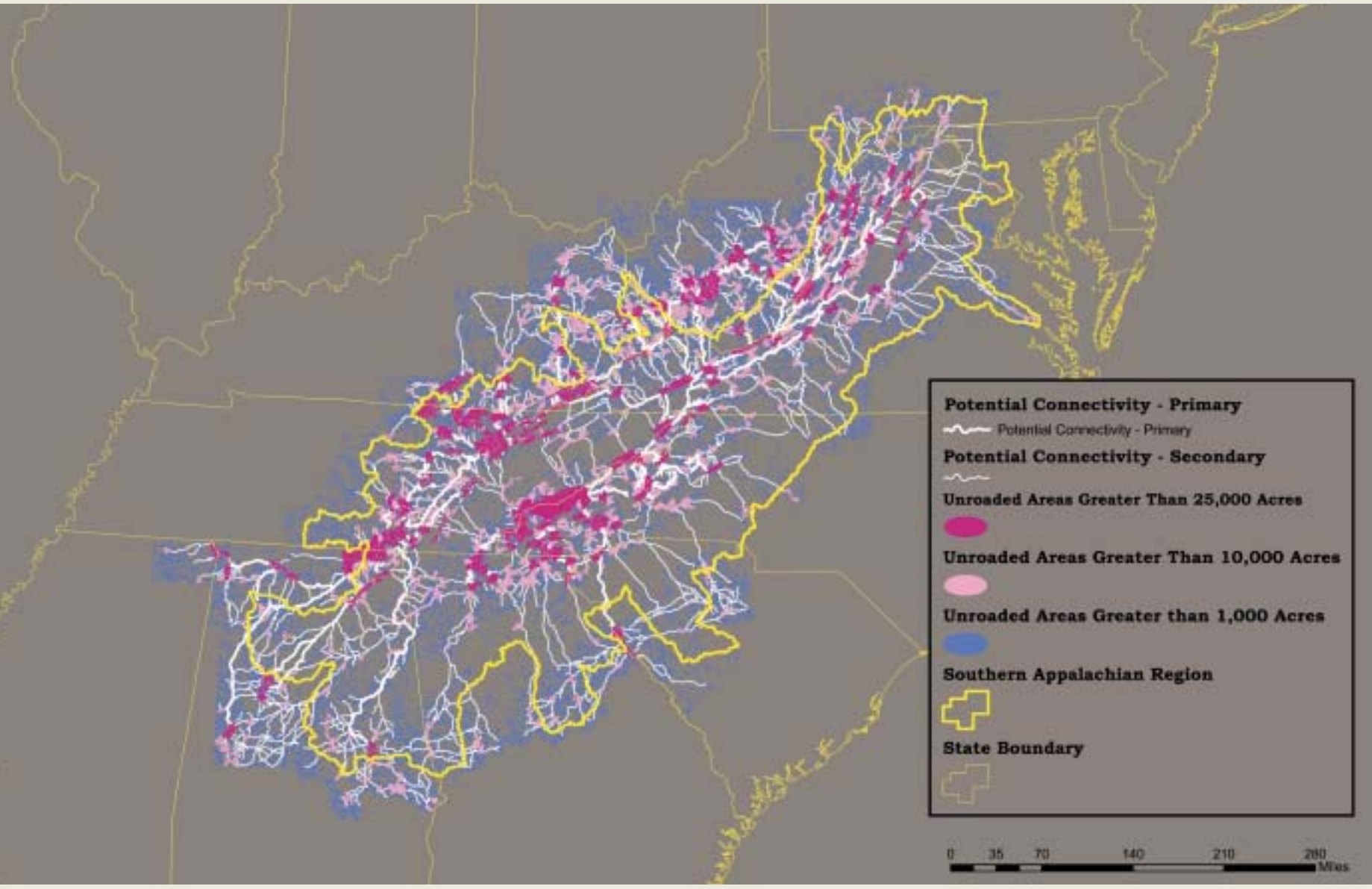
bear movements. As expected, the analysis showed that even small blocks of unroaded wildlands could perform the essential ecological function of linking larger unroaded areas together in a regional network (see figure page 37).

The connectivity analysis helps to visualize potential connectivity between landscape conservation areas (see figure below). The condition of these landscape connections varies. Some currently function as landscape connections; some could function with key conservation initiatives to improve their conditions; others would require extensive conservation groundwork; including the establishment of corridors across highways. In most cases considerable conservation work, including conservation acquisitions, easements, and road engineering will be required to secure the integrity of the connections into the future. The implications of the unroaded area identification and connectivity analysis are clear. In order to maintain and enhance the ecological performance of conservation areas on a regional basis, unroaded blocks should be maintained and even expanded whenever possible. Conservation protection, acquisition, and easement priorities should be established, taking regional connectivity into account. The connectivity between conservation areas should be strengthened as well by mitigating the fragmenting effects of major roads through road engineering that allows freer passage for wildlife. Landscape and regional analysis to retain and augment wildlife linkages should become a regular part of conservation planning in the future.

Potential Connectivity in Relationship to Landscape Conservation Areas



Southern Appalachian Potential Connectivity



Even small blocks of unroaded wildlands could perform the essential ecological function of linking larger unroaded areas together in a regional network.

E. Ecological Restoration Depends on Land Restoration: Principles of Conservation Biology

The goal of this monograph is to provide a road map for the journey toward renewed ecological health for the Southern Appalachian region. Reintroduction of extirpated species and recovery of those with reduced viability are crucial stages of this journey. Essential first steps are to ensure sufficient suitable habitat through the recovery of landscape-scale conservation areas and the creation of regional linkages between habitats.

The strategy of protecting important habitat in isolated parks and small reserves has failed. The reason is that small reserves support fewer species



SAFC's proposal for conservation lands in the Southern Appalachians hinges on five key elements. These include:

- ❁ Conservation management of critical natural areas
- ❁ Acquisition of important private lands from willing sellers
- ❁ Participation by willing private landowners in conservation management through easements and other long-term commitments
- ❁ Establishment of landscape-scale conservation areas from Virginia to Alabama
- ❁ Establishment of corridors between conservation areas so that the areas function as an integrated network

than large areas – a central discovery of island biogeography and conservation biology. Numerous ecological studies, starting with Arrhenius (1921), have established that islands of smaller size are able to support fewer species than larger islands

SAFC's land proposal lays the foundation for a vision of ecological restoration that would:

- Represent all native ecosystem types across their natural range
- Maintain viable populations of all native species in natural patterns of abundance and distribution and reintroduce extirpated species
- Assure biological connectivity between populations, communities, and ecosystems at different spatial scales
- Maintain resilience in the face of short-term and long-term environmental changes
- Maintain the integrity of ecological and evolutionary processes

(e.g., Meffe and Carroll 1997). Even our largest parks and reserves, isolated by development and other human activities, are far smaller than the natural landscape that supported the evolution of the current diversity of living organisms. Newmark (1987, 1995) demonstrated that even the largest national parks in the western United States are too small to maintain all their native species. Newmark also found that the loss of native species increases as the size of the reserve decreases. Our society cannot afford to maintain the illusion that protecting a few scattered reserves will protect biological diversity and ecosystem processes.

New understandings in conservation biology can greatly increase the chances of long-term species survival through improved design of conservation areas. Large core reserves of habitat, managed primarily to maintain or restore native species and natural processes, are essential elements of modern reserve design (Noss and Cooperrider 1994). These reserves should be selected so as to represent as many ecosystems as possible and to provide habitat for viable populations of as many native species as possible (Margules et al. 1988).

Principles Behind a Unified Reserve System

1. Species well distributed across their native range are less susceptible to extinction than species confined to small portions of their range.
2. Large blocks of habitat with large populations of a target species are more beneficial than small blocks of habitat with small populations.
3. Blocks of habitat close together are better than blocks far apart.
4. Habitat in contiguous blocks is better than fragmented habitat.
5. Interconnected blocks of habitat are better than isolated blocks; corridors are better when habitat within them resembles the habitat preferred by target species.
6. Blocks of habitat that are roadless or otherwise less accessible to disturbance are better than roaded and easily accessible blocks.

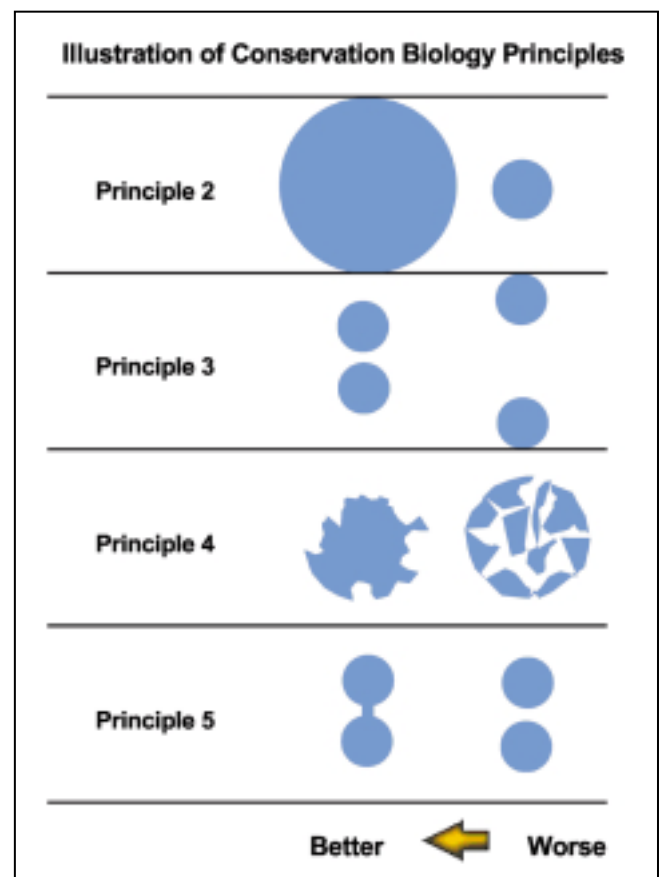
From Noss and Cooperrider (1994)

The results of this approach are difficult to demonstrate, especially in regions with as many species and complex interrelationships as the Southern Appalachians. Carefully chosen focal species, however, can provide helpful guidance in designing reserves and assessing the effectiveness of a reserve system (Miller et al. 1998).

“Rewilding”, the restoration of large wilderness areas that promote the regulatory role of large predators, is a critical step in restoring healthy and resilient natural communities (Soulé and Noss 1998). Solving the problem of reserve isolation in this context involves the creation of “land bridges” or migration corridors between core reserve areas that allow for the mobility of wide-ranging species, such as cougar and black bear, which cannot maintain viable populations in small, isolated areas (Beier 1993, Noss and Cooperrider 1994). These land bridges, combined with core conservation areas, would constitute a network that allows optimum gene exchange and the return of large predators to areas of local extirpation. Once these predators are reestablished, they can resume their essential role in maintaining the ecological structure, diversity, and resilience of a regional conservation network (Soulé and Noss 1998).

Buffer areas are another important element in reserve design. Transitional buffers adjacent

to core areas and corridors can allow a variety of relatively nonintrusive human uses and thus provide a gradual transition between natural and developed areas. Buffers both provide supplemental habitat and reduce the impact of human activity on biological habitat (Meffe and Carroll 1997).



F. Building Blocks for Recovery

Securing core areas of habitat in the Southern Appalachians will require protecting a variety of conservation lands. Fortunately, the region is rich in such lands. SAFC proposes that the areas identified in this section be protected and managed for their conservation value. This protection can take many forms, from wilderness designation to management by wise forest planning. Through protection plans, core areas of forest can be secured as habitat for our native species. Management that assures conservation protection also provides many human benefits, including clean water,



quality recreation, and the knowledge that we are restoring and preserving the health of ecosystems on which human well-being ultimately depends.

Protection Comes in Many Forms

Wilderness can only be designated by Congress. Wilderness designation provides the strongest and most permanent form of protection on public land.

Wilderness Study Areas, like wilderness areas, are designated by Congress. Although Wilderness Study Area status provides protections similar to those of wilderness designation, it is considered only an interim designation while an area is being considered for wilderness designation.

Wild and Scenic Rivers are fairly narrow corridors that provide protection against destructive uses, including road building and logging. They require designation by Congress, usually following Forest Service recommendations.

Research Natural Areas are high-quality forest habitats that are reserved for study but also available for low-impact recreation, such as hiking. Many do not qualify as wilderness but contain significant natural values for wildlife. They are designated by the Chief of the Forest Service.

National Scenic Areas are chosen for their scenic values, but they typically offer significant conservation values as well. They require designation by Congress.

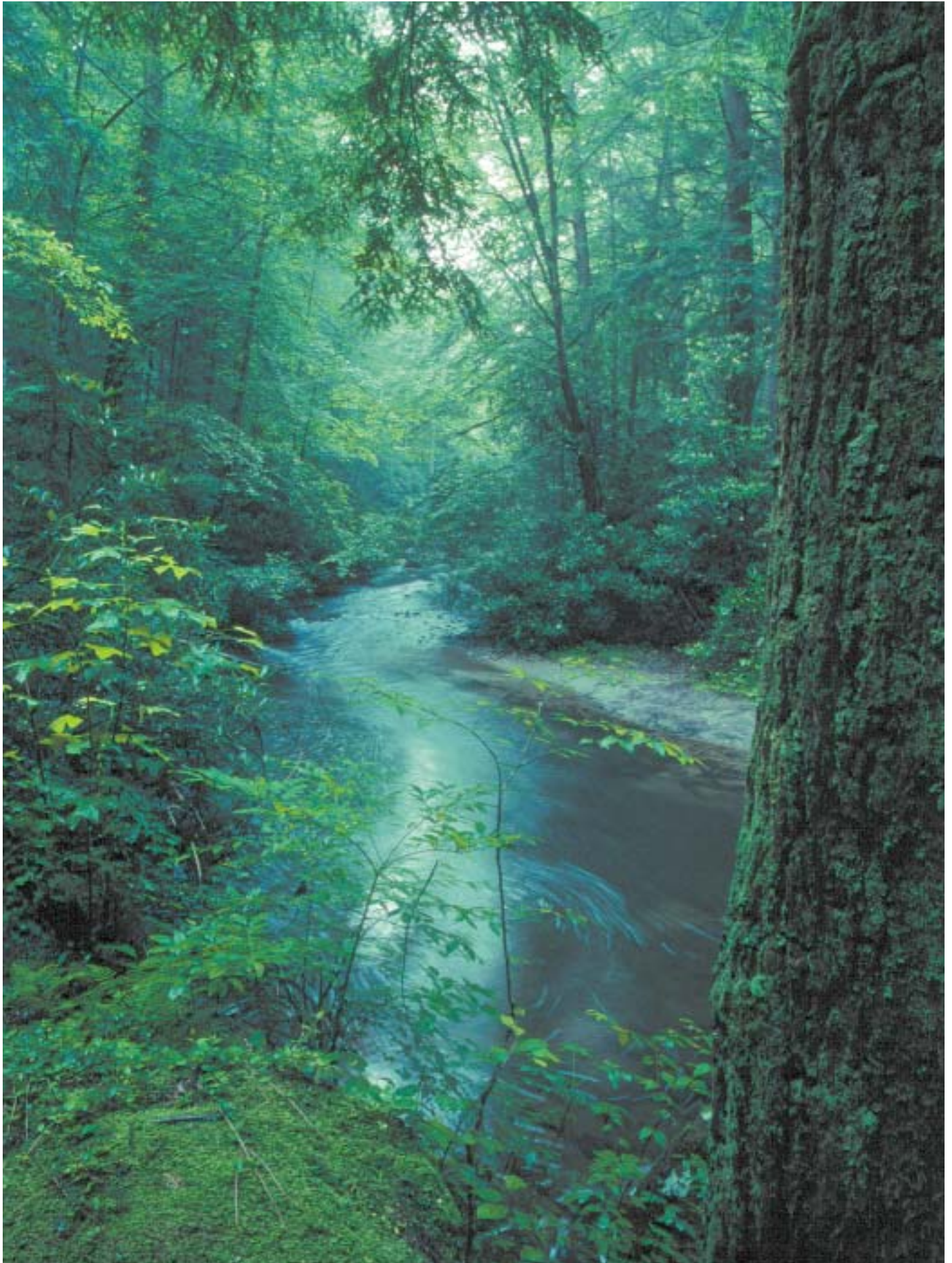
National Recreation Areas are selected for their value for fishing, canoeing, rafting, biking, horseback riding, and other recreation activities. They are designated by Congress, as are their management guidelines. Their primary purpose is

recreation, although they also generally serve conservation purposes.

Administrative Rules set policies that guide agency plans and decision-making. An example is the roadless policy published by the Forest Service in 2001. This policy was enacted by the Clinton Administration after extensive public comment and review. Areas protected under the roadless policy are important remaining wildlands. Many will qualify for wilderness designation or other protection, but achieving this goal will take time to build the support required to enact legislation. Administrative rules can be an important supplemental category of wild lands protection, but policies can change with successive Administrations.

Plan Designations are decided during a Forest Service planning process. Planning is supposed to occur every 10 years, although in practice the time has stretched to 15 years and more. Many designations, such as backcountry, scenic area, botanical area, and special management area, can provide protection to areas for the life of the plan.

Conservation Easements are enacted on private lands as legally binding agreements between landowners and qualified conservation organizations or public agencies. An easement may protect all or part of a property by prohibiting certain activities, using restrictions tailored to fit an individual owner's needs and the unique conservation values of the land.



1. Protected Natural Areas

In less than a century, exemplary conservation work by a succession of activists has protected some of the finest examples of the native forest that once blanketed the region. More than 462,000 acres of national forest and national park land within SAFC's area of concentration in the Southern Appalachians have been added to the National wilderness preservation system. An additional 465,000 acres in the Great Smoky Mountains National Park are also managed as wilderness, though not yet formally designated as such. Natural processes are sustained in these areas, and while human recreation is in some cases high, the impact of such use is intended to be minimal.

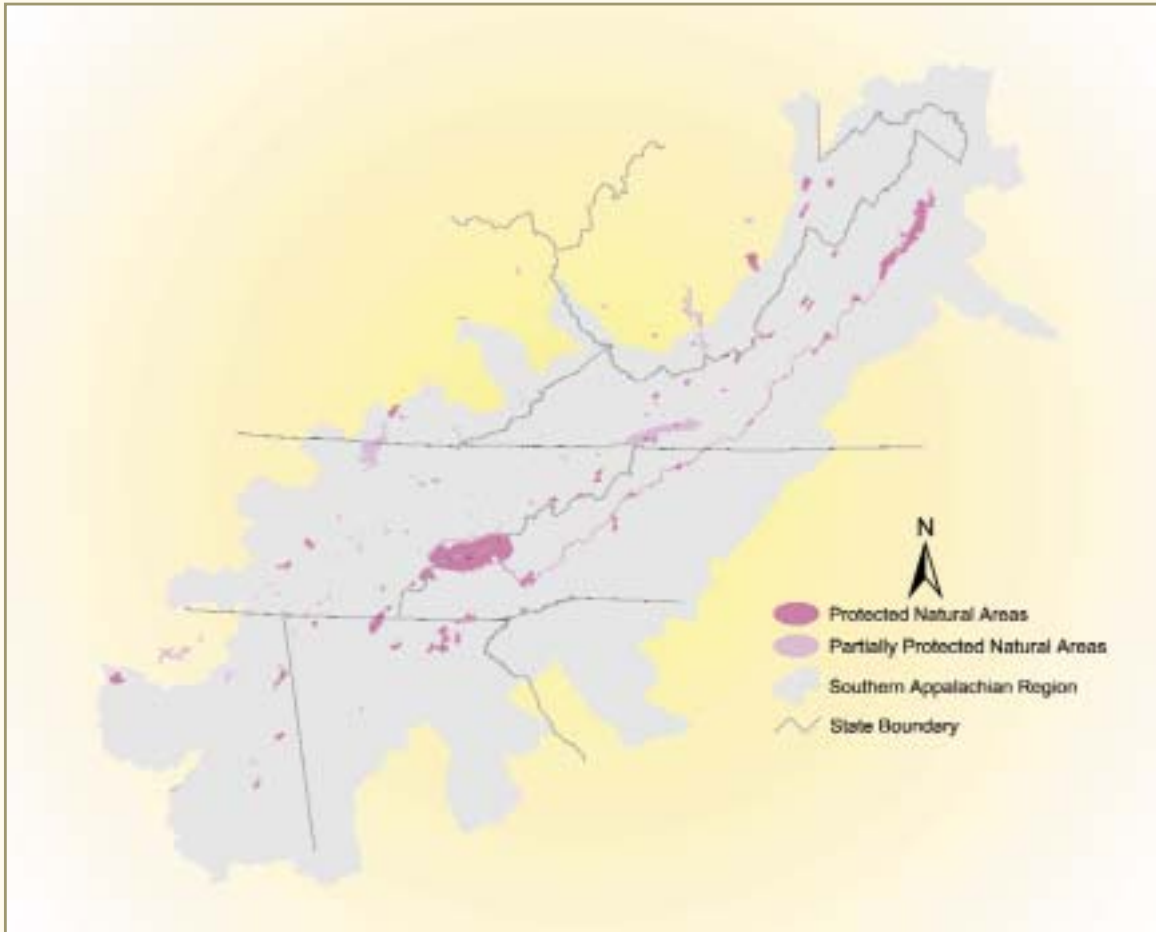
However, these examples by themselves are inadequate to protect the region's natural wealth. In total, they represent less than 2 percent of the entire regional landscape. These protected areas cannot provide the large, connected habitats necessary to maintain ecological processes and a full complement of native species. And most of them are far too small to support the reintroduction of extirpated large species, such as cougars. Even Great Smoky Mountains National Park, the region's premier reserve, was inadequate to support reintroduction of the red wolf.

Many of these protected areas were designated primarily for backcountry recreation, delivering excellent habitat as



a supplementary benefit. But boundaries were rarely drawn with the needs of nature in mind. Now is the time to reconsider the boundaries of these areas in terms of their ecological and landscape value. As independent islands, they make up an archipelago scattered across the landscape. If they reach their full potential as the nuclei of core areas of connected habitat, they represent the beginnings of a truly integrated reserve system.

The basic framework to create these reserves in SAFC's area of focus already exists, with over 5.5 million acres in federal ownership. The challenge now is to ensure that the best of those lands—the roadless areas, the old growth forests, the biological hotspots, and the critical watersheds—are managed and linked to form a reserve system built around the existing protected areas.



Existing Protected Areas are important regional conservation elements, but by themselves they are scattered and disconnected.



The challenge now is to ensure that the best of those lands — the roadless areas, the old growth forests, the biological hotspots, and the critical watersheds — are managed and linked to form a reserve system built around the existing protected areas.

2. Unprotected Natural Areas

Unprotected natural areas take on heightened significance when they are near protected areas. The combination of unprotected and protected areas frequently exhibit characteristics essential for true core areas (see section 6. E, Principles of Conservation Biology). Such aggregated areas may span not just the home range of a single bear, for example, but an entire, viable breeding population. Rather than holding a single population of a rare plant species, combined areas may offer sufficient terrain for several populations. They are also likely to hold significant stands of old growth or recovering old growth. And they begin to approach the scale for natural ecosystem processes that can, for example, absorb major storm or fire damage without losing important elements of natural forest dynamics. For these aggregated areas, many of the services that might be performed by land managers such as regulation of animal populations and provision of early succession habitat are provided naturally as ecosystem functions.

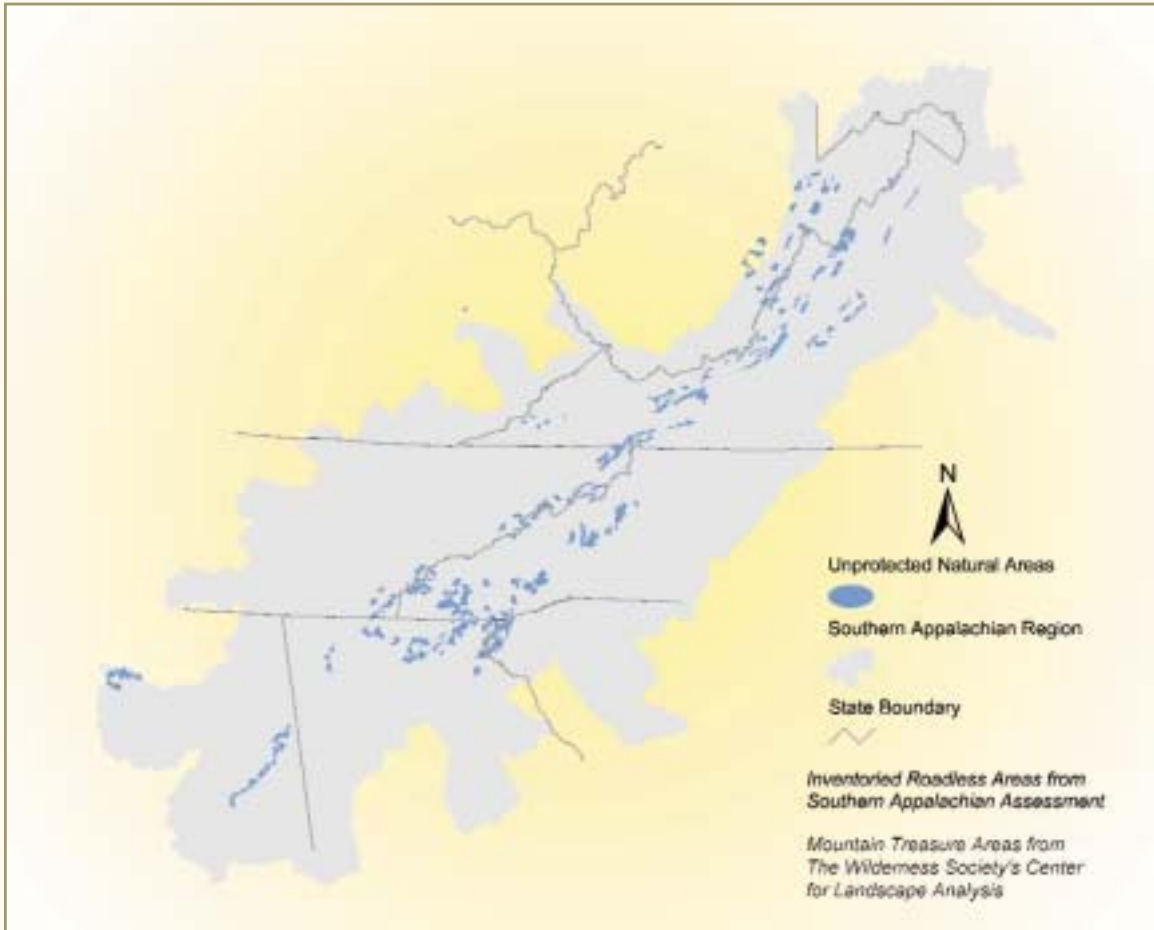
One of the keys to improving unprotected areas is an improved road policy. The assumption that “any road is a good road” has prevailed since the time of European settlement. Clearly, certain roads are necessary, but as our fractured landscape, deteriorating habitat, and declining species populations indicate, it is past time to re-evaluate our attitudes and policies in regard to roads. Any road creates a barrier between increasingly smaller areas of



habitat. A poorly maintained road causes erosion and siltation, compromising everything from aquatic life and water supplies to sensitive riparian and terrestrial habitat. We need to look hard at what we do with the roads we already have and with new roads that are proposed.

Significant tracts of national forest lands remain relatively free of roads. Approximately 487,000 acres, or 10 percent, of the national forest in the Southern Appalachians have been inventoried by the U.S. Forest Service as roadless areas. The Wilderness Society, working with most of the conservation groups in the region, has identified an additional 884,000 acres, described as “Mountain Treasure Areas,” that are not included in the Forest Service’s inventory of roadless areas. These natural areas still provide important biological and social values. Many of the roads in these places contribute little to needed access but detract greatly from the quality of habitat.

Some of these areas are excellent candidates for wilderness protection. Yet it is neither necessary nor desirable that all of them be formally designated as wilderness. Other categories of protection, including backcountry, old-growth restoration, or watershed protection, can allow natural processes to dominate and enable the areas to serve an important role in a network of conservation reserves. Some areas can be improved by restoration and species reintroduction. Restoration in these places is most effective when it targets specific species and ecological processes, rather than manipulating ecosystems for purposes other than conservation activities.



Unprotected natural areas make up an area greater than currently protected areas and offer the opportunity to assure habitat for species that need large areas of undisturbed habitat.



Significant tracts of national forest lands remain relatively free of roads. Approximately 487,000 acres, or 10 percent, of the national forest in the Southern Appalachians have been inventoried by the U.S. Forest Service as roadless areas.

3. Old Growth

Old-growth forest is one of the most important remnants of the region's pre-European landscape. Until recently, most people believed that the era of industrial logging around the turn of the last century destroyed virtually all the old growth in the Southern Appalachians, with the exception of a few sections of the Great Smoky Mountains and a handful of others, such as Joyce Kilmer Memorial Forest in North Carolina. Rapacious and destructive as the old operations were, the profit motive that drove them also saved considerable tracts of old growth. The industrial loggers turned away from areas that would cost more money than they generated – many of which contained old-growth forest. Also, rugged terrain prevented access to some areas that otherwise promised a rich harvest. Yet other parcels eluded ax and saw because they were too sparse or too small to attract large logging operations.

The U.S. Park Service and the Forest Service also played important roles in preserving old-growth forest during the early 20th century. These agencies pursued an aggressive acquisition program, buying a mix of cut and uncut lands. Much of the uncut lands occurred on dry, difficult to reach, ridges but surprising amounts of high quality rich cove, oak, and northern hardwood forest also survived.

It is only in recent years that the considerable extent of these areas is coming to light, thanks to work by such groups as the Asheville-based Western North

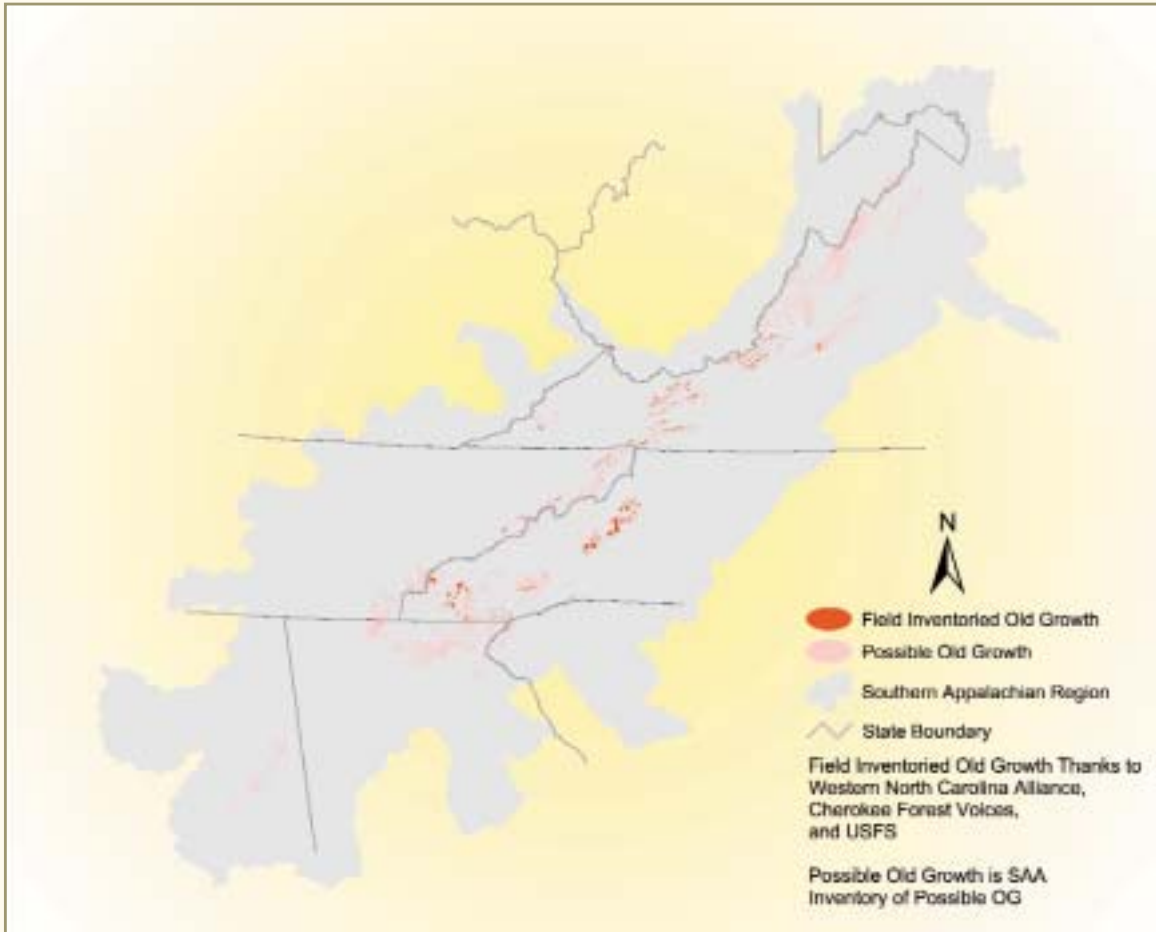


Carolina Alliance. A group of over 50 volunteers, led by old-growth researcher Rob Messick, documented surprising amounts of remnant old growth, some of them several thousand acres in size (Messick 2000). Messick's team, along with previous researchers, has located close to 80,000 acres of old growth in Pisgah and Nantahala National Forests. Such findings help dispel the long-standing myth that old growth endures only as scattered pinpoints on the map.

The Nantahala-Pisgah survey was based on old growth survey methods developed in Great Smoky Mountains National Park, where more than 125,000 acres of old growth have been found, including trees of record size for a number of species. Messick found and surveyed 17 sites that each contained more than 1,000 acres of old growth. We now know that two national forest areas—Linville Gorge and Mackey Mountain—join Joyce Kilmer in having more than 5,000 acres of exceptional old growth. The Mackey Mountain site carries special value because it is among the first tracts purchased for national forests in the East.

Surveys of Tennessee's Cherokee National Forest, led by Dean Whitworth and Dana Eglinton of Cherokee Forest Voices, also revealed previously unknown old growth. In addition, the Forest Service has documented old growth in the George Washington-Jefferson National Forest in Virginia. And national forests throughout the Southern Appalachians have conducted preliminary investigations using existing stand data with a view to identifying stands that may be old growth or could attain old growth if left alone.

These old-growth areas are perhaps our most significant legacy from the past. They suggest the richness and diversity of the great forests of the Southern Appalachians before they were logged. As refuges for species and ecological processes, they are the "ecological seeds" bearing the potential to generate landscape-scale recovery. For this reason they constitute the centerpieces of our Conservation Vision.



Surveys are revealing significant reserves of old growth and potential old growth.



*"... Here is the largest area of
virgin forest in the
South Atlantic region, and
the finest example
of mixed forest in America."*

— Appalachian National Park
Association (Wilson 1902)

4. Biological Sites

Traditionally, rare species are preserved by establishing refuges to protect their immediate habitats. However, many rare species and other species suffering population declines are at the mercy of the broader habitat conditions that surround the limited areas where they live. Protecting an individual wetland, for instance, requires protecting upland areas that drain into it. As the landscape matrix between habitats is altered or fragmented, the plants and animals that occupy them are increasingly vulnerable to each new disturbance. Single catastrophic events can then cause local extinctions, and when local extinctions accumulate, entire species can disappear.

Providing a continuum of intact natural habitat around rare populations can provide ecological resilience against both human and natural changes, including climate alterations. For this reason, a critical step in developing a conservation plan is to assess the landscape-scale habitat around targeted species and natural communities. “Targeted” species include rare species—those whose global populations may be as low as a few hundred individuals—along with endemic, disjunct, and wide-ranging species whose viability depends on having high-quality habitats in the Southern Appalachians.

For this purpose, the Southern Appalachian Forest Coalition participated with The Nature Conservancy and state Natural Heritage programs in ecoregional assessments of two ecoregions: the Southern Blue Ridge Ecoregion and the Cumberlands and Southern Ridge and Valley Ecoregion. The partners in these studies analyzed Natural Heritage Program (NHP) data on target



species and communities, along with habitat information on dozens of species not tracked by NHP, to identify a “portfolio” of biological sites for conservation action throughout the two ecoregions.

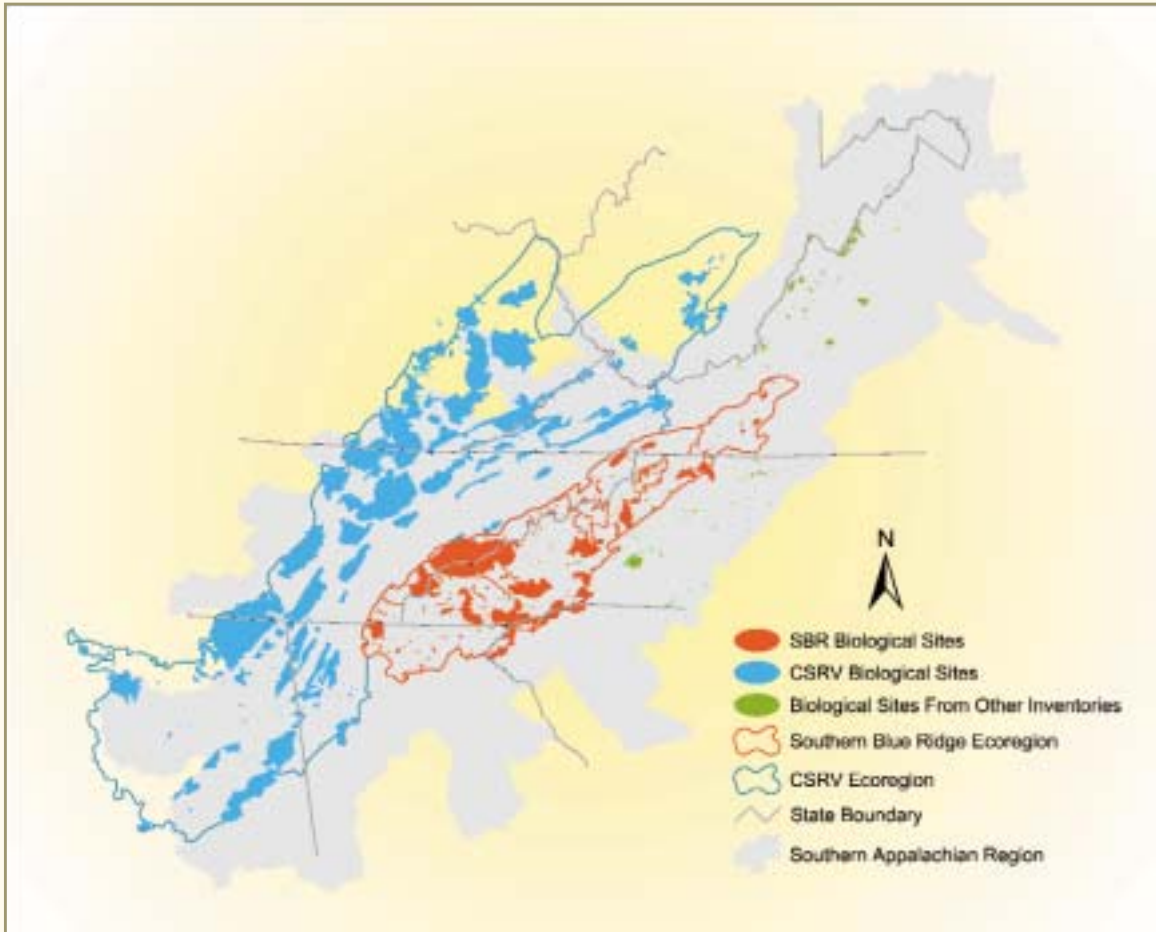
These sites were chosen because they provide critical habitat for rare species, wide-ranging species, and other species of concern. A primary criterion in choosing the sites was the occurrence of rare species and communities tracked by the NHP. The sites

provided ‘buffer zones’ around these occurrences and in some cases were consolidated to provide landscape areas for wide-ranging species. The biological sites provide an important supplement to the other building blocks in SAFC’s conservation vision. In some cases the sites overlap other conservation building blocks, emphasizing the importance of those areas; in other cases they identify unique areas omitted from other conservation building blocks.

Because the studies of the Southern Blue Ridge and the Cumberlands and Southern Ridge and Valley Ecoregions did not cover the entire Southern Appalachian region, data from the studies was supplemented by sites identified in similar NHP and agency assessments. As additional ecoregion assessments become available, these will be incorporated into the conservation vision.

Beyond identifying biological sites that were incorporated in the conservation vision, the ecoregion assessments provide valuable insights into how different portions of the region are similar or different. The Cumberland and Southern Ridge and Valley Ecoregion is three times larger, at 31 million acres, than the 9.4-million-acre Southern Blue Ridge. But the ecoregion studies identified a similar proportion of the landscape as biological sites: 23 percent for the Southern Blue Ridge (Nature Conservancy and Southern Appalachian Forest Coalition, 2000) and 24 percent for the Cumberlands and Southern Ridge and Valley. Biological sites in the two studies also protect most of the known viable occurrences of target species and communities in the assessments: 95 percent in the Southern Blue Ridge versus 87 percent in the Cumberland and Southern Ridge and Valley.

The ecoregion assessments also demonstrated that much more conservation groundwork has been established in the Southern Blue Ridge Ecoregion than in the Cumberland and Southern Ridge and Valley Ecoregion. A third of the Southern Blue Ridge is in public ownership, compared to only 7 percent in the Cumberland and Ridge and Valley. The public owns 68 percent of the area within biological sites in the Southern Blue Ridge, but only 23 percent of the area within biological sites in the Cumberland and Southern Ridge and Valley. These different ownership patterns of the two ecoregions and of the biological sites within them call for different conservation activities. The Southern Blue Ridge, with its relatively large holdings of public lands, requires work to assure conservation management of the existing public lands; acquisition of additional public lands and conservation easements can fill gaps in landscape conservation areas and provide connectivity between them. The Cumberlands and Southern Ridge and Valley requires extensive work to both secure additional public lands and to establish conservation easements on privately-owned lands to secure its conservation future.



Studies are documenting important biological sites throughout the Southern Appalachians.



“Mysterious and little-known organisms live within reach of where you sit. Splendor awaits in minute proportions...”

— E.O. Wilson
(Wilson 2000)

5. Aquatic Diversity and Critical Watersheds

Few habitats in Southern Appalachian forests have suffered such dramatic species loss and decline as our streams and rivers; aquatic species are the most threatened of all species groups in the Southeast (Master et al. 1998). The number of imperiled freshwater species in the region now exceeds 280 and continues to rise. For example, all 36 mussel species now presumed extinct in the U.S. lived in the Southeast (Neves et al. 1997). Up to 70 percent of 269 southeastern mussel species are imperiled (Threatened, Endangered, or Species of Concern), (Neves et al. 1997). Some 19 percent of 490 southeastern freshwater fishes are in jeopardy (Etnier 1997).

The significance of these figures is magnified when the region is viewed in a larger context. Rivers that flow from these mountains, including the Coosa and Tennessee Rivers, are some of the most biologically rich waters in the world, containing 90 percent of all mussel and crayfish species, 75 percent of aquatic snail species and about 50 percent of all the freshwater fishes known in the continental United States (Shute, Biggins, and Butler 1997). Clearly, protecting the headwaters of the Southern Appalachians is a necessity if we are to protect the aquatic diversity of the region and, indeed, the continent.

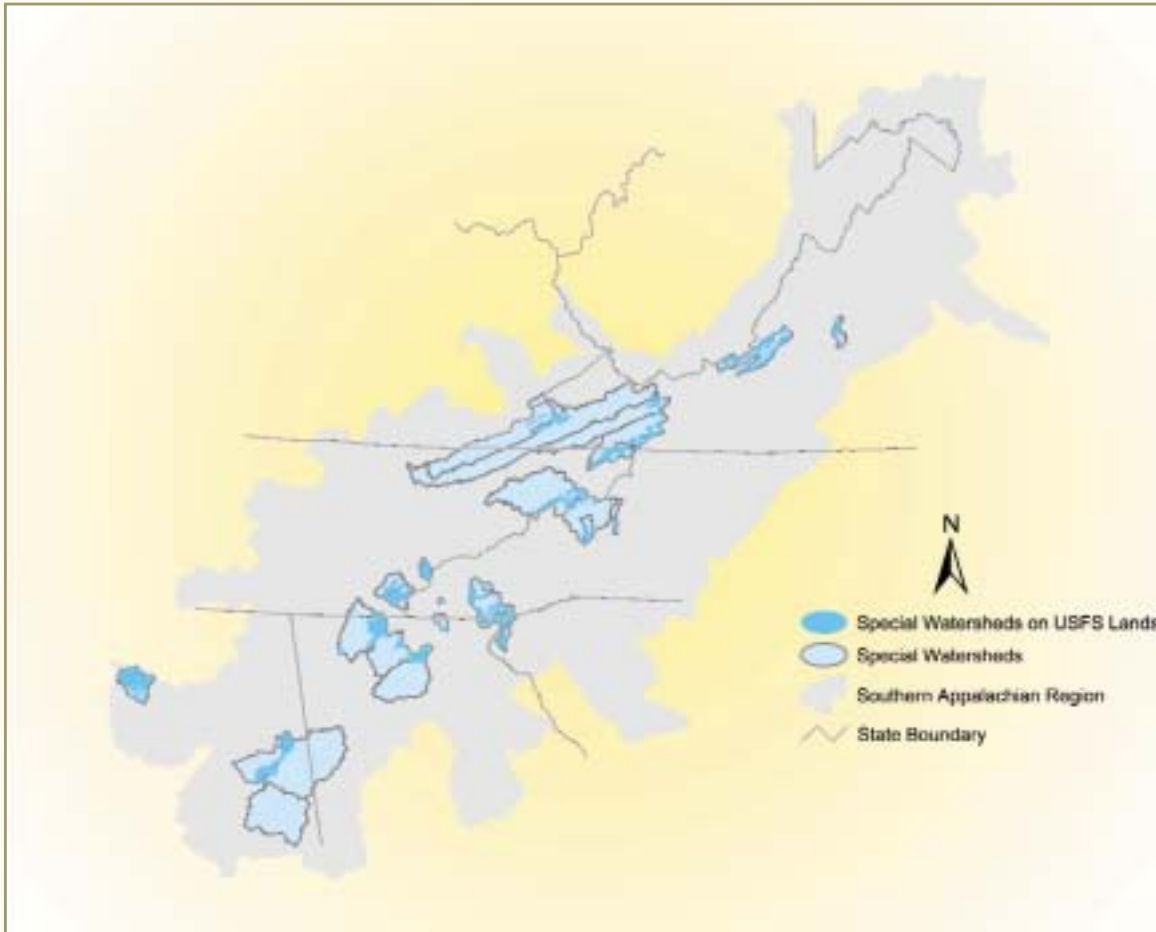
While intact watersheds are clearly needed to protect aquatic life and to provide habitat and corridors for movement of terrestrial species, they also provide clean drinking water for human populations. The Forest



Service estimates that more than 60 million Americans rely on water that flows out of our national forests (Dissmeyer 2000). It hardly bodes well for our own future if native mussels can no longer survive by filtering the waters that have been their home for millions of years.

It is impossible to protect terrestrial species in any area without attending to the health of the surrounding landscape. The same is true for aquatic species, because everything that occurs in a watershed ultimately affects the health of its streams and aquatic life. In the Southern Appalachians, the deterioration of the region's watersheds degrades both aquatic and terrestrial populations.

It is not too late to take action. SAFC has identified 15 critical watersheds that, if protected against destructive management practices, would offer some protection for most of the imperiled aquatic species in the region (McLarney 1999). Adequately protecting these 15 watersheds would provide at least one secure habitat for 90 percent of the imperiled species.



Protecting 15 critical watersheds in the Southern Appalachians would provide secure habitat for 90 percent of imperiled aquatic species.



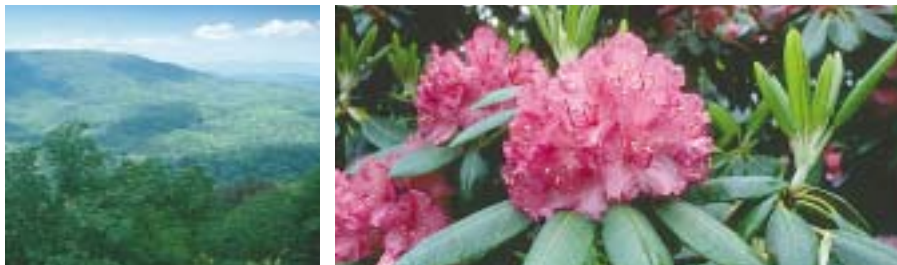
*“To protect your rivers,
protect your mountains.”*

— Emperor Yu,
China, 1600 BC

6. Conservation Easement Lands

Conservation activities are not confined to public lands. Private lands managed for forestry or conservation purposes can provide important habitat, particularly when they are part of a landscape that includes core natural areas protected under public ownership. Additionally, many landowners want their lands to provide wildlife habitat. In some cases they want to improve their yield of game populations for the sake of hunting; other landowners simply desire to be active conservation stewards.

Most states provide incentives for private landowners to engage in land management favorable to wildlife, habitat and other natural values. Landowners qualify for these incentives, which include reduced property and estate taxes,



by voluntarily restricting the type and extent of development on their property. For those who stand to inherit large tracts of land such as farms, the financial advantages of conservation easements can make the difference between keeping the land and being forced to sell.

Conservation easements can dramatically enhance the effectiveness of conservation areas. For example, the Black Mountains, northeast of Asheville, North Carolina, contain a high proportion of federal and state lands, including national forest, national park, and state park. Alone, however, these lands lack connectivity, which mitigates their conservation value. Their long-term conservation value was greatly enhanced when more than 20,000 acres of the watershed generating Asheville's water supply were placed under a conservation easement. Coupled with numerous private tracts similarly managed, the Black Mountains provide large-scale natural areas and corridors that generate excellent habitat for black bears, rare plants, and neotropical migrant birds.

7. Cultural Heritage Areas

In regions with a long human history, such as the Southern Appalachians, many locales acquire cultural significance and meaning. These human values need not conflict with conservation goals, but often complement them. In many cases, for example, landscapes that played a vital role for indigenous people represent a successful fusion of cultural life and ecological dynamics. By honoring cultural areas we both preserve a landscape and celebrate the dependence of humans on the natural world.

One of the best-described examples of such an area lies in the Bankhead National Forest of northwest Alabama. Criss-crossed



by ancient Native American trails and sites, the Bankhead exhibits a history of contrasting human uses. Under European settlers in the nineteenth and twentieth centuries, the Bankhead was treated as a kind of factory, churning out wood fiber and other commodities. Earlier, however, the forest was home to people who lived in relative harmony with the landscape. Too often the protection of natural processes and biological diversity is thought to be opposed to human desires and progress. This need not be true if we protect and celebrate examples of places where humans have lived in balance with animals, plants and the ecological dynamics of an area. Cultural areas, like natural forest ecosystems, can suggest approaches to more sustainable forest use.

8. High Priority Areas For Public Acquisition

Because our native species pre-date the concept of ownership boundaries by millions of years, they are as likely to live on private lands as on public lands. In fact, private lands contain more federally threatened and endangered species than public lands. In the Southern Appalachians, private lands hold 45 such species compared with just 17 in the national parks and 26 on national forests (SAMAB 1996b). More than 60 percent of rare biological communities in the region occur only on private land. These figures cause concern, given the rate at which private forest lands are disappearing to development. Still, many opportunities exist to minimize the impact of this development. Many of the most biologically rich lands in private ownership fall within boundaries drawn for potential national forest expansion. These boundaries delineate areas within which the Forest Service may pursue land purchases from willing sellers.

Also, recent changes in land values and business strategies have prompted corporations, including Champion International and Duke Energy, to place large tracts on the market. These areas often have high conservation values and have served as de facto components of landscape-scale conservation areas. Many of these lands continue serving traditional uses for local people, such as hunting and fishing. Keeping these lands in their natural state and securing them under conservation management is one of the critical challenges of the next decade. The loss of these lands would seriously degrade critical landscape conservation areas.



Significant tracts of important conservation lands can be added to the public lands in the Southern Appalachians.

Congress makes resources available each year through the Land and Water Conservation Fund to purchase such lands, but it has never received full funding. This shortfall hampers public agencies such as the Forest Service when acquisition opportunities arise. Such was the case with the Rocky Fork tract, which lies adjacent to a large wildlands area in the Bald Mountains of Tennessee and North Carolina. This tract is now owned by private land speculators because the Forest Service was unable to secure funding quickly enough to purchase it. By contrast, an innovative partnership between North Carolina, South Carolina and the Forest Service was successful in purchasing lands in the Jocassee Lake area from Duke Power. Land conservancy groups and conservation organizations played important roles in brokering this complex transaction. Such cooperative efforts offer great potential, but generating the necessary resources and political will to bring them about can take time – time that is not always available.

SAFC's conservation plan recognizes that without public acquisition of critical migration corridors and privately-owned biological hotspots, prime habitat will continue to be irretrievably lost. A concerted effort is required to ensure adequate funding and create strategic alliances to capitalize on acquisition opportunities as soon as they arise.

G. Focal Species Recovery

Certain species are considered “focal species” in conservation area planning because, by definition, they are species that require the kinds of healthy conditions that tend to support key ecological processes and other species (Miller et. al. 1998). Selection of appropriate focal species can help address damaged ecological processes, determine the size of functioning conservation areas, and determine needs for connectivity.

Foundation species are those that play a pivotal role in their ecosystem and are known to provide some factor or ecosystem service on which many other species depend (Soulé 2000). To a large extent, the recovery of the ecosystem itself depends on the recovery and health of foundation species.

Keystone species enrich the ecosystems in which they live in distinctive and important ways (Miller et

al 1998). Their activities or the ways they modify habitat significantly affect other species, effects that are disproportionate to their numerical abundance. Removing such species can cause changes in ecosystem structure, with the common result of declining species diversity.

Umbrella species require large areas for their home ranges and seasonal movements (Frankel and Soulé 1981). Areas large enough to sustain a viable population of an umbrella species include smaller habitats for many other species. The health of umbrella species is a good indicator of the health of landscape-scale habitat.

Flagship species are “charismatic” creatures that have broad public appeal and can draw attention to and serve as symbols for major conservation efforts (Miller et. al. 1998).



1. American Chestnut: A Foundation Species

Even if wildland cores and corridors can be protected into the future, long-term recovery in the Southern Appalachians will depend on restoration of some of the region's damaged ecological elements. Chief among them are species that were part of a primary food base and served, directly or indirectly, as a primary energy source for a wide range of species. The American chestnut was one of these, providing a dependable food source and occupying as much as 25 percent of the canopy of the Southern Appalachian forest until the early twentieth century (Buttrick 1925). Deer, bear, turkey and many other species depended on the abundant nuts for the necessary calories and protein to sustain them through the winters. The tree was attacked during the first decades of the twentieth century by a fungus introduced from Asia. The fungus causes a canker that kills the vascular cambium of the tree and eventually the entire tree. Oaks replaced many of the lost chestnut trees in the decades following the blight, and while they provide mast in the form of acorns at the same time of year, their nut crop is much less consistent from year to year. Animals that are dependent on a reliable food supply are less able to maintain stable populations on a food source that fluctuates.

Fortunately, there is hope for the restoration of the chestnut to the forests of the region. Asiatic chestnut species have a natural resistance to the Asian



fungus. Geneticists have determined that just a few genes are responsible for resistance. The American Chestnut Foundation has a breeding program that should result in a resistant American chestnut type tree in the first decade of the new century. Once resistant trees are available, a strategy for introducing resistance to wild populations can be developed. Meanwhile, many of the original chestnuts continue to sprout from the roots, which are not affected by the fungus. Even though these sprouts are inevitably attacked by the fungus before reaching maturity, they represent invaluable genetic adaptation to specific habitats. Designing a breeding strategy that utilizes the wild stock and introduces only the genes necessary for resistance could provide the basis for recovery of American Chestnut in the region.

The recovery of many other native species should also be aided by the return of this foundation focal species. For example, chestnuts would provide dependable fall food for bears, so that their reproductive success would not fluctuate sharply as it does today. In addition, chestnut recovery would boost today's small wildlands populations of deer, and potentially elk, forming a prey base for predators, such as red wolves and cougar.

Some wildlife managers favor the expansion of deer populations by providing early-succession habitat, such as post-clearcut browse. This solution, even if it worked to boost deer populations, neglects the loss of wildlands to logging and road-building activities. Chestnut trees, by contrast, both adapt perfectly to mature, unfragmented forest and provide the food needed by deer, squirrels, and other prey species during critical pre-winter months. These combined features would bring perfect conditions for predator recovery.

2. Black Bear: An Umbrella Species

Black bears have recovered from near extirpation to reach their healthiest populations in the Southern Appalachians in many decades. Most researchers attribute the bears' success to the maturing of the surrounding forests and the designated breeding zones and other remote areas that function, by design or default, as biological refuges.

However, even in their success, black bears illustrate the incomplete ecological recovery that characterizes the Southern Appalachians today. Although bear populations have improved, they are confined to islands of suitable territory that are surrounded by human populations and activities. The demise of the chestnut tree eliminated a dependable fall food source and forced the bears to rely on much less dependable acorns (see *Foundation Species*, page 55). The wide fluctuations in acorn production have been accompanied by uneven reproductive success for the bears. During poor acorn years, hungry bears – especially yearling males – range beyond secure habitat and even into residential areas where they endanger both humans and themselves. With the current lack of forest corridors connecting suitable habitat, many bears end up in unsuitable areas, suffering high mortality from hunting and road accidents. This toll illustrates the fate of an umbrella species whose habitat needs are not met.

When the natural landscape is intact, individuals from one population are free to move over a wide area to interbreed. This free-



dom allows species such as bear to have a continuous population. Currently, in the Southern Appalachians, bear and many other species are increasingly isolated into discreet populations separated by inhospitable habitat. These populations are therefore genetically limited and subject to perturbations, including extinction. However, if these populations can be linked by occasional dispersal, they could be considered part of a larger “metapopulation” (McCullough 1996). Such metapopulations are generally more stable than isolated populations because they produce individuals that are more resilient to disease and genetic deterioration. Metapopulation dynamics, which depend on the ability of individuals to travel between different population areas, prevent inbreeding and provide a mechanism for repopulation when one population suffers a catastrophic decline. Continuous population dynamics are best, but core areas large enough for breeding populations of wildlife and connections sufficient to provide for healthy metapopulation dynamics should be considered essential. Bears are a good indicator for how well habitat and landscape connectivity is provided for other species; if it is not possible for bears to move across the landscape, it is likely that other terrestrial species will be isolated as well. If corridors exist that allow bear to move from one core area of habitat to another, other species are likely to be able to move along the same corridor. Providing for bear thus creates an “umbrella” that provides for many other species.

It has been suggested that wildlife biologists could create “virtual” metapopulations on a case-by-case basis, physically transporting individuals of a species such as bear from one breeding area to another. This is clearly less effective or desirable than a well-linked system of landscape-scale habitats. The tools and materials exist to create a truly functional ecological landscape that sustains itself the way it has for millennia.

3. Beaver: A Keystone Species

Beavers, once very common along the streams of the region, traditionally played a keystone role in shaping and maintaining the ecosystems of the Southern Appalachians (Bass 2000b, Herrig and Bass 1998). They provided habitat for a wide range of species, including fish such as pickerel that are now extirpated from the region. Their activities increased the riparian areas of streams as much as four-fold. They created several productive habitats, including riparian, early succession, and enriched forest coves, on which many rare plants depend.



Beavers lost their keystone status quickly in the early 1800's when they were virtually eliminated by trapping. The last beaver in the region was recorded in 1896, by which time beavers had long since lost their ecological importance. Although they have not been a keystone species for almost 200 years, their recovery could greatly enrich the same streamside habitats they once occupied. For example, Herrig and Bass (1998) estimate that 80 percent of the sensitive plant species of Cherokee National Forest would benefit from the presence of beavers. Beaver have been reintroduced and are thriving in parts of the region. The greatest barrier to widespread recovery of the species are the lack of human toleration of their activities and finding appropriate areas for reintroduction.



4. The Missing Predators: Keystone and Umbrella Species

Predators are also keystone species, especially large carnivores that serve to regulate prey populations and thus to support a cascade of ecological effects. The structure, resilience and diversity of ecosystems often depend on “top-down” ecological interactions that are initiated by “top” predators (Terborgh et al. 1999). The loss of large predators often triggers ecosystem changes leading to ecological simplification and species loss (Mills, Soulé, and Doak 1999). Large predators are also considered to be umbrella species. They require large core areas of habitat and require connectivity between core areas to assure their long-term viability (Soulé and Noss 1998).

Many species in the Southern Appalachians, particularly large carnivores, have been extirpated or marginalized by resource



extraction, over-hunting, development, and loss of habitat. Some of these species, such as black bears, have recovered from very low population levels in the last few decades. Others, such as wolves and cougars, exist only as “ghosts” in the region. In the case of cougars, tantalizing sightings continue to occur and physical evidence continues to be found (Bolgiano 2000), raising the question of whether cougar populations could – or do – survive.

“Rewilding with extirpated carnivores and other keystone species is a means as well as an end. The “end” is the moral obligation to protect wilderness and to sustain the remnants of the Pleistocene – animals and plants – not only for our human enjoyment, but because of their intrinsic value. The “means” refers to the vital roles of keystone species in maintaining the ecological structure, diversity, and resilience of the entire fabric of living nature.”

— Soulé and Noss, 1998

Genetic studies suggest that the eastern cougar is indistinguishable from other North American subspecies (Culver 1999). Such a mobile and far-ranging creature could theoretically find its way back to the region if sufficient habitat and prey were available. Red wolf reintroduction was attempted during the 1990’s in Great Smoky Mountains National Park, but the effort failed for a variety of reasons. Chief among these were the lack of an adequate prey base and the fact that the premier natural reserve of the region failed to provide sufficient habitat. SAFC’s conservation proposal seeks to assure adequate core habitat and wildlife corridors with low road density to allow the recovery of species, including large carnivores.

The recovery of large predators in the southern Appalachians will depend most of all on the protection of core areas of habitat. It will also require the repair of damaged ecosystem functions, the recovery of foundation and prey species, and the healing of interdependencies that have been lost or weakened over the past century. As Aldo Leopold recognized, this undertaking will require extraordinary courage, humility, and ecological conscience (Noss & Cooperrider 1994). It is one thing to argue for the protection of wildflowers and birds; it is quite another to work toward the recovery of large and potentially dangerous predators. But ecologists have shown that these two efforts are not only closely related; they are also essential parts of the same process. Successful reintroduction of predators in the region is a fundamental element of ecological recovery.



H. Rare Species and Rare Communities

To be effective, a conservation plan should represent all natural ecological types. The best ecological mapping that has been performed for the Southern Appalachians is a land cover analysis conducted with satellite imagery for the 1996 Southern Appalachian Assessment (SAMAB 1996b). The SAFC plan has incorporated this data to ensure adequate representation of most natural land cover types, including mixed mesophytic, northern hardwood, oak-hickory, montane spruce-fir, mixed pine-hardwood, southern yellow pine, and white pine-hemlock. There are, however, two exceptions. Bottomland hardwood forest and wetlands are inadequately represented in the proposal because they are found primarily in areas of relatively low elevation and along rivers, where land is held to a great extent by private landowners.

When the use of non-public lands as potential conservation areas is included (see sections VI F.6 and VI F.8), the prospect for thorough representation increases. Non-public lands in Aquatic Diversity Areas and Critical Aquatic Refuges offer the opportunity to protect bottomland hardwoods and wetlands through public acquisition and conservation easements.

For regions such as the Southern Appalachians that have a long history of settlement, it is critically important to include areas with low road density. Native species have evolved without the influence of roads, which seriously disrupt natural ecological processes, and many species cannot adapt well to their presence. Habitat areas of zero or low road density are critical to the survival and vigor of such species. This concern is particularly acute in the Southern Appalachians, where rapid road-building and road upgrading continue to fragment the landscape. The elements proposed in SAFC's vision would protect most of the largest and most extensive areas of low road density.

It is also essential to protect rare species and rare communities. SAFC's projects with The Nature Conservancy and state heritage programs created an inventory of biological sites across much of the region (see section VI F.4). These biological sites contain important rare species and communities. Protection of these lands, which are included in SAFC's conservation vision, would safeguard most of the rare species and communities in the inventory. Those that occur on public lands receive high priority for protection in SAFC's conservation vision. Some of those found on private lands are currently managed under easements or other conservation practices. Protecting the remainder of these areas through good conservation management should be a high priority.





Conclusion

Five hundred years ago the Southern Appalachian region was a rich and resilient landscape. Old-growth forest prevailed; a varied tapestry of trees, shrubs, and herbs was draped across the mountains in endless adaptation to local conditions and natural disturbances. Birds, mammals, amphibians, reptiles, invertebrates, and insects found abundant habitats in which to live and reproduce. Beaver shaped the riparian environment from the mountain headwaters to the rivers, which teemed with a diversity of fish, mollusks, and other aquatic species that made up one of the richest aquatic systems in the world (Folkerts 1997). Deer, elk, and bison roamed the forests, the beaver glades, and the mountaintop balds. Chestnuts dominated the forest – heralding summer with a sea of cream-colored, pungent flowers, greeting the fall with a measureless bounty of nuts that sustained the ecosystem through the cold winter. Wolves,

cougars, and bears ranged freely throughout the region, regulating prey populations and conferring a wildness on the land.

Humans lived here as well. Level tracts along the river valleys offered favorable farming, and the forests nearby teemed with game. Some scientists have argued that early Native Americans had a greater effect on the landscape than is generally recognized, and may even have contributed to the extinction of a large number of species at the end of the Pleistocene several thousand years ago. This remains to be proved, but by 500 years ago the human population lived off the land in vibrant and sustainable balance with natural ecosystems.

Much has changed in those 500 years, however, since Europeans began to make their mark on the landscape of the Southern Appalachians. Species



have been lost, forests have been altered, and the hand of man has so altered the landscape that it is difficult to see old natural patterns. Some would argue that human changes of the past are water over the dam: that the changes are irreparable, the die is cast, and human advances toward higher standards of living and improved health are certainly for the better. But the conservationists who stood up a century ago during the height of forest destruction took a longer view, striving to preserve the essence of the region's natural heritage. It is because of them that we can still discern the natural grandeur of this region. Their struggles and dreams have given us not only our national parks, national forests, wilderness areas, and roadless areas, but also the hope that their work can be extended.

In the years since Europeans settled the Southern Appalachians, we have tasted the bitter losses of species once common in the region. But we have gained in our knowledge of what species need in order to flourish. We also know much more about what natural areas need to function well, and what must be done to restore the ecological landscape. We understand that the groundwork laid by conservationists over the last century was just a beginning, and that the task of recovering the ecosystems of the region is immense.

It would be easy to turn away from these tasks because they seem too difficult or politically unrealistic. We believe that the ecological potential of the region survives like an ember, ready with proper tending to burst once more into flame. We are heartened by the brave effort of those who yearned for that flame a century ago and whose vision gives shape to our own. And we are sustained by the countless citizens of today who treasure the Southern Appalachians' natural potential, understand the resiliency of natural ecosystems, and work hard to sustain that priceless ember.

In this document we describe SAFC's vision of a network of landscape conservation areas in the Southern Appalachians. In this vision, natural processes and native species play the vibrant, harmonious roles they did in the past. In the same vision, people play essential roles as stewards of the land, deliberately choosing to nourish the landscape less than to change it for their own purposes. It is a vision that may take as long to realize fully as the

500 years it has taken to alter the landscape since European occupation, but there are no fundamental barriers to its realization.



The proposals in this document seek to extend a linked set of initiatives begun in the past. The proposals are designed to secure existing conservation lands in order to establish landscape-scale conservation areas with healthy ecological functions. They also suggest linking these landscape areas to form a regional network of conservation lands. Such lands, some of which are specifically identified in this document, must form the foundation of any regional network of conservation lands. The critical task for the present is to build this foundation. The task for the future is to further secure linkages between these conservation areas, add additional landscape conservation areas wherever possible, and plan for the conservation linkage of the Southern Appalachian region with neighboring regions. Just as landscape conservation areas function best when linked to other conservation areas, the Southern Appalachian's conservation network will function best when it is linked to neighboring regional conservation networks that are ecologically restored.



VIII.

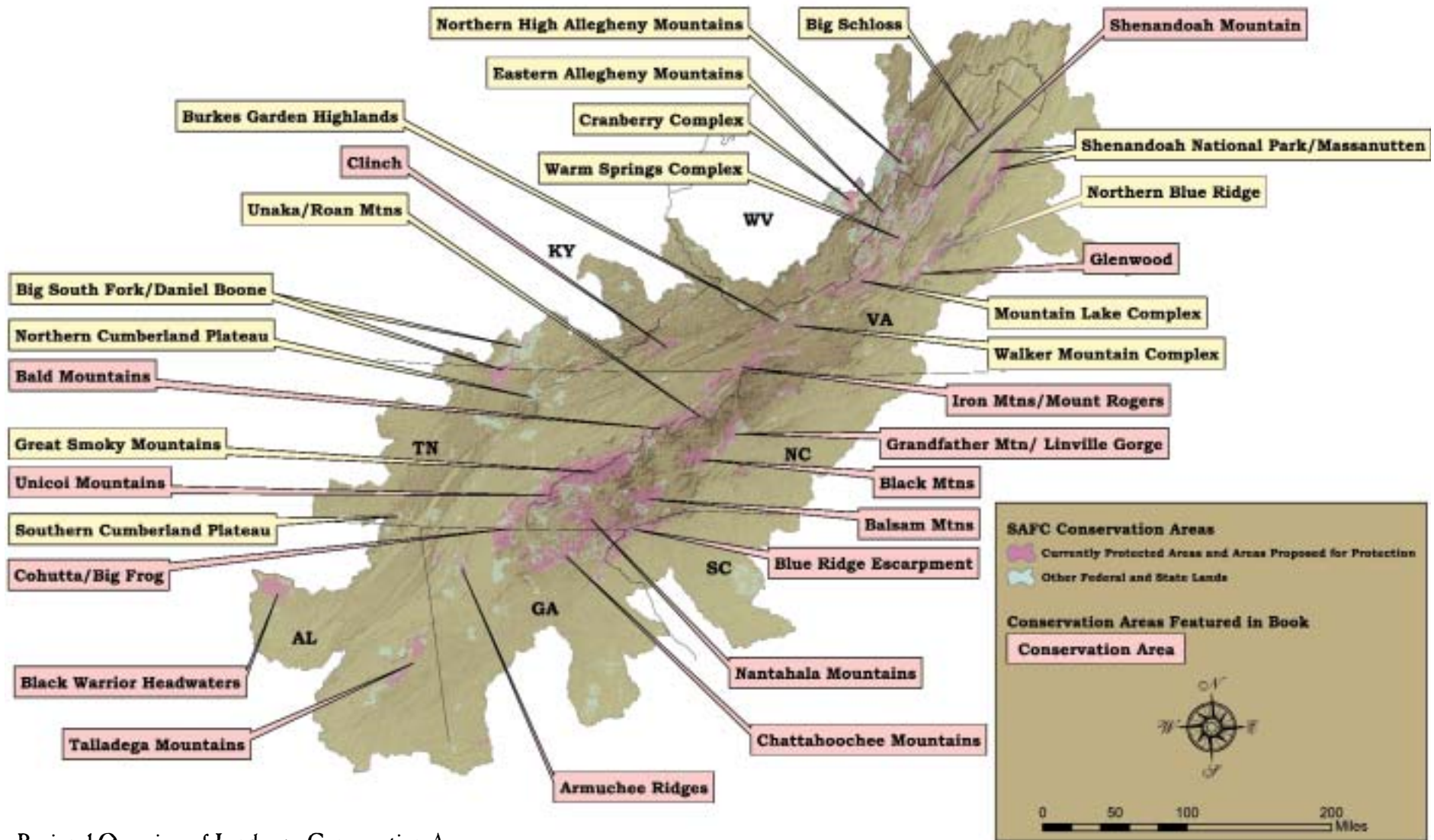
Landscape Conservation Areas in the Southern Appalachians

“The Appalachian national forests offer one of the few areas on this continent where a true bioregion is possible, a place where identity can be built on both ecosystem and cultural grounds. Maybe the historically elusive sense of Appalachian self-identity needs only to be fixed in place, and that place would logically be the commons, the place that unites everyone. Love of place and a sense of place get a lot of homage in Appalachian literature, but rarely do they address the physical nature of place and the physical requirements for maintaining place. The Appalachian national forests make it possible to link love of place with conservation biology. They offer the foundation for a truly sustainable future for this region because they are the core, the wild heart, of that state of mind and country we call Appalachia.”

— Chris Bolgiano (Bolgiano 1999 - 2000)

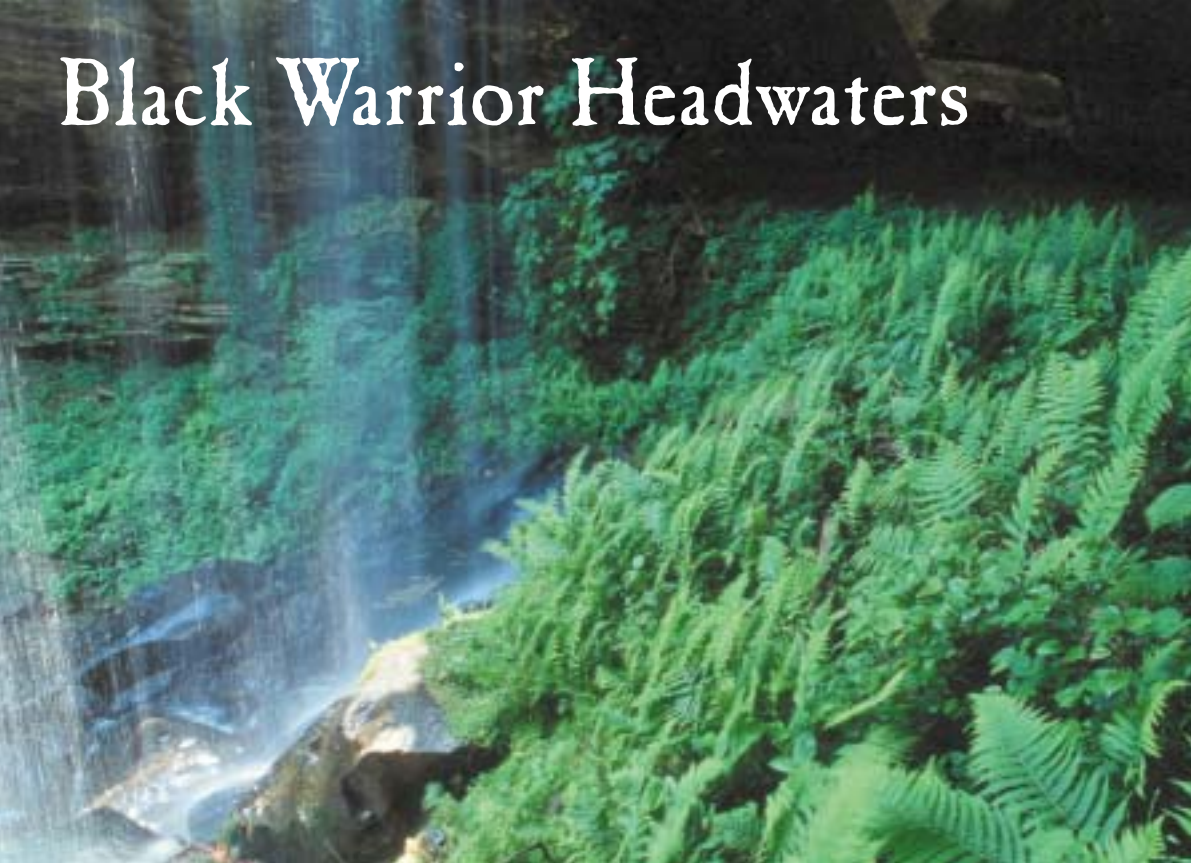
This section attempts to portray the significant regional reserve of relatively intact or recoverable landscape conservation areas. This is a map showing landscape conservation areas that have been identified in the Southern Appalachians. This section also describes 16 of these landscape-scale conservation areas in some detail. As key elements of SAFC's conservation vision, these areas are portrayed in their potential as continuous, unbroken, areas of sweeping, unspoiled, and in some cases rare habitat. In most cases it will take considerable conservation effort and time for them to return to this potential.

In human terms, each landscape conservation area is a legal patchwork of many different ownerships. Each of these areas holds significant concentrations of public land (national forest, national park, state lands, etc.), where dedication to conservation purposes is directed by policy decisions, legislation, or other public processes. Conservation activities on privately-held land, however, require decisions by each landowner. Achieving the conservation vision described in this book will require the active partnership of public and private landholders who share the common objective of protecting our forests.



Regional Overview of Landscape Conservation Areas

Black Warrior Headwaters



"The preservation of forests is a subject to which too little attention has been paid in the past and to which should be given much thought. Already the country is experiencing the bad effects of indifference."

— Indianapolis (Ind.) News
1899 (Wilson 1902)

The Black Warrior Headwaters Conservation Area is part of the Southern Cumberland Plateau Ecoregion and includes the 187,000-acre Bankhead National Forest of northwestern Alabama.

The Black Warrior Headwaters Area is a bountiful and inviting land of canyons, waterfalls, caverns, and old-growth trees predating the establishment of the United States. Rich with signs of Native American travel-ways and settlements thousands of years old, the Black Warrior Headwaters Area is a unique blend of natural and cultural heritage that offers many clues about how Native Americans were able to safeguard their environment while living in close association with nature.

Black Warrior is set along the southern extreme of the Cumberland Plateau, where more than 400 miles of canyons shelter unique plants and animals. This area formed a refugium during the era of Pleistocene glaciation and still harbors plants and animals characteristic of habitats much farther north. These Appalachian species, along with Alabama's more typical southern species, create an astoundingly diverse and even unique

mixture of plants and animals. The streams, canyons, and forests also provide crucial habitat for endangered, threatened, and rare species, some of which occur only in the Black Warrior Headwaters Area.

The rich diversity of species found in the Black Warrior Headwaters is complemented by abundant evidence of early human habitation and culture. Over 300 archeological sites, some dating back thousands of years, are found in the area, along with important Native American trails and historic sites. The state of Alabama recognizes three State Historical Districts within the Black Warrior Headwaters, formally acknowledging the area's value for recreation and study. Its blend of natural and historic attractions draws visitors to explore its rich diversity of plants and animals, to experience its pristine streams and waterfalls, and to learn from its rich cultural heritage.



Important Aquatic Systems

The Sipsey Fork of the Black Warrior River is an important aquatic diversity area that contains at least 10 imperiled aquatic species. For most of these species the Black Warrior Headwaters is the only place that assures essential habitat into the future. Most of the streams in the area flow through national forest lands, providing an excellent opportunity to protect the aquatic resources by protecting these public lands and shielding them against activities that would degrade the streams.

Biological Hotspots

The Nature Conservancy and SAFC recently completed a conservation planning exercise for the Cumberland Plateau ecoregion which recognized the Black Warrior Conservation Area as a biological hotspot. The area is a unique blend of Appalachian and Coastal Plain elements that reflect the region's role as a Pleistocene refugium. There are 15 species of toads and frogs, 14 species of salamanders, 9 species of turtles, 9 species of lizards, and 27 species of snakes. Over 147 species of birds are either indigenous or migrate through the Black Warrior Area. Within Black Warrior, the relatively small Flint Creek Botanical Area has 350 species of plants, 12 of which are rare.

Protected Wildlands

The Sipsey Wilderness, one of the oldest wilderness areas in the East, is located within the Black Warrior Headwaters Area. At almost 26,000 acres, it is the second largest wilderness area east of the Mississippi.

Unprotected Wildlands

The Brushy Fork unroaded area is one of the wildest and most rugged tracts of land left in Alabama. It contains over 20 miles of canyons, with 52 canyon heads and waterfalls. The headwaters of Brushy Creek, a candidate for Wild and Scenic River status, emerge from the Brushy Fork Area. Potential additions around

Sipsey Wilderness are not "inventoried" as roadless but offer excellent opportunities to expand the wilderness.



Old Growth

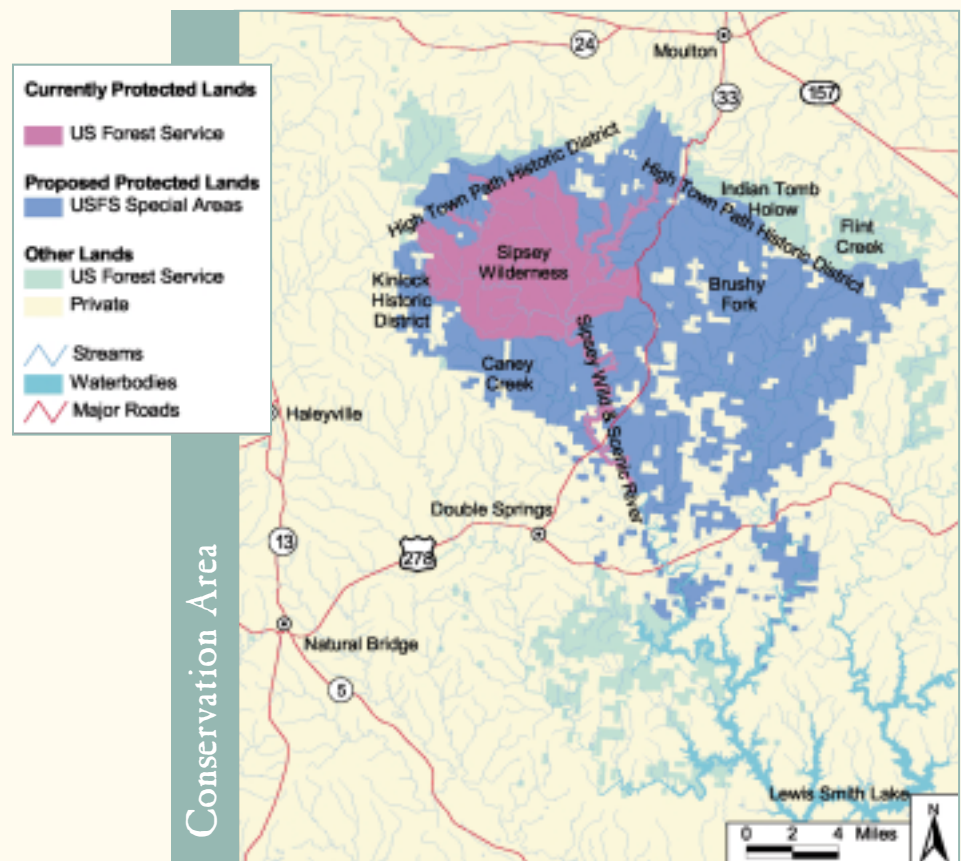
Although no systematic survey of old growth forest has been conducted for the Black Warrior Headwaters Area, the presence of significant old growth is clear. For example, one champion poplar tree in Sipsey Wilderness is estimated to be 550 years old. The area is also known for its arboglyphs on old beech trees – Native American and early settlement carvings that confirm the great age of the trees and the old-growth status of the forest.

High Priority Areas For Public Acquisition

Opportunities for consolidating Forest Service ownership and acquiring inholdings from willing sellers are numerous, particularly where Bankhead National Forest ownership is fragmented.

Cultural Heritage Areas

The impressive cultural heritage of the Black Warrior Headwaters Area is revealed by numerous cultural sites and Historic Districts recognized by archeologists and by formal state designation. The Kinlock Rock Shelter was used by Paleoindians as long as 20,000 years ago. Petroglyphs are carved in the rocks under the bluff where modern descendants of Native Americans still practice tribal ceremonies. The High Town Path was the tribal boundary of the Creek and Chickasaw Indians during the 1700s, serving as a well-known Indian trail and frontier route. Indian Tomb Hollow, a bluffed canyon, witnessed an ancient battle between the Creeks and Chickasaws. Many other sites of comparable significance have been located and studied throughout the area.





Talladega Mountains

“Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals. Food chains are the living channels which conduct energy upward; death and decay return it to the soil. The circuit is not closed; some energy is dissipated in decay, some is added by absorption from the air, some is stored in soils, peats, and long-lived forests; but it is a sustained circuit, like a slowly augmented revolving fund of life.”

— Aldo Leopold (1949)

The Talladega Mountains Conservation Area is part of the Southern Ridge and Valley Ecoregion. It includes two districts of the Talladega National Forest, as well as state and other federal lands, which together cover 230,246 acres.

The Talladega Mountains of Alabama represent the southernmost reach of the great Appalachian chain. The ecology and geology of these mountains resemble the ecosystems of the Blue Ridge Mountains to the northeast more closely than the mountains of the rest of the state. The Talladega Mountains Conservation Area features outstanding scenic

attractions, including numerous bluffs and waterfalls and the magnificent cave system of the

Coosa Valley. Its cool ravines

and streamsid es nourish rich hardwood forests, while its slopes support communities of mixed pines and hardwoods, with pine becoming more abundant along the ridge tops.

These streams and forests provided high-quality subsistence for early

Native American inhabitants, including a mound-building civilization during the Mississippian Period of 900-1550 A.D. The explorer Hernando DeSoto visited these early settlements in the mid-sixteenth century. DeSoto’s visit, the first contact with Europeans for many of the tribes in the region, led to the decimation of Indian populations by disease and to the collapse of their civilization. Evidence of the Native American inhabitants from this period is abundant throughout the Talladega region.



Important Aquatic Systems

The Talladega Mountains Conservation Area contains perhaps the best remaining example of a small, warm-water stream in the Mobile River drainage: Shoal Creek, a tributary of Choccolocco Creek. Shoal Creek contains the Blue Shiner, a threatened fish, plus at least three imperiled mussel species and four critically imperiled snails. All but two miles of Shoal Creek lie on public forest land. Coldwater Springs, another Choccolocco tributary, is the only place in the world where the Pygmy Sculpin is known to live.

Biological Hotspots

The Nature Conservancy and SAFC recently completed a conservation planning exercise for the Ridge & Valley Ecoregion, and recognized virtually the whole of the Talladega Area as a biological hotspot. It hosts breeding colonies of the endangered Red-cockaded Woodpecker, the rare Solitary Vireo and New England cottontail, a recovering beaver population, and numerous rare plants.

Protected Wildlands

Areas surrounding Alabama's two highest peaks are both designated wilderness. The Cheaha Wilderness and Cheaha State Park contain Cheaha Mountain (the state's highest at 2,407 ft.). The Dugger Mountain Wilderness (with its peak at 2,140 ft.), designated in 1999, is the most recent addition to Alabama's protected lands.

Unprotected Wildlands

These include Oakey Mountain, a prominent ridge immediately adjacent to the new Dugger Mountain Wilderness that would provide a large block of relatively undisturbed forest habitat; Rebecca Mountain, a 15,000-acre unroaded area featuring rich lowland forest; Blue Mountain, a 7,500-acre area adjacent to Cheaha State Park; and the 9,600-acre Shoal Creek Scenic Area. The Pinhoti

Trail runs the length of the Talladega Mountains and links many of these areas in a recreation corridor.

Old Growth

The Southern Appalachian Assessment estimated that more than 20,000 acres of National Forest lands may contain old-growth forest which have yet to be described by on-the-ground field studies. However, beautiful remnant stands are well known, including the outstanding old-growth hardwoods along the Pinhoti Trail and the high ridges of Fort McClellan, with their stands of 250-year-old hardwoods.

High Priority Areas For Public Acquisition

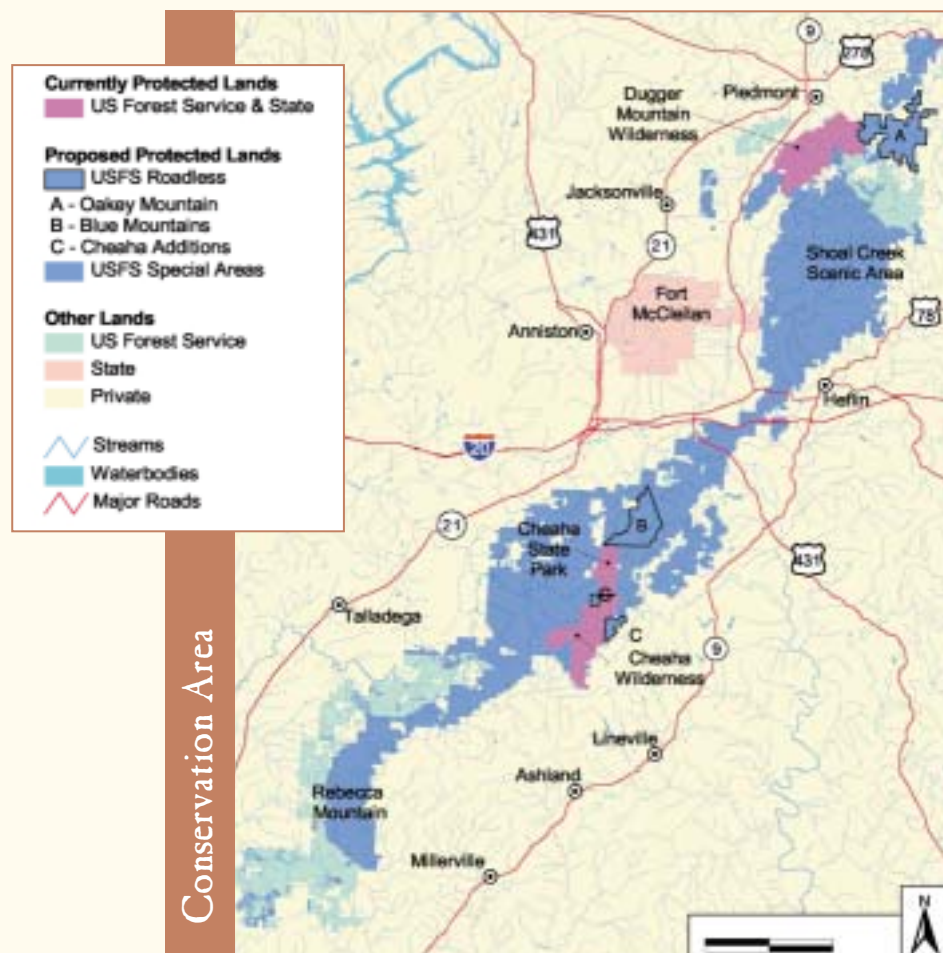
These include Forest Service inholdings on the west sides of the Dugger Mountain Wilderness and the Blue Mountain area; lands in the Terrapin Creek Valley near Oakey Mountain; areas along the Pinhoti Trail between



Indian Mountain and the northern boundary of the national forest; and the highly diverse longleaf pine forest ecosystems at the southern end.

Cultural Heritage Areas

There is solid evidence of human habitation in this area some 12,000 years before the present. Archeological evidence, such as stone tools, petroglyphs and camp remnants, can be found in caves, on bluffs, and along streambanks. The Pinhoti Trail, which spans over 100 miles, was once an important travel route for Creek and Cherokee Indians and now passes through several backcountry and wilderness areas.





Armuchee Ridges

“To the Cherokee, the term ‘Armuchee’ represented ‘the land of flowers’. Today, it represents a last remnant forest that indeed contains a treasure trove of wild plants but also in spite of its fragmentation, holds within it a deep history of North against South, hard labor in the face of industrialism and without a doubt, the shame of genocide.”

— Angela Martin
(Martin 2000)

The Armuchee Ridges Conservation Area is in the Southern Ridge and Valley Ecoregion. It includes the Armuchee District of Chattahoochee NF, as well as state and other federal lands, covering 64,730 acres in Georgia.

The Armuchee Ridges, stretching across northwestern Georgia between Dalton and Summerville, contain the most rugged and scenic portion of that state’s Ridge and Valley Ecoregion. They represent a significant example of the Southern Appalachian forest’s capacity for recovery. Heavily farmed, mined and logged, the land was severely degraded before the Armuchee District was added to the Chattahoochee National Forest during the 1930s and 1940s.

Today the Armuchee is home to such rare plants as the endangered Large-Flowered Skullcap, and its streams provide some of the last habitat for several rare and threatened fish and mollusk species. Uncommon birds such as the Scarlet Tanager find habitat within the Armuchee, as do many neotropical warblers and other migrating songbirds. The area’s older forests also support a great variety of salamanders.

Some of the less accessible areas of the Armuchee contain fine old-growth stands of basswood, yellow buckeye, sassafras, oak and hickory. One of the prime cove hardwood sites in the area sits on the north face of Johns Mountain. Johns

Mountain, Rocky Face and Hidden Creek, each of roughly 6,500 acres, are three ecological jewels within the Armuchee, widely recognized as prime representatives of Georgia’s Mountain Treasure areas. Together these three tracts contain the area’s most wild and scenic lands and waters, and provide a wealth of recreational resources for birders, hunters, anglers, campers and hikers.

The vast and varied history of the Armuchee is revealed by marine fossils dating back to early periods of Earth’s history. More recent historical sites include gun pits, fortifications and other archeological remnants of the Civil War. Its American Indian history is among the richest of any area of North Georgia. The Cherokee nation placed its capital at New Echota, on the eastern edge of the district, and numerous Indian trails still wind through the landscape. The Pinhoti Trail also runs through the Armuchee, linking it to the Talladega National Forest in Alabama. Once completed in the Great Valley and connected to the Appalachian Trail, the Pinhoti will form the last link of a continuous trail system between Alabama and Canada.



Important Aquatic Systems

The northeastern portion of the Armuchee Conservation Area falls within the Conasauga River watershed, an extremely important aquatic diversity area. It has been described as one of the most significant aquatic hotspots in the world (McLarney, 1999). It is home to a total of at least 24 imperiled species, and 6 of these species (4 fish, 1 crayfish, and 1 mussel) are not known to live anywhere else.

Biological Hotspots

Biological hotspot areas cover much of the Armuchee conservation area. These range from a small, 259-acre site to large landscape-scale areas that cover much of the Armuchee National Forest and the Pigeon and Lookout Mountain complexes. The Armuchee Ridges contain communities and species from both Appalachian and Piedmont ecosystems. Mountain logleaf pine, one of the rarest forest communities in North America, still grow along some ridges of the Armuchee.

Protected Wildlands

The only solidly protected section of the Armuchee Ridges Conservation Area is the Chickamauga and Chattanooga National Military Park. National forests and state management areas offer some protection, but still allow practices such as logging and road building that can degrade habitat and threaten species.

Unprotected Wildlands

Rocky Face, John's Mountain, and Hidden Creek are three areas of national forest land totaling almost 20,000 acres that rank high in priority for protection. Each is a rare, unroaded remnant of the Ridge and Valley ecoregion.

Old Growth

Precious old growth remnants occur in the Rocky Face, John's Mountain, and Hidden Creek areas, highlighting their significance as wildlands in need of protection.

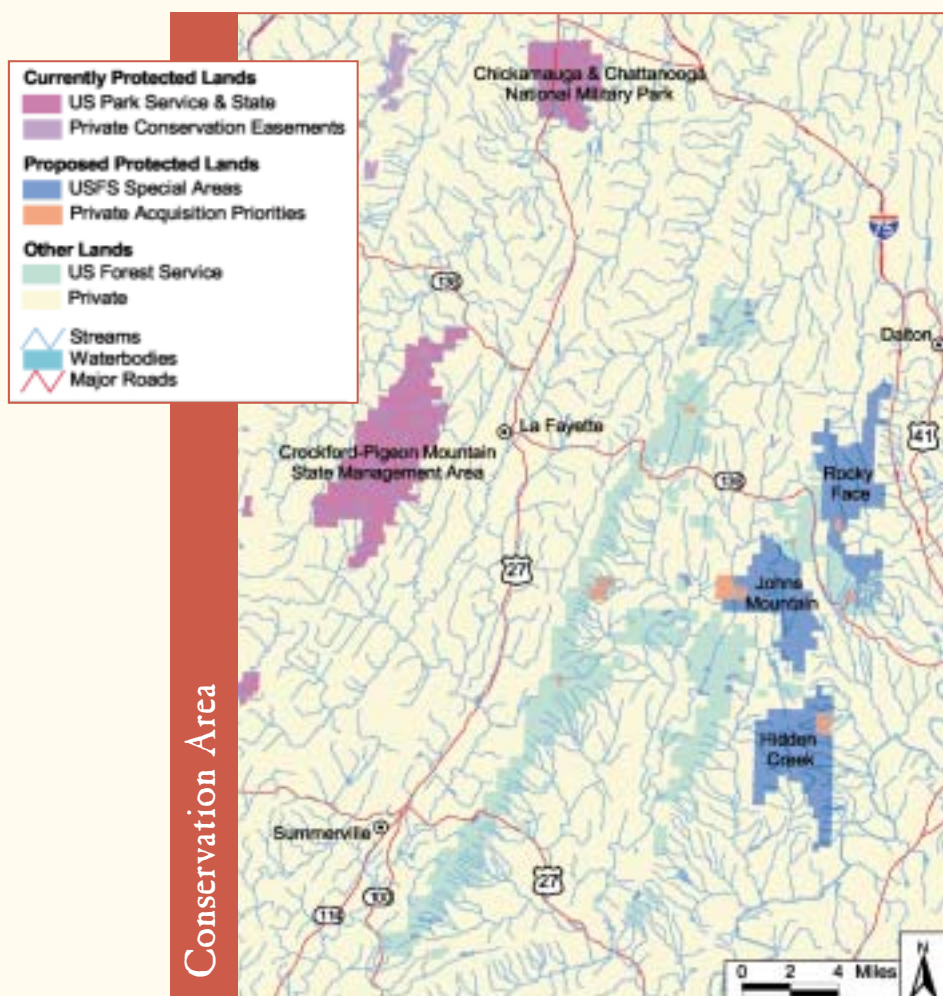


High Priority Areas For Public Acquisition

The Armuchee District of Chattahoochee National Forest was established in the 1930s and 1940s. This was relatively late for national forest establishment, and relatively little of the potential land within the purchase boundaries has been acquired. National forest ownership is fragmented, and acquisitions are needed to consolidate this ownership. Several identified acquisition priorities, especially within the identified unprotected natural areas would greatly increase the area's current and potential biological value.

Cultural Heritage Areas

The streams and forests of the Armuchee area provided a high-quality environment for the earliest American Indian inhabitants and for the later mound-building civilization of the Mississippian Period. Hernando DeSoto visited local settlements of the mound builders and helped lead to their downfall in the mid 1500s, primarily due to the spread of diseases to which the American Indians had no resistance. After this civilization collapsed, the Creek Confederacy took its place. Bands of Cherokee, which came to be known as Chickamaugas, replaced the Creeks during the late 1700s. These Chickamaugas resisted encroachment by white settlers until they were forcibly removed to Oklahoma by way of the infamous Trail of Tears in the 1830s. Numerous maneuvers and battles took place along the Armuchee Ridges during the Civil war as General Sherman struggled to outflank Confederate troops during the Atlanta campaign.





Cohutta/Big Frog



"Now is the time for us to acknowledge that we can no longer live without respecting and understanding our mountain forests and the other great ecosystems of the earth which have for millennia supported the habitat of man."

— President Jimmy Carter

The Cohutta/Big Frog Mountains Conservation Area forms the southwest edge of the Blue Ridge Ecoregion. National Forest lands in this conservation area cover 215,000 acres.



Spanning over a quarter of a million acres, where southeast Tennessee meets northwest Georgia, the Cohutta/Big Frog area marks the southwestern tip of the Blue Ridge Ecoregion. The state line disappears into this island of prime mountain forest, where round, flat-topped ridges and peaks are covered with deep, black soils and carpeted with lush ferns and knee-high herbs. The area is anchored around four tracts of designated wilderness (one of the largest blocks of designated wilderness in the East) and nearly 70,000 additional acres of unroaded lands, offering abundant habitat for black bears, bobcat, forest songbirds, and game birds, such as grouse and wild turkey.

Geologically, some of these mountains have more in common with the Great Smokies to the northeast than with their sandstone and limestone

neighbors immediately to the west or the metamorphosed, crystalline rock to the east; and like the Smokies, these mountains host an exceptional variety of plants.



The Conasauga River, which flows from its headwaters in the Cohutta Wilderness in Georgia north into Tennessee before returning south to join the Coosa River, boasts some 92 fish species; the great rivers of the American West typically contain just 7 or 8. Little wonder that the Conasauga has been deemed by aquatic biologists as important as a tropical rainforest in its rich biodiversity.

Important Aquatic Systems

The many special aquatic systems in this planning area include the Conasauga River, which has an extraordinary 92 fish species. It is the most nearly pristine of the major streams in the remarkably diverse Coosa Basin. The lower Hiwassee River, a mussel hotspot containing some 35 species, also lies within the conservation area. Over half of the riparian lands of the lower Hiwassee are in federal ownership.



Biological Hotspots

The Conasauga and the lower Hiwassee River basins, with 67,000 and 12,000 acres respectively, are the two largest biological hotspots in this area. The importance of these watersheds extends beyond their immediate aquatic habitats because of the upland terrestrial systems that drain into the streams themselves. Rare plants, such as *Silene ovata* (a campion), along with rare salamanders, songbirds, and small mammals, are found in these basins. Basic mesic coves, a relatively rare plant community, are found in the conservation area.

Protected Wildlands

This conservation area contains four designated wilderness areas: Georgia's Cohutta Wilderness; the contiguous Big Frog Wilderness immediately to the north in Tennessee; and the Little Frog Wilderness and Gee Creek Wilderness areas farther north. The four areas total 52,300 acres.

Unprotected Wildlands

Roadless areas recognized by the Forest Service, plus de facto unroaded areas not yet "inventoried" by the agency, total some 69,300 acres. Many of these unprotected wildlands lie adjacent to existing wilderness and could logically be joined to them.

Old Growth

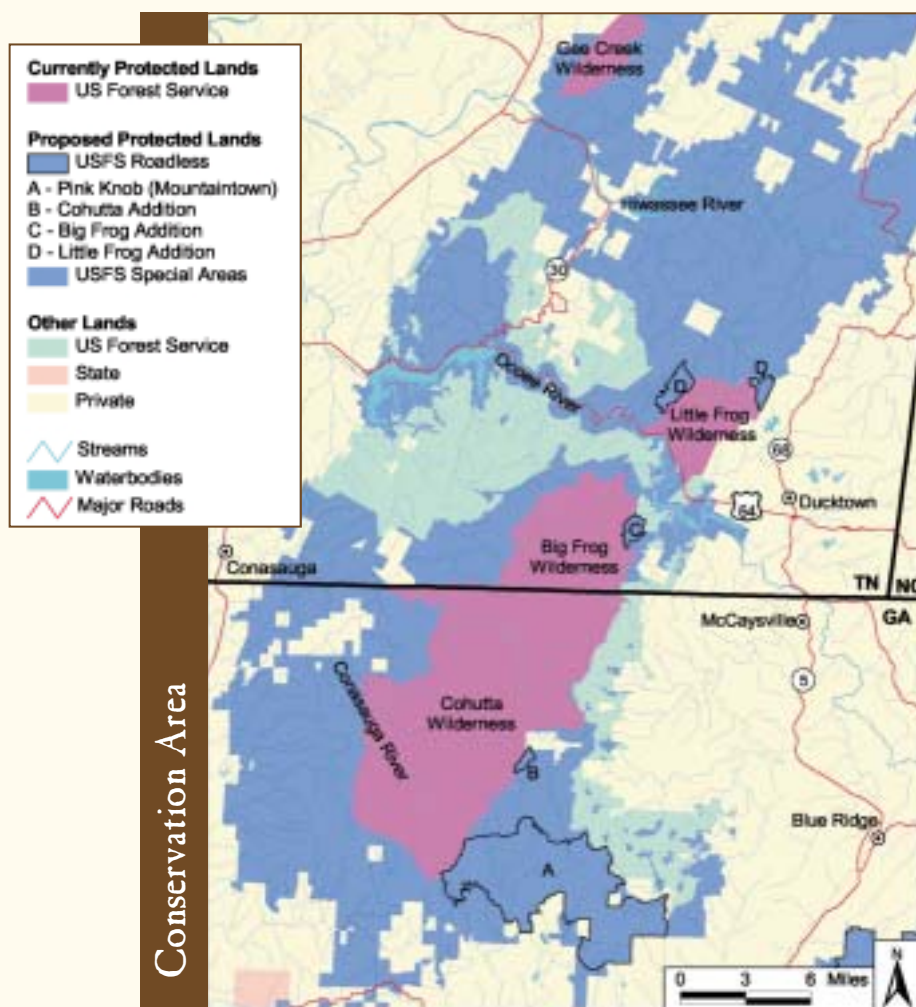
A systematic old-growth field inventory is needed in this area. The Southern Appalachian Assessment found approximately 28,000 acres of potential old growth outside existing wilderness. Although extensive logging has eliminated most true old growth, some high-quality remnants exist, including unprotected, high-quality portions of Grassy Mountain. These remnant areas can serve as anchors for old-growth restoration.

High Priority Areas For Public Acquisition

It is highly desirable to add land in the Alaculsy Valley to adjacent national forest tracts.

Cultural Heritage Areas

The Cohutta and Big Frog Wilderness areas, like many regions of the Southern Appalachians, were logged extensively—70 percent of its 37,000 acres—between 1915 and 1930. It is still possible to see the remains of four logging camps, each employing 80-100 men, that operated simultaneously. Signs of these operations include dynamite drills in rock, spikes, cables, railroad trestles and rails, and old building foundations. Records have also been found that document the rich forest that was present before the logging. The conservation area is also rich with American Indian history, and numerous American Indian sites have been documented.



Chattahoochee Mountains



"The need for open spaces – places of solitude and refuge where people can take their families to escape the stress and strain of everyday life – will only increase over time..."

— Former U.S. Forest Service Chief, Mike Dombeck

The Chattahoochee Mountains Conservation Area forms the broad southern terminus of the Blue Ridge Ecoregion and includes 372,000 acres within the Chattahoochee National Forest.



The Chattahoochee Mountains form the broad southern terminus of the Blue Ridge Ecoregion in northern Georgia. Complex geological forces shaped southwest-to-northeast ridges that are joined by shorter east-to-west ridges and mountains. This elaborate geography creates a variety of habitats that host a rich diversity of plants and animals.

The watersheds of the Chattahoochee Mountains are also complex, with some draining to the Tennessee River and the eastern Gulf of Mexico and others draining to the Atlantic. It is typical to find a south-draining watershed adjacent to one that drains to the northwest.

A large sweep of both protected and unprotected wildlands gives the Chattahoochee Mountains great conservation potential. These wildlands provide large blocks of remote habitat and old forest for wide-ranging species and for those sensitive to human development.

The Chattahoochee Mountains are also significant for their diversity of species. The area constitutes the

southernmost range of many Appalachian species, while elements from the Piedmont find suitable habitat here as well. High-elevation red oak forest, hardwood boulderfield forest, granite dome heath balds, and rich montane seeps support uncommon mountain plant communities. Rare fishes, including the blue shiner, the olive darter, and the colorful holiday darter are found in the streams of the conservation area.

The Chattahoochee Mountains are important because they form one of the most critical linkages in the Southern Appalachian region. The Southern Appalachians have fairly good landscape connectivity from south to north along the lightly settled mountain ridges, but intervening valleys, most of which contain human development, provide few opportunities for east-west movement and migration. The complex geography of the Chattahoochee Mountains, however, provides a relatively effective east-west movement corridor for such species as black bear. The presence of this corridor helps unify the Southern Appalachian region into a connected system of conservation areas.

Important Aquatic Systems

The Etowah River watershed is an extremely important aquatic diversity area. It ranks as a regional, national, and world-class aquatic hotspot and a “conservation imperative” (McLarney, 1999). Besides having a total of at least 22 imperiled species, 9 species (4 fish, 1 crayfish, and 5 mussels) are not known to exist in any other watersheds. The Coosawattee River watershed is also a priority Aquatic Diversity Area that is particularly important for crayfish. The watershed hosts 4 imperiled crayfish species, two of which are endemic to the Coosawattee. The Chattahoochee watershed, flowing from headwaters in the Chattahoochee Mountains, serves as the primary water source for a variety of communities, including the Atlanta metropolitan area. Brasstown Creek is a Critical Aquatic Refuge in the Tennessee River drainage and is one of the best examples of a warm-water stream. Suches Creek and the headwaters of the Toccoa River form a Critical Refuge important for trout and other coldwater species.



Biological Hotspots

At least 17 hotspots are found in the Chattahoochee Mountains. Many of these hotspots feature important rare communities, such as Southern Appalachian cove forest, that host a variety of associated species. Other hotspots shelter locations of single important species, such as mountain bit-tercress and fringed gentian.

Protected Wildlands

The Chattahoochee Mountains contain five designated wilderness areas. The five areas -- Rich Mountain, Blood Mountain, Raven Cliffs, Mark Trail, and Brasstown -- contain almost 56,000 acres.

Unprotected Wildlands

Ten roadless areas totaling 29,577 acres and eighteen Mountain Treasure areas adding an additional 64,000 acres represent excellent potential to expand wilderness areas and protect other stand-alone areas. The stand-alone areas include Kelly Ridge, a high-priority area with prime, primitive trout streams, old growth, and botanically rich cove hardwood and boulderfield forests.

Old Growth

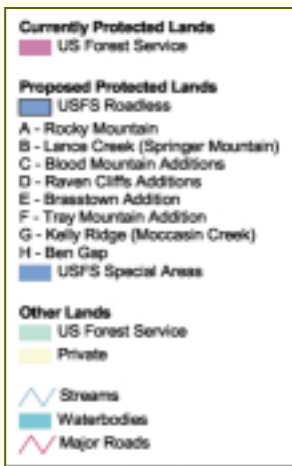
Almost 70,000 acres of potential old growth was identified in the Southern Appalachian Assessment for the Chattahoochee Mountains. There has not been a systematic old-growth field inventory in the area, but rare community inventories and other reports confirm the presence of significant amounts of old growth. High quality old-growth sites include the “valley of the giants” in the Cooper Creek Scenic Area, which boasts tulip poplars up to 18 feet in circumference.

High Priority Areas For Public Acquisition

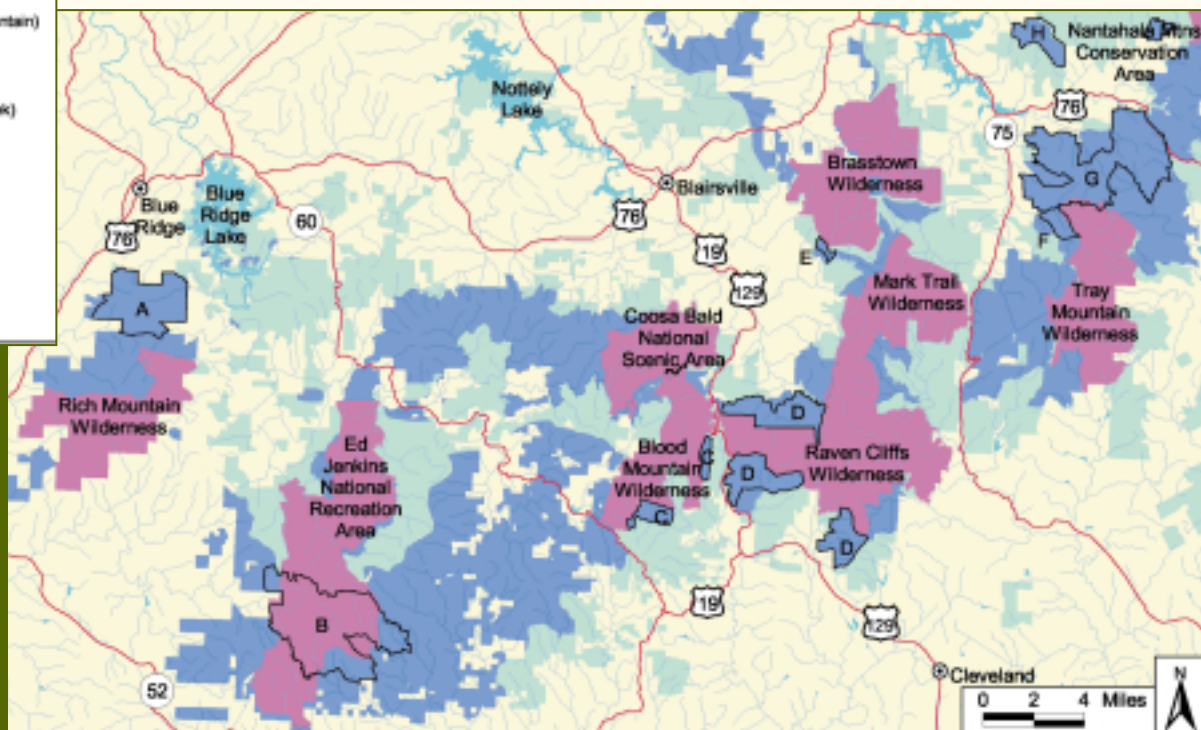
Opportunities for consolidating Forest Service ownership and acquiring inholdings from willing sellers are numerous.

Cultural Heritage Areas

The Chattahoochee Mountains are marked by Creek and Cherokee Indian sites. The Creek and Cherokee fought an historic battle in the late 1700s in the southern portion of the area. The victory by the Cherokee resulted in the retreat of Creek settlements to areas south of the Chattahoochee River.



Conservation Area





"We must never lose sight of the primary value of the mountains — the cost-free management of rock, soil, water, air, life, and sun energy. Anything that humans do there must be prefaced with the question, Are we compromising or damaging these vital life-support functions?"

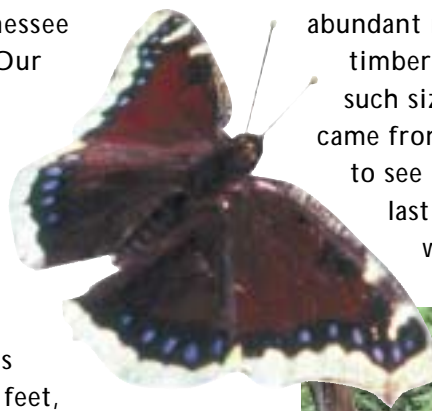
— Dr. Charles Wharton (1998)

Nantahala Mountains

The Nantahala Mountains Conservation Area consists of southeast-to-northwest-trending ranges perpendicular to the main Appalachian chain in northeast Georgia and southwest North Carolina. This conservation area contains 302,186 acres of public lands in the Nantahala and Chattahoochee National Forests.

The Nantahalas are the southernmost of the great transverse mountain chains that make up the Blue Ridge, including areas in northeast Georgia and extending northward from the North Carolina-Georgia line for 25 miles to their terminus at Fontana Lake. The range is drained by the Nantahala River on the west and the Little Tennessee River on the east. Our conservation area for the Nantahalas includes the Coweas, the neighboring range to the east.

Recent field surveys of this rugged area reveal nearly 20,000 acres of old-growth forests, which have survived because of their relative inaccessibility on steep slopes and drainages of the Nantahalas. Additional acreage of similar size is likely old growth, but has yet to be surveyed. Indeed, because of its rich soils, high elevation, and abundant moisture, the original timber of the Nantahalas was of such size and density that visitors came from as far away as Asheville to see it – even at the turn of the last century when virgin timber was commonplace.



Many peaks along its crests exceed 5,000 feet, with the high point at Standing Indian (5,499 ft.) on the southern end. Along its high south rim, rising above the great horseshoe-shaped valley known as Standing Indian Basin, some 24,500 acres are protected as the Southern Nantahala Wilderness. A large portion of the remaining land is in public ownership as national forest.



Important Aquatic Systems

The middle and upper sections of the Little Tennessee River form an aquatic diversity area -- one that is unique in the Blue Ridge because no modern species extirpations are documented. This drainage contains several streams recognized by SAFC as critical refugia, including Cowee Creek and Betty Creek, which receive high scores for biotic integrity. Betty Creek has one of the healthiest populations of brook trout remaining in the region.

Biological Hotspots

Roughly one-half of the Nantahala Mountains is recognized as falling within a biological hotspot. This is probably a conservative estimate, however, for the ruggedness of the mountains has not been conducive to road building, and thus many areas have not been accessible to biologists for surveys. Even so, the area is known to contain important habitat for Northern flying squirrels, Yellow-bellied Sapsuckers, Golden-crowned Kinglets, and other species of conservation interest.

Protected Wildlands

The Southern Nantahala Wilderness embraces some 24,500 acres across two national forests (Chattahoochee in Georgia and Nantahala in North Carolina).

Unprotected Wildlands

The greater Nantahala region contains the unprotected wildlands of the Tusquitee Mountains to the west of the Nantahala range and areas surrounding Shooting Creek Bald and Chunky Gal Mountain, Cheoah Bald and Sassafrass Gap, Percy Bald and Hickory Knob, Wesser Bald, Tellico Bald,

and Siler Bald, plus proposed extensions to the Southern Nantahala Wilderness. These wildlands total some 107,000 acres.

Old Growth

Naturalist Rob Messick (2000) has conducted field surveys of this area that estimate 16,800 acres of old-growth forest. A similar amount of additional old growth is estimated to exist in areas that have yet to be surveyed.

High Priority Areas For Public Acquisition

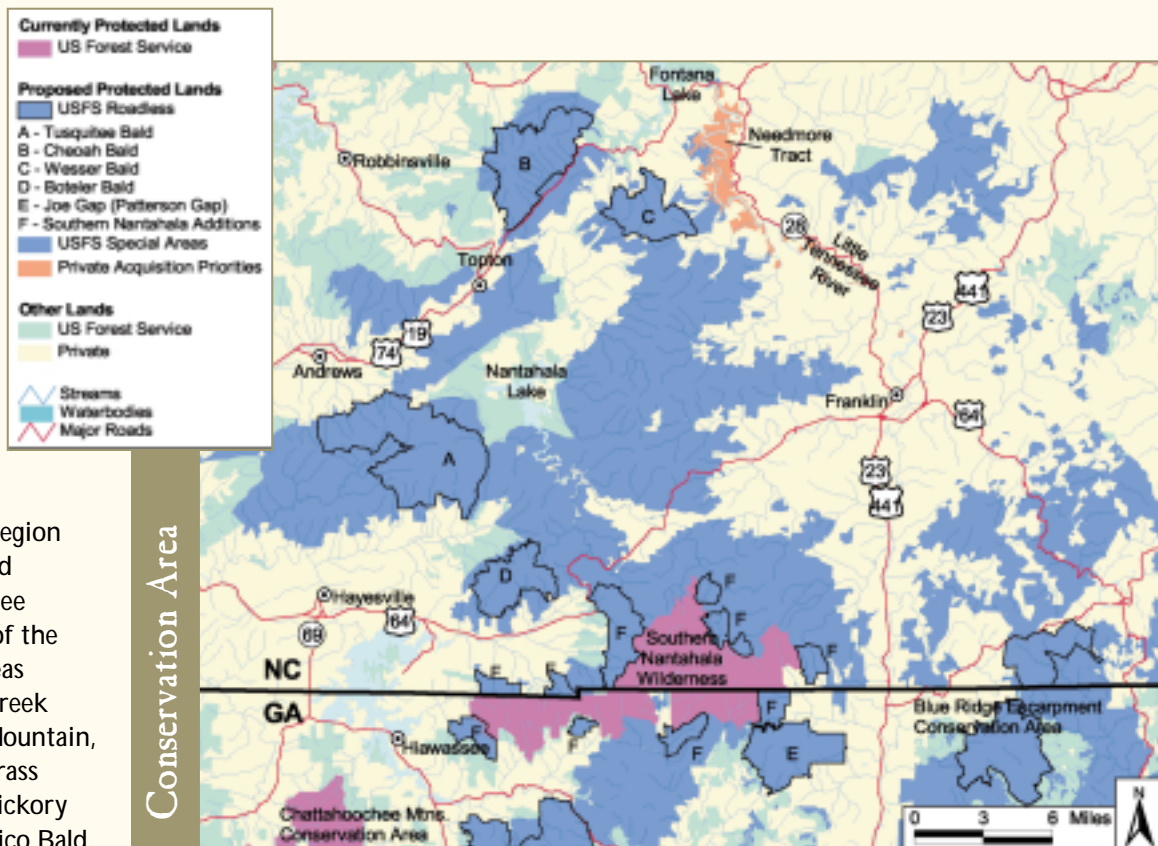
The "Needmore Tract," a mostly unroaded portion of Swain and Macon counties, is a very important area for acquisition. It includes some of the most significant land around the Little Tennessee River, including important tracts of bottomland hardwood forest. Very little of this type of forest is held in public ownership in the southern Appalachians. The tract would also help link the Nantahala Range to the west with the Cowees to the east. The Land Trust for the Little Tennessee, the Nature Conservancy, and other



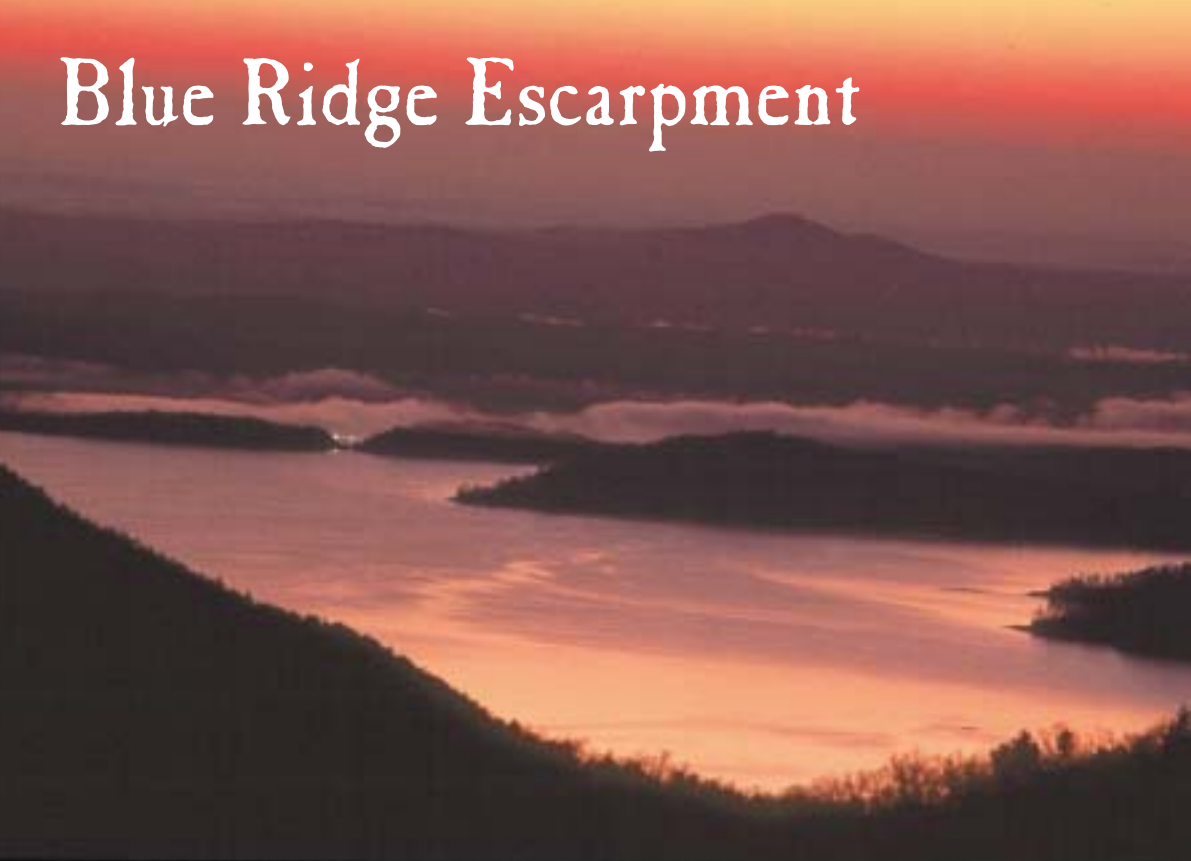
groups are working on acquiring the tract for public ownership.

Cultural Heritage Areas

The Little Tennessee River valley is a setting of immense historical value as the site of the largest Cherokee town ever built in the mountains, known as Cowee. This valley has also been the main trade corridor from the Coastal Plain to the Tennessee Valley since pre-Columbian times. There are even signs of industrial history here as well, such as a 1,500-year-old mica mine and processing center.



Blue Ridge Escarpment



"...This is a wilderness area of national significance, one of the world's great natural places—a place of endless forest, sheer cliffs, foaming whitewater, trout, black bears and other wild mountain creatures."

— Thomas Wyche
(Wyche and Kilgo 1996)

The Blue Ridge Escarpment Conservation Area consists of the steeply sloped eastern edge of the Blue Ridge Ecoregion and surrounding areas. This large conservation area contains approximately 400,000 acres of public lands, including areas of the Nantahala, Chattahoochee, and Sumter National Forests as well as large areas of state lands in South Carolina, and North Carolina.

The Blue Ridge Escarpment is an east-facing "scarp" or cliff-like landform that marks the rugged, mountainous border between North and South Carolina and between South Carolina and Georgia. Although the escarpment is part of a far larger geological feature that accompanies the Blue Ridge Mountains for some 800 miles from Virginia to Georgia, we consider the Blue Ridge Escarpment to be the conservation area marked by this striking escarpment and the adjacent mountains at the southern end of this range.

Along the Blue Ridge Escarpment, the massive, southeast-facing slope of the Blue Ridge plummets to the Piedmont. This portion of the escarpment is an ancient and significant landscape where granite domes like Table Rock and Caesar's Head only hint at the tectonic cataclysm that once heaved up jagged, Sierra-like mountains. The forms that remain owe their striking beauty to the patient work of 350 million years of water and weathering. Though they have been lowered and rounded, some of them retain remarkable relief, with steep, rocky sides and precipitous, unforgiving faces.

Perhaps the richest jewel of the escarpment is the Jocassee Gorges, whose unremitting streams and rivers, like the Whitewater, Thompson, Horsepasture, Toxaway and Eastatoe, have shaped a complex terrain that was not easily accessible to humans in the past. This naturally protected haven allowed the Jocassee area to shelter a diversity of habitats and species long ago uprooted or extinguished elsewhere on the land. This refuge for life, shaped by countless millennia, is today a window on an ancient, almost lost natural world, one of the largest and most biologically significant wild places left east of the Mississippi.

Still, this priceless biological treasure is in danger of being lost. Although much of the area is now in public ownership, the long-term protection for many of these areas is not assured. In addition, the entire escarpment is threatened by the development of vacation homes and private recreational sites such as golf courses. At the same time, urban sprawl creeps steadily northward from the growing metropolis of Greenville.



Important Aquatic Systems

The Blue Ridge Escarpment area contains numerous streams and rivers that tumble dramatically off the escarpment. Two critical aquatic refuge watersheds, the Chattooga and the Chauga, are found in the area. The Chattooga River is a designated Wild and Scenic River. The Chattooga Conservancy, SAFC, and The Conservation Fund have proposed a watershed and terrestrial-based conservation plan for the Chattooga River Watershed that is guiding proposals and restoration by conservation groups in the watershed. The Chauga, a municipal water source, is eligible for Wild and Scenic River designation, but has not been recommended.

Biological Hotspots

The Blue Ridge Escarpment Conservation Area carries great biological importance, featuring over 30 biological hotspots. These areas shelter significant populations of vascular and nonvascular plants, salamanders, mammals, and birds. The area is particularly significant for plants, containing many unique endemic and disjunct species, with the Jocassee Gorges standing out as an exceptional hotspot for endemics.

Notable endemic species include Oconee bells -- perhaps the rarest spring flower of the Blue Ridge Escarpment, deserving of special notice. According to Dr. L. L. Gaddy (1998), 90 percent of its populations grow in the Jocassee Gorges. Cane Creek harbors the rare faded trillium, which has never been found outside the Savannah River drainage. The green salamander is found in the crevices of rock outcrops of the area. Although it is a disjunct species more typical of the Cumberlands, some of its best habitat is in the Jocassee.

Protected Wildlands

The 8,274-acre Ellicott Rock Wilderness is a centerpiece of the Escarpment area, as is the Chattooga Wild and Scenic River. In addition, several other areas offer good protec-

tion, including Table Rock State Park (3,000 acres, Caesar's Head and Jones Gap State Parks (8,900 acres), Watson Natural Heritage Preserve (2,400 acres), Gorges State Park (7,092 acres), and Poinsett Watershed (19,300 acres).

Unprotected Wildlands

A large proportion of the Blue Ridge Escarpment is in public ownership, but much of the area needs stronger protection to assure long-term integrity of the conservation area. Four stand-alone roadless areas, totaling almost 16,000 acres, as well as roadless extensions of Ellicott Rock Wilderness totaling 1,537 acres, have been inventoried.

Conservation groups identified an additional 93,804 acres as Mountain Treasure areas. The purchase of the large Jocassee Gorges area (approximately 42,600 acres) by the states of South Carolina, North Carolina, and the US Forest Service was a very significant acquisition made in 1998/99. The management plans for much of this land are still being designed and debated. In particular, many people think that the South Carolina Jocassee lands should receive stronger protection than they currently have with a strong focus on native ecosystem restoration.

Old Growth

The Southern Appalachian Assessment identified 75,000 acres of potential old

growth in the Escarpment area. Almost 2,800 acres of old growth were found in field surveys that examined only the North Carolina portion. Additional old growth was documented by Paul Carlson (1995) and Chuck Gaddy (1998b).

Conservation Easements

The cities of Greenville and Table Rock protect large watersheds through conservation management. The Table Rock Watershed (9,800 acres) adjoins Table Rock State Park as well as state lands from the Jocassee Gorges land purchase. The Poinsett Watershed (19,300 acres) is protected for Greenville's water supply as well as providing important natural habitat. The Nature Conservancy also holds significant conservation easements in the area.

High Priority Areas For Public Acquisition

Crescent Timber owns 4,000 acres south of Highway 11, contiguous with or very near the South Carolina State Lands. Approximately 600 acres north of Highway 11 should be acquired and added to Keowee-Toxaway State Park. Critical private in-holdings on and around Waddakoe Mountain are among the very best sites for wildflowers in the state of South Carolina.

Cultural Heritage Areas

There are 11 SC Heritage Trust Preserves in the Escarpment area.





Unicoi Mountains



*“Step out onto the Planet.
Draw a circle a hundred
feet round. Inside the circle
are 300 things nobody
understands, and maybe
nobody’s ever really seen.”*

— Lew Welch (1973)

Located along the border between North Carolina and Tennessee, the Unicoi Mountains Conservation Area is a natural companion to the Great Smoky Mountains National Park a short distance to the northeast. The area includes 400,000 acres of public lands in Cherokee and Nantahala National Forests.



To the southwest of Great Smoky Mountains National Park lies a companion wildland whose old-growth forests resemble in grandeur those of the Smokies. Trails in this area lead to remote areas as wild and remote as any in its better-known companion area and contain some of the most isolated and unfragmented Forest Service lands in the eastern US.

These are the Unicoi Mountains, split by the Tennessee-North Carolina border and divided between the Cherokee and Nantahala National Forests. This political and agency fragmentation has tended to prevent the area from being recognized for what it is: a single large and important conservation area. However, for the bears, birds, and other species that depend on its wildland habitat, the Unicoi Mountains form an important refuge of healthy forest, clear streams, and intact ecosystem processes.

The Unicoi Mountains Conservation Area offers one of the best opportunities to protect a large, unfragmented

portion of the landscape in the east. Because of its rugged topography and its remoteness, the area is largely free of roads and development. Forest Service ownership is more consolidated here than in practically any other portion of the region. Its proximity to the Smokies heightens its value for biological habitat and recreation, since the size of the combined areas forms abundant terrain for wide-ranging species such as black bear. Significant



portions of the Unicoi Mountains have never been logged or have been logged only once. Most of the areas that were logged have had 80 to 100 years to recover. Thus this vast expanse of native forest with intact pockets of old growth has the potential to act as a reservoir and catalyst for further recovery of the ecosystem.

Important Aquatic Systems

Citico Creek, a critical aquatic refuge watershed that is home to several rare species including the endangered smoky madtom and the threatened yellowfin madtom, flows out of the heart of the area. Other streams, including Slickrock Creek and Snowbird Creek, are important aquatic habitat for native trout and other species.

Biological Hotspots

The Unicoi Mountains form a hotspot of biological diversity. Its unfragmented forest represents crucial territory for black bears and important breeding habitat for neotropical migratory birds. Rare species of plants, amphibians, fish and mammals are found in the area and depend on it for critical habitat. The Unicoi Mountains form the central habitat for the rare Junaluska salamander. Although much of the area was logged in the early part of the century, significant amounts of old growth survive, including the majestic Joyce Kilmer forest and other examples of biologically rich cove hardwood forest.

Protected Wildlands

The Unicoi Mountains are rich in protected wildlands, including the Joyce Kilmer / Slickrock / Citico Wilderness complex, which totals over 30,000 acres. Other wilderness areas include Bald River Gorge Wilderness.

Unprotected Wildlands

The unprotected wildlands of the area would, if protected, fill in most of the gaps in currently protected wildlands. The large Upper Bald River area when added to the Bald River Gorge Wilderness and potential additions to the wilderness, would protect the entire Upper Bald River watershed. Snowbird, an important Wilderness Study Area, has failed to get wilderness protection for almost a decade. Other areas include additions to Joyce Kilmer-Slickrock, Flats Mountain (an addition to Citico Creek Wilderness), Deaden Tree, the Unicoi Mountains area (an integral ecological part of the



Upper Bald River area), Cowcamp Ridge, Miller Ridge, Sycamore Creek, and Brushy Ridge.

Old Growth

Over 8,000 acres of old growth have been inventoried in the Nantahala National Forest portion of the area by the Western North Carolina Alliance. The Forest Service recognizes a large old-growth restoration area in the Unicoi Mountains. Little formal inventory has been undertaken in the Tennessee portion, but areas of old growth are known to occur in the upper portions of the Bald River watershed and Citico Creek watershed.

Conservation Easements

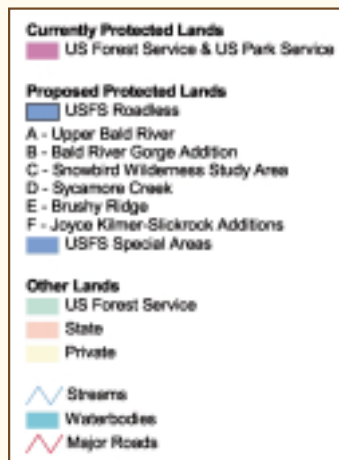
None currently identified.

High Priority Areas For Public Acquisition

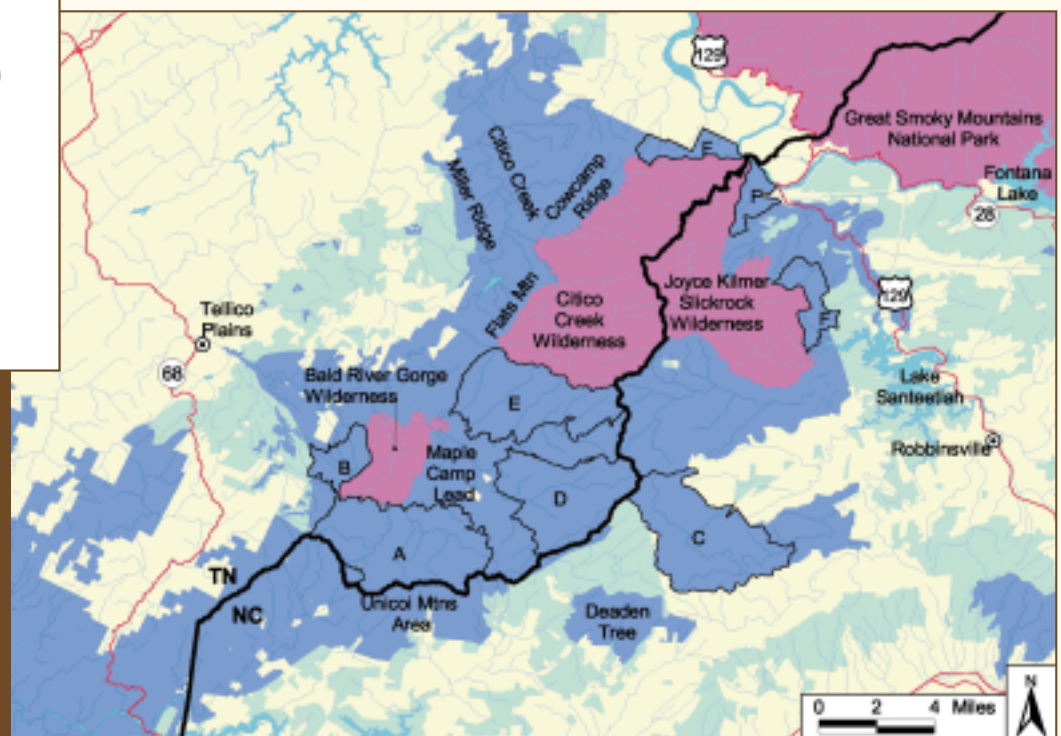
None currently identified.

Cultural Heritage Areas

The Unicoi Mountains are rich in both Native American and European settlement history. Relics from these periods have been found throughout the area.



Conservation Area





Balsam Mountains



"It is an ideal country for a park...here are peaks where Vulcan might forge his thunderbolts and where the Gods of Olympus might sit in council above the clouds..."

— Future North Carolina Governor Locke Craig (Asheville Daily Citizen 1899)

The Balsam Mountains Conservation Area consists of a long ridge running southwest from Asheville, NC to the Unaka Mountains in Great Smoky Mountains National Park. Pisgah National Forest and Blue Ridge Parkway (national park ownership) lands represent 216,500 acres in the Balsam Mountains.

The Balsam Mountains Conservation Area consists of a long, U-shaped mountain ridge running from just southwest of Asheville, North Carolina, toward the main Unaka Mountain range in Great Smoky Mountains National Park. The Plott Balsams, an extension of the Balsams, join the Balsams to the Unaka Mountains. The Balsam Mountain Ridge is a very long ridge, punctuated by higher mountain peaks and with broad mountain slopes on each side of the main ridge. It is the longest of the cross-ridges in the Southern Appalachians, reaching its highest point atop Richland Balsam at 6,540 feet.

Both the northern and southern slopes are characterized by deep, cool coves with fertile soil, rich species diversity, and vigorous hardwood tree growth. Spruce trees crown the summits and upper slopes of many of the mountains.

Much of the area was part of the large Biltmore Estate, the site of the first professional forestry as practiced under the direction of Gifford Pinchot. The historical significance of

this area has earned its designation as the "Cradle of Forestry." While professional forestry developed the idea of a sustained timber supply in America, it also brought tremendously destructive practices, such as splash dams. Splash dams were constructed by damming streams and floating harvested logs into the impoundment. The dam was then blasted away and the lumber swept out of the forest on a flood of water. It was then floated to points where it could be transported to mills. This practice destroyed extensive sections of riparian habitat and structure.

While destructive logging and fires that followed the logging severely degraded the original forest, remnants of old growth survive. Some areas have largely recovered from the logging. The Balsam Mountains currently contain an impressive complex of natural areas that shelter a wide variety of species, including a large number of rare plant and animal species. It also is a popular center of recreation. The Blue Ridge Parkway, following the crest of the Balsam Mountains, gives easy access to natural areas which are heavily used by hikers and picnickers.



Important Aquatic Systems

The Balsam Mountains form the headwaters of three important rivers: the Pigeon, the French Broad, and the Little Tennessee.

Biological Hotspots

A very large part of the Balsam Mountains falls within biological hotspot areas. The Balsam Mountains are significant for a wide range of species groups and communities, including high-elevation birds, cove hardwood species, grassy balds, spruce-fir forest, high elevation bog complexes, and boulderfield communities. They also contain extensive forests of northern hardwood, acidic cove, and dry oak.

Protected Wildlands

The Balsam Mountains contain the Shining Rock and Middle Prong Wilderness areas.

Unprotected Wildlands

The Balsam Mountains contain two stand-alone roadless areas: South Mills River and Laurel Mountain, totaling

14,312 acres. Additional roadless extensions to Shining Rock Wilderness and Middle Prong Wilderness total 6,408 acres. An additional 48,255 acres are located in Mountain Treasure areas.

Old Growth

The Southern Appalachian Assessment identified 36,094 acres of potential old growth. Rob Messick and others with the Western North Carolina Alliance found nearly 3,000 acres of verified old growth, as well as 68 candidate sites and 1,344 acres suitable for old-growth recovery in the Balsams.

High Priority Areas For Public Acquisition

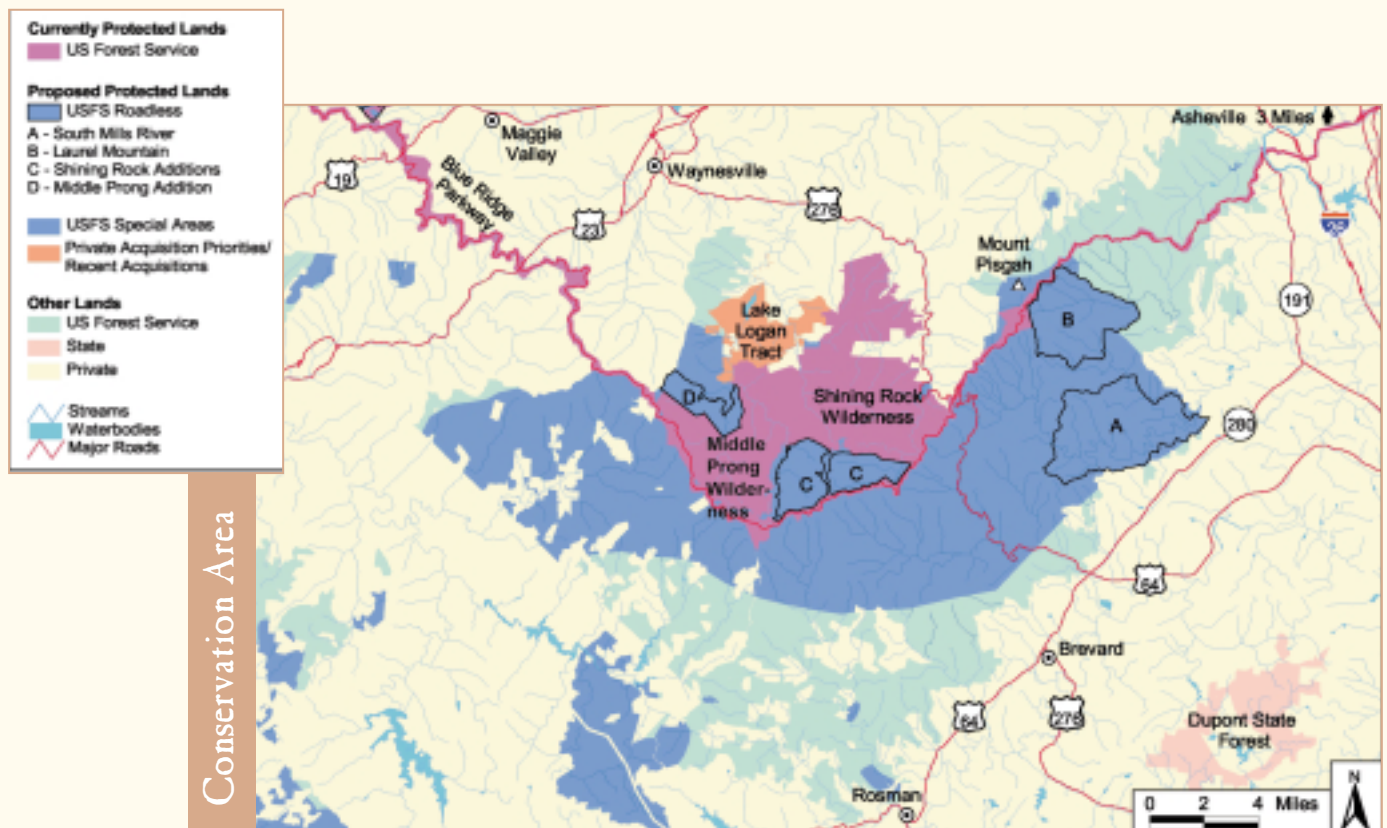
There is great potential for acquisitions to supplement the Balsam Mountains Conservation Area, particularly since development pressures threaten the Balsams from every direction. Valuable tracts on the northwest near Waynesville are particularly vulnerable to housing development. An example is the Lake Logan Tract, a 5,000-acre area adjacent to Shining Rock Wilderness, which was

acquired in 1999. A unique partnership by the Forest Service, the state of North Carolina, and two private groups, the Boy Scouts and the Episcopal Church, secured the conservation potential of this area.



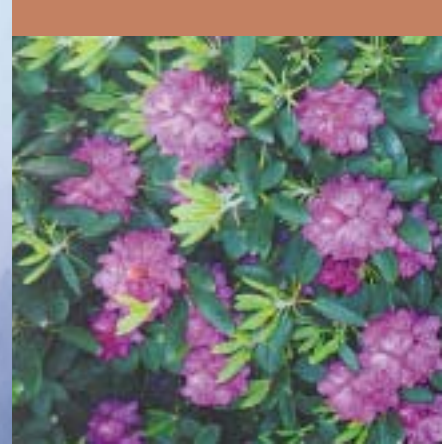
Cultural Heritage Areas

As noted above, the Cradle of Forestry in the Balsam Mountains marks the location of the first professional forestry practice in North America. It was the crucible in which forest practices were shaped and professional foresters were trained. It was also one of the first tracts





Black Mountains



"I don't want to die without once more saluting the grand, fondly, round-headed trees of the east side of America that I first learned to love and beneath which I used to weep for joy when nobody knew me."

— John Muir

Located in western North Carolina just northeast of Asheville, the Black Mountains Conservation Area includes the Black Mountains, the Craggy Mountains, and mountains on the edge of the Blue Ridge Escarpment at the headwaters of the Catawba River. Pisgah National Forest and Blue Ridge Parkway lands, as well as significant conservation easements, include 250,000 acres.



The Black Mountains are among the most biologically rich areas in the Southern Appalachians. The complex convergence of high-elevation peaks with intersecting ridges drained by hundreds of streams creates intricate habitats for a wide diversity of plants and animals. A diversity of brightly-colored neotropical birds join black bears in finding refuge in the many unfragmented roadless areas of the Black Mountains.

The area is dominated by the high mountain ridges of the Black and Craggy Mountains, with upper elevations exceeding 6,000 feet. Six of the Black Mountain peaks are among the 10 highest east of the Mississippi River, including Mount Mitchell, the highest peak in the eastern United States at 6,684 feet above sea level. Indeed, the various habitats in these forests closely resemble those of Canadian climates hundreds of miles to the north.

From the surrounding valleys and even from Asheville, the Black Mountains with their slopes and coves are promi-

nent on the landscape. Their tops, covered with spruce and fir forests, appear black from a distance, giving rise to their name. Over the last several decades, however, air pollution and exotic pests have killed many of the trees in these unique forests. Acid precipitation and fog, with acidity that can be higher than that of lemon juice, threatens the health of these forests.

The first national forest purchase in the eastern United States was made near Curtis Creek on the eastern slopes of the Black Mountains, under the authority of the Weeks Act of 1911. One of the largest verified stands of national forest old growth is found within this original purchase area.



Important Aquatic Systems

The South Toe Critical Aquatic Refuge and the headwaters of the Nolichucky River Aquatic Diversity Area lie in the Black Mountains. The Catawba River, which flows east into the Piedmont, also originates in the Blacks.

Biological Hotspots

Biological hotspots cover virtually all of the Black Mountains Conservation Area. Representatives of vascular and non-vascular plants, mammals, birds, and amphibians are all significant. In particular, the higher elevations of the Black Mountains are home to the rare and declining spruce-fir forest ecosystem.

Protected Wildlands

Relatively little of the Black Mountains Area is currently in permanent protection. Mount Mitchell State Park (2,531 acres) and the Blue Ridge Parkway lands (6,631 acres) are managed for the dual purposes of habitat protection and recreation. Two Forest Service research natural areas totaling slightly over 1,300 acres are

the only national forest areas that can be considered permanently protected.

Unprotected Wildlands

Unprotected wildlands include five Mountain Treasure areas: the Craggy Mountains (13,000 acres), Black Mountains (14,000 acres), Jarrett Creek (10,000 acres), Mackey Mountain (14,000 acres), and Woods Mountain (11,000 acres). Each of these areas contains a smaller inventoried roadless area. The Craggy Mountain area contains a Wilderness Study area that was recommended by the Forest Service for wilderness designation, but Congress has not acted on this recommendation.

Old Growth

Over 16,000 acres of old growth have been identified in the Black Mountains by the Western North Carolina Alliance old-growth survey (Messick 2000). The large amount of old growth and the number of large tracts (several exceed 1,000 acres) make the Black Mountains one of the most significant reserves of old growth in the Southern Appalachian region.

Conservation Easements

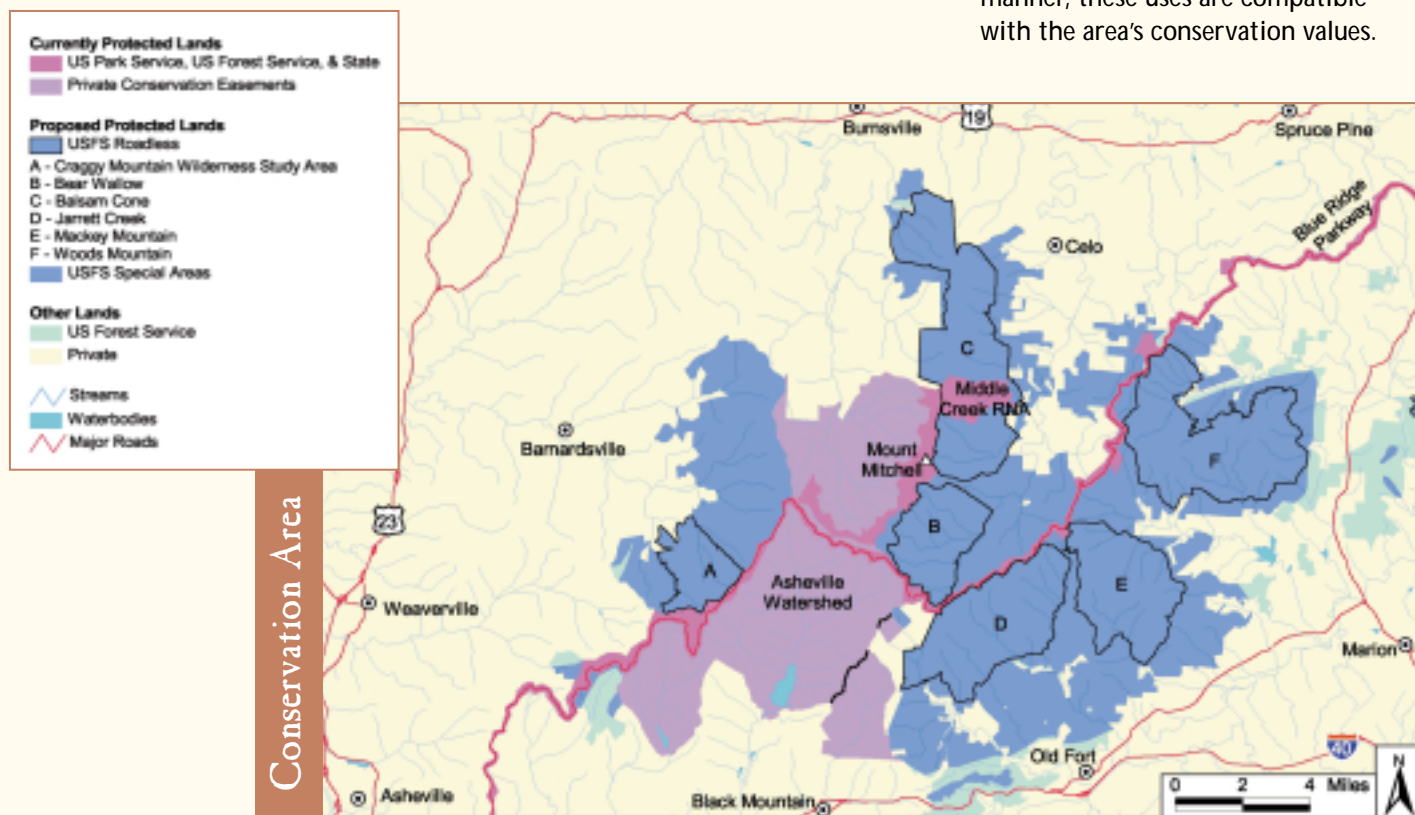
Seventeen thousand acres of the 21,000-acre Asheville Watershed, which is owned by the City of Asheville and Buncombe County, is in a conservation easement, providing not only clean water but also crucial wildlife habitat and connectivity between adjoining conservation lands. The Montreat Wilderness, owned by the Presbyterian Diocese, is managed as a wilderness area. The Big Tom Wilson Reserve is privately owned and managed to provide wildlife habitat.

High Priority Areas For Public Acquisition

The acquisition of additional lands would make public ownership less fragmented.

Cultural Heritage Areas

The Black Mountains are rich in cultural history. Some current residents of the area can trace local ancestors back six or seven generations. Many of these residents still depend on traditional uses of the landscape, including hunting, fishing, and herb collecting. Carried out in a sustainable manner, these uses are compatible with the area's conservation values.



Grandfather Mountain/ Linville Gorge



"The Appalachians are a forest upon a high rolling floor, and in all the continent, in all the world I believe, there is no such hardwood and deciduous forest as this...nothing bleak, nothing eroded, nothing arid... everywhere the murmur of leaves, the trickling or rushing of water."

— Andre Michaux
French explorer and botanist,
1746-1802. (1904)

The Grandfather Mountain/ Linville Gorge Conservation Area consists of ancient mountains and gorges that represent some of the oldest geological structures in the region. Pisgah National Forest and Blue Ridge Parkway lands represent 138,508 acres in the conservation area.



The Grandfather Mountain/ Linville Gorge Conservation Area includes the unique mountain massif of Grandfather Mountain. At 5,964 feet, Grandfather Mountain is a towering presence within the Southern Appalachians of North Carolina; it also commands global visibility as a showcase of biological diversity. More than 60 rare plant and animal species, including the Northern flying squirrel and four federally listed plants, make their homes at different elevations on this metamorphic sandstone monolith. It is also home to one of two known populations of the spruce-fir moss spider, a tarantula smaller than a penny. Seeps and streams tumbling down steep slopes provide habitat for 16 species of salamander. Birders are drawn by a wealth of migratory species, including large numbers of neotropical warblers and other songbirds. Because of its high altitude, Grandfather Mountain is also on the southern fringe of the range for Northern Saw-whet Owl, New England cottontail, and Black-capped Chickadee.

The varied topography and large number of thrust faults and rock types of the Grandfather Mountain/ Linville

Gorge Area are largely responsible for the survival of 27,800 acres of documented old-growth forest. Parts of that acreage were inaccessible to early logging operations and developers because of its rugged terrain. For the same reason, the Grandfather District of Pisgah National Forest is home to five inventoried roadless areas of significant size. There are also numerous smaller unroaded areas worthy of increased protection.

Dobson Knob and Linville Ridge to the southwest of Linville Gorge would provide excellent wildlife connectivity to the Black Mountains Conservation Area with some conservation attention and restoration. Despite its status as one of the premier natural sites in the entire region, the Grandfather Mountain/Linville Gorge Area and its biological riches remain under threat from road building, housing development, unwise logging, and some unchecked recreational use.

A number of private conservation initiatives have been created in the area by individual landowners, conservation groups, and municipal interests, such as the City of Morganton.

Important Aquatic Systems

Wilson Creek, which runs for 23 miles from Calloway Peak on Grandfather Mountain to its confluence with the Johns River south of Collettsville, was designated as a Wild and Scenic River in 2000. The nearby Johns River riparian corridor is also the subject of efforts to classify it as Outstanding Resource Water. Linville River, one of the less polluted rivers in the Catawba Watershed, is a critical aquatic refuge.



Biological Hotspots

At least 12 biological hotspots, including large landscape areas of Grandfather Mountain and Linville Gorge, are found in the Grandfather Mountain/Linville Gorge Conservation Area. These areas are biologically significant for fraser fir forests, a large number of plant communities, cave species, bogs, and high-elevation birds.

Protected Wildlands

Linville Gorge Wilderness, home to a single old-growth tract of more than 10,000 acres, is the only designated wilderness in the Grandfather District.

Unprotected Wildlands

Four stand-alone roadless areas -- Wilson Creek, Lost Cove, Harper Creek, and Dobson Knob -- contribute 24,423 acres of wildlands.

Harper Creek and Lost Cove are Wilderness Study Areas that the Forest Service recommended for wilderness designation. Additional wildlands include a 2,800-acre roadless extension to Linville Gorge Wilderness and Mountain Treasure areas that add 24,852 acres.

Old Growth

A total of 27,800 acres of old growth have been documented in this conservation area by the Western North Carolina Alliance. Some of this is permanently protected as part of the Linville Gorge Wilderness, but numerous other medium- to small-sized tracts have no guarantees of protection because they do not fall within roadless areas inventoried by the Forest Service.

Conservation Easements

The Nature Conservancy manages approximately 3,000 acres under a conservation easement on Grandfather Mountain.

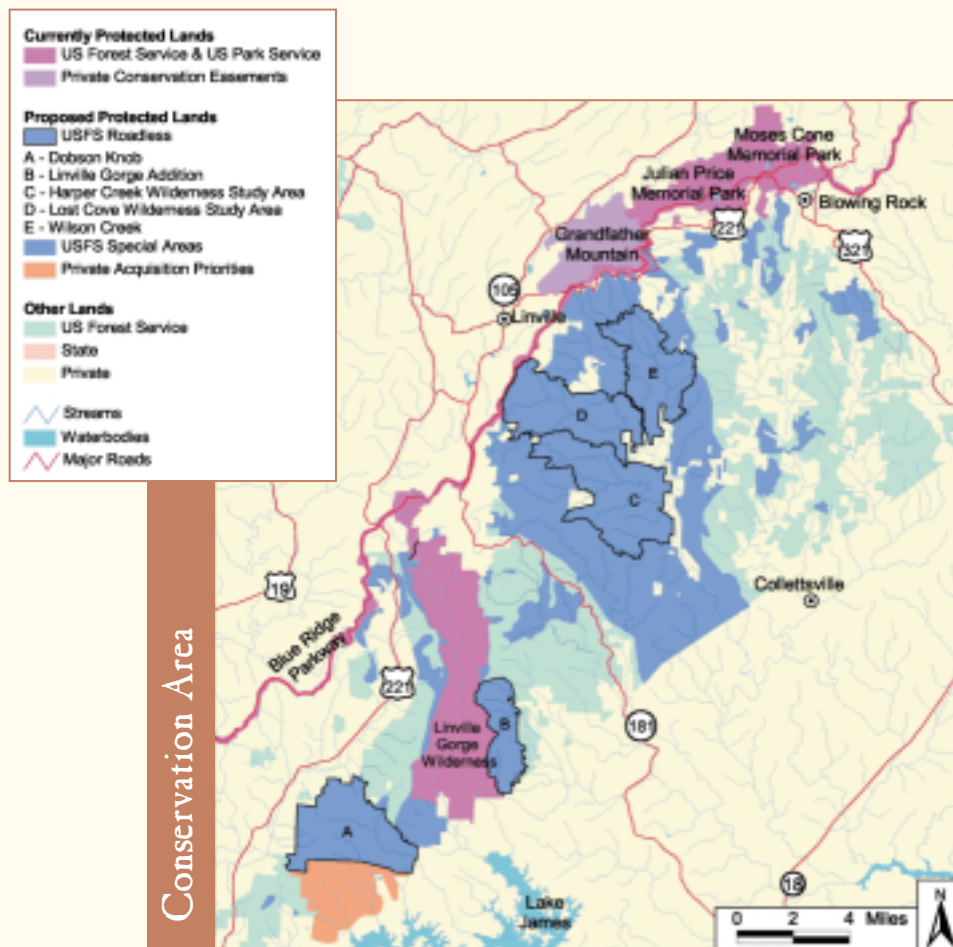


High Priority Areas For Public Acquisition

A large tract of former timberland near Lake James is being targeted for acquisition under Land and Water Conservation Fund authorization. The Eckart Tract is being acquired as an addition to Moses Cone Memorial Park

Cultural Heritage Areas

No specific areas are identified.



Bald Mountains



"[It] is in this region that occur that marvelous variety and richness of plant growth which have led our ablest business men and scientists to ask for its preservation by the Government for the advancement of science and for the instruction and pleasure of the people of our own and of future generations."

— President Theodore Roosevelt (1902)

The Bald Mountains Conservation Area lies along the western edge of the Southern Blue Ridge Ecoregion. Cherokee and Pisgah National Forest lands represent over 200,000 acres in the conservation area.

The Bald Mountains form part of the western flank of the Southern Blue Ridge that extends northeast from the Smoky Mountains. They are composed of southwest-to-northeast-trending ridges lying along the Tennessee-North Carolina border.

Public ownership of the Bald Mountains primarily takes the form of national forest lands of the Cherokee and Pisgah National Forests. This public ownership is fragmented at the southwestern end of the Balds and more consolidated to the northeast.

The potential for landscape-scale conservation in this area is tremendous. The area forms the main corridor connecting populations of wildlife, particularly black bear, in the Smoky Mountains to populations farther north. This important connection is tenuous at present because of fragmented ownership and the separation of the two areas by Interstate 40. It is essential to enhance the current connection through acquisition and protection of key tracts, and by addressing the fragmenting effects of major

roadways. Such major roads should be retrofitted with wildlife overpasses or underpasses to assure effective connections with nearby conservation areas and the long-term ecological functioning of the Bald Mountains in a regional network.

Consolidating and protecting the large core area in the northern end of the Bald Mountains is also essential. A potential wildland complex of over 40,000 acres can be safeguarded through protection of vital national forest lands and adjacent acquisition priorities. This regionally significant core area provides some of the best bear habitat north of the Smoky Mountains and also provides significant habitat for rare plants and animals.

The Appalachian Trail winds its way through the length of the Bald Mountains, generally following the ridge crest. Numerous side trails lead from the ridge crest down stream valleys on both the Tennessee and North Carolina slopes, providing numerous loop routes by which to explore the area.



Important Aquatic Systems

The Nolichucky River forms the northern boundary of the Bald Mountains Conservation Area. The river is classified as impaired by the EPA because of pollution from sedimentation. However, the Nolichucky River watershed is considered a significant aquatic diversity area (McLarney, 1998). Many of the Nolichucky's tributaries emerge from the Bald Mountains as pristine streams contributing the pure water that sustains rare species in the river itself.

Biological Hotspots

No fewer than 22 biological hotspots are scattered throughout the Bald Mountains, ranging from small areas hosting localized species and habitat to large areas covering a variety of habitats and numerous species. The Bald Mountains shelter numerous rare species of plants and animals, including Peregrine Falcon, and are rich in rare vascular plants. The area has a wide variety of habitat types including coves, dry oak, pine oak heath, dry oak-pine, rock outcrops, balds, and bogs.

Protected Wildlands

Sampson Mountain is an 8,000-acre wilderness in the heart of a much larger natural area of core habitat.

Unprotected Wildlands

The 23,000-acre Bald Mountain Roadless Area, the second largest unprotected national forest roadless area in the region, is adjacent to Sampson Mountain Wilderness. The 4,500-acre Sampson Mountain Addition is also contiguous to the wilderness area. These areas together encompass a 35,500-acre wildlands complex that is one of the largest in the region. Devil's Backbone, an inventoried roadless area, and Wildcat, an unroaded area, both play a key role in black bear and other animal movements between the Smoky Mountains and the Bald Mountains.

Old Growth

There has not been a systematic old growth survey in the Bald Mountains. The rugged terrain of much of the area and multiple reports of remaining old growth make the occurrence of significant amounts likely. The Southern Appalachian Assessment estimated 22,635 acres of possible

old growth in the area.

Conservation Easements

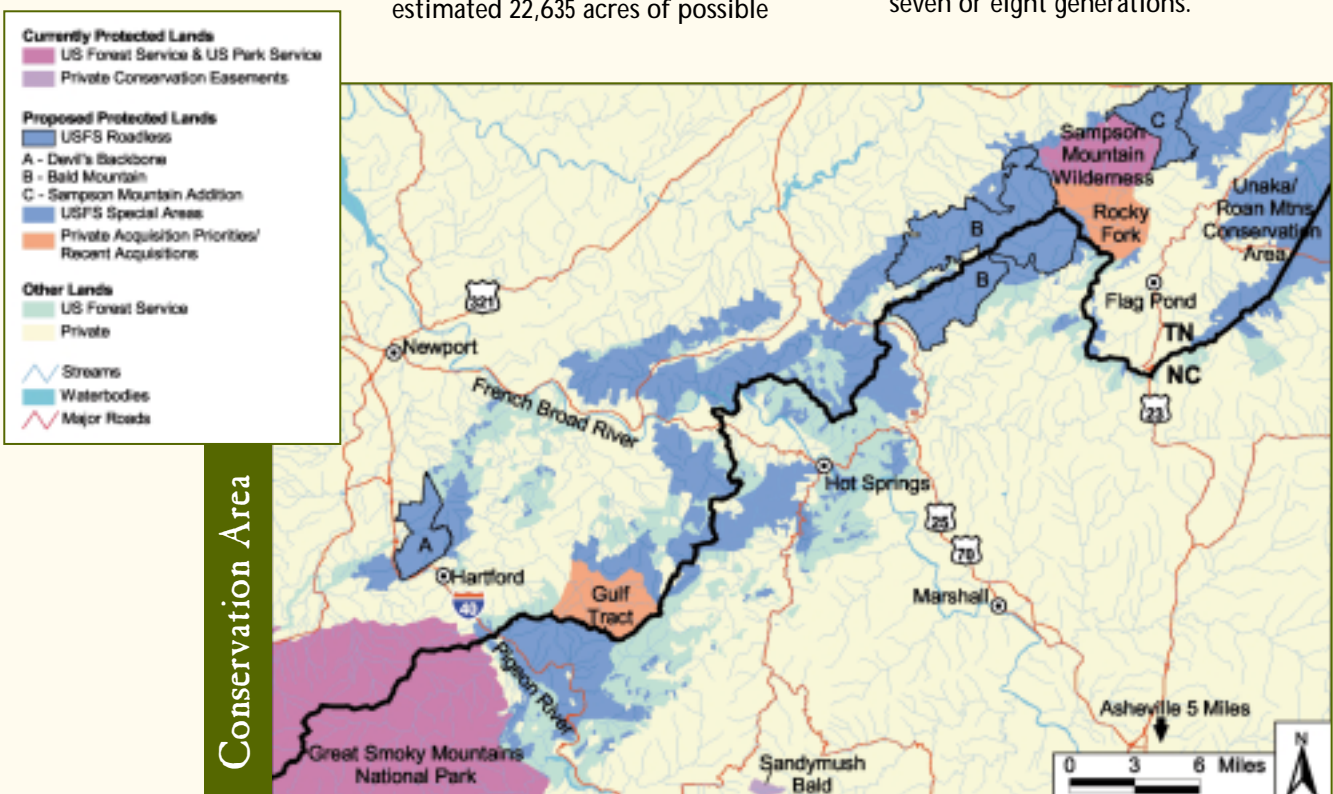
There is a tremendous need and potential for conservation easements, especially in the lower Bald Mountain Area, but none are known to exist at present.

High Priority Areas For Public Acquisition

The 10,000-acre Rocky Fork Tract has been a priority for acquisition for decades. It helps tie together the large wildlands complex around Sampson Mountain Wilderness. The Forest Service is pursuing acquisition of a portion of the tract along the Appalachian Trail. At the very least, the headwaters for the Sampson Mountain Wilderness Area should be acquired so that aquatic species and water quality are preserved in the wilderness.

Cultural Heritage Areas

Numerous archeological sites, including Native American sites, have been found in the Bald Mountains. The Bald Mountains are surrounded by communities whose histories go back seven or eight generations.





Iron Mountains/ Mount Rogers

*“Climb the mountains and
get their good tidings.
Nature’s peace will flow
into you as sunshine
flows into trees. The winds
will blow their own
freshness into you, and the
storms their energy,
while cares will drop off
like autumn leaves.”*
— John Muir (1901)

The Iron Mountains/
Mount Rogers Conservation
Area consists of a series
of long parallel ridges
and massifs at the
northern extent of the
Southern Blue Ridge.
Public lands, primarily
on the Jefferson
and Cherokee National
Forests make up
300,000 acres.

The Iron Mountains/Mount Rogers area features a series of long parallel mountain ridges running southwest to northeast near the northern tip of the Southern Blue Ridge Ecoregion. Unique and prominent mountain massifs are also a part of this mountain complex. Two of the primary ridges, Holston Mountain and Iron Mountain, each stretch for well over thirty miles in northeast Tennessee. The Iron Mountain Ridge continues as a single ridge north of Laurel Creek near Damascus, Virginia, and runs northeast for another thirty miles through southwest Virginia. Another parallel ridge, Rogers Ridge, stretches for ten miles to the northeast tip of Tennessee. To the southeast of Iron Mountain Ridge in Virginia lies a mountain massif consisting of Whitetop Mountain and Mount Rogers, the highest point in Virginia at 5,729 feet. Long valleys parallel and separate the mountain ridges.

The Virginia portion of this conservation area corresponds to the Mount Rogers National Recreation Area. This designation was intended to make the Mount Rogers area a recreation destination. Its campgrounds, extensive trail system, and horse use offer many primitive and developed recreation opportunities. The designation also serves the purpose of de-emphasizing extractive uses and favoring habitat and species conservation.

The Iron Mountains/Mount Rogers Area is regionally important as habitat

and for its corridors for wildlife. The national forest lands in the Iron Mountains form the only corridors of continuously forested land in this area of the Southern Appalachians. The area forms a crucial connector between black bear habitat to the south, in Tennessee and North Carolina (including the Smoky Mountains), and black bear strongholds farther north in Virginia and West Virginia. The Iron Mountains constitute a clear case of important wildland reserves that function as indispensable linkages for the overall habitat network of the Southern Appalachians.

Many rare plant species are found in the conservation area, including rock scullcap, Roan rattlesnake root, mountain bitter cress, and rosy twisted stalk. The valleys between the ridges also contain rare species, including ones associated with threatened upland bog communities. On the slopes, oak and cove hardwood forest grades into northern hardwood forest, with spruce and fir at the highest elevations. Old-growth forest is found in many areas of the Iron Mountains, notably on Holston Mountain and in the Mount Rogers NRA. Extensive balds are found at high elevations.

The Appalachian Trail runs the length of the Iron Mountains/Mount Rogers Area. The trail and the other recreation features make portions of this conservation area well known to a large number of people.



Important Aquatic Systems

The majority of the Iron Mountains/Mount Rogers Conservation area is in the South Fork Holston River watershed, where a high number of imperiled species live. Whitetop Laurel Creek, a tributary of the South Fork Holston River, is a critical aquatic refuge with a high diversity of species, including rare fish, aquatic insects, hellbenders, the spiny river snail, and bog turtles. Another critical refuge, Possum Creek, has shown dramatic improvements in quality in recent years. The New River drainage on the eastern side of the conservation area is significant for both aquatic species and recreation. A number of municipalities, including the twin towns of Bristol, Tennessee and Bristol, Virginia, depend on the South Fork Holston watershed for drinking water.

Biological Hotspots

Several biological hotspots fall within the Iron Mountains/Mount Rogers area. The Shady Valley site contains rare, high-elevation seep communities. The large Mount Rogers site contains several rare, high-elevation plant communities and species. Several other hotspots include Hunter Marsh, Laurel Creek, Pond Mountain, Whetstone Branch, and Whitetop Mountain. These areas protect important communities and rare species.

Protected Wildlands

Big Laurel Branch Wilderness, in the Cherokee National Forest in Tennessee, lies at the southwest end of the Iron Mountains/Mount Rogers Area. The Mount Rogers Recreation Area on the Jefferson National Forest in Virginia places emphasis on recreation rather than resource extraction. In addition, three wilderness areas -- Lewis Fork, Little Wilson Creek, and Little Dry Run -- fall within the Mount Rogers Area. In all, over 18,000 acres of the Iron Mountains/ Mount Rogers Area are currently protected as wilderness. Whitetop Mountain and the Appalachian Trail corridor currently have strong protection in the forest plan. Grayson Highland State Park protects extensive stretches of the Mount Rogers Area.

Unprotected Wildlands

Unprotected wildlands provide a tremendous opportunity for securing biological and recreation protection in the Iron Mountains/Mount Rogers Area. Taken together, suitable additions to the existing wilderness areas totaling 10,200 acres have been inventoried. Other inventoried roadless areas total 40,500 acres, and additional areas identified as Mountain Treasures total 72,000 acres. These roadless and Mountain Treasure areas include many important sites, such as Whitetop Mountain and Raccoon Branch in Virginia and Roger's Ridge and Flint Mill in Tennessee, that are high on the list of conservationists for protection.

Old Growth

The Iron Mountains/Mount Rogers area contains extensive areas of old growth and potential old growth. The Jefferson National Forest inventory identified 5,930 acres of possible old growth in the Mount Rogers Ranger District. Cherokee Forest Voices identified almost 2,800 acres of old growth

along the crest of Holston Mountain in Tennessee.

Conservation Easements

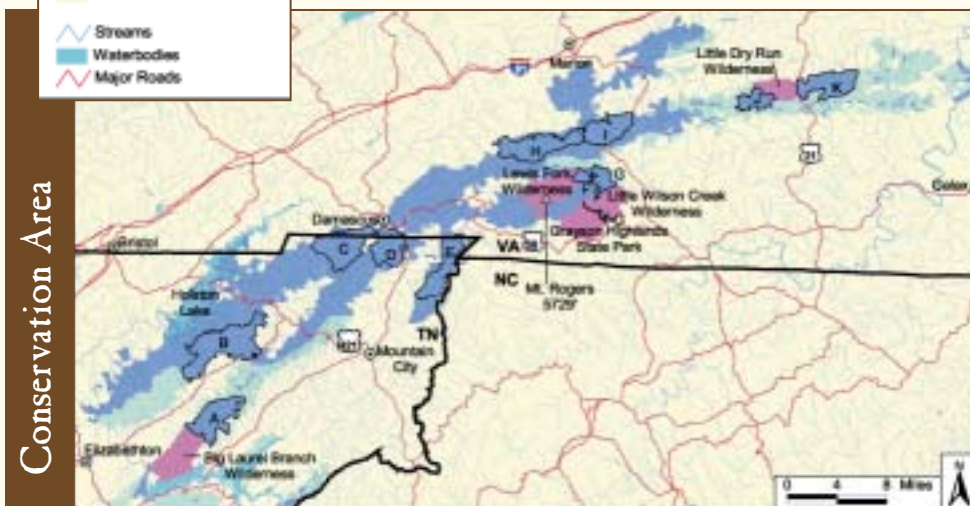
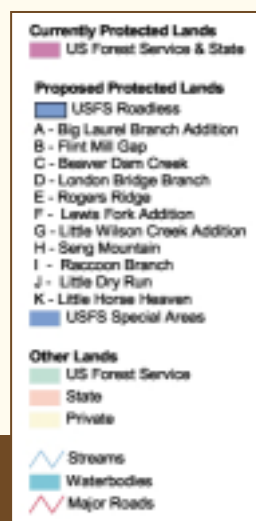
The Nature Conservancy and other land conservancies hold conservation easements on lands in the Iron Mountains/ Mount Rogers Area, particularly in the biologically important Shady Valley area.

High Priority Areas For Public Acquisition

A number of tracts would be desirable for acquisition if they become available on a willing-seller basis in order to consolidate public lands, buffer the Appalachian Trail, and assure protection of rare species. Twelve priority tracts have been identified for acquisition within the Mount Rogers NRA.

Cultural Heritage Areas

The Iron Mountains/Mount Rogers area has a long and significant human history. A number of archeological sites are found in the Iron Mountains, including very important early American Indian sites. In addition, ruins from settlement periods are widespread. Existing local communities are dependent on mountain environments, with many people getting their water supply from springs and streams that originate in natural areas in the mountains. Ramps, sugar maple sap, and fir cones are traditionally gathered in the forest. An annual naturalists' gathering in the spring attracts many people. The Virginia Creeper Trail is a popular hiking, biking, and horse trail built on an old railroad bed, and the restored Green Cove Railroad Station celebrates the role of early railroads in the area.



Clinch



"The last word in ignorance is the man who says of an animal or plant: 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering."

— Aldo Leopold (1953)

Located in extreme southwest Virginia, the Clinch Conservation Area is located in the Cumberland Mountains and forms the headwaters of the Guest and Powell Rivers. The Clinch River originates to the northeast and flows through the conservation area. Jefferson National Forest and state lands constitute 98,000 acres of public lands in the Area.

The Clinch Conservation Area is highly significant from at least two standpoints. Most importantly, the aquatic diversity of the area is of national and global significance. The area contains the highest number of imperiled and vulnerable freshwater aquatic species in the United States. Second, the Cumberland Mountains have relatively few areas that have escaped coal mining and severe resource extraction with its attendant environmental degradation. Public lands such as these represent some of the least impacted lands. However, the southern portion of the Cumberland Mountains is underrepresented in public land ownership. A relatively small amount of land (only about 98,000 acres) is managed by the Forest Service and the state in the Clinch Area.

The Clinch and Powell Rivers flow through the Clinch Area, and the Guest River flows into the Clinch River within the conservation area. The Clinch and Powell Rivers are the only free-flowing headwater rivers in the Tennessee River system. The

Karst landscape of limestone, characterized by such dramatic topographic features as sinkholes and caves, is a part of the unique habitat of this conservation area. This distinctive habitat



contributes to an exceptional suite of plants and animals, but conservation-minded management is critical to help maintain the water quality necessary to sustain aquatic species on public and private lands. Groups such as the Clinch Coalition, Virginia Forest Watch, Coalition for Jobs and the Environment, and Citizens Task Force on National Forest Management are working hard to protect this area. The Nature Conservancy has an innovative program of cooperation with private landowners that includes incentives and education to protect private lands.



Important Aquatic Systems

The Clinch River is one of the world's most significant freshwater rivers for mussels. This conservation area contains an astounding 29 rare mussel species, as well as 19 rare fish species (Master, Flack, and Stein 1998). All of these aquatic species are threatened by mining (especially on mountaintops), logging, and the resulting siltation. A number of municipal water sources in Virginia depend on watersheds in this conservation area: Norton and Wise (Guest River), Pennington Gap and Appalachia (Powell River), and St. Paul (Clinch River).

Biological Hotspots

More than 400 rare plants and animals are found in the Area, including 28 species that are federally listed as threatened or endangered. The Nature Conservancy has a number of reserves protecting important biological sites.

Protected Wildlands

There are no designated wilderness areas in the Clinch Conservation Area. A section of the Guest River is

designated as a Wild and Scenic River. Breaks Interstate Park offers some protection of lands along the Virginia-Kentucky border, although gas wells are allowed in the park.

Unprotected Wildlands

The Clinch Area contains the North Fork of the Pound roadless area and the Devil's Fork semi-primitive area, which are both high-priority wildlands for protection. In addition, the Roaring Branch, Stone Mountain, Little Stony Creek, and Laurel Fork Mountain Treasure areas are in need of protection. The High Knob-Bark Camp area requires increased protection. Sections of the Russell Fork, Devil's Fork, Roaring Branch, and Clinch River are being evaluated for Wild and Scenic River designation.

Old Growth

Jefferson National Forest has approximately 2,500 inventoried acres of old growth, including extensive amounts on Laurel Fork Mountain.

Conservation Easements

The Nature Conservancy and Virginia Department of Conservation and Recreation own and manage a number

of preserves along the Clinch River, including the 435-acre Pinnacle Natural Area Preserve. The Nature Conservancy sponsors a "Forest Bank Program" that provides incentives for sustainable forestry management.

High Priority Areas For Public Acquisition

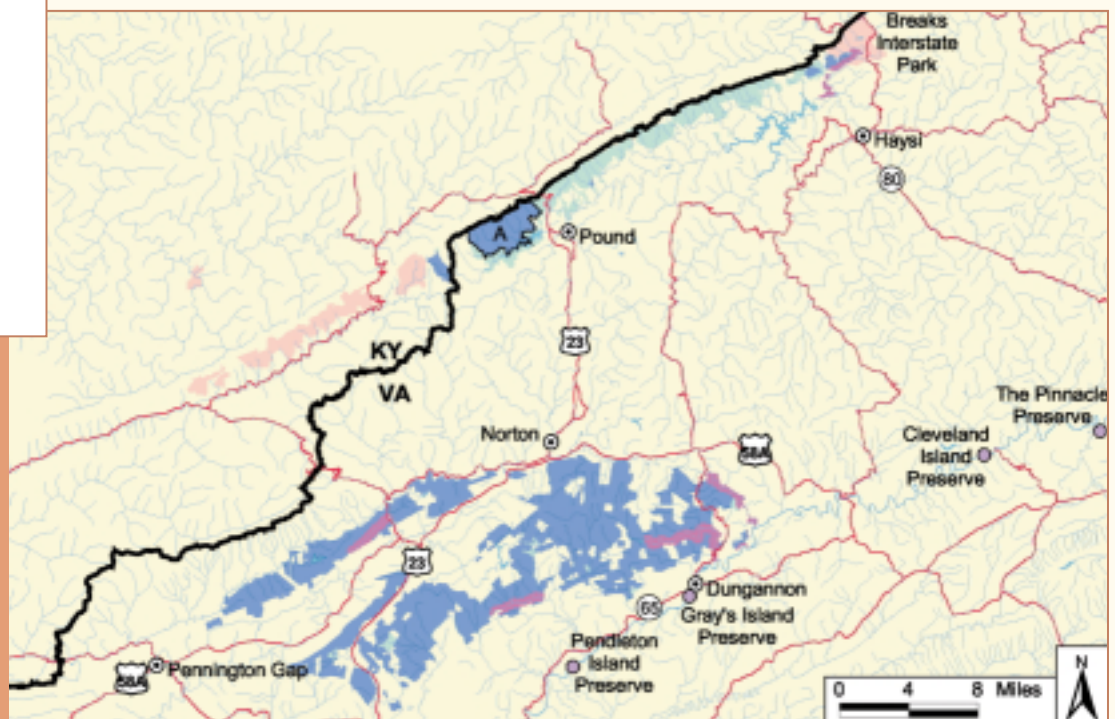
Fragmented public ownership in the Clinch Conservation Area calls out for acquisition efforts to purchase private land from willing sellers. Opportunities for consolidating Forest Service ownership and acquiring inholdings from willing sellers are numerous. It is also essential to acquire mineral rights for existing public lands where these mineral rights are not currently in public ownership.

Cultural Heritage Areas

The Clinch area is rich in archaeological history, with evidence of human habitation dating back more than 10,000 years. A great deal of this history has been documented at numerous cave sites throughout the area. There is also a strong identification and attachment to the land by local communities.



Conservation Area





Glenwood

"If you can't get beyond yourself, you're pretty narrow. There is obviously a greater force beyond our comprehension, and we respect it by preserving the creation in which this force is manifested."

— Ernie Dickerman
(Bolgiano 1998)

The Glenwood Conservation Area lies within the Northern Blue Ridge Mountain Ecological subsection. The James River cuts through the Blue Ridge Mountains at the northern end of the conservation area and forms the boundary between the Jefferson National Forest to the south and the George Washington National Forest to the north. National forest lands along with Blue Ridge Parkway lands, represent 180,000 acres in the conservation area.

The Glenwood Conservation Area features dramatic elevation changes from the James River to Apple Orchard Mountain. At nearly 4,000 feet, it is the highest peak on the Blue Ridge Parkway in Virginia. The Glenwood Area lies within the Northern Blue Ridge Ecological subsection. The Blue Ridge Parkway travels the high ridgeline and offers spectacular views of the Great Valley of Virginia to the west and the Piedmont to the east. The slopes, coves, valleys, and streams below the ridge are popular with tourists and wildlife alike. Much of the terrain is ideal for black bear, songbirds, salamanders, trout, and rare species such as oak fern and the giant snail-eating ground beetle. The area is also important for anglers, hunters, campers and hikers, and provides many primitive and developed recreation attractions. Hikers can trek more than 50 miles of the Appalachian Trail within the Glenwood district. The Blue Ridge Parkway attracts millions of visitors each year along this particularly scenic portion.

The James River Face and Thunder Ridge Wilderness areas are significant features of the Glenwood Area. A large number of additional natural areas make the Glenwood Area important for both habitat and recreation. Popular for its cascades, waterfalls (especially the Apple

Orchard falls), trails, and seasonal floral displays, the North Creek area is a beautiful natural valley that hosts two National Recreation Trails (Cornelius Creek and Apple Orchard) and the primitive North Creek campground. Old-growth oak trees on Apple Orchard Mountain are so severely pruned by the strong winds that they look like apple trees. The U.S. Forest Service has determined that seven miles of North Creek itself are eligible for Wild and Scenic River designation and has recommended it for Recreational River designation. It is the only creek in Virginia that has been designated by EPA under the category of "exceptional waters." Restricted trout angling is currently permitted.

At the southern end of the Glenwood district, the Peaks of Otter area adjacent to the Blue Ridge Parkway is managed by the U.S. Park Service. This area hosts one of only five populations of the Peaks of Otter salamander whose entire known range is limited to a two-county area. Across the James River at the north of the Glenwood district lies the 8,169-acre Three Sisters Roadless Area.

For all its biological, cultural, and recreation riches, portions of the Glenwood area are subject to the threat of timbering. In the past it has experienced heavy logging.



Important Aquatic Systems

The Glenwood Area overlooks the James River and mainly lies within the James River watershed. There is heavy recreational use of the James River up to the Balconey Falls. Jennings Creek and its North Creek tributary are extremely popular trout fisheries.

The North Creek is the only stream recognized by the Commonwealth of Virginia as "exceptional waters" under the Clean Water Act. Lynchburg and Madison Heights draw water from the James River downstream of the conservation area.

Biological Hotspots

The Apple Orchard Mountain area is a Virginia Natural Heritage Special Biological Area recommended to the U.S. Forest Service for special management. The high-elevation portion provides habitat for the rare Peaks of Otter salamander.

Protected Wildlands

The 8,886-acre James River Face Wilderness sits within the Glenwood district. South of James River Face Wilderness lies Thunder Ridge, another designated wilderness of 2,344 acres. The Blue Ridge Parkway

prohibits logging and hunting. The Appalachian Trail corridor is protected in the forest plan, as is the Apple Orchard Special Management Area.

Unprotected Wildlands

A proposed 1,140-acre wilderness addition to James River Face is rich with hardwood forests, some close to 100 years old. Areas south, east, and west of the wilderness area -- Terrapin Mountain, North Creek, Wilson Mountain, and Cove Mountain -- are prime natural areas that should be maintained as wildland habitat and primitive recreation areas. The North Creek area features a network of National Scenic Trails. The U.S. Forest Service has determined that seven miles of North Creek and 23 miles of the James River are eligible for Recreation River study under the Wild and Scenic River Act.

Old Growth

The Jefferson National Forest has identified approximately 5,900 acres of possible old growth outside of wilderness areas in the Glenwood Ranger District. Additional possible old growth is located within the two wilderness areas, within the Blue

Ridge Parkway lands and in the George Washington National Forest lands north of the James River.

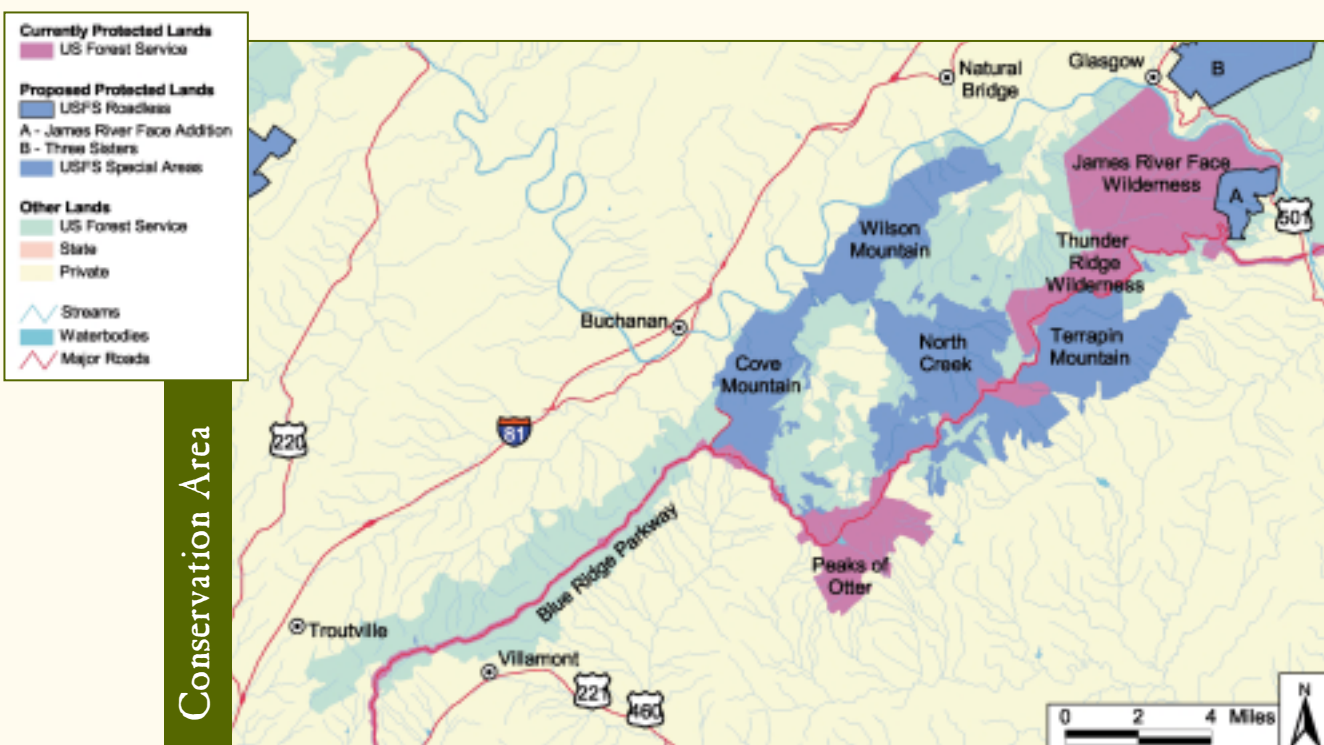


High Priority Areas For Public Acquisition

Opportunities to consolidate Forest Service ownership and acquire inholdings from willing sellers are numerous.

Cultural Heritage Areas

The Glenwood Area has a rich history, with numerous historical and cultural sites. The Glenwood is named after an iron furnace near Arcadia, which operated in the 19th century. Remains of locks from the James River Canal are located where the Blue Ridge Parkway crosses the James River. American Indians quarried stone in the Glenwood Area for use in stone implements.





Shenandoah Mountains

"Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed; if we permit the last virgin forests to be turned into comic books and plastic cigarette cases; if we drive the few remaining members of the wild species into zoos or to extinction; if we pollute the last clean air and dirty the last clean streams and push our paved roads through the last of the silence, so that never again will Americans be free in their own country from the noise, the exhausts, the stinks of human and automotive waste. And so that never again can we have the chance to see ourselves single, separate, vertical and individual in the world, part of the environment of trees and rocks and soils, brother to the other animals, part of the natural world and competent to belong in it.."

— Wallace Stegner

The Shenandoah Mountain Conservation Area features a prominent mountain massif within the Ridge and Valley Ecological Section. The area stretches sixty miles, contains 400,000 acres of George Washington National Forest, and includes a wealth of roadless and unroaded areas.

The Shenandoah Mountain Conservation Area is one of the most significant concentrations of wildlands in the Southern Appalachians. In addition to Ramsey Draft, an existing wilderness area, it holds eight inventoried roadless areas, including the largest unprotected roadless area in the Southern Appalachians. This concentration of unroaded and undeveloped lands on approximately 400,000 acres of the George Washington National Forest constitutes a core of native forestland with resources for native species habitat, recreation, hunting, fishing, and clean waters.

The conservation area contains some of the highest elevations in the state. Shenandoah Mountain is over 4,000 feet for much of its length. Reddish Knob at 4,397 feet gives spectacular views of the Shenandoah Valley to the east and the Allegheny Mountains to the west. This site is near eight inventoried roadless areas and on the edge of the Little River roadless area, which is the largest inventoried roadless area in the Southern Appalachians.

The Shenandoah Mountain Conservation Area is important for a wide variety of biological and social goals.

It contains one of the highest concentrations of roadless and unroaded areas in the region. The

habitat is important for neotropical migratory birds, black bears, and other species that need unfragmented habitat. This relatively undisturbed landscape also provides spectacular scenery, over 170 miles of hiking and backpacking trails, excellent opportunities for hunting and fishing, and abundant clean water.

The most prominent feature of the conservation area is the mountain massif known as Shenandoah Mountain that runs sixty miles from the southwest to the northeast within the Northern Ridge and Valley Ecoregion. Great North Mountain intersects Shenandoah Mountain in the southeast, with Walker Mountain and Chestnut Ridge lying between the legs formed by this intersection.



Important Aquatic Systems

The Shenandoah Mountain area embraces the headwaters of both the James and Potomac Rivers, and the relatively undisturbed waters flowing out of the area provide municipal water supplies for the cities of Staunton and Harrisonburg. Ramsey Draft, Briery Branch, and Benson Run are celebrated wild trout streams providing crucial habitat for native brook trout. Segments of the North River, another important trout stream, and Cowpasture River are being evaluated for Wild and Scenic River status.

Biological Hotspots

The area is geologically and topographically exceptional in the Ridge and Valley. Rather than a narrow linear ridge consisting of resistant sandstone like most mountains of the Ridge and Valley ecological section, Shenandoah Mountain and Great North Mountain together form a broad dissected ridge of inter-layered sandstones and shales. This geological variety, combined with the diversity of elevations, slope, aspect, and weather patterns in the conservation area creates a large variety of plant communities and habitats, including nine designated special biological areas. The white spotted or Cow Knob salamander is found only on the high slopes of Shenandoah Mountain. The Shenandoah Mountain millipede, Virginia least trillium, and the shale-barren rockcress, all globally rare, depend on the Shenandoah Mountain area

for critical habitat essential for their viability. Numerous other rare and sensitive species are found here

Protected Wildlands

The Shenandoah Mountain Conservation area contains the 6,518 acre Ramsey Draft Wilderness area.

Unprotected Wildlands

Nine inventoried roadless areas total over 112,000 acres in the Shenandoah Mountain Area. These inventoried roadless areas include Ramsey Draft Addition, Little River, Oak Knob, Gum Run, Skidmore, Dry River, Jerkentight, Crawford Mountain, and Elliott Knob. Little River at 27,293 acres is the largest inventoried area in the region. Additional areas including Benson Run, Stony Point Ridge, Dunkle Knob, and Laurel Run, while uninventoried, are significant unroaded areas. Taken as a whole the conservation area constitutes one of the most significant roadless and unroaded resources in the region.

Old Growth

Shenandoah Mountain hosts some of the most significant old growth remaining in the Southern Appalachians. Besides old growth protected in Ramsey

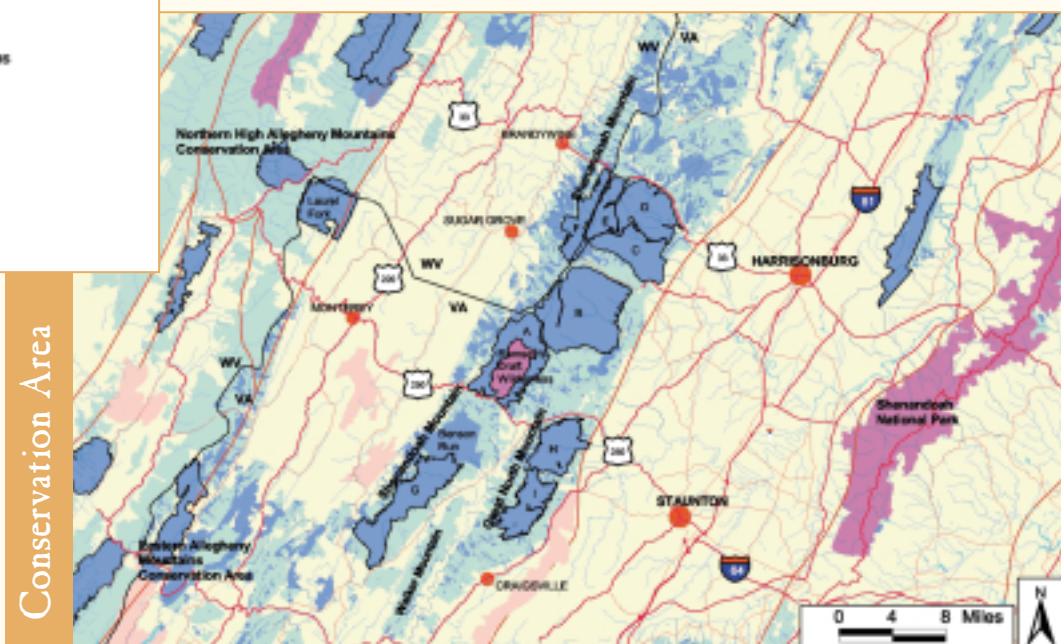
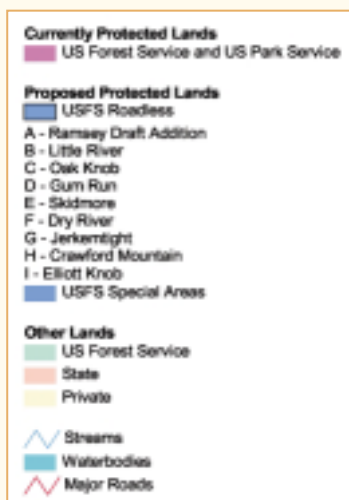
Draft Wilderness, the upper reaches of Skidmore Fork and over half of the Dry River and Ramsey Draft Addition roadless areas are old growth, representing significant reserves of these rare forests. There is probably more concentration of old growth on Shenandoah Mountain than on any other portion of the George Washington- Jefferson National Forest.

High Priority Areas For Public Acquisition

Opportunities exist to consolidate Forest Service ownership and acquire inholdings from willing sellers.

Cultural Heritage Areas

American Indian tribes are known to have traveled through the area; sites probably used as bases for hunting and gathering are found within the area. The mountain provided a significant barrier to Scotch Irish and German farmers moving south into the Shenandoah Valley from Pennsylvania in the early 18th century, restricting westward expansion into West Virginia. A tavern was located at Mountain House in the early 1800s. Remnants of Civil War fortifications remain at Confederate Breastworks.



Conservation Area

Allied Voices for the Great Forest

As Americans face the daily incremental loss of natural places that provide clean water, scenic beauty, outdoor adventure, spiritual renewal, and economic sustainability, conservation values increasingly transcend a specific political agenda or social group. Americans are learning that protecting the natural resources on which our futures depend is an issue that must unify all corners of our society. Fortunately, this unification is occurring.

Like a great many conservation alliances, Southern Appalachian Forest Coalition is supported by a diverse network of advocates for our conservation plan and goals. These supporters advance conservation values through the media, at public meetings, among their peers, in written forums and the internet, and in their personal lives. Their mission is to educate and engage a broad spectrum of the public about the importance of preserving the precious natural and cultural heritage of the Southern Appalachian region.

SAFC unites these voices online at ForestLink, our web page featuring scientists, business leaders, hunters and anglers, the faith community, conservationists and others in a virtual panel of experts, where visitors ask questions on forest related topics.

We find these voices united around our conservation vision, sharing their wisdom and experiences in its evolution, and now in its release. The pages that follow bring you the perspectives of a few of these experts on Return the Great Forest and its conservation goals. We thank them for doing their part to return the great forest.

“A Future for Fishing and Hunting and Love of the Big Woods”

By Christopher Camuto

To many of us who live in the Southern Appalachians, the woods have always been important in ways that are hard to measure. A spring day hip-deep in a mountain trout stream, an autumn afternoon pursuing grouse behind a good dog, a winter morning on a deer stand watching a whitetail carrying its gleaming antlers along a stone-cold ridge. What are those hours worth? Hard to say. But as much today, maybe more, as they were a hundred or two-hundred years ago. And so many of us keep fishing and hunting in the Southern Appalachian backcountry trying to stay committed to the southern mountain past and to traditions that continue to contribute important values to the troubled world in which we live.



Christopher Camuto

Quality fishing and hunting in our region have no future without what the conservationist Aldo Leopold called “a land ethic,” a vision of a way to live alongside nature with wisdom and respect—wisdom about what nature has to offer and respect for the limits of what nature will bear. We cannot just take from nature and expect it to be there when we want it—or need it. We cannot over-use, disturb and fragment what’s left of what William Faulkner called “the big woods” and expect to find wholeness there. We need to protect, preserve and restore the Southern Appalachian backcountry so that in the future we have access to the best of our past—as anglers, hunters, hikers, and lovers of the woods.

We have learned important lessons in the last century, and we need to take advantage of those lessons. It takes a river to make a trout—a feisty, wild trout worth catching. It takes a healthy forest to make that feisty, wild river and a mountain free of roads and development to nurture that forest. We have learned to value the entire ecology of undisturbed watersheds where everything native to our fabulous cove forests can thrive—from delicate wildflowers to grumpy black bears. We have learned that what is good for wildlife is good for all life and that what is good for the land is good for us.

In the Southern Appalachians, we are rich with public lands into which any citizen can wander in the best democratic tradition to hike, camp, bird watch, paint, photograph, fish, hunt, or snooze away a wild hour surrounded by some of the most spectacular biodiversity on this hard-used planet. In *Return the Great Forest*, the Southern Appalachian Forest Coalition offers a vision of the future that keeps faith with the past, a vision that would preserve a Southern Appalachian backcountry for all to revere and enjoy and for future generations to revere and enjoy.

Chris Camuto is a contributing editor for *Gray's Sporting Journal*, a columnist for Trout Unlimited's *Trout* and the author of *A Fly Fisherman's Blue Ridge*, *Another Country*, and *Hunting from Home*. He lives in Rockbridge County, Virginia.



“If we create a world without wilderness — and that is precisely what we are doing — then we lose a critical locus for the radical encounter with the divine.”

— Bill McKibben

Reverence for the Land that Could Be

By Brian Cole

The story of the Southern Appalachians is a story of contrasts. No region in the U.S. can match the beauty and natural wonder of our mountains. Yet, no region in the U.S. has ever experienced the massive exploitation of our forests and the devastation to our mountains and waterways as a result of the wholesale removal of our ancient forests in the late 19th century. However, whether in times of beauty or careless exploitation, the people of



Brian Cole

the region have continued to carry deep respect for our mountain lands and the need for roots and home place.

If the practice of faith matters anywhere in the U.S., it matters deeply in the Appalachian south. And every faith community that has thrived and practiced faith in the region—no matter how diverse—have all confessed one common truth: places matter and coming home can heal and restore us. The fragile creation that surrounds us has been placed in our care for good stewardship according to Hebrew and Christian creation stories. The very places that are essential to our spiritual care need us to protect and care for them.

We see in our region and throughout the U.S. that we are on the verge of losing an essential piece of wisdom that comes from religious practice and good folk sense—places that are wild are good for the soul as well as the natural world. In Hebrew and Christian scriptures, the wilderness is a difficult and necessary place for the people. God uses the wilderness to teach, restore, and remind us that limits to human knowledge exist while we have yet to measure the depth of mystery we encounter in places shaped primarily by the Creator.

At crucial times in the history of faith, quiet and unassuming people have done a very bold thing—they have stayed put and cared for their land, sometimes by simply being wise enough to leave some of it alone. The proposal by SAFC offers us a map to a more hopeful future that continues to honor the wisdom and the faith of our ancestors.

Brian Cole is director of the St. Francis initiative of the Environmental Leadership Center of Warren Wilson College in Asheville, North Carolina. He is lay vicar of Church of the Advocate, an Episcopal worshipping community primarily of homeless and street folk of Asheville.



“Protecting and increasing the supply of open space is no longer only an environmental issue — it’s a key economic issue for businesses and communities across the country. There is so much at stake for us, both environmentally and economically and we want to be part of finding a solution.”

— Dana Donley
Outdoor Industry Association

A Wild and Wonderful Future

By Myrna Johnson

The Southern Appalachians are rich with recreational experiences. Outdoor enthusiasts from all over the country know the Appalachian Trail as an icon for long distance trail hiking. Whitewater enthusiasts make the Nantahala River a major destination. These rich experiences, and others, deserve protection.

Protecting backcountry recreation opportunities has the added value of helping to sustain outdoor businesses. During the year 2000, 137 million people participated in what is known as human-powered outdoor recreational activities on federal, state, local and private lands. Human-powered outdoor recreation users of public lands camp, hike, bike, climb, backpack, paddle, cross country ski and snowshoe. These individuals fueled an industry that generated \$18 billion in revenues.

It is often said that small business is the backbone of the American economy, but it is the heart and soul of the outdoor industry. There are over 4,000 outdoor businesses in America, and over 90% are small businesses as defined by the Small Business Administration. These small business owners are also often outdoor enthusiasts themselves who highly value public lands and the experiences that can be found on the rolling mountains and wild rivers of this region. They unite around this value in Business for Wilderness, a project of the Outdoor Industry Foundation.

To continue to grow and contribute to the economy, outdoor businesses need open spaces where it is appropriate for their products to be used. In this case, the needs of the industry match public sentiment and the desires of our customers. Given the overwhelming number of Americans that participate in human-powered outdoor recreation activities (137 million in 2000), protecting and increasing the supply of open space is no longer only an environmental issue it is a quality of life issue.

We salute the Southern Appalachian Forest Coalition for its vision of a wild and wonderful future for the Southern Appalachians.

—Myrna Johnson manages the Business for Wilderness Program for the Outdoor Industry Foundation. For more information, see www.businessforwilderness.org.

“My family has been in the timber business for over 75 years, and I know that a plan that limits the logging of old growth timber and restores native species will return many more dollars to the local community, and in a variety of ways. In SAFC’s *Return the Great Forest* we have, at last, a comprehensive vision we can aspire to—a future that promises the highest value for these treasured forests.”

–Matt Hooton
Chairman, The Emerald Triangle Commission,
Alabama realtor and timber businessman

“The Coalition’s work in preserving our forest lands and wildness is critical to the well being of creatures and creation. May we all act in ways that not only sustain our forest but begin to restore that which has been worn out and depleted.”

–Sandra Smith
Director, Holy Ground, a nonprofit
retreat ministry in western North Carolina

“The Vision and Proposal of the Southern Appalachian Forest Coalition is a landmark work presenting relevant information and rational common sense means to ensure a sustainable future for the Southern Appalachian region. Patchwork remnants of habitat and broken migration corridors cannot maintain long-term stability and survival to sustain plants and animals. Let us act soon and decisively to ensure that we do our part to allow nature to restore what we have all too often destroyed.”

–Chuck Rice
Executive Director, North Carolina Wildlife Federation

“Based on my work and experience of over twenty years in the region, I can say [Return the Great Forest] is a scientifically-based, realistic, and inspiring blueprint for sustaining the rich biodiversity of the Southern Appalachian forests”

–Peter Kirby
former Director of the Southeast Region for the
Wilderness Society, 1988-1998

“This plan is truly visionary. The proposal uses the principles of conservation biology to develop a pragmatic, long-range plan that will allow future generations to experience fresh air, clean water and the rich biological diversity characteristic of healthy ecosystems. I applaud this integrated approach.”

–Dr. Matthew Rowe
Appalachian State University

"This proposal reflects a thorough understanding of the complexities of addressing conservation issues at such a large scale. SAFC is proposing a broadly inclusive approach that encourages all elements of society to participate, ranging from individual citizens to top federal agencies and legislators."

– Dr. Jim Petranka
University of North Carolina

"For centuries we have enjoyed and economically benefited from the richness of our natural resources. Now is the time to preserve and protect this natural bounty through a regional network of conservation areas.

– Alan Briggs
Executive Director, Save our State, North Carolina

"Thanks for doing your part to return wholeness to the Southern Appalachians, so that the landscape may function with at least most of its pieces and processes intact. In doing so, its residents may know what it means to live fully in a place, with the place."

– Janisse Ray
Author of *Ecology of a Cracker Childhood and other books*

"How appropriate that this is launched in 2002, the International Year of the Mountain. A note worthy event of global interest!"

– Professor Lawrence S. Hamilton
World Commission on Protected Areas/IUCN

"We will share your message with those we work with and encourage them to share your vision for the conservation of our region's special places."

– Ron & Sandy West
Owners, French Broad Rafting Company

"SAFC's project is an excellent example of how ecoregional planning provides the scientific basis for local conservation action. Through collaboration with The Nature Conservancy and state Natural Heritage Programs, SAFC has gathered the best available science to produce an action plan for conservation."

– Rob Sutter
The Nature Conservancy

"We look forward to working with SAFC and all the forest protection organizations in the South to make this vision a reality of protection for our Southern Heritage."

– Ray Vaughn
Executive Director, WildLaw

Endorsements

The following organizations and individuals have formally endorsed this conservation plan.

"I am very impressed by this bold vision of how to restore and preserve the Southern Appalachian Forest, and hope that it can be realized."

– Jimmy Carter

State and Local Organizations

Alabama Environmental Council
Alabama League of Environmental Action Voters
Alabama Wilderness Alliance
Anniston Outdoor Association, Alabama
Atlanta Botanical Garden
Arthur Smith Chapter, Cherokee Forest Voices,
Tennessee
Audubon North Carolina
Birmingham Audubon Society, Conservation
Committee
Bluff Mountain Outfitters, North Carolina
Cahaba River Society, Alabama
Chattooga Land Trust, Georgia
Chattowah Open Land Trust, Georgia
Cherokee Forest Voices, Tennessee
Clean Water for North Carolina
Citizens of Lee Environmental Action Network,
Virginia
Concerned Citizens of Rutherford County,
North Carolina
Conservation Council of North Carolina
Coosa River Basin Initiative, Georgia
Coosawattee Foundation, Georgia
Dickenson County Citizens Committee, Virginia
Earthkeepers, Georgia
Emerald Triangle Commission, Alabama
Ens and Outs, Georgia
Environmental Defense, North Carolina
Environmental Studies Department, University
of North Carolina, Asheville
Episcopal Diocese of Western North Carolina
Environmental Concerns Committee
Foothills Land Conservancy, Tennessee
ForestWatch of Vermont
French Broad Rafting Company, North Carolina
Friends of the Mountains, Georgia
Friends of the Reedy River, South Carolina
Georgia Appalachian Trail Club
Georgia Botanical Society
Georgia ForestWatch
Georgia Interfaith Alliance
Georgia Wildlife Federation
Goshen Alliance, Virginia
Grassroots Conservancy of Smyth County, Inc.,
Virginia
Grayson/Carroll Forest Watch, Virginia
Green Pursuits, Inc., Georgia
Green Sangha of Western North Carolina
Harvey Broome Group of the Sierra Club,
Tennessee

Help Our Mother Earth, H.O.M.E, Georgia
Hidden Lake Academy, Georgia
High Country Conservancy, North Carolina
Holy Ground Retreat Ministry, North Carolina
Jackson Macon Conservation Alliance, North
Carolina
Jennie Branch Nursery, Georgia
Keep Oconee Beautiful Association, South
Carolina
League of Women Voters for the Clemson Area,
South Carolina
Living Education Center for Ecology and the
Arts, Virginia
Memorial Ecosystems, South Carolina
Michaux-St. James Foundation, Virginia
Moss Rock Preserve, Alabama
Mountain Heritage Alliance, Damascus, Virginia
Mountain Heritage, Inc., Virginia
Mountain Conservation Trust of Georgia,
Georgia
Mountain Gateway Museum, North Carolina
Nantahala Outdoor Center, North Carolina
Nantahala Forest Watch, North Carolina
Naturaland Trust, South Carolina
New Hampshire Chapter of the Sierra Club
New River Group of the Sierra Club, Virginia
North Carolina Botanical Garden
North Carolina Conservation Network
North Carolina Natural Heritage Program
Old Towne Chimney Sweep, Georgia
Patagonia, Washington, DC
Patrick Environmental Awareness Group,
Virginia
Reflection Riding, Arboretum and Botanical
Gardens, Tennessee
Rockbridge Area Conservation Council, Virginia
Rome-Floyd Parks and Recreation Authority,
Rome, Georgia
Sabbath Project of the Western North Carolina
Alliance
Save Our State, North Carolina
Shenandoah Ecosystems Defense Group, Virginia
Soque River Watershed Association, Georgia
South Carolina Coastal Conservation League
South Carolina Forest Watch
South Carolina Progressive Network
St. Francis Initiative, Environmental Leadership
Center of Warren Wilson College, North
Carolina
Tennessee Chapter of the Sierra Club
Tennessee Citizens for Wilderness Planning

Tennessee Environmental Council
 Tennessee League of Women Voters
 Tennessee Parks and Greenways
 The Clinch Coalition, Virginia
 The Compleat Naturalist, North Carolina
 The Nature Conservancy, Tennessee Chapter
 Track Rock Gap Alliance, Georgia
 Upper Chattahoochee River Keeper, Georgia
 Upstate Forever, South Carolina
 Virginia Forest Watch
 Virginia Native Plant Society
 Virginia Wilderness Committee
 Virginians for Wilderness
 Western North Carolina Alliance
 Wild Alabama
 Wild Animals, Rivers, and Trees, Virginia
 Wilderness Road Garden Club, Virginia
 Wildlife Rehabilitation Sanctuary, Georgia
 Wythe Conservation Group, Virginia
 Yellow Creek Botanical Institute, North Carolina

Regional Organizations

Appalachian Mountain Club
 Appalachian Office of Justice and Peace
 Appalachian Regional Conservation Committee
 of the Sierra Club
 Appalachian Voices
 Blue Ridge Environmental Defense League
 Blue Ridge Parkway Foundation
 Carolina Public Relations/Marketing, Inc.
 Chattooga Conservancy
 Coalition for Jobs and the Environment
 Diamond Brand Outdoors
 Dogwood Alliance
 Eastern Forest Partnership
 Eastern Old Growth Clearinghouse
 Highlands Coalition
 Highlander Research and Education Center
 League of Conservation Voters Education Fund
 Maryland Alliance for Greenway Improvement
 and Conservation
 Sierra Club - Southern Appalachian Highlands
 Ecoregion
 Smoky Mountains Hiking Club
 Southern Appalachian Biodiversity Project
 Southern Appalachian Center for Cooperative
 Ownership
 Southern Environmental Law Center
 Southwings
 Wildlaw

National and International Organizations

American Lands Alliance
 American Whitewater
 Back Home Magazine
 Blue Ridge Outdoors Magazine
 Business for Wilderness
 Dagger Kayaks and Canoe

Forest Service Employees for Environmental Ethics
 Heritage Forest Campaign
 National Committee for the New River
 National Parks Conservation Association
 Perception Kayaks
 Religious Campaign for Forest Conservation
 Save America's Forests
 Sierra Club
 The Wilderness Society
 Trees for the Planet
 U.S. Public Interest Research Group
 Wilderness Support Center, TWS
 Wilderness Watch
 Wildlife Forever: The Conservation Arm of the
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 World Commission on Protected Areas

Scientists

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 Geoffrey Hill, PhD, Auburn University
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 John Terborgh, PhD, Co-Director, Center for
 Tropical Conservation, Duke University
 Joe E. Winstead, PhD, President, Southern
 Appalachian Botanical Society

Endorsing Writers

Sheila Kay Adams, musician and author of
Come Go Home With Me
 Chris Bolgiano, author of *The Appalachian Forest*
 and others
 Christopher Camuto, author of *A Fly Fisherman's*
Blue Ridge and others
 Wilma Dykeman, historian and author of
The French Broad and others
 Phillip Manning, Ph.D., naturalist, author of
Islands of Hope, and others
 Janisse Ray, author of *Ecology of a Cracker*
Childhood and others
 Lee Smith, author of *Fair and Tender Ladies*
 and others
 Terry Tempest Williams, naturalist and author
 of *Red*, and others

Glossary

Aquatic diversity areas: Watersheds with high aquatic diversity and ecological intactness, containing significant tracts of public lands.

Biological hotspot: An area characterized by high biological diversity and populations of rare species; includes biological sites.

Biological sites: Areas identified as important through joint studies by SAFC, The Nature Conservancy, and Natural Heritage Programs for diversity and abundance of target species, including rare species.

Biotic integrity (or Index of Biotic Integrity): Numerical measure of the biological completeness of a system. The use of IBIs allows for quantitative comparisons among riverine or other complex systems.

Connectivity: The degree to which the landscape facilitates the natural short- and long-term movements of animals and plant species.

Conservation elements / building blocks: Areas of high conservation priority: old-growth forest, aquatic diversity areas, biological hotspots, Mountain Treasures areas, roadless areas, and high-quality acquisition prospects.

Cove: Sheltered area occupying the drainage between two adjoining slopes up to an elevation of about 5,000 feet. The forests found in coves and along adjacent north- and east-facing slopes in the Southern Appalachians, known as cove hardwood or mixed mesophytic communities, are among the most biologically diverse ecosystems in the United States. These communities are characterized by rich, thick soils, abundant moisture, and a great variety of tree, shrub, and herbaceous species.

Critical aquatic refuge watershed: Watershed smaller than an aquatic diversity area, with high-integrity aquatic ecosystems and populations of imperiled species. These watersheds have relatively high percentages of land in national forest ownership or within purchase boundaries.

Disjunct species: Those with discontinuous ranges characterized by small, isolated populations that live outside the area of its main population. Many disjunct species migrated into the Southern Appalachians during the Pleistocene and remained in favorable, usually high-elevation, locations after the ice age.

Ecological processes: All the biogeochemical processes of intact natural ecosystems that support plant and animal populations; these includes plant and animal interactions, water and air purification, decomposition of dead plant and animal matter, soil renewal, nutrient transport, etc.

Endangered species: The classification used by the U.S. Fish & Wildlife Service to describe an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range.

Endemic species: Those that are native to a particular, usually confined, geographic area. Although endemic species may be locally common, they are not naturally found anywhere outside this area. Endemism usually arises when species are isolated in some manner, such as by climate change.

Flagship focal species: "Charismatic" creatures, such as the black bear and cougar, that have broad public appeal and can serve as symbols for major conservation efforts.

Focal species: Those that require healthy ecological processes. Addressing the needs of focal species can help restore damaged ecological processes (See *Ecological processes*), determine the size of functioning conservation areas, and determine needs for connectivity.

Foundation focal species: Focal species that play a pivotal role in their ecosystem and are known to provide some activity or ecosystem function on which many other species depend. To a large extent, the recovery of the ecosystem itself depends on the recovery and health of foundation species (See *Focal species*).

Keystone focal species: Focal species that enrich the ecosystems in which they live in distinctive and important ways. Their activities or the ways they modify habitat affect other species to a degree disproportionate to their numerical abundance. Removing keystone focal species can cause changes in ecosystem structure and the decline of species diversity.

Landscape analysis: Examination of large areas, focusing on intact, logical subunits of the region, for their ecological significance and habitat potential without respect to political or ownership boundaries.

Landscape conservation areas: Selected sub-regional planning units, often identified as distinct natural features that are large enough to sustain ecological and evolutionary processes.

Mountain Treasures areas: Tracts of land which remain as largely wild and unroaded; these areas were identified in the Southern Appalachians in inventories by The Wilderness Society in conjunction with a large number of conservation groups.

Old-growth forest: Forest that meets specific age, size, structure, and other criteria that vary by forest type. Includes forests identified through field inventories as well as those identified by the Forest Service as "possible old growth".

Refugium: An area of relatively unchanged climate that is inhabited by plants and animals during a period of climatic change, such as glaciation, and remains a biological reservoir from which new dispersion and speciation may take place. 'Refuge' is a less formal term used to describe an area of ecological value to some number of species.

Regional analysis: A detailed examination of the features and characteristics of a region that make it ecologically and geographically distinct. Regional analysis helps to describe a region's natural identity and highlights relationships that are not evident at other levels.

Rewilding: Restoration of large wilderness areas that promote the regulatory role of large predators. Rewilding is a critical step in restoring healthy and resilient natural communities.

Roadless areas: Areas inventoried by the Forest Service using agency criteria of low road density, shape, size, and lack of human presence and sounds. One of the purposes of such an inventory is to identify areas that will be considered for wilderness recommendation.

Threatened species: The classification of the U.S. Fish & Wildlife Service for an animal or plant likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Umbrella focal species: Focal species that require large areas for their home ranges and seasonal movements. Areas large enough to sustain a viable population of an umbrella species include smaller habitats for many other species. The health of umbrella species is a good indicator of the health of landscape-scale habitat.

Unroaded areas: Areas (generally larger than 1,000 acres) that have no roads. Many unroaded areas are not included in the Forest Service inventory of roadless areas.

USFS Special Areas – Forest Service lands included in SAFC's conservation building blocks: Unprotected natural areas, old growth, biological sites, and aquatic diversity/critical watersheds.

Viability: The degree to which a species has a high probability of surviving into the future.

Warm, cool, and cold-water streams: Three broad categories of streams based on their temperature, which has a direct influence on the viability of aquatic species. Water temperature also affects many physical, biological and chemical characteristics of a river or stream. Certain aquatic species are only found in streams of a particular temperature class (e.g., trout are found in cold-water streams; certain snail species in warm-water streams).

Wildlands: Areas that are roadless or unroaded and retain many of their natural ecological processes.

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Credits

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Cover

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Nantahala sunset – Bill Thomas

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Allied Voices for the Great Forest

"SAFC's vision for restoring the Great Appalachian Forest embodies the lessons learned from a bitter history of loss. Born out of wanton destruction, the Appalachian national forests today offer a unique possibility for healing in both a physical and a spiritual sense. The SAFC proposal realizes this possibility by linking love of place with conservation biology. It offers the foundation for a truly sustainable future for this region by protecting the national forests as the core, the wild heart, of that state of mind and country called Appalachia."

— Chris Bolgiano
author of *The Appalachian Forest*
and *Living in the Appalachian Forest*

"It has been a century since we last had a true vision for our Southern Appalachian forests. I am proud to be a part of this effort, one which honors the legacy of my grandfather and the heritage of our grandchildren."

— A. Chase Ambler, Jr., grandson of Dr. Chase P. Ambler, co-founder and secretary-treasurer of the 1899 southern forests movement and the Appalachian National Park Association

"SAFC is doing a splendid job combining science and advocacy to promote a better future for the Southern Appalachians. Your group has the science down pat and is applying it to great effect. Bravo!"

— Dr. John Terborgh
Co-Director, Center for Tropical Conservation, Duke University

"I am very impressed by this bold vision of how to restore and preserve the Southern Appalachian Forest, and hope that it can be realized.

—Jimmy Carter

At the dawn of this new century, a new generation of conservationists gathered in the Southern Appalachians to take stock of the land and lay out a vision for the future. We celebrate their effort and their intention. The health of the land is at stake.

— Mike Dombeck, Former Chief of the U.S. Forest Service, Pioneer Professor of Global Environmental Management, University of Wisconsin.

"*Return the Great Forest* will present the reader with a remarkably clear understanding of the value and importance of the forests to our society, and a clear vision for their future. We all owe thanks to the superb leadership that the Southern Appalachian Forest Coalition is providing."

— Chester E. Sansbury, Director Emeritus, Republicans for Environmental Protection and Board member, REP Environmental Educational Foundation