VISTA MANAGEMENT WITHIN CAROLINA NORTHERN FLYING SQUIRREL HABITAT ALONG THE BLUE RIDGE PARKWAY

Environmental Assessment

December 2008

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Table of Contents

Item **Page**

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CNFS	Carolina Northern Flying Squirrel
DEM	Digital Elevation Model
DBH	Diameter Breast Height
DO	NPS Director's Order
DOI	Department of the Interior
EA	Environmental Assessment
FPPA	Farmland Protection Policy Act
GIS	Geographic Information System
GMP	General Management Plan
HA	Hectare
HRS	Historic Resource Study
MP	Milepost
NCDENR	North Carolina Department of Environment and Natural Resources
NCNHP	North Carolina Natural Heritage Program
NCSHPO	North Carolina State Historic Preservation Officer
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
OSHA	Occupational Safety and Health Administration
Parkway	Blue Ridge Parkway
PIF	Partners in Flight
PLUMs	Parkway Land Use Maps
PwL	Parkway Left
PwR	Parkway Right
T&E	Threatened and Endangered
USC	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

PURPOSE AND NEED

PURPOSE AND NEED FOR ACTION

Vistas including overlooks and roadside vistas were designed along the Blue Ridge Parkway (Parkway) to provide long-distance views to the visiting public. The sequence of views through individual sections of the Parkway were carefully planned. Many of these planned vistas had specific points of interest such as a scenic mountain peak, a rock outcrop, waterfall, lake, stream, or farmstead that were showcased as focal points. Designers envisioned the planned scenic vistas to remain open as a window to the scenic beauty as is evident on the original design Parkway Land Use Maps (PLUMs) drawings that show where they were located and how large an area they included.

The need to actively manage vistas through vegetation removal is essential to keeping this recreation opportunity available to future generations. In the past, the Parkway's overlooks and vistas were maintained by National Park Service (NPS) employees who would periodically cut down any woody vegetation that was growing up and blocking views. Since 2000, the Parkway has maintained the views by hiring privately owned companies under contracts that call for about one-third of the vistas being cleared each year so that each site is cut on a three-year cycle. These contracts identify several species of ornamental trees and shrubs to be left in the vistas, including such plants as flowering dogwood (*Cornus florida*), rosebay rhododendron (*Rhododendron maximum*) and flame azalea (*Rhododendron calendulaceum)*. Evergreen trees are also retained since they provide visual variety, and fir trees, proposed for federal listing as an endangered species, are also not removed.

By virtue of the geographical location and placement of the Parkway motor road along the southern Appalachian chain in North Carolina, the habitat for Carolina Northern Flying Squirrel (*Glaucomys sabrinus coloratus*) (CNFS) was traversed. Listed as an endangered species in 1985, some 25-30 years after the construction of the Parkway through its habitat, Carolina Northern Flying Squirrels now receive additional protection through the Endangered Species Act and through NPS *Management Policies 2006*, that requires units of the National Park Service, including the Blue Ridge Parkway, to "both proactively conserve listed species and prevent detrimental effects on these species."

CNFS can be found in and adjacent to high-elevation spruce-fir forests. The CNFS is adapted to cold boreal conditions and its range has probably been shrinking due to natural warming conditions since the last ice age. Populations are now restricted to isolated areas at high elevations, separated by vast areas of unsuitable habitat. Logging and other activities has also resulted in the reestablishment of deciduous forests favored by the more aggressive southern flying squirrel. Several areas along the Parkway have been identified in the US Fish and Wildlife Service (USFWS) Recovery Plan as Geographic Recovery Areas.

PROJECT BACKGROUND

The Parkway currently manages over 900 vistas and overlooks along its 469-mile length. One hundred sixty-seven vistas and overlooks are in potential Carolina Northern Flying Squirrel habitat and would be considered under the proposed project. These are found along four sections of the Parkway at the following Mileposts (MP):

- MP 350.6 – 366.9 (Mt. Mitchell/Craggy area) -16.3 miles, 42 sites covering 45.7 acres;
- MP 407.5 – 408.4 (Mt. Pisgah area) - 0.9 mile, 8 sites covering 3.2 acres;
- MP 417.9 – 433.3 (Graveyard Fields/Richland Balsam area) - 15.4 miles, 49 sites covering 47.9 acres; and
- MP 445.8 – 460.1 (Waterrock Knob area) - 12.4 miles, 68 sites covering 51.5 acres.

The Grandfather corridor (MP 300-305) is not considered in the proposed project since the elevation is considered to be too low (maximum of 4,400 feet) with a southern aspect to have suitable habitat and no squirrels were captured during 2005, 2006, 2007 and 2008 surveys (Cherry 2008). Several developed areas occur within spruce-fir habitat, including Craggy Gardens, Mt. Pisgah, and Waterrock Knob.

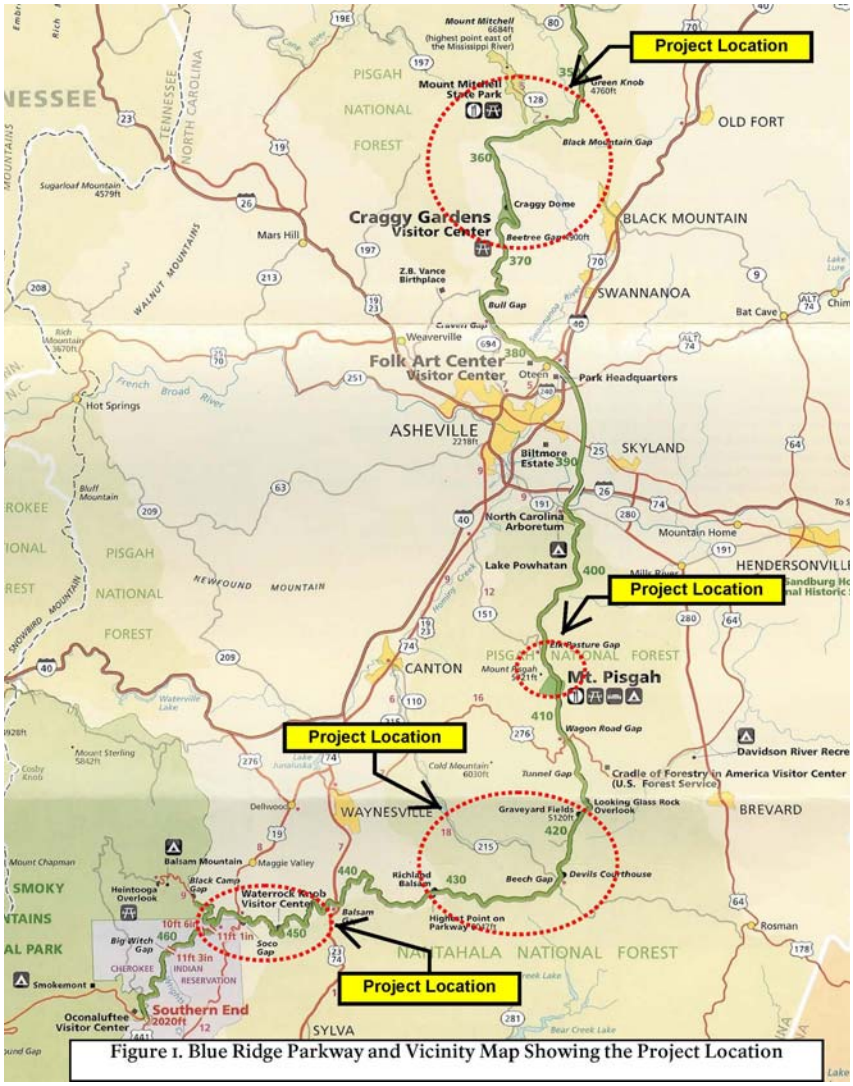

Figure 1. Blue Ridge Parkway and Vicinity Map Showing the Project Location

Biologists with the USFWS have expressed concern regarding the impact of the Parkway's vista management program on CNFS. USFWS concerns are primarily based on the vistas being a barrier to flying squirrel movement and that continued vista clearing could be resulting in the loss of a significant amount of CNFS habitat and individual nest trees.

In 2007 a decision was made by Parkway management to stop clearing vistas within potential CNFS habitat until an evaluation of impact to CNFS was made. Thus, the purpose of this document is to evaluate the impact of continued clearing of existing vistas, both at overlooks and along the roadside, on the CNFS and other associated species. This document will explore the direct, secondary, and cumulative environmental consequences of cyclic vista clearing within potential habitat of the Carolina Northern Flying Squirrel, generally considered to be areas containing or adjoining spruce-fir forests. This document outlines proposed alternatives that would best protect, enhance and preserve CNFS habitat while providing for an enjoyable visitor experience of viewing scenery while traveling the Blue Ridge Parkway.

PARK PURPOSE AND SIGNIFICANCE

The legislated purpose of the Blue Ridge Parkway under the Act of June 30, 1936, is to link Shenandoah National Park in Virginia with Great Smoky Mountains National Park in North Carolina and Tennessee by way of a recreationally oriented motor road. Inherent within this legislation and in the subsequent planning of the Parkway is a fundamental objective of providing opportunities to enjoy the scenic beauty of the southern Appalachian Mountains. Management of Parkway vistas at both overlooks and adjacent to the road provide visitors with breathtaking views of layered mountain ranges unique to North Carolina. The Blue Ridge Parkway is considered the best example of rural parkway design in the country if not the world. There is no other unit in the national park system that can provide the variety of visual resources due to the unique flora, topography, and land use found in the southern Appalachians.

Under the provisions of the Organic Act approved by Congress on August 25, 1916 (39 Stat. 535) creating the National Park Service, the intended purpose of the Blue Ridge Parkway is to conserve, interpret and exhibit the unique natural and cultural resources of the central and southern Appalachian Mountains, as well as provide for leisure motor travel through a variety of environments. Parkway management further promotes public understanding, appreciation and knowledge of Appalachia by preserving and managing the natural, historic and cultural resources contained within park lands. The draft *Historic Resource Study* (HRS), 2005, completed for the Blue Ridge Parkway by Dr. Ian Firth, University of Georgia, found that vistas are a contributing element to the national significance of the cultural landscape that is the Blue Ridge Parkway. Vistas influenced the final alignment, design and layout of the Parkway.

LAWS, REGULATIONS, AND POLICIES

The following laws and associated regulations provided guidance for the development of this Environmental Assessment (EA), selection of the preferred alternative and alternatives, analysis of impacts, and creation of mitigation measures to be implemented as part of the preferred alternative.

The NPS Organic Act (1916) and the General Authorities Act (1970) prohibit impairment of park resources and values. The NPS 2006 *Management Policies* uses the terms “resources and values” to mean the full spectrum of tangible and intangible attributes for which the park was established and is managed, including the Organic Act’s fundamental purpose and any additional purposes as stated in the park’s establishing legislation. The impairment of park resources and values may not be allowed unless directly and specifically provided by statute.
The primary responsibility of the NPS is to ensure that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities to enjoy them.

The evaluation of whether impacts of a preferred alternative would lead to an impairment of park resources and values is included in this EA. Impairment is more likely when there are potential impacts to a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- essential to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park’s General Management Plan (GMP) or other relevant NPS planning documents.

NPS Management Policies 2006 (NPS, 2006) addresses management of biological resources, emphasizing that the NPS will adopt park resource preservation, development, and use management strategies that are intended to maintain the natural distribution and abundance of individual plant and animal populations, groups of plant and animal populations, and migratory animal populations in parks.

Section 4.4 Biological Resource Management "The Service must protect and strive to recover rare, threatened, or endangered species native to national park system units that are listed under the Endangered Species Act, and undertake active management programs to inventory, monitor, restore and maintain listed species' habitats."

Section 4.4.2.3 Management of Threatened or Endangered Plants and Animals "The Service will fully meet its obligations under the NPS Organic Act and the Endangered Species Act to both proactively conserve listed species and prevent detrimental effects on these species."

SCOPING

Scoping is an open process that determines the breadth of environmental issues and alternatives to be addressed in an EA. Scoping involves obtaining internal and external input on project-related issues from resource specialists and the public, respectively. The park conducted internal scoping with appropriate NPS staff and external scoping with the public, including interested and affected groups or individuals and non-NPS agency personnel.

An interdisciplinary team comprising of Parkway staff members contributed to the internal scoping process. This process resulted in definition of the purpose and need, identification of potential actions to address the need, and determination of what the likely issues and impact topics would be.

For external scoping, a public scoping letter and a news release (see **Figures A-1** through **A-2** in **Appendix A**) describing the project and requesting public input was issued to private parties and state, federal, and local agencies on October 1, 2007. **Appendix A** provides a list of individual and agencies/organizations that were sent the scoping letter (**Table A-1**). The external scoping period ended on November 19, 2007. Comments received during the scoping period can be found in **Figures A-3** to **A-5** of **Appendix A**.

THE ENVIRONMENTAL ASSESSMENT

This EA analyzes the environmental impacts that would result from the alternatives considered, including the No Action Alternative. This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, (42 United States Code (USC) 4321 et seq.), the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) 1500 through 1508) for implementing NEPA, and the NPS NEPA compliance guidance handbook (Director's Order (DO)-12, *Conservation Planning, Environmental Impact Analysis, and Decision-making*).

IMPACT TOPICS

Issues and concerns affecting this proposal were identified by an interdisciplinary team assembled specifically for this project, and are grouped into distinct impact topics to aid in analyzing environmental consequences, which allows for a standardized comparison of alternatives based on the most relevant

information. The impact topics were identified on the basis of federal laws, regulations and orders, NPS *Management Policies 2006,* and NPS knowledge of potentially affected resources. A brief rationale for selecting or dismissing each topic is provided below.

Impact Topics Analyzed in this Environmental Assessment

Soils
The proposed activity could have the potential to impact soil resources; therefore, this issue will be addressed in this document.

Vegetation
Vegetation would be impacted by the proposed activity; therefore, this topic will be analyzed in this document.

Threatened and Endangered (T&E) Species – Carolina Northern Flying Squirrel
Carolina Northern Flying Squirrels (*Glaucomys sabrinus coloratus*), occur within the project study area, thus impacts on CNFS will be considered in this document.

Threatened and Endangered Species (Excluding Carolina Northern Flying Squirrel)
The Endangered Species Act of 1973 requires that any proposed federal action consider the potential for affecting the continued existence of any species (either flora or fauna) or its habitat listed by the USFWS as threatened or endangered, or any species proposed to be listed. Also, NPS *Management Policies 2006*, requires the National Park Service, to the greatest extent possible, to manage state and locally listed species in a manner similar to that of federally listed species. There are several rare state- and federally-listed species that are known to occupy sensitive habitats located on or near areas proposed for cyclic vista management. The potential impacts to protected species will be analyzed in this document.

Wildlife
Vista clearing has the potential to displace wildlife, disrupt reproductive efforts, inhibit movements or eliminate wildlife habitats through removal of vegetation and the activities associated with removing the vegetation. Therefore, this topic will be analyzed in this document.

Neotropical Migratory Birds
Executive Order 13186, January 2001, directs each federal agency taking actions having or likely to have a negative impact on migratory bird populations to work with the USFWS to develop an agreement to conserve those birds. The protocols developed by this consultation are intended to guide future agency regulatory actions and policy decisions; renewal of permits, contracts or other agreements; and the creation of or revisions to land management plans. In addition to avoiding or minimizing impacts to migratory bird populations, agencies are expected to take reasonable steps that include restoring and enhancing habitat, preventing or abating pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible. Impacts to migratory birds will be analyzed in this EA.

Cultural Landscapes
Consideration of cultural resource impacts is required under the National Historic Preservation Act (NHPA), NEPA, the 1916 NPS Organic Act, and NPS *Management Policies* (NPS, 2006). All properties and districts listed in or eligible for listing in the National Register of Historic Places (National Register) are considered in the planning of federal undertakings, including projects that are licensed or partially funded by the Federal Government. Established by the National Historic Preservation Act of 1966, the National Register of Historic Places is the nation's official list of buildings, structures, objects, sites, and

districts worthy of preservation for their significance in American history, architecture, archaeology, and culture. The purpose of the Act is to ensure that properties significant in national, state, and local prehistory or history are considered in the planning of federal undertakings. To achieve National Register status a property must possess integrity of location, design, setting, materials, workmanship, feeling or association and meet at least one of the following National Register criteria:

- Association with events that have made a significant contribution to the broad patterns of our history; or
- Association with the lives of persons significant in our past; or
- Embodiment of the distinctive characteristics of a type, period, or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Yielding or potential to yield information important in prehistory or history.

Since management of vistas could affect the components of cultural landscapes, this topic will be addressed in this document.

Recreational/Visual Resources
The provision of a scenic highway and scenic opportunities of the Appalachian Mountains is contained within the Blue Ridge Parkway enabling legislation. The Blue Ridge Parkway is a designed landscape along its entire route. Proposed activities have the potential to impact recreational and visual resources; therefore, this topic will be analyzed in this document.

Human Health and Safety
Proposed activities, including removal of trees, have the potential to impact human health and safety; therefore, this topic will be analyzed in this document.

Socioeconomic Environment
Though the proposed project would not directly displace or relocate residents, it could potentially affect local and regional businesses, especially those that bid on vista clearing contracts and those that depend on tourism. This topic will be analyzed in this document.

Impact Topics Dismissed From Further Consideration

State Listed Species of Concern
Some state listed species of concern are found in CNFS habitat along the Parkway, but they are not exclusive to these habitats. Impacts from any of the alternatives would be at a low level of detection (negligible); therefore, this topic was dismissed from further consideration.

Wetlands
Executive Order 11990, *Protection of Wetlands*, NPS *Management Policies 2006*, Section 4.6.5, *Wetlands*, and NPS DO #77-1, *Wetland Protection*, require an examination of impacts to and protection of wetlands. Proposed activities do not have the potential to impact wetlands; therefore, this issue will not be addressed in this document.

Water Quality
NPS *Management Policies 2006* requires protection of water quality consistent with the provisions of the Clean Water Act of 1977, a national policy to restore and maintain the chemical, physical, and biological

integrity of the nation's waters and to prevent, control, and abate water pollution. Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, the discharge of dredged or fill material into U.S. waters. Recently conducted surveys found few vistas with perennial flowing water; therefore, this topic will not be analyzed in this document.

Prime and Unique Farmlands

In August 1980, the CEQ directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops, such as common foods, forage, fiber, and oil seed; or unique farmland that produces specialty crops, such as fruits, vegetables, and nuts. Since the proposed project area does not meet the definition of farmland as stated in Title 7, Chapter 73, Section 4201 (c)(1) of the Farmland Protection Policy Act (FPPA), it is not applicable to the FPPA. Therefore, the topic of prime and unique farmlands was dismissed as an impact topic in this EA.

Floodplains

Executive Order 11988, *Floodplain Management*, requires all federal agencies to take action to reduce the risk of flood loss, to restore and preserve the natural and beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. The proposed project area is not located near or in any floodplains; therefore this topic was dismissed from further consideration.

Air Quality

Section 118 of the Clean Air Act, as amended (42 USC 7401 et seq.), requires all federal facilities to comply with existing federal, state, and local air pollution control laws and regulations. The implementation of the proposed alternative would present no significant deterioration of ambient air since there would be minimal and sporadic use of motorized equipment, such as chainsaws and string trimmers. For this reason, air quality was dismissed as an impact topic.

Soundscape

In accordance with NPS *Management Policies 2006,* Section 4.9, *Soundscape Management,* the Parkway strives to preserve the natural soundscape. There would be noise produced during vista clearing with the use of chainsaws to remove woody shrubs and some trees. The disruption should not last more than several hours at each site. Visitor disruption would be temporary and minor. The proposed action would not affect natural ambient sound in the long-term. Therefore, soundscape was dismissed from further consideration.

Aquatic Fauna

Just 7% of the vistas along the Parkway have any water in them or nearby and only 2% of the sites are considered Mesic (Chris Ulrey, unpublished data). The work called for under this EA in those few locations where water is present would not create problems that would generally harm aquatic systems and should not harm aquatic fauna. Therefore, this topic will not be analyzed in this EA.

Archeological Resources

The National Park Service is required to, "preserve collections of prehistoric and historic material remains, and associated records, recovered under the authority of the Antiquities Act (16 USC 431-433); the Reservoir Salvage Act (16 USC 469-469c); Section 110 of the National Historic Preservation Act (16 USC 470h-2); Native American Graves Protection and Repatriation Act (25 USC 3001 et seq.), or the Archaeological Resources Protection Act (16 USC 470aa-mm) (36 CFR Part 79)." These regulations, promulgated under the authority of the Secretary of Interior, apply to findings made by historic

preservation professionals that meet qualification standards for federal projects. As no ground disturbance is associated with this project, archeological resources were dismissed as an impact topic in the EA.

Historic and Prehistoric Structures

NHPA, as amended in 1992 (16 USC 470 *et seq*.); NEPA of 1969 (42 USC 4321 *et seq*.); NPS DO #28, *Cultural Resource Management Guideline*, NPS *Management Policies 2006*, and NPS DO #12, *Conservation Planning, Environmental Impact Analysis, and Decision Making* require the consideration of impacts on historic structures and buildings listed in or eligible for listing in the National Register of Historic Places. No structures, historic or prehistoric, are directly involved in this project, thus this topic has been dismissed from further consideration.

Museum Collections

The NPS' *Management Policies 2006* and DO #28, *Cultural Resource Management Guidelines* require the consideration of impacts on museum collections (historic artifacts, natural specimens, and archival and manuscript material). There are no museum objects that would be affected by this proposal; therefore, this topic was dismissed as an impact topic.

Ethnographic Resources

The National Park Service must be respectful of ethnographic resources, those cultural and natural features that are of traditional significance to traditionally associated peoples. These are contemporary peoples whose interest in the park began prior to its establishment (1936) and who have associated with the park for more than two generations (40 years) (NPS *Management Policies 2006*, Sec. 5.3.5.2.6). The proposed project would not affect any ethnographic resources currently known to park staff, and thus, would not be discussed as an impact topic.

Environmental Justice

Presidential Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed project would not have disproportionate health or environmental effects on minorities or low-income populations, or communities; therefore, was dismissed as an impact topic in this EA.

Protection of Children

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children. There would be no activities occurring under any of the alternatives that would disproportionately and adversely affect the health or safety of children; therefore, was dismissed as an impact topic.

ALTERNATIVES CONSIDERED

CEQ regulations for implementing NEPA require that federal agencies explore and objectively evaluate all reasonable alternatives to the preferred alternative, and to briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This chapter describes a range of reasonable

alternatives, including the No Action Alternative, Preferred Alternative, one other action alternative, and two alternatives that were considered and eliminated from further analysis.

ALTERNATIVE A – NO ACTION

CEQ regulations (40 CFR 1502.14) require the assessment of the No Action Alternative in NEPA documents. The No Action Alternative provides a baseline against which to measure the impacts of the other proposed alternatives.

Under Alternative A, no further action would be necessary. Under this alternative, the Parkway would continue to actively manage all vistas not considered within potential CNFS habitat. Approximately 167 vistas within potential CNFS habitat would be abandoned from future management actions and allowed to naturally revegetate causing unacceptable impact to the cultural landscape by loss of historic Parkway vistas. The 2007 ban on cutting vistas identified within potential CNFS habitat would continue.

Advantages

- Potential habitat of the CNFS, and other animals that prefer mid- to late successional habitat, could return to a natural forest successional process adding an additional 148.2 acres of potential habitat.

Disadvantages

- Vistas would gradually become obstructed or totally blocked causing adverse impacts to the cultural landscape through loss of historic Parkway vistas.
- Visitors would seek other recreational activities.
- A decline in tourists may occur and subsequently income to counties and businesses.
- A decline in squirrel populations could continue based on other factors not related to vegetative succession.
- Animals that prefer early successional habitat could be impacted.

ALTERNATIVE B – HISTORIC MANAGEMENT METHOD

Under Alternative B, the Parkway would continue to manage vegetation within all vistas in potential CNFS habitat by mechanical treatment of trees and shrubbery on a cyclic basis. This method would remove or prune all species of vegetation except those listed by federal and state agencies and those identified by the Parkway as attractive ornamental and showy species.

Advantages

- Trees and shrubs could be managed before growth patterns of the vegetation interfered with the open view of the vista.
- Visitor's recreation experience of viewing scenery would remain intact.
- Within potential habitat vistas, flowering trees such as sourwood or dogwood, or flowering shrubs such as mountain laurel or rhododendron, could be adequately controlled with annual pruning. This method of pruning could control plant growth and produce compact low growing shrubs, which would not interfere with the open view. Pruning at the proper time would frequently provide a more profuse showing of flowers.

- Vistas would be cleared to more nearly reflect the designed, cultural landscape envisioned by the Parkway design team.
- Habitat for animals that prefer open, edge or early successional habitat would be maintained.

Disadvantages

- Cyclic maintenance of vistas could have an impact on viable populations of CNFS and other rare plants or animals that prefer late successional forests.
- Park Service could be out of compliance with the Endangered Species Act and the USFWS Recovery Plan.
- Vegetation as it reaches mature heights outside the current vista cutting limits would begin to obscure scenery.
- This type of cutting is costly, requires many more man hours than is available by park staff, and is an inefficient means of keeping vistas intact. More area is clear cut every third year than is necessary to maintain the view.

ALTERNATIVE C – DEVELOP DESIRED FUTURE CONDITIONS FOR INDIVIDUAL VISTA CLEARINGS THAT HAVE POTENTIAL TO AFFECT CNFS (NPS PREFERRED ALTERNATIVE)

Under Alternative C, the Parkway would develop management guidelines and mitigation objectives utilizing mechanical treatment techniques for each individual vista within potential CNFS habitat. These actions would be aimed at managing the site to allow visitors a view of distant landscapes while maintaining or improving habitat for CNFS. The primary focus would be to manage the vegetation at the vista by removing spruce and other conifer species only as necessary to open up or to maintain the view, while keeping enough trees so squirrels could still glide from one tree to another without having to run across open ground. Additionally each site would be evaluated to see if mature trees at the vista edges would need to be removed or trimmed or if the boundaries of the vista could be modified to reduce the total area cut without impacting the view. Implementation of mitigation measures would both maintain the vista for visitor enjoyment and enhance potential CNFS habitat.

Advantages

- The current moratorium on cutting flowering shrubs and vistas outside and within CNFS habitat has caused many vistas to be overgrown or degraded. Any vegetation manipulation that would benefit CNFS habitat would also improve a visitor's ability to view scenery.
- Non-CNFS dependent species of vegetation could be removed or trimmed before growth patterns of the vegetation interfere with the open view of the vista.
- CNFS's potential habitat would be enhanced by specific treatment strategies for each individual vista.
- Other rare animals and plants could benefit from management actions taken to improve habitat for CNFS.
- Visitor's recreation experience of viewing scenery would remain intact or be improved by managing individual vistas in potential habitat to meet the desired future condition intactness by selective spatial and scheduled zone cutting of conifer and deciduous tree species.
- Flowering trees such as sourwood or dogwood, or flowering shrubs such as mountain laurel or rhododendron, could be adequately controlled with annual pruning. This method of pruning could control plant growth and produce compact low growing shrubs, which would not interfere with the open view. Pruning at the proper time would frequently provide a more profuse showing of flowers.

Disadvantages

- Increased annual monitoring of CNFS nesting boxes.

ALTERNATIVES CONSIDERED BUT DISMISSED

CEQ regulations for implementing NEPA require that federal agencies explore and objectively evaluate all reasonable alternatives to the Preferred Alternative, and to briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This section describes alternatives to the Preferred Alternative that were considered and eliminated from further study, and the rationale for their elimination.

Scenic Vista Clearing By Controlled Burns

This method was dismissed because research findings on the Parkway indicated that there are few days in a year that are conducive to burning and vista burns increase sprouting of hardwoods, including some exotic trees. Research in the Great Smoky Mountains National Park and Shenandoah National Park, both of which have similar climate and topography to the Parkway, has shown that this method can be very dangerous and difficult to control. All vegetation is not similarly affected by fire. Fire is not selective, killing some plants and encouraging the growth of others. In some cases, native trees or shrubs could be removed allowing some exotic species to become dominant. There is extensive development including many homes adjacent to the narrow Parkway corridor that could be destroyed if a controlled burn became a wildfire. Fire is also a highly dangerous element to the over 25 million visitors that travel the Parkway each year, as well as Parkway employees and local firefighters.

Scenic Vista Clearing By Animal Grazing

Research has found that animal control, such as goat grazing, is much more effective if concentrated within a single area. The 167 vista areas are widely scattered along approximately 100 miles of the Parkway. Moving goats from one location to another would not be cost effective or timely. Staging goats adjacent to the motor road could prove to be dangerous for Parkway motorists. There are few areas with adequate existing fencing; therefore, tethering or other methods of restraint would be necessary to ensure our visitor's safety. Goats are not selective in their grazing habits and could eat the desirable lower growing native plants rather than the undesirable larger trees, shrubs, and exotics needed removed from the vista area.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with DO-12, the NPS is required to identify the “environmentally preferred alternative” in all environmental documents, including EAs. The environmentally preferred alternative is determined by applying the criteria suggested in NEPA, which is guided by the CEQ. As stated in Section 2.7 (D) of the NPS DO-12 Handbook, “The environmentally preferred alternative is the alternative that will best promote the national environmental policy expressed in NEPA (Section 101(b)).” This environmental policy is stated in six goal statements, which include:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

3. Attain the widest range of beneficial uses of the environment without degradation, risk to health and safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural, and natural aspects of our national heritage, and maintain wherever possible, an environment which supports diversity and variety of individual choice;
5. Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (NEPA, 42 USC 4321-4347).

In sum, the environmentally preferred alternative is the alternative that, not only results in the least damage to the biological and physical environment, but also that best protects, preserves, and enhances historic, cultural, and natural resources.

The approach for incorporating these national goal statements into the determination of the environmentally preferable alternative used a qualitative comparison rating of the alternatives under consideration. Each alternative assessed in this EA was rated as to how well it contributes to meeting each of the six NEPA goals. Given the very general nature of the goal statements, with no specific measurable parameters identified, precise, quantitative ratings are not feasible. Therefore, three general qualitative levels were established to rate alternatives as to how well they contribute to meeting each goal: 1) the alternative contributes substantially to meeting that goal (denoted by a check mark); 2) the alternative neither much contributes nor much detracts to meeting that goal (denoted by a circle); and 3) the alternative interferes with that goal achievement (denoted by an "X"). Each rating was judgmentally based on an alternative's predicted impacts on the relevant environmental resources. For example, an alternative that adversely affects historic, cultural, and natural resources would get a low rating in regard to NEPA goal #4. Although more than one alternative may contribute substantially towards meeting a goal, one may contribute to a greater level than another. In these cases, the use of multiple check marks denotes the difference between alternatives, with the larger number of check marks indicating the greater level of goal achievement.

A summary of this process for each alternative is presented in **Table 1.** Below the table, a discussion is provided for each alternative explaining the basis for each of the ratings given to that alternative. Identification of the environmentally preferred alternative involved comparing the entire set of ratings for each alternative. In the absence of any indication of Congressional intent otherwise, each of the six NEPA goal statements was considered equally important.

Table 1. Selection of the Environmentally Preferred Alternative			
National Environmental Policy Act Goals	**Alternative A (No Action)**	**Alternative B (Historic Method)**	**Alternative C (Preferred Alternative)**
Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.	**X**	**X**	√
Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.	**X**	√	√
Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences.	**X**	**X**	√
Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, whenever possible, an environment that supports diversity, and variety of individual choice.	**X**	√	√
Achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities.	**X**	**O**	√
Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.	**O**	**O**	**O**
Legend: Contributes substantially to meeting the goal = √ Neither much contributes nor much detracts to meeting the goal = O Interferes with that goal achievement = **X**			

Activities taken under this EA would affect natural, cultural, recreational and visual resources, resulting in the alternatives potentially having both negative and positive impacts under each of the individual goals. Whether the impacts would be positive, negative or neutral has been determined based on a combination of how the three resource types are impacted.

In general, Alternative A would allow the vistas to grow up reducing recreation opportunities (views to visitors) and removing cultural scenes (historic vistas) while improving natural resources (habitat for Carolina Northern Flying Squirrels). Under Alternative B, the cultural and recreational resources would be preserved but there would be a negative impact on the natural resources and specifically on CNFS.

Only Alternative C would provide positive or neutral contributions under each of the six goals.

While this alternative would not completely protect the cultural scene and views, there are mitigating measures that would preserve the majority of these sites. Though some viewing areas would be eliminated (17 within a 45 mile area; averaging one vista per 2.5 miles) under this alternative, several of the vistas that would be eliminated provide a view or contain a view that no longer meet park standards or focuses on a scene which could be viewed from another vantage point, e.g., rock quarries. Many of those vistas that would be modified under this alternative involve a change in the vegetation footprint that would be managed (e.g., allowing some trees to grow within a prescribed mathematical arrangement) but not fully obscure the viewing area (the distant view would still be visible). This alternative would not significantly reduce the viewing platform offered to visitors of the park, and thus would not adversely impact the

cultural landscape. The historic management method cut all woody vegetation within a prescribed vista area. This alternative would allow for the establishment of conifers and nest trees within the managed area, enhancing the view by providing variety and foreground visual features. The changes proposed in this alternative should not reduce visitation to the park or adversely impact local businesses. Alternative C would also provide improved habitat for CNFS and would benefit other wildlife and vegetation.

In conclusion, Alternative C would provide the highest level of protection of natural and cultural resources while enhancing the habitat of an endangered species. This alternative would provide the best overall compromise between management of views by providing a relatively uncompromised recreational resource of viewing southern Appalachian landscapes and protection of an endangered species. Therefore, Alternative C would be the environmentally preferred alternative.

MITIGATION MEASURES

For all action alternatives, best management practices (BMP) and mitigation measures would be used to prevent or minimize potential adverse effects associated with vista cutting within potential CNFS habitat. These practices and measures would be incorporated to reduce the magnitude of impacts and ensure that major adverse impacts would not occur. Mitigation measures undertaken during project implementation would include, but would not be limited to, those listed below. The impact analysis in the *Environmental Consequences* section in this EA was performed assuming that these BMPs and mitigation measures would be implemented as part of all action alternatives.

- Vista management within potential CNFS habitat would utilize the table found in **Appendix B** that outlines specific treatments for each vista (**Table B-1**).
- On-going surveys would be conducted for T&E species during site visits as part of the vista management work and at other times as deemed necessary to ensure that these species are not present.
- Park resource management staff would identify individual species of vegetation and trees critical to CNFS habitat that should not be cut as noted in **Table B-1**.
- Within vistas containing CNFS habitat, the following modification criteria would be utilized:

    - Do not cut conifers except as identified by park resource management staff.
    - Manage for health of conifers, thin to promote growth of specimens.
    - Distance between conifers should not be more than 80% of the height of the trees (50’ tall trees should be no more than 40’ apart).
    - Retain large birch trees as nest cavity trees in vistas of suitable size.

COMPARISON OF ALTERNATIVES

Table 2 compares the potential environmental impacts resulting from the three alternatives. Potential impacts are grouped according to environmental resource topic. The *Environmental Consequences* section of this EA contains a detailed discussion of these potential impacts by resource topic.

Table 2. Summary Comparison of Impacts

Impact Topic	Alternative A *No Action*	Alternative B *Historic Management Method*	Alternative C *Develop Desired Future Conditions for Individual Vista Clearings that have Potential to Affect CNFS (Preferred Alternative)*
Soils	Moderate, short- and long-term, beneficial impacts.	Moderate, beneficial impacts, with high potential for landslides.	Negligible, short- and long-term, beneficial impacts.
Vegetation	Moderate to major, short- and long-term, beneficial impacts.	Moderate to major, short- and long-term, adverse impacts.	Moderate, short- and long-term, beneficial impacts.
Carolina Northern Flying Squirrels	Negligible, short-term, beneficial impacts and negligible to moderate, long-term, beneficial impacts.	Minor, long-term, adverse impacts.	Negligible, long-term, beneficial impacts overall, with possible moderate, long-term impacts at a few individual sites.
T&E Animals (except CNFS)	Negligible, long-term, beneficial impacts.	Negligible, long-term negative impacts.	Negligible, short- and long-term, beneficial impacts.
Wildlife	Negligible to minor, long-term, negative impacts, depending on species.	Negligible to moderate, long-term, negatives impacts, depending on species.	Negligible to minor, long-term, beneficial impacts, depending on individual species.
Neotropical Migratory Birds	Minor, long-term, beneficial impacts for birds associated with spruce-fir forest.	Negligible to minor, long-term, beneficial impacts.	Negligible to moderate, long-term, beneficial impacts, with most benefit for birds dependent on spruce-fir and northern hardwood forests.
Cultural Landscapes	Moderate to major, long-term, adverse impacts.	No impacts to the cultural landscapes.	Minor, long-term, beneficial impacts.
Recreational/Visual Resources	Minor to major, long-term, adverse impacts.	Minor adverse impacts to recreational resources and minor to moderate, long-term beneficial impacts to visual resources.	Moderate, long-term, beneficial impacts to recreational and visual resources.
Human Health and Safety	Minor to moderate, short- and long-term, adverse impacts to human health and safety.	Negligible, long-term, adverse impacts to employee, visitor and contractor health and safety.	Negligible, long-term, beneficial impacts to employee, visitor and contractor health and safety.
Socioeconomic Environment	Minor to moderate, short- and long-term, adverse impact to socioeconomic environment.	Negligible, short- and long-term, beneficial impacts to socioeconomic environment.	Negligible, short- and long-term, beneficial impacts to socioeconomic environment.

AFFECTED ENVIRONMENT

In accordance with CEQ regulations (40 CFR 1502.15), this section describes the existing conditions of the area(s) which would be affected by the alternatives under consideration in this EA. As stated in DO-12, the NPS NEPA compliance guidance handbook, only those resources that may experience impact or be affected by alternatives under consideration are described in this section.

The proposed project area falls within the Pisgah District and contains a mosaic of interesting landforms and natural resource features, including 16 major watershed basins, three municipal watersheds, a variety of slopes (mostly steep) and exposures, eight federally-listed rare and endangered plants and animals, several significant high-elevation wetlands, and more than 30 natural heritage areas.

SOILS

The dominant soil order present in the affected environment is inceptisols. These soils are characteristic of soils with moderate horizon development due to steep topography and resistant parent material. Boulders and outcrops of bedrock are conspicuous but extensive on mountain slopes. Soils that occur on side slopes and ridges are well drained, and range from very deep to shallow over hard bedrock, saprolite, or soft bedrock. Soils that occur above 4,800 feet elevation are subject to extreme cold temperatures and high winds. Some of the soils that commonly occur in the affected area include: Cheoah, Cowee, Evard, Plott, Soco, Stecoah, Tanasee, and Wayah. All present moderate to severe erosion hazards, depending on steepness of slope.

VEGETATION

Forest types in the park are generally classified as Appalachian oak forest, southeastern spruce-fir forest, and northern hardwoods. The predominant vegetation form is montane cold-deciduous broad-leaved forest dominated by the genus *Quercus* (Oak). The oak forest type consists of black, white, and chestnut oaks that dominate dry mountain slopes; pitch pine is often a component along ridge tops. Mesophytic species such as yellow poplar, red maple, northern red oak, and sweet birch dominate the valleys and moist slopes. Smaller areas of cold-deciduous broad-leaved forest with evergreen needle-leaved trees are present in the intermontane basins, with the hardwood-pine cover type of scarlet, white, blackjack, and post oaks and Virginia pine. Table Mountain pine, a fire-dependent species with serotinous cones, occurs on xeric ridge tops where fire was historically more common. Eastern white pine dominates small areas of coarse-textured soils and parts of the Blue Ridge escarpment joining the southern Appalachian Piedmont Section. Mesic sites at higher elevations (4,500 ft, 1,360 m) are occupied by northern hardwoods (e.g., sugar maple, basswood, and buckeye); drier sites are dominated by northern red oak. The broad-leaved forest changes to evergreen needle-leaved forest with conical crowns (e.g., red spruce, Fraser fir) above altitudes of about 5,000 to 6,000 ft (1,800 m). While plant inventories are currently underway, there are currently 1,400 species of vascular plants that are known to occur in the park.

The rare plant communities included in **Table 3** occur throughout the park and across environmental conditions. Protection of these communities involves protecting all of the components of the community.

Table 3. List of Rare Plant Communities within Blue Ridge Parkway Lands	
COMMUNITY NAME	**G-RANK**
BOULDERFIELD FOREST	G3
CAROLINA HEMLOCK BLUFF	G2G3
FRASER FIR FOREST	G1
GRASSY BALD	G2
HIGH ELEVATION GRANITIC DOME	G2
HIGH ELEVATION ROCKY SUMMIT	G2
HIGH ELEVATION SEEP	G3
MONTANE ALLUVIAL FOREST	G2
MONTANE MAFIC CLIFF	G2
NORTHERN HARDWOOD FOREST (BEECH GAP SUBTYPE)	G2
RED SPRUCE--FRASER FIR FOREST	G2
SOUTHERN APPALACHIAN BOG (NORTHERN SUBTYPE)	G1
SOUTHERN APPALACHIAN BOG (SOUTHERN SUBTYPE)	G1
SPRAY CLIFF	G2
SWAMP FOREST-BOG COMPLEX (TYPIC SUBTYPE)	G2-G3

THREATENED AND ENDANGERED SPECIES

Plants

There are currently 85 known rare plants that occur on Blue Ridge Parkway lands. Within the proposed project area four species are federally listed, they are: *Gymnoderma lineare* (rock gnome lichen), *Geum radiatum* (mountain avens), *Liatris helleri* (Heller's blazing star), and *Isotria medeleoides* (small whorled pogonia). In addition, eight species are listed as federal species of concern: *Calamagrostis cainii* (Cain's reed grass), *Cardamine clematitis* (mountain bittercress), *Chelone cuthbertii* (Cuthbert's turtlehead), *Delphinium exaltatum* (tall larkspur), *Geum geniculatum* (bent avens), *Lilium grayi* (Gray's lily), *Silene ovata* (mountain catchfly), and *Euphorbia purpurea* (glade spurge).

Gymnoderma lineare (rock gnome lichen) was federally listed as endangered on January 18, 1995. This rare lichen is primarily found above 5,000 feet on northern exposed vertical rock faces where water flows periodically, only at very wet times. It prefers sites that are generally open with a moderate amount of light. It can occur on southern and western exposures when there is partial canopy coverage. *G. lineare* is known to occur at several locations on the Parkway.

Geum radiatum (mountain avens) was federally listed as endangered on April 29, 1993. Occurring on high elevation rock outcrops, this plant is a perennial herb with basal rosettes of leaves arising from horizontal rhizomes. Bright yellow flowers are borne atop a stem 2 to 5 decimeters tall. Flowering occurs from June through September; fruiting occurs from August through October. The rhizomes of spreading avens are believed to be capable of surviving for decades, but continued failure in seed production or clonal spread poses a definite threat to long-term survival and recovery of the species.

Liatris helleri (Heller's blazing star) was federally listed as threatened on November 19, 1987. This species occurs on xeric rock outcrops at elevations greater than 4,500 feet. Heller's blazing star is a perennial herb which grows from a cormlike rootstock 2 to 5 centimeters broad. One or more erect or arching stems arise from a tuft of narrow pale green basal leaves. The stems reach up to four decimeters

in height and are topped by a showy spike of lavender flowers 7 to 20 centimeters long. The stems, usually stiffly erect, are proximally purplish, distally green, strongly ribbed, and angulate. Blooming occurs in August and fruiting in September-October.

Isotria medeoloides (small whorled pogonia) was listed as endangered on October 12, 1982. The small whorled pogonia life cycle and habitat requirements are widely varied, but in the southern Appalachians, it typically emerges in April and flowers in late April to mid-May. It occurs on upland sites generally within second or third growth, mixed deciduous or mixed deciduous/coniferous forests. Soils are moderately high in soil moisture, highly acidic, and generally nutrient poor. Small whorled pogonia occurs in both young and old forests with relatively open understory, moderate ground cover, and near features that "create long-persisting breaks in the forest canopy" (Recovery Plan, 1992).

Calamagrostis cainii (cane's reed grass) is a grass that occurs at high elevation rocky summits. *Cardamine clematitis* (mountain bittercress) is a small herbaceous perennial plant whose habitat includes high elevation seeps, shaded outcrops, and stream banks. *Chelone cuthbertii* (cuthbert's turtlehead) is an herbaceous perennial that occurs in bogs and wetlands and low to middle elevations in the southern Appalachians. *Delphinium exaltatum* (tall larkspur) is a tall (1-2 m) herbaceous perennial that occurs on deep humus nutrient rich soils. This species requires moderate sun, typical of conditions found along the forest edge. Competition with invasive exotic plants is a concern with this species. *Euphorbia purpurea* (glade spurge) is a tall (1 m) herbaceous perennial that occurs in generally moist nutrient rich soils. This species does not compete well with invasive exotic plants. Glade spurge can tolerate a wide range of light conditions, from full sunlight to deep shade. *Geum geniculatum* (bent avens) is a tall (up to 1 m) perennial that occurs in high elevation forests, stream banks, and seepage slopes. *Lilium grayi* (Gray's lily) is known to occur along trails and along roadside habitats in the park. This herbaceous perennial prefers moist habitats at mid to upper elevations (4,000 to 6,000 feet). Light conditions are variable for this species, ranging from full sunlight in open meadows, to filtered shade in forested settings. Recent concerns about decline in this species due to a suite of native fungi has spurned interest in experimenting with increasing light levels and improving air movement at sites where this species occurs. *Silene ovata* (mountain catchfly) grows mainly in upland forests on slopes in humus-rich, rocky, often thin soils. The plants are normally in partial shade. *Silene ovata* is known to be a perennial, but its longevity is unknown. Colonies of the species may be locally extensive because of the potential ability of the plant to produce individual clumps from a system of creeping underground rhizomes. The mountain catchfly is not an aggressive or competitive herb. Competition from exotic plant species can be a threat to populations. These species, as well as the uncontrolled growth of native woody plants and saplings, can form dense stands and eliminate ground layer herbaceous species (including this herb) due to excessive shade.

Animals

Three federally-listed animal species are known to occur within the park and one of these, Carolina Northern Flying Squirrel (*Glaucomys sabrinus coloratus*) (US, NC Endangered), may occur near proposed vista management areas. **Table C-1** in **Appendix C** lists all federally listed animal species that occur on Parkway lands. Virginia big-eared bats (*Corynorhinus townsendii virginianus*) and bog turtles (*Glyptemys muhlenbergii*), while found on Parkway lands, are not known to occur near the area considered under this EA. Four other federally listed species, Indiana bat (*Myotis sodalis*) (US, NC Endangered), gray bat (*Myotis grisescens*) (US, NC Endangered), eastern cougar (*Felis concolor couguar*) (US, NC Endangered), and spruce-fir moss spider (*Microhexura montivaga*) (US Endangered), are not known to, but could occur within the park. Each of these species will be discussed separately

below. Saint Francis' satyr (*Neonympha mitchellii francisci*) (US Endangered) is not known from the park and has not been found near the Parkway in the area covered by this EA and will not be discussed here.

Bald eagles (*Haliaeetus leucocephalus*) (US, VA Threatened, NC Endangered) and Kirtland's warblers (*Dendroica kirtlandii*) (US, VA Endangered) migrate across the Parkway and do not use Parkway lands enough to be impacted. They will not be considered in this document.

Species on the North Carolina or Virginia threatened and endangered lists that would not be impacted include engraved covert (*Fumonelix orestes*) (NC Threatened), peregrine falcon (*Falco peregrinus*) (NC Endangered, VA Threatened), Appalachian Bewick's wren (*Thryomanes bewickii altus*) (NC, VA Endangered), Henslow's sparrow (*Ammodramus* henslowii) (VA Threatened) and Wehrle's salamander (*Plethodon wehrlei*) (NC Threatened). **Table C-2** in **Appendix C** lists all North Carolina state listed animal species that occur on Parkway lands; however, these species will not be discussed in this EA.

Carolina Northern Flying Squirrel (*Glaucomys sabrinus coloratus*)

The Carolina Northern Flying Squirrel was federally listed by the US Fish and Wildlife Service as an endangered subspecies in 1985 (USFWS 2006). Unlike other American squirrels, flying squirrels are nocturnal animals, sleeping in nests during the day and foraging at night. Despite their names they do not fly but instead take gliding leaps of up to 50m or more by using flaps of skin between their fore and rear legs (Howell 1918).

Flying squirrels are separated into two species in the genus *Glaucomys*, southern flying squirrels (*Glaucomys volans*) and northern flying squirrels (*Glaucomys sabrinus*), with 10 (Braun 1988) and 25 (USFWS 1990) subspecies respectively. *G. volans* are found in temperate forests in the eastern half of the United States, north into southeastern Canada and in scattered populations in Central America (Patterson *et al.* 2003), while *G. sabrinus* are found in the northern United States and Canadian boreal coniferous and mixed coniferous/hardwood forests (USFWS 1990). The Recovery Plan (USFWS 1990) lists eight sites containing *G. s. coloratus*, including the Black, Great Balsam and Plott Balsam Mountains along the Parkway. In Western North Carolina Northern Flying Squirrels are generally at higher elevations while the common southern flying squirrels occupy lower locations. An additional site in Virginia has been identified (Hackett and Pagels 2002) since the Recovery Plan was prepared.

Radio tracked animals have demonstrated a biphasic activity pattern with peaks between sundown and midnight and 1-3 hours before sunrise (Weigl and Osgood 1974: Menzel 2003). Estimated home ranges of CNFS from three studies in North Carolina, one in Virginia and one in Oregon, and one study of Virginia Northern Flying Squirrel (VNFS) from West Virginia are shown in **Table 4**. In a study comparing Northern Flying Squirrel (NFS) movement in Oregon, Martin and Anthony (1999) found that the squirrel home range size and daily movement did not differ between old growth and second-growth sites.

Weigl *et al.* (1992) suggest that CNFS feed commonly on hypogeous fungi, though this is different than what Menzel (2003) found with VNFS where the fungi were not that common due to a patchy distribution. In Oregon Maser *et al*. (1985) found that at least 90% of the NFS ingested food consisted of fungi and lichen, including 20 genera of hypogeous fungi. Loeb *et al*. (2000) found that hypogeous fungi are found more often in areas with spruce trees than in areas without these trees. Flying squirrels in the Pacific Northwest also eat hypogeous fungi (Meyer *et al.* 2005) and other plant parts including lichens, fruits, seeds and conifer seedlings (Thysell *et al*., 1997). While gaining nutrients from fungi flying squirrels also contribute to the dispersal and diversity of fungi and microbial species (Thysell *et al*., 1997, Maser *et al*. 1985), playing an important role in the maintenance of these systems.

Flying squirrels are arboreal animals and often travel through the woods by gliding from tree to tree rather than moving across the ground, though the Recovery Plan (USFWS 1990) does cite several studies that note that at times CNFS do spend substantial amounts of time on the ground. During this time, on the ground cover, such as ferns and rhododendron is important, providing shelter as the animal forages (Hackett and Pagels 2002), though the understory vegetation and ground cover is often very different between sites containing CNFS (Payne and Young 1989).

In a New Brunswick study, northern flying squirrels glided from 3.2 to 45 m with more than one-half of the glides terminating on a vertical tree trunk and others landing just short of a tree (Vernes 2001). This ability to glide over areas is important along the Blue Ridge Parkway as the Parkway presents a potential barrier to the movement of these animals. This barrier is not limited to the physical width of the road and shoulders but also can include dense ground vegetation next to the road, exposed terrain in grassy bays, increased risk of predation and vehicle traffic (Weigl *et al.* 2002). Bednarczuk and Judge (2003) note that while southern flying squirrels could cross a four-lane road, though unsure whether the squirrel ran or glided across, it was more common for squirrels to cross a two-lane road. Bendel and Gates (1987) radio-tracked southern flying squirrels and found that they avoided gliding across clear cuts (0.5 – 4.7 ha) but were able to move around these sites. Menzel (2003) found a significant number of G. s. fuscus nests near hiking trails and skidder, possible due to the openness that allowed easier gliding by the squirrels.

Carolina Northern Flying Squirrel are primarily found in the ecotone between spruce-fir forests and northern hardwoods (USFWS 1990), possibly as an important foraging site due to an association of one of their major food sources, hypogeous fungi, and spruce trees (Loeb *et al.* 2000). Hackett and Pagels (2002) found that the probability of finding CNFS decreased with increased distance to the nearest red spruce tree. Payne *et al.* (1989) only found G. s. *coloratus* and G. s. *fuscus* at sites with red spruce in the canopy, though other canopy species differed between the northern and southern sites. Vernes (2001) notes that NFS more often used coniferous trees, including spruce, as landing points after gliding, despite a dominance of nonconiferous trees, probably because of the rough texture and better traction they provide.

Yellow birch (*Betula alleghaniensis*) is also an important tree species for CNFS. In Virginia they used yellow birch for 63% of their nests with all nest trees ranging from 15.7 to 63.5 cm diameter breast height (DBH) (Hackett and Pagels 2003). VNFS in West Virginia most often nested in Norway spruce (*Picea abies*), though not more than expected based on their abundance, but nested in both yellow birch and Fraser magnolia (*Magnolia fraseri*) more than expected based on availability (Menzel *et al*. 2004).

Table 4. Home Range Estimates of Northern Flying Squirrels from Six Studies

	Hackett and Pagels 2002 (CNFS - VA)	**Weigl and Osgood 1974 (CNFS - NC)**	**Weigl, *et al.* 1992 (CNFS - NC)**	**Weigl *et al.* 2002 (CNFS - NC)**	**Menzel 2003 (VNFS - WV)**	**Martin and Anthony 1999 (NFS – OR)**
Home range - Overall	3.4 – 18.2 ha (Mean 9.4 ha)	2 -3 ha	1.2 – 22.6 ha (Mean 8.9 ±2.2ha)	3.3 – 51.4 ha (Mean 15.9 ha)	-----	-----
Home range – Summer	-----	-----	6.2 ±1.9 ha	7.5 ha	-----	-----
Home range – Winter	-----	-----	11.5±3.8ha	17.4 ha	-----	-----
Home range – Males in Winter	-----	-----	16.9±3.2ha	-----	-----	-----
Home range – Females in Winter	-----	-----	3.4ha	-----	-----	-----
Home range – Females in Summer	-----	-----	10.5ha	-----	-----	-----
Home range – Males	18.2 ha Max. 9.5±7.7 ha	-----	-----	20.3 ha	66.8±29.4 ha	5.9±0.75 ha
Home range – Females	15.0 ha Max. 8.0±6.1 ha	-----	-----	4.9 ha	17.6±10.1 ha	3.9±0.37 ha

(CNFS indicates Carolina Northern Flying Squirrel studies in Virginia (VA) or North Carolina (NC). VNFS indicates Virginia Northern Flying Squirrel (Glaucomys sabrinus fuscus) study. WV = West Virginia. OR = Oregon)

This spruce-fir habitat is distributed over about 90,100 acres in the southern Appalachians, about 0.2% of the total land coverage, (SAMAB 1996) in an island-like manner resulting in large distances separating each population of squirrels (Weigl *et al*. 1992). This distribution suggests that it is a relict species, retreating to the north and upslope as glaciers receded after the last ice age and both climatic and vegetation changes occurred (Weigl 1977). Spruce-fir forests in the southern Appalachians were reduced by about 50% due to large-scale logging from 1880 to 1930 (Saunders 1979) though today there is virtually no logging of spruce occurring in the southern Appalachians (SAMAB 1996a). While logging is no longer a threat to the spruce-fir forests, and despite 93% of the forests being under public ownership, there are new threats from non-native pests, atmospheric pollution and climate change, and Boyce and Martin (1993) state that their "forecast is for continued shrinkage and possible extinction" of spruce-fir forests in the southern Appalachians.

In addition to the long-term problems associated with small, isolated populations, there are other threats to CNFS in the southern Appalachians. The Recovery Plan (USFWS 1990) lists other threats to CNFS survival, including habitat loss, habitat fragmentation, introduced pests, recreational activities, increased development and global warming. Warming weather conditions could not only alter the vegetative communities but could also increase the range of the competitive southern flying squirrel and allow for the spread of the parasite *Stronglyoides robustus* (Weigl *et al*. 1992).

Indiana Bat (*Myotis sodalis*)

Indiana bat is an endangered species that occurs throughout much of the eastern United States. During the winter they hibernate in large groups in caves and mines. With 87% of all Indiana bats using just seven hibernacula, Indiana bats are highly vulnerable to disturbances, habitat change or environmental contaminants at this time. In the spring the bats migrate north and females form maternity colonies, roosting under the loose bark of dead, large-diameter trees near small to medium-sized streams between mid-April through mid-August (NC Natural Heritage Program (NCNHP) Undated). The diet of Indiana bats is largely nocturnal insects. Vista management activities do not remove standing dead trees unless they are a hazard to visitors. Trees along the Parkway near locations where Indiana bats have been found would be assessed prior to removal for potential bat habitat. None of the vistas contains caves and very few have any water flowing through or next to them. Since a few vistas and overlooks might be close enough to water to attract these bats they could be impacted by vista management activities.

Gray Myotis (*Myotis grisescens*)

Gray myotis use caves in both summer and winter. They forage for insects over lakes and streams. There are recent records of gray myotis from Buncombe, Swain and Haywood Counties in North Carolina (NCNHP 2006a), though it has not been found on park lands. This endangered species should not be affected by vista management activities.

Eastern Cougar (*Felis concolor couguar*)

Parkway employees and other land management agencies in the southern Appalachian Mountains continue to receive occasional reports of cougar sightings. While many of these reports likely involve bobcats, dogs or other large animals, some come from people who are familiar enough with large mammals to be considered credible sources. Many biologists have assumed that even if these were valid reports of cougars that they were of non-native cats that were raised as pets and were released into the wild as the owner realized the work and difficulty in keeping an animal of this size, rather than sightings of *Felis concolor couguar*. Recently there have been reported sightings of cougar kittens suggesting that a wild population is being established.

Federally listed as endangered, mountain lions are a secretive animal, occupying large forested areas and seemingly at home in coastal swamps as well as on mountain slopes. They occur primarily in undisturbed habitats that support healthy populations of their primary prey species, the white-tailed deer (Webster *et al*. 1985). Abundant prey allows cougars to survive in smaller areas at higher densities and stable prey populations permit a more stable cat population (Bailey 1993). Seen as a threat to domesticated animals and as a competitor to deer hunters, cougars have been hunted throughout their range (Bailey 1993). Because of their wide-ranging habits and their status as a top-level carnivore, cougars, if they still exist along the Parkway, should not be affected by vista management.

Spruce-fir Moss Spider (*Microhexura montivaga*)
(US Endangered) is restricted to spruce-fir forests where it is found in damp moss mats on rock outcrops and boulders in well shaded situations. While several surveys have been conducted for this species, they have not been located on Blue Ridge Parkway lands.

In addition to those species mentioned above there are several animals that are federal species of concern and have the potential to be found in or around the high-elevation vistas and overlooks considered in this Environmental Assessment. These federal species of concern include: Rafinesque's big-eared bat – Mountain subspecies (*Corynorhinus rafinesquii rafinesquii*) (NC Threatened); southern rock vole (*Microtus chrotorrhinus carolinensis*) (NC Species of Concern); Eastern small-footed Myotis (*Myotis leibii*); Eastern woodrat – southern Appalachian population (*Neotoma floridana haematoreia*) (NC Species of Concern); Appalachian woodrat (*Neotoma magister*) (NC Species of Concern); southern water shrew (*Sorex palustris punctulatus*) (NC Species of Concern); Appalachian cottontail (*Sylvilagus obscurus*) (NC Significantly Rare – Game Animal); Northern saw-whet owl –southern Appalachian population (*Aegolius acadicus pop 1*) (NC Threatened); olive-sided flycatcher (*Contopus cooperi*) (NC Species of Concern); cerulean warbler (*Dendroica cerulean*) (NC Significantly Rare); southern Appalachian red crossbill (*Loxia curvirostra pop 1*) (NC Species of Concern); southern Appalachian black-capped chickadee (*Poecile atricapillus practicus*) (NC Species of Concern); Appalachian yellow-bellied sapsucker (*Sphyrapicus varius appalachiensis*) (NC Species of Concern); Appalachian Bewick's wren (*Thryomanes bewickii altus*) (NC Endangered); and tawny crescent (*Phyciodes batesii maconensis*) (NC Significantly Rare).

Most of these species are not spruce-fir dependent and would not be impacted by the vista-clearing activities described in the proposed project. Four of the birds use spruce-fir forests: Northern saw-whet owl – southern Appalachian population, olive-sided flycatcher, southern Appalachian red crossbill, and southern Appalachian black-capped chickadee. The actions being considered under this EA should not impact these four species (Curtis Smalling, pers. comm. 2007).

WILDLIFE

The Parkway supports a variety of wildlife species. Most commonly observed are whitetail deer (*Odocoileus virginianus*), squirrels (*Sciurus carolinensis*), rabbits (*Sylvilagus* sp.), groundhogs (*Marmota monax monax*) and songbirds. Dozens of less visible species are found throughout Parkway lands including approximately 74 species of mammals, 44 of amphibians, 35 reptile species, 57 species of fish and more than 300 species of birds.

Parkway impacts on wildlife can be both direct (being hit by a vehicle) or indirect (fragmentation of habitat, noise, etc.). The work that is required to maintain vistas and overlooks generally causes indirect impacts and results in changes of habitat, changes in vegetation, alterations of nesting or foraging sites

and habitat fragmentation. Whether the impacts are positive or negative depends on the species being examined. Removal of mature woody vegetation can benefit some animals that prefer early successional habitat while harming others that prefer mature forests and shady conditions.

NEOTROPICAL MIGRATORY BIRDS

Executive Order 13186 directs each federal agency taking actions having or likely to have a negative impact on migratory bird populations to work with the U.S. Fish and Wildlife Service to develop an agreement to conserve those birds. The protocols developed by this consultation are intended to guide future agency regulatory actions and policy decisions; renewal of permits, contracts or other agreements; and the creation of or revisions to land management plans. In addition to avoiding or minimizing impacts to migratory bird populations, agencies are expected to take reasonable steps that include restoring and enhancing habitat, preventing or abating pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible.

Waves of migratory songbirds travel along the Blue Ridge Parkway during the spring and fall migrations and about 115 species have been identified as breeding on the Parkway during the summer months. Nesting birds take advantage of the various vegetation communities and breeding birds can be found the length of the Parkway in virtually all habitats. Whether the overlooks and vistas are maintained as early successional habitat or are allowed to grow up to become mature forests may be irrelevant to songbirds overall. Partners in Flight (PIF) (Hunter *et al.* 1999) stress that both early successional and late successional habitats are important in the southern Blue Ridge and that more of each of these habitats is needed. The habitat at the vistas addressed under this proposal are generally spruce-fir and northern hardwood forests. This habitat has been identified as important bird habitat by PIF (Hunter *et a. 1999*).

CULTURAL LANDSCAPES

Vistas have been created at both parking overlooks and along the motor road (called roadside vistas). They are an integral part of the Parkway's designed landscape. Vistas are considered to be one of the features that contribute to the overall historic significance of the Blue Ridge Parkway as described in the park's draft *Historic Resource Study*, December 2005.

Overlooks were provided along the Parkway at strategic points to allow motorists to park and enjoy the view. The park averages one overlook every 1.78 miles. These overlooks were located with due regard to safe access, suitable topography, interesting views, and to opportunistically hide construction scars. An overlook provides the greatest opportunity for the visitor to enjoy the scenic resources of the Parkway. A landscape that is observable in detail for a longer period of time would substantially increase the scenic importance of that vista point and viewshed. Overlooks offer visitors the opportunity to view scenery, the changes in weather, and wildlife for a duration determined by their pace of travel. Roadside vistas, on the other hand, provide a shorter viewing time of the scenic landscape. Nonetheless, roadside vistas still provide the greatest duration of viewing opportunity to the motorist who is traveling along the Parkway at an average speed of 45 miles per hour.

The landscape development program, including establishment and maintenance of vistas, was experimental in many areas. Nothing of this scale and scope had been attempted before in the national parks or along earlier parkways. Much had to be learned by a process of trial and error. At specially developed points along the Parkway and in park areas where the tourist pauses the emphasis is being placed on design for more intimate pictures (draft HRS 2005, p.175). The wide variation in vegetation management reflects the complex scope of the program for the Blue Ridge Parkway (p.216).

According to the draft HRS, each parking area was carefully designed to provide for safe access from the road, ease of parking, and direction of the best views. It was not unusual for the number, location, and design of the parking areas to be altered as the main grading contract proceeded. This was done in response to other changes, most commonly revisions in the cut and fill calculations, but it was also done as a result of a better appreciation of site topography. Designing overlooks with this flexibility had considerable advantages (draft HRS 2005, p.143-144). By 1957, though, overlooks were planned features in the designed landscape and approved along with the alignment of the motor road.

By the early 1950s, the maintenance of vista clearings was described as a serious problem. Natural succession posed a threat to the careful modulation of the forest edge and the clearings made for vistas. Shortage of funds presented problems for the landscape development program, and it became necessary in some cases to allow trees to grow up in formerly open fields and vistas to screen undesirable views of suburban developments. These changes to the landscape within the right-of-way meant it became necessary to update the Parkway Land Use Maps (PLUMS), a process which began in the late 1950s (draft HRS 2005, p. 296).

RECREATIONAL/VISUAL RESOURCES

The Blue Ridge Parkway was created and legislatively intended to be a scenic parkway. In visitor surveys scenic viewing is considered the most valued recreational opportunity, with hiking also showing high participation. According to leading travel writers, the Blue Ridge Parkway is ranked as “America’s most scenic drive” (National Park Service, 2003).

The Parkway is a highly designed landscape of grass, shrub, and tree bays aesthetically placed along the Parkway motor road alignment with the design intent to provide foreground interest to the panoramic background of the Appalachian Mountains. There are more than 960 managed vistas along the 469 mile parkway which are depicted on the park’s PLUMs. These as-built drawings show exact locations where views were planned as part of the alignment and engineering of the Parkway. Panoramic, canopy, open, vista, and other types of designed scenic experiences were an intended historic design element shown on the PLUMs of the Parkway, and these areas require vegetation management to maintain this recreational asset. The fall leaf color display is historically the most visited scenic recreational opportunity on the Parkway, with the month of October at its peak. The original landscape of the Parkway included almost exclusive use of native species that were often transplanted from the alignment footprint of the Parkway.

Congress has designated the Blue Ridge Parkway as an All American Road, at the top of National Scenic Byways. Bestowed by the Federal Highway Administration, this designation recognizes roadways that possess surpassing scenic, historic, recreational and other intrinsic qualities that make them "one of a kind." The North Carolina sections were designated in 1996 and the Virginia segment in 2006. To receive an All-American Road designation, a road must possess multiple intrinsic qualities that are nationally significant, have one-of-a-kind features that do not exist elsewhere, and be considered a “destination unto itself.” Moreover, this designation emphasizes local involvement and promotes tourism and economic development.

The primary recreational activity in the proposed project area is recreational driving, sightseeing, picnicking, and hiking. The Parkway also provides ranger guided interpretive walks and talks, self-guided nature trails, roadside exhibits, and camping. In particular, vistas provide for a number of recreational activities, including: night sky viewing, hawk migration viewing and monitoring; photography and art renderings, and the viewing of an ever changing landscape.

Overlooks and roadside vistas can be described in terms of intactness. A vista that is fully or 100% intact would provide a wide open unimpeded view across a clear cut area to a particular focal point or panoramic scene. A vista that is less than 100% intact can be estimated based on what portion of the panoramic scene may be obscured. A vista from which one cannot see outside of the boundary or does not provide a spatial opening would be considered 0% intact. A vista which is estimated to be 75-100% intact may be considered by some viewers as more scenic as vegetation would occur within the managed vista area and provide foreground visual elements that add a depth of field and visual interest to the landscape. Vegetation managed within the vista area would also give park managers the opportunity to frame and focus views where a degradation of the natural landscape has occurred. Intactness was inventoried for all affected vistas. An existing intactness was determined and an estimate was made based on the vegetative management prescription on what the intactness would be at the desired future condition. The average intactness was improved for all alternatives except the No Action Alternative.

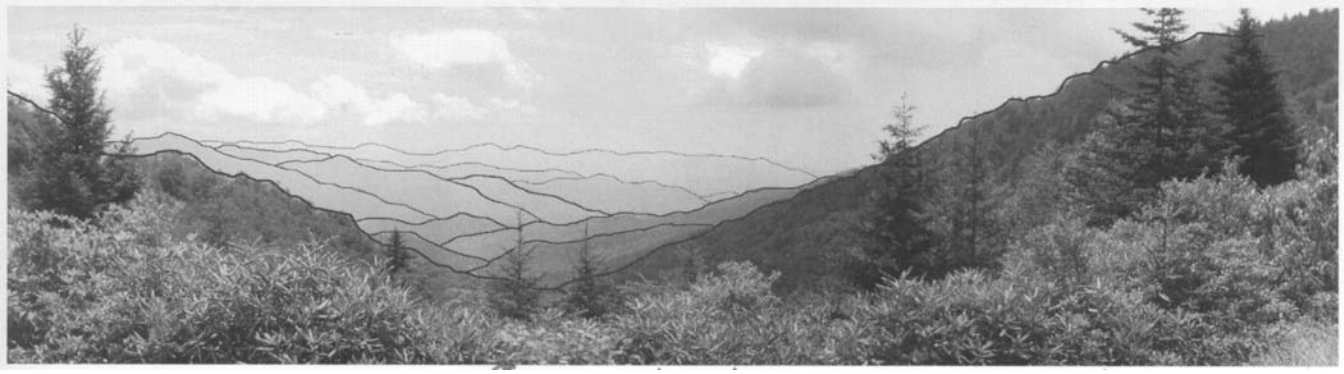

Figure 2 **Vista 90-95% Intact**

HUMAN HEALTH AND SAFETY

Currently vista management is performed by private companies under contract to the National Park Service. The contract for this work is awarded through a competitive bid process. Private employers are regulated under OSHA guidelines. Vistas within CNFS habitat have not been maintained under contract for several contract cycles and some vistas have become overgrown completely or partially obscuring a visitor's view.

Vista management could have both positive and negative safety concerns for employees, contractors and visitors.

Advantages

- Vistas can provide improved site distance and better visibility for drivers.
- Vistas provide better day lighting of pavement for snow melt.
- Vista clearings remove trees that could become hazards along the motor road and in overlooks.
- Overlooks for viewing a vista provide a safe place for visitors to park and recreate.
- Vistas provide openings for better cell phone coverage.

Disadvantages

- Improper use of chainsaws can injure employees and contractors.
- Vistas can provide a distraction for drivers and cause accidents.
- Vistas created on steep slopes can be difficult for employees/contractors to negotiate causing loss-time injuries; vegetation cleared on vistas can leave stobs that trip or puncture employees or contractors.
- Roadside vistas can pose a hazard to visitors when they try to stop along the motor road to take a photograph.

SOCIOECONOMIC ENVIRONMENT

Based on economic studies in western North Carolina, viewing mountain scenery is a large contributor to the success of regional tourism. The Blue Ridge Parkway plays a significant roll in providing that recreational activity. Lack of maintenance and a loss of a visitor's ability to view mountain scenery would directly effect all economic populations within a county. Reductions in visitors (tourists that spend money) would have a direct impact on service jobs at hotels, restaurants, gas and convenience stores, and gift shops. Reduced tourist dollars would also be felt in the reduction of sales tax and other taxes levied on hotel/motel and rental car patrons.

ENVIRONMENTAL CONSEQUENCES

The National Environmental Policy Act requires that environmental documents disclose the environmental impacts of the proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented. This section analyzes the environmental impacts of the three alternatives for the management of overlooks and vistas that occur on Parkway lands in Carolina Northern Flying Squirrel habitat on natural resources, cultural resources, recreational and visual resources. This analysis provides the basis for comparing the effects of the three alternatives. The intensity and duration of the impacts, mitigation measures and cumulative impacts were assessed in considering the impacts.

METHODOLOGY

In this document, the NPS based its analysis of impacts and conclusions on discussions with the scientific community, a review of scientific literature and park studies, and on professional judgments of park technical experts. Using these data, the team determined which impacts would occur and assessed them according to their duration, extent, intensity, and whether or not the impact would cause impairment to park resources. These parameters are defined below.

General Impact Definitions

Thresholds of Change

Threshold events are marked by a distinct change in conditions or level, and that a practical means of monitoring proximity to thresholds is available. The thresholds of change of a biological or ecological impact are designated as *intensity* and *duration*.

Intensity

For the purpose of this analysis, intensity or severity of the impact to the resource or discipline is defined as:

- *Negligible* is barely perceptible, not measurable, and confined to a small area.
- *Minor* is perceptible, measurable, and localized.
- *Moderate* is clearly detectable and could have appreciable effect.
- *Major* is substantial and highly noticeable.

Duration

For the purpose of this analysis, duration of the impacts to the resource or discipline is defined as:

- *Short-term* are those that occur during implementation of the alternative.
- *Long-term* are those that extend beyond implementation of the alternative and would likely have permanent effects.

Direct verses Indirect Impacts

Direct effects are impacts caused by the alternative(s) at the same time and in the same location as the action. Indirect effects are impacts caused by the alternative(s) that occur later in time or farther in distance than the action, but still reasonably foreseeable. An indirect impact could occur because of a change to another resource or impact topic.

Cumulative Impacts

As defined by CEQ Regulations (40 CFR, Part 1508.7), "cumulative impacts" are those impacts on the environment resulting from the incremental impacts of the proposed, past, present, and foreseeable future actions regardless of who or what agency undertakes the actions. Cumulative impacts can result from minor but collectively significant actions taking place over time both within NPS boundaries and outside those boundaries.

Cumulative impacts were assessed by combining the potential environmental impacts of the alternatives with the potential impacts of known projects that have occurred in the past, are currently occurring, or are projected to occur in the future.

Impairment of Park Resources

In addition to determining the environmental consequences of the proposed action and other alternatives, the NPS *Management Policies 2006* and DO-12 require analysis of potential effects to determine if actions would impair a park's resources.

The purpose for which the Blue Ridge Parkway is managed is articulated in the 1916 Organic Act establishing the National Park Service. The Organic Act tells us that the purpose is:

> *"to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as would leave them unimpaired for the enjoyment of future generations."*

The National Park Service may not allow the impairment of park resources and values unless directly and specifically provided for by legislation or by the proclamation establishing the park. Impairment that is prohibited by the *Interim Technical Guidance on Assessing Impacts and Impairment to Natural Resources (July 2003)*, National Park Service Organic Act, the General Authorities Act, and National Park Service Management Policies (NPS, 2006) is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values had the impact not occurred.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. In this section, a determination on impairment is made in the conclusion statement of each resource area for each alternative. The NPS does not analyze the potential for impairment of recreational values/visitor experience (unless impacts are resource based), socioeconomic values, or park operations.

ALTERNATIVE A: NO ACTION

Under Alternative A, no further action would be necessary. Under this alternative, approximately 167 vistas within potential CNFS habitat would be abandoned from future management actions and allowed to naturally revegetate causing unacceptable impact to the cultural landscape by loss of historic Parkway vistas. The Parkway would continue to actively manage all vistas not considered within potential Carolina Northern Flying Squirrel habitat.

Soils

Direct/Indirect Impacts
Under this alternative, vegetation within the 167 vistas identified as suitable for CNFS habitat would continue to grow and mature without management intervention. Allowing vegetation to grow would gradually increase the subsurface root structure density and would stabilize soils from erosion. The threat of landslide from construction of the motor road across steep slopes and failure and aging of drainage systems would be reduced under this alternative. There would be no appreciable changes to soil chemistry. Under this alternative, more than 50.1 hectares (ha) of soils would be stabilized and protected in the long-term. The overall impacts to soil stability would be minor (perceptible, measurable, and localized) and long-term (permanent effect).

Cumulative Impacts
Across the southern Appalachian region soil loss is occurring primarily at lower elevations where agricultural practices result in excessive runoff and erosion. Stream buffers which are strips of vegetation between waterways and agricultural fields, serve to intercept runoff and help reduce erosion. Soils are also being impacted across the region due to conversion of forest to residential and commercial use. Under this alternative soil resources would be conserved, thus offering a small positive offset to the regional pattern.

Conclusion
Under Alternative A, overall impacts to soil resources would be beneficial in the short- and long-term. Native soil chemistry and structure would be preserved. Implementation of this alternative would not result in an impairment of the Blue Ridge Parkway's soil resources.

Vegetation

Direct/Indirect Impacts

Permanently ending the cyclic clearing of overlooks and roadside vistas would allow woody plants to become established and set forth a successional progression that would eventually culminate in a mature forest. At some sites, the successional rate would be hampered by extensive rock debris. At other sites invasive exotic plants would likely become established and further slow down successional processes. Under this alternative, approximately 60.0 ha (148.2 acres) currently maintained as vistas would be removed from active management and allowed to succeed into mature forests.

Of the rare plant communities listed in **Table 3**, only the red spruce-Fraser fir forest would be affected by this alternative. It is estimated that this community occurs in approximately 20% (11 ha or 29.1 acres) of the current vistas being maintained. Therefore, the cessation of vista management would have a small benefit to this community.

None of the federally listed plants are located within the vistas or adjacent lands nor do these vistas contain appropriate habitat; therefore, this alternative would not have any impact on these species. However, of the federal species of concern, the following plants would benefit for addition of suitable habitat: *Calamagrostis cainii, Cardamine clematitis, Geum geniculatum, Lilium grayi*.

Cumulative Impacts

Forested lands declined by 182,109 ha (450,000 acres) from the mid-1970's through 1995 while both large and small urban areas increased 35% and 53%, respectively (SAMAB 1996). The creation of the Blue Ridge Parkway resulted in over 4,200 ha (10,378 acres) of potential CNFS habitat (Ulrey, unpub. data) being protected from private development and logging. However, the creation of the Parkway motor road resulted in approximately 101 ha (250 acres) of habitat being lost when the road, associated cut banks and fill, overlooks and developed areas were constructed.

Conclusion

Ending maintenance activities at all 167 managed vistas in CNFS habitat would have long-term, moderate, beneficial impacts on vegetation resources by allowing for succession to occupy once-natural areas. Under Alternative A, there would be no impairment of the park's resources or values with respect to vegetation.

Threatened and Endangered Species

Carolina Northern Flying Squirrel

Direct/Indirect Impacts

Ending maintenance activities at all 167 vistas and overlooks in CNFS habitat has the potential to cause various impacts to CNFS, with all of these being positive effects. In the short-term the herbaceous cover could provide limited protection to CNFS and until spruce and birch seedlings inhabit the vistas there would be little impact, positive or negative, to CNFS. As the stand fills in and spruce and birch grow on the site it would become better CNFS habitat and would continue to improve as it matures into old-growth. This could take decades. Eventually there could be an additional 60 ha (148.2 acres) containing suitable CNFS habitat for their use.

While a 60 ha block of land, or even six 10 ha tracts, could potentially provide habitat for an additional five pairs of squirrels, in reality these vistas are spread over four sections of the Parkway covering over 150 miles. The small size of each individual vista or overlook prevents each from providing sufficient

habitat to support CNFS on their own. Additional home ranges for pairs of squirrels would only result if this additional land was added to tracts that were too small to support a pair at present and if the vistas provided suitable habitat of sufficient size. Rather than provide additional pairs of squirrels with new territory to use, these reforested vistas would more likely improve existing habitat, providing additional nest sites, foraging opportunities or corridors to move between existing sites. In this case the improved habitat could result in healthier squirrels, more successful reproduction efforts and more stable populations at several sites.

Reforested vistas could help CNFS by providing better corridors to move between existing patches of habitat. Habitat fragmentation is a common problem with many animals as large blocks of land are divided by roads, power lines and other developments creating small patches that are separated from each other. While the Parkway may present a barrier to some animals, in most locations flying squirrels are able to glide over and even, if necessary, to scamper across to get to the other side. At sites with vistas or overlooks along the Parkway, the accumulated distance could become too far for the squirrels to manage, thus preventing their movement. Research in Maryland (Bendel and Gates 1987) showed that southern flying squirrels were able to go around clear cuts as large as 4.7 ha (11.6 acres) and presumably CNFS could do the same. Except in locations where the reforested vista could provide a corridor where one did not exist before, these sites would not provide a significant benefit in the movement of CNFS.

Cumulative Impacts

Potential CNFS habitat along the Parkway represents only about 3% of the habitat in the southern Appalachians and these vistas and overlooks are only about 0.02% of this total area and 0.5% of park-owned habitat. While restoring the complete 60 ha (148.2 acres) as squirrel habitat would be beneficial this would still be a negligible amount of the total habitat in the region.

CNFS populations, including those found on park lands, are threatened in many ways besides loss of habitat found at Parkway vistas. Protection of the spruce-fir habitat and spruce-fir/northern hardwood ecotone are critical to the long-term existence of these animals. Development along NPS-owned lands has already impacted several CNFS sites (Lori Williams pers. comm.) and while important lands are being placed under public ownership or under conservation easements this threat would continue for the foreseeable future.

While logging in the past has reduced spruce-fir forests in the southern Appalachians by about half there is virtually no logging occurring at present. Virtually all high-elevation spruce-fir in the southern Appalachians is either owned by government agencies or private organizations that have conservation missions. As these forests mature the habitat would improve, with larger trees available for nesting and as food sources.

Global warming is likely to present long-term problems to CNFS. Spruce-fir forests are relicts from past glacial activity and as the glaciers retreated the forests moved north or up slope to mountaintops in order to remain in cool, moist conditions. Global warming could force these forests to move higher and higher in elevation until they reach the mountaintops and there is no place left to go. In this scenario Parkway vistas and overlooks would cease being available to spruce-fir forests regardless of how they are managed by the Blue Ridge Parkway. Restoration of Parkway vistas and overlooks to spruce-fir forests would only be a temporary measure and one that would be lost as temperatures became too warm.

Warm weather could also benefit the competitive southern flying squirrel, which is typically found at lower elevations. This animal is more aggressive, especially when defending nest sites, and could have a significant impact on CNFS (Weigl *et al.* 1992). In addition, a parasite carried by southern flying squirrels, *Strongyloides robustus*, is limited by cold weather conditions and global warming could allow

this parasite to become more of a problem to CNFS (Weigl *et al.* 1992). If southern flying squirrels begin moving uphill they could displace northern flying squirrels or indirectly affect CNFS by moving *Strongyloides* into new locations and deeper into what is now northern flying squirrel habitat.

Conclusion
Under Alternative A, CNFS would benefit from increased habitat created as vistas revegetate and many of them develop into spruce-fir or northern hardwood forests, though this benefit could be relatively short-term depending on such threats as global warming and atmospheric pollution. Long-term impacts from vegetation change would be positive if suitable habitat grows at these sites and if the habitat lasts, or at least neutral if spruce-fir does not become established. Since the acreage of these vistas and overlooks represents less than one-tenth of 1% of all potential CNFS habitat in the southern Appalachians, the impact would be negligible overall, generally minor on park lands as a whole, while some individual sites would have a moderate beneficial impact to local populations. There would be no impairment to CNFS on the Blue Ridge Parkway under this alternative.

Indiana Bat

Direct/Indirect Impacts
Under this alternative, the only threatened or endangered species that could be at risk would be Indiana bats who could possibly use the habitat found in these vistas and overlooks as maternity sites. The management of these areas under this alternative should not impact habitat if used by Indiana bats. Trees would be allowed to mature and would be available for bat use. Dead and standing trees would not be removed unless they were a hazard to visitor safety. Hazardous trees that are identified as being suitable for Indiana bat use (loose bark, large diameter in size, near streams) would not be cut between mid-April through mid-August.

Cumulative Impacts
Logging and other activities resulting in the loss of mature forests could remove habitat used by Indiana bats during their migrations. Forests along the Blue Ridge Parkway have not been cut since the early 1900's and as they age they would provide more dead trees with loose bark for the bats to use. This increase would be much more than the 60 (148.2 acres) ha being created under the proposed project. In addition forests on National Forest and private lands are also recovering from past logging activity and would provide additional acreage of suitable trees. Hibernacula are not found in North Carolina and generally have been protected in recent years.

Conclusion
Threatened and endangered species by definition are already nearing extirpation and are easily stressed by any changes in the environment. Reducing active management within the vistas should have an overall long-term, beneficial impact as potential maternity sites are created. The impact would be negligible because these vistas and overlooks constitute such a small area of potential habitat. Under Alternative A, there would be no impairment to Indiana bats on the Blue Ridge Parkway.

Wildlife

Direct/Indirect Impacts
Impacts to wildlife under this alternative would be negligible to minor, depending on the species considered. Salamanders and other species that need shady, forested habitat would generally respond favorably while some grassland or early successional habitat dependent birds could be adversely impacted. Duration would be long-term as the vegetation at each site would change over time and would eventually become a mature forest that should persist indefinitely.

Cumulative Impacts
In the southern Appalachians about 74% of the acreage is forested or in grasslands while about 24% is either in agriculture or developed (SAMAB 1996). Despite this large percentage of "natural" systems remaining, much of this land has also been altered or degraded so much that it has lost its value as wildlife habitat. In general, restoration of lands to a more natural state would have a positive effect.

Conclusion
Under Alternative A, different wildlife species would respond differently to reforestation. The benefits to CNFS would outweigh adverse impacts to other wildlife. Implementation of this alternative would not lead to an impairment of wildlife resources on the Blue Ridge Parkway.

Neotropical Migratory Birds

Direct/Indirect Impacts
Impacts to neotropical migratory birds would vary with the species being considered under Alternative A. Many of the Parkway birds do not use or seldom use spruce-fir or northern hardwood habitat. There is a suite of birds, however, that are found predominantly, if not exclusively, in this habitat. These birds would benefit from the actions proposed under this alternative as more spruce-fir forest acreage is created. These forests have been identified by PIF as important bird habitat because of the small amount of habitat remaining and the rarity of many of these species in this area. For many of these birds the southern Appalachians represent the southern limits of their range and many of these are subspecies that are endemic to the southern Appalachians. Restoration of these forests would provide a moderate beneficial impact. Duration of this impact would be long-term.

Cumulative Impacts
Approximately 30% of the breeding birds in the Southern Blue Ridge physiographic area have declined sharply in the last 30 years with another 18% showing possible declining trends (Hunter *et al.* 1999). Neotropical migratory birds are declining the most of all birds studied, though the reasons for this decline are not clear, though habitat loss in both winter and summer ranges is suspected as the major cause. Lands in the southern Appalachians have changed routinely and significantly from the glacial period to Native American use, to settlement by early Europeans to the present times. Land use now is different than just a few decades ago and this change has had significant effects on bird populations and composition (Hunter *et al.* 1999). As human development increases and agricultural activity declines, bird populations would continue to be affected, with some species declining in number and others coping with the changes.

Conclusion
Blue Ridge Parkway lands offer some stability within a surrounding world that is rapidly changing. This stability could be threatened by the large-scale establishment of non-native plants. While natural systems are generally quite dynamic, moving from one seral stage to the next, the protected lands along the Parkway provide an increasingly important refuge. This alternative would allow an important vegetation community, the spruce-fir-northern hardwood forests, to become re-established on 148 acres of land along the Parkway. While this would not impact many species of neotropical migratory birds, those that are dependent on this community would benefit with a minor beneficial, long-term impact. Implementation of Alternative A would not lead to an impairment of the Blue Ridge Parkway's neotropical migratory bird species or habitat.

Cultural Landscapes

In coordination with Section 106 of the NHPA, the NPS initiated consultation with the North Carolina State Historic Preservation Officer (SHPO) regarding effects to cultural and historic resources from the proposed alternatives. The NPS prepared a *Section 106 Assessment of Actions* with a No Adverse Effect determination which would also result in better management of cultural landscapes.

Direct/Indirect Impacts
Under Alternative A, 34 overlook vistas, 6 vistas adjacent to parking areas and 127 roadside vistas (167 vistas) along 45 miles of Parkway motor road in four different sections would be removed. This would have a moderate to major impact on the cultural landscape through the four segments of roadway in which these vistas occur. Though some new roadside views could be created and established in non-CNFS habitats, it is not likely that the same number of vistas to observe the same scenery could be established and long term views would be permanently lost from the overlooks. Additionally, they would likely be established in areas of lower elevation where the views would not be as spectacular. The discussion of intactness under the recreational/visual resources section has correlation with impacts to the cultural landscape.

Cumulative Impacts
Combined with loss of scenic views to land disturbances outside the park, including but not limited to commercial and private development and resource extraction (rock quarries and timbering), the loss of 167 maintained vistas would be a major impact to the cultural landscape.

Conclusion
Though the park's management of overlooks and vistas has changed over time through trial and error, the complete loss of more than 167 vistas would have a long-term, moderate to major negative impact on the cultural landscape. However, since there are many other overlooks and vistas along the Blue Ridge Parkway, Alternative A would not lead to an impairment of cultural landscapes at the park.

Recreational/ Visual Resources

Direct/Indirect Impacts
With no active vista management program, vegetation within currently managed vistas would eventually obscure visitor views from Parkway overlooks and roadside vistas. Visitor demographics and purpose for traveling these sections of the Blue Ridge Parkway would change. Visitation for the purpose of viewing scenery within these sections of Parkway and adjacent counties would decrease. Visitors would be limited to viewing scenery at locations where vegetation did not obscure the view or in locations where vistas were actively managed outside of potential CNFS habitat. This could result in overcrowding at these vistas and potentially more severe environmental impacts associated with overuse. Visitors wanting broad views of the natural landscape could travel to other sections of the Parkway, also leading to overcrowding and overuse. The disabled or elderly could find it more difficult to view scenery from their cars if this opportunity were to be restricted to natural openings that do not occur in an area accessible to a vehicle.

Cumulative Impacts
Under Alternative A, discontinuing maintenance of vistas would eliminate the recreational opportunity of viewing scenery except at natural openings. Visitors interested in viewing an undeveloped landscape mosaic of lands managed by the USFS and Great Smoky Mountains National Park would be restricted to natural openings where vehicular access may be difficult or nonexistent. Visitors could travel to other locations inside the park or travel out of the area for these types of views. It is expected that 167 vistas

which under management could approach being 75-100% intact would revert to near 0% intactness. Roadside vistas which occur naturally or remain somewhat intact due to steep slopes adjacent to the motor road would also revert to near 0% intact due to vegetation within the first 20 feet of slope not being maintained.

Figure 3 **Vista 0-5% Intact (Alternative A: No Action)**

Conclusion
Implementation of Alternative A would have a major, long-term, negative impact to visitor use and satisfaction in areas where vistas are not managed. Over 90% of the current vistas would be lost due to natural forest succession. A change in visitor use patterns, due to visitors travelling this section of the Parkway less, could also have a negative impact on sections of the Parkway where vistas are managed for the purpose of viewing scenery.

Human Health and Safety

Direct/Indirect Impacts
Under Alternative A, vistas would not be maintained which would eliminate potential injury to employees and contractors working within the vistas on steep slopes during clearing operations. However, this hazard would not be totally eliminated as employees would need to enter these areas to monitor squirrel recovery or remove hazard trees.

Cumulative Impacts
Unmanaged vistas would tend to shade the motor road, thus reducing the speed which ice and snow melts from the roadway, which would potentially increase the chance of a motor vehicle accident or delay the road being opened to traffic. Loss of vistas could also decrease sight distance reducing a driver's response time in reacting to oncoming traffic.

Conclusion
Implementation of Alternative A could have negligible, long-term, negative impacts on visitor and employee safety due to hazardous trees and reduction in sight distance.

Socioeconomic Environment

Direct/Indirect Impacts
Under Alternative A, a vista clearing contract would not be awarded to local businesses whose employees live and commute near the proposed project area. There could also be a reduction in visitors or a reduced

length of stay to these sections of the Parkway and adjacent areas resulting in less visitor spending in neighboring cities and counties. Currently, Haywood County is assisting the Parkway financially with vegetation management funds, acknowledging the importance of the viewshed to tourism in that county. A recent study by Appalachian State University and the Blue Ridge Natural Heritage Area (published in the business section of the Asheville Citizens-Times) concluded that tourism is a 2.8 billion dollar industry in the western North Carolina region and that 64% of the public surveyed stated that the Blue Ridge Parkway and other scenic drives were the rated participant's top activity during their visits. A reduction on the scenic integrity and ability of people to view scenery could substantially affect the tourism industry.

Cumulative Impacts
Under this alternative, there is the potential of reduced tourism visits to the area which would have long-term, negative impacts on local service industries including restaurants, hotels, motels, gift shops and the general western North Carolina tourism industry.

Conclusion
Under Alternative A, there would be moderate to major, long-term, negative effects to the local and regional economy due to lost revenue from reduced visitation and tourism.

ALTERNATIVE B – HISTORIC MANAGEMENT METHOD

Under Alternative B, the Parkway would continue to manage vegetation within all vistas in potential CNFS habitat by mechanical treatment of trees and shrubbery on a cyclic basis. This method would remove all species of vegetation except those listed by federal and state agencies. The use of mechanical methods would involve using hand and/or power tools to dig, pull, and cut plants.

Soils

Direct/Indirect Impacts
Due to the high erosion potential of soils located in the area of concern, landslide potential is a significant issue. The removal of vegetation on 148 acres has the potential to impact soils on steep slopes (greater than 20%) due to erosion if resource protection measures, such as revegetation or mulching, were not followed. Under extreme conditions such as a tropical depression, the success of resource protection measures would be questionable. When a landslide does occur, it would very likely affect adjacent landowners as was witnessed during Hurricanes Francis and Ivan in 2004. The long-term erosion of soils has the cumulative effect of reducing soil resources and exposing parent material. The genesis of new soil is a process that occurs over thousands of years.

Small, localized fuel spills could also occur when using chainsaws and weed eaters.

Cumulative Impacts
Across the southern Appalachian region soil loss is occurring primarily at lower elevations where agricultural practices result in excessive runoff and erosion. Stream buffers, which are strips of vegetation between waterways and agricultural fields, serve to intercept runoff and help reduce erosion. Soils are also being impacted across the region due to conversion of forest to residential and commercial use. Under this alternative soil resources would not be conserved, thus offering to the cumulative threat to soil resources across the region.

Conclusion
Under Alternative B, there would be minor, short-term and localized negative impacts to soil resources if resource protection measures were not followed. Implementation of erosion protection measures would adequately reduce or prevent accelerated erosion that could be produced with sudden removal of vegetation on steep slopes. Above ground cutting with hand tools would be a viable option at sensitive sites where soil disturbance is problematic. However, there would be a high likelihood that catastrophic weather events could pose major impacts to soil resources under this alternative. Implementation of Alternative B would not lead to an impairment of soil resources on the Blue Ridge Parkway.

Vegetation

Direct/Indirect Impacts
The 167 vistas being considered in this document have been cleared for approximately the last 50 years. Therefore, the majority of impacts to vegetation occurred long ago. However, the continued maintenance of these open areas would provide an opportunity for invasive exotic plants to become established and then spread into adjacent natural areas, thus posing a major, long-term threat to vegetation resources.

There are no known occurrences of any of the federally listed or federal species of concern species listed in **Table 3** occurring within the 167 vistas analyzed in this document. Therefore, this alternative would not affect these species. However, of the federal species of concern, the following plants would benefit for addition of suitable habitat: *Calamagrostis cainii, Cardamine clematitis, Geum geniculatum, Lilium grayi*.

Cumulative Impacts
Of the rare plant communities listed in **Table 3**, only the red spruce-Fraser fir forest would be affected under this alternative. It is estimated that this community occurs in approximately 20% (10 ha) of the current vistas being maintained. This community is currently under siege by multiple factors such as acid deposition, exotic insect damage, and global warming. Therefore, the continuation of vista management would have minor, negative impacts to this community by further limiting habitat availability.

Land conversion from forest to residential housing is occurring at a rapid pace across the region and this alternative would do nothing to offset this loss of forest.

Conclusion
Under Alternative B, there would be minor, short-term, negative impacts to vegetation resources, but potentially moderate to major, long-term, negative impacts due to invasive exotics. However, there would be no impairment of the park's resources or values with respect to vegetation.

Threatened and Endangered Species

Carolina Northern Flying Squirrel

Direct/Indirect Impacts
Resuming maintenance of the 167 vistas found along the Blue Ridge Parkway in CNFS habitat would have immediate and long-term, negative effects on CNFS. Under Alternative B, only vegetative species that are listed by USFWS or North Carolina would not be cut, resulting in the renewed loss of red spruce and yellow birch, trees upon which flying squirrels depend, from many of these sites. Removal of these trees could immediately reduce nesting sites, movement corridors, and foraging opportunities as important species are cut. The quality of large habitat blocks surrounding the vistas would be reduced as newly cleared openings created more edge, fragmented continuous stands and allowed easier access for

non-native vegetation. Vegetation that would grow on these sites under natural conditions would be replaced by early successional and pioneer species consisting of small trees, shrubs, vines and ground cover.

Loss of these 60 ha (148.2 acres) of potential habitat could reduce the vigor, reproduction and survival of squirrels at a few scattered sites over the 150 miles of Parkway where these vistas are located. This would require that the vistas be within a block of marginal habitat where the squirrel population could benefit from increased nesting or foraging opportunities and where the addition of quality habitat within the vista would provide this increase. The small size of each individual vista or overlook prevents each from providing sufficient habitat to support CNFS on their own.

Maintenance of the openings at the vistas and overlooks would have negligible impacts on squirrel movement as they are likely able to go around these sites. Available food would be reduced as spruce and birch are cut and hypogeous fungi were lost at these sites due to increased sunlight and heating.

Clearing vistas and maintaining views could increase visitor use of these sites, resulting in increased noise and other disturbance to squirrels. A study in Virginia (Menzel 2003) found more nests along trails, suggesting that human activity may not disturb northern flying squirrels, though it is unclear how heavily the trails were used and if this activity is comparable to visitor activity at Parkway overlooks.

Cumulative Impacts

Potential CNFS habitat along the Parkway represents only about 3% of the habitat in the southern Appalachians and these vistas and overlooks are only about 0.04% of this total area and 1.1% of park-owned habitat. While maintaining the entire 60 ha (148.2 acres) of vistas and overlooks as clearings could be harmful, clearing the vistas and overlooks as proposed under this alternative would probably have only a minor impact on CNFS in the region and on Parkway lands.

CNFS populations, including those found on park lands, are threatened in many ways besides loss of habitat found at Parkway vistas and overlooks. Protection of the high-elevation spruce-fir habitat and spruce-fir/northern hardwood ecotone throughout the southern Appalachians are critical to the long-term existence of these animals. Development along NPS-owned lands has already impacted several CNFS sites (Lori Williams pers. comm.) and while important CNFS lands have been protected and are continuing to be placed under public ownership or under conservation easements this threat would continue for the foreseeable future.

While logging in the past has reduced spruce-fir forests in the southern Appalachians by about half there is virtually no logging occurring at present. Virtually all high-elevation spruce-fir in the southern Appalachians is either owned by government agencies or private organizations that have conservation missions. As these forests mature the habitat would improve, with larger trees available for nesting and as food sources.

Global warming is likely to present long-term problems to CNFS. Spruce-fir forests are relicts from past glacial activity and as the glaciers retreated the forests moved north or up slope to mountaintops in order to remain in cool, moist conditions. Global warming could force these forests to move higher and higher in elevation until they reach the mountaintops and there is no place left to go. In this scenario, Parkway vistas and overlooks would cease being available to spruce-fir forests regardless of how they are managed by the Blue Ridge Parkway.

Warm weather could also benefit the competitive southern flying squirrel, which is typically found at lower elevations. This animal is more aggressive, especially when defending nest sites, and could have a significant impact on CNFS (Weigl *et al.* 1992). In addition, a parasite carried by southern flying squirrels, *Strongyloides robustus*, is limited by cold weather conditions and global warming could allow this parasite to become more of a problem to CNFS (Weigl *et al.* 1992). If southern flying squirrels begin moving uphill they could displace northern flying squirrels or indirectly affect CNFS by moving *Strongyloides* into new locations and deeper into what is now northern flying squirrel habitat.

Conclusion

Under Alternative B, CNFS would experience long-term, minor , negative effects as vistas and overlooks are cleared of spruce, birch and other vegetation that benefit them. This alternative would continue maintaining the 60 ha of clearings as an early successional ecosystem, with scattered fir trees, preventing it from being used by CNFS as nesting or foraging habitat. The small total size of the impacted area relative to total CNFS habitat in the southern Appalachians would keep the impact minimal, though the impact would last as long as the sites are maintained. Implementation of this alternative would not lead to an impairment of these park resources on the Blue Ridge Parkway.

Indiana Bat

Direct/Indirect Impacts

Under Alternative B, the only threatened or endangered species that could be at risk would be Indiana bats who could possibly use the habitat found in these vistas and overlooks as maternity sites. The management of these areas under this alternative would prevent possible maternity trees from reaching appropriate size, though in the large majority of vistas and overlooks there is not sufficient water nearby to make the sites suitable anyway.

Cumulative Impacts

Logging and other activities resulting in the loss of mature forests could remove habitat used by Indiana bats during their migrations. Forests along the Blue Ridge Parkway have not been cut since the early 1900's and as they age they would provide more dead trees with loose bark for the bats to use. This increase would be much more than the 60 ha (148.2 acres) that would be lost under this alternative. In addition forests on National Forest and private lands are also recovering from past logging activity and would provide additional acreage of suitable trees. Hibernacula are not found in North Carolina and generally have been protected in recent years.

Conclusion

Impacts to Indiana bats under this alternative would be long-term but should be negligible due to the limited amount of habitat that would be affected. Positive impacts outside of the overlooks and vistas would be much greater than the negative impacts occurring in the 60 ha (148.2 acres) covered under the proposed project. Under Alternative B, there would be no impairment to Indiana bats on the Blue Ridge Parkway.

Wildlife

Direct/Indirect Impacts

Wildlife species at these sites would be impacted by changes in vegetation community and overall structure of the forest. Under Alternative B, the trees would generally pioneer species with no tree allowed to reach large size. Mast production would be limited to blackberries and a few other species benefiting from the maintained opening.

Cumulative Impacts
Loss of habitat is one of the major causes of decline for many species of wildlife in the southern Appalachians. This impact increasingly involves species using spruce-fir forests where lands that were formerly too remote or too steep for development are now being converted to summer homes and permanent residences. While the loss of these 167 vistas as potential spruce-fir forests could impact a few animals, the total acreage is a very small part of the habitat found in the southern Appalachians and on Blue Ridge Parkway lands.

Conclusion
Vegetation management for most plant species under Alternative B would continue as occurs presently; therefore, there would be little change to existing wildlife communities and populations in and adjacent to the vistas. The major exception would involve spruce and fir trees, which are not presently being cut in the vistas. Under this alternative, fir trees would continue to be protected but spruce trees would not, allowing them to be removed from these sites. There are several species that either favor or are dependent on spruce-fir forests and could possibly be impacted by the removal of spruce trees. Non-bird species include Pygmy Salamanders (*Desmognathus wrighti)* and Weller's Salamander (*Plethodon welleri*). Even taking into consideration the activities happening in other areas of the southern Appalachians, the continued unavailability of these sites would have little impact on wildlife. Impacts to wildlife under this alternative would be negligible to moderate with most of the impacts resulting from loss of spruce trees at these sites. Duration would be long-term since this management option would continue for the foreseeable future. However, implementation of this alternative would not lead to an impairment of wildlife resources on the Blue Ridge Parkway.

Neotropical Migratory Birds

Direct/Indirect Impacts
There is a suite of birds (e.g., Black-capped Chickadee, Northern Saw-whet Owl, Red Crossbill) that favor spruce-fir forests and these would be most affected by the management actions planned under this alternative. Even for them the impact would be minor due to the mobility of the birds, the remaining habitat available nearby and the small size patches involved. Birds that do not have an affinity for spruce-fir or northern hardwood forests should be negligibly impacted by removal of spruce from these sites and the continued loss of large hardwood species.

Cumulative Impacts
As with CNFS and other wildlife there would be cumulative impacts on migratory birds as spruce-fir forests are lost to other activities throughout the southern Appalachian Mountains. In addition to the loss of habitat there are also concerns with impacts to breeding activity, foraging and survival rates from the associated noise, increased night-time lighting, introduction of pets and habitat fragmentation. The small total size involved, small size of each vista and the fact that the sites are spread out over more than 100 miles of the Parkway would reduce the impact of this project on a landscape scale.

PIF considers early successional plant communities to be an important and declining habitat for birds. Most of this type of habitat in the southern Appalachians is quickly lost as it progresses to mature forests or is cleared for development. Little of it remains available for wildlife use. The early successional habitat created under Alternative B would be very small in size and low in quality and would likely not provide beneficial habitat to birds that use this habitat.

Conclusion
While birds that use spruce-fir forests would be impacted the most, no bird species should be negatively impacted at a significant level under Alternative B. The maintenance of vistas on a regular basis could

benefit early successional forest birds but the small size of the sites and the high density of the vegetation would generally keep any of them from being quality habitat for these species. Impacts to neotropical migratory birds would be negligible to minor, with most of the difference depending on the specific bird addressed. Removal of spruce from these sites would be continued and so the duration of this impact would be long-term. Implementation of Alternative B would not lead to an impairment of the Blue Ridge Parkway's neotropical migratory bird species or habitat.

Cultural Landscapes

Direct/Indirect Impacts
Alternative B would preserve to the greatest extent the cultural landscape as envisioned by park designers. This alternative would maintain vista integrity in terms of shape and depth. Though some vista clearings have been eliminated through time, this alternative would maintain the 167 vista clearings in North Carolina in CNFS habitat.

Cumulative Impacts
Based on three Cultural Landscape Reports that have been prepared at sites other than those considered in this analysis, Parkway cultural landscapes appear generally to be intact. Though elements such as vegetation succession, picnic tables, animal-proof trash receptacles, lantern posts, wayside exhibits, etc., have changed and are not always consistent, overall design elements and principles are still observable and in-use. Thus, maintaining as many vistas as possible is preferred, and would be maintained under Alternative B.

Conclusion
This alternative would maintain to the greatest extent the original design and maintenance standards of the Blue Ridge Parkway. Alternative B would not lead to an impairment of cultural landscapes at the park. The discussion of intactness under the recreational/visual resources section has a direct correlation with impacts to the cultural landscape.

Recreational/Visual Resources

Direct/Indirect Impacts
Implementation of this alternative would maintain a visitor's ability to view scenery from Parkway overlooks and roadside vistas. Overall implementation would have a positive effect on visitor experience and enjoyment. Vistas would be maintained in a manor consistent with decades of visitor expectation. Thus, a visitor who experienced the Parkway as a child could bring their children to the Parkway 25 years from their last visit and expect to be able to view scenery from the same observation point. However, lack of oversight could have long-term negative effects of exposing land management practices not commonly thought to be of high aesthetic value such as open-pit mining and the construction of housing developments along steep slopes.

The current vista clearing contract identifies several species of conifers and ornamental trees and shrubs to be left in the vistas, including flowering dogwood, rhododendron, laurel, and flame azalea. The exclusion of cutting or thinning these types of vegetation over time has reduced or eliminated the intactness of approximately 25% of vistas. To maintain all vistas at 90-100% intactness, a review of these exclusions would be necessary at each vista. In addition, approximately 20% of vistas have lost intactness due to trees at the current vista clearing limits growing too tall, thus blocking valley views. To maintain the historic view, it would be necessary to cut or prune some tall tree species every 40 to 50 years as these trees at the vista edge mature and obscure the view. Currently vistas average 60% intactness due to the moratorium on cutting vistas and excluding conifers and flowering trees and shrubs.

Cumulative Impacts

Cumulative impacts would be positive under Alternative B, as visitors would be able to view scenery much the same as they have done since the Blue Ridge Parkway was opened. It is not suggested that all vistas be maintained at 100% intact. Complete intactness requires that all vistas be clear cut of vegetation which would create a distinctive edge with little variety of species or accent flowering plants.

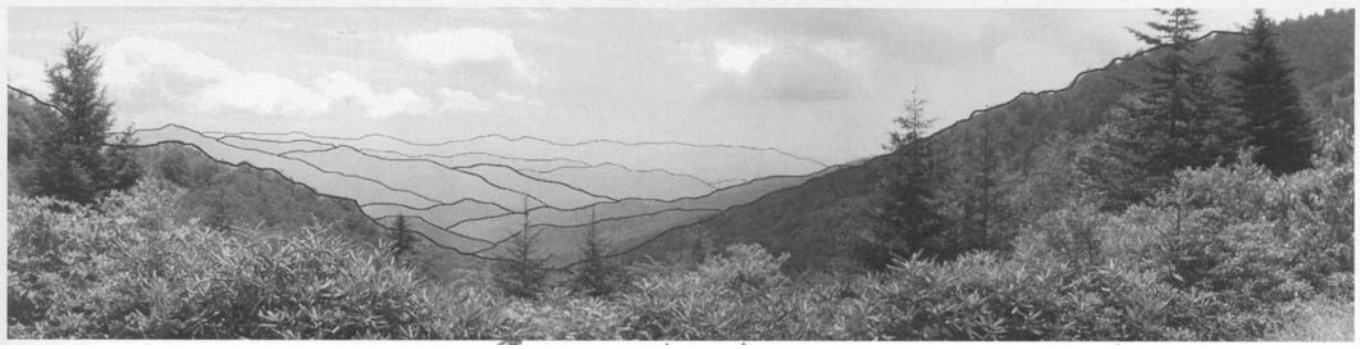

Figure 4 **Vista 90-95% Intact (Alternative B: Historic Management Method)**

Conclusion

This alternative would maintain the greatest number of vistas in their historic configuration and allow visitors to view undeveloped forested and national park lands.

Human Health and Safety

Direct/Indirect Impacts

Under Alternative B, maintaining vistas would have both positive and negative health and safety impacts for employees, contractors and park visitors. Improper use of chainsaws could injure employees and contractors. However, potential injuries caused by maintenance equipment could be reduced through education and proper contractor/employee training.

Opportunities to view scenery or wildlife could provide a distraction for drivers causing vehicle accidents. Driver distractions could also be caused by a number of other reasons, thus this hazard would still exist where natural openings in vegetation exist. Maintaining vistas under this alternative would provide the opportunity to focus views along the road in safer locations and could provide improved site distance, as well as provide better day lighting of road pavement for snow melt.

Vistas created on steep slopes could be difficult for employees/contractors to negotiate causing loss-time injuries; vegetation cleared on vistas could leave stobs that trip or puncture employees or contractors. This hazard exists all along the Parkway even in areas where vista management has not occurred in the past. Roadside vistas could pose a hazard to visitors trying to stop along the motor road to take photographs. Not maintaining vistas would limit the location of openings to areas where natural openings would tend to occur. These natural openings could occur in locations where there is a lack of sight distance or road shoulder.

Vista clearing removes trees that could become hazards along the motor road and in pull-outs.

Cumulative Impacts
Human health and safety impacts to visitors, employees and contractors would be positive and long-term under implementation of this alternative. There could be minor, short-term negative impacts during maintenance activities which could be reduced through education and worker awareness.

Conclusion
Under Alternative B, there would be positive, long-term human health and safety impacts on visitors, employees and contractors. Maintaining vistas would provide driver's improved site distance and better day lighting of road pavement where ice and snow tend to accumulate along the motor road.

Socioeconomic Environment

Direct/Indirect Impacts
Under Alternative B, vistas would be maintained as they have historically been managed, and would provide positive impacts to park visitors while driving along the scenic motor road. Visitors would experience unimpeded views of surrounding forests within adjacent counties. Hiring of local workers needed to assist in vista clearings would reduce unemployment in surrounding cities and counties.

Cumulative Impacts
Meeting visitor expectation and guaranteeing the opportunity to view scenery as past generations have viewed them would have positive impacts to adjoining counties through increased visitation. Under this alternative, unemployment within surrounding counties would be decreased as local workers would be hired to perform vista clearings.

Conclusion
There would be positive, long-term effects to the local tourism industry under Alternative B as visitation would increase due to visitors seeking views of undeveloped forested scenery. Local workers would be provided opportunities for jobs as vista clearing contracts would be utilized, which would positively impact the local and regional economy through expenditures from workers accessing local hotels, restaurants, etc.

ALTERNATIVE C – DEVELOP DESIRED FUTURE CONDITIONS FOR INDIVIDUAL VISTA CLEARINGS THAT HAVE POTENTIAL TO AFFECT CNFS

Under Alternative C, the Parkway would implement management guidelines and mitigation objectives utilizing mechanical and chemical treatment techniques for each individual vista within potential CNFS habitat. Vegetation management recommendations are described in **Appendix B**. Implementation of these mitigation recommendations would both maintain the vista for visitor enjoyment and enhance potential CNFS habitat.

Actions under this alternative for the 167 vistas and overlooks identified as being in potential CNFS habitat would result in nine (9) sites continuing to be maintained as cleared vistas, twenty (20) sites being removed from the vista program and allowed to completely revegetate, and the remaining 138 sites would have modified management while still being maintained as vistas or overlooks. Of this last category 38 vistas would be permanently reduced in size with the area removed being allowed to revegetate. All of the 138 sites would allow red spruce to grow on the site for CNFS benefit, but would be thinned to open the view and promote healthy growth to the remaining stock while still allowing squirrel movement through the vista. The distance between conifers would not be more than 80% of the height of the trees (e.g., 50 foot tall trees should be no more than 40 feet apart). Birch would be allowed to grow unimpeded

in all 138 sites, as would any tree that has a cavity that would be suitable for nesting. Tall mature trees at some vista edges would be trimmed or removed to provide valley views that over time have become obliterated. Dependent on recommendations by the park's plant ecologist, some tall trees that are not CNFS dependent species may be selectively managed for cavity trees. The chart in **Appendix D** summarizes the proposed changes in vista management under Alternative C.

Soils

Direct/Indirect Impacts
Since vegetation would be allowed to succeed into forest over nearly 11 ha, the potential for erosion and large-scale landslides would be diminished. Woody shrubs and trees would recolonize sites that were previously cleared on a cyclic basis, and serve to stabilize soils on steep slopes. Under this alternative, the potential for erosion on the remaining disturbed lands would remain.

Cumulative Impacts
Across the southern Appalachian region soil loss is occurring primarily at lower elevations where agricultural practices result in excessive runoff and erosion. Stream buffers, which are strips of vegetation between waterways and agricultural fields, serve to intercept runoff and help reduce erosion. Soils are also being impacted across the region due to conversion of forest to residential and commercial use. Under this alternative soil resources would be conserved, thus offering a very small positive offset to the regional pattern.

Conclusion
Under Alternative C, soil resources would slightly benefit due to a reduction of cyclic vegetation clearing on 11 ha; however, the continued clearing of the remaining 40 ha would still present a slight chance of soil erosion and landslide potential on steep slopes. There would be no impairment of the park's resources or values with respect to soils under this alternative.

Vegetation

Direct/Indirect Impacts
Under this alternative, the footprint of disturbance would be reduced 50 to 40 ha. The reduced disturbance would make it more difficult for invasive exotic plants to become established and thereby reduce the threat these species present to natural systems. Vegetation, including the rare red spruce-Fraser fir forest, would be allowed to recolonize previously maintained areas. Rare species could become established as habitat conditions become more favorable.

Cumulative Impacts
Across the southern Appalachian region land conversion from forested to residential housing is occurring at an alarming rate. This alternative would offset this trend by returning nearly 11 ha of high elevation habitat to forested habitats.

Conclusion
Under Alternative C, vegetation resources would benefit from the reduction of perpetual disturbance caused by the vista management program. The beneficial impacts would be both short- and long-term. There would be no impairment of the park's vegetation resources.

Threatened and Endangered Species

Carolina Northern Flying Squirrel

Direct/Indirect Impacts

Management actions under this alternative would offer different options at each vista based on potential future CNFS habitat suitability, surrounding existing habitat, distance to known squirrel populations, and size/shape of the vista or overlook. These options (see **Appendix B**) have been created with the primary intent of benefiting CNFS at each site if it appears that the site could provide suitable habitat. During site visits, Parkway biologists identified whether sites provided suitable habitat for CNFS or if the site would provide suitable habitat if vegetation was allowed to grow. In addition, biologists also examined the area surrounding the vista to see if the vista was an island in relatively inhospitable habitat or if squirrels could use the site as part of a larger habitat patch. If the site was not considered to be good habitat then it was identified as a vista that would be managed under the same standards as sites elsewhere along the Parkway where CNFS were not found. Twenty sites were identified as being suitable CNFS habitat but were either so overgrown with large trees that it would be impractical to restore as a vista, were located in areas where there were several other vistas nearby, or did not offer unique views, thus these sites were identified for removal from the vista program. The remaining 138 sites have been identified as suitable CNFS habitat and would be managed as vistas but with a different standard than the rest of the Parkway's vistas.

Management of these 138 sites would focus on retaining vegetation that benefit CNFS, primarily red spruce, Fraser fir and yellow birch. Benefits from these trees result from providing nesting sites and by providing food resources. Other tree and shrub species would be cut from the vistas on scheduled rotations. Enough vegetation would be left on the site to allow squirrels to move through the site without having to scamper across bare ground where they would be exposed to predators and would be less likely to travel. This would be done by ensuring that trees would not be thinned to the extent that the distance between spruce trees is greater than 80% of the height of the trees (100 foot tall trees would be no more than 80 feet apart) so that squirrels could glide from one tree to the next. Select large birch would be left on or adjacent to the vista to provide nesting cavities.

Cumulative Impacts

CNFS habitat is limited to high elevation sites consisting of spruce-fir forest and northern hardwood ecotone. While these sites have been fairly well protected from development, there is increasing pressure as lands that used to be too steep or too remote are now being developed for summer homes and permanent residences. Fortunately most spruce-fir forests in the southern Appalachians are owned by either government agencies or by private land conservation organizations; therefore, much of the core habitat is protected, with development limited to nibbling away at the edges and in the northern hardwood forests.

An introduced aphid has decimated the Fraser fir throughout the southern Appalachians leaving red spruce to take its place in what used to be spruce-fir forests. While no diseases or pests are on the horizon for spruce or yellow birch, both of these trees could suffer greatly from global warming. Increasing temperatures could force these trees higher and higher up the mountains until there is no longer anywhere left to go, presumably taking northern flying squirrels with them.

Conclusion

Under Alternative C, there would be in excess of 125 acres of Parkway vistas being made available to Carolina Northern Flying Squirrels. For the southern Appalachians this would increase available land by 0.04% and CNFS habitat within the park by 1.1%. While at some sites the size and location of the vista

could provide sufficient habitat that the impacts to local populations could be moderate, in many areas the small size of the vistas would result in significant benefits. Squirrels would not be harmed at any sites by these changes in vegetation management under this alternative.

The impacts from this new management technique could potentially benefit squirrels at each vista, though it is likely that the benefit at each site would be negligible to moderate, depending on the site being considered, while overall impacts at the sites in total would be minor. Duration would be long-term as these proposed changes in management would continue indefinitely. Implementation of Alternative C would not lead to an impairment of these resources on the Blue Ridge Parkway.

Indiana Bat

Direct/Indirect Impacts
Under this alternative, allowing spruce and birch trees to grow within the vistas could potentially provide some maternity sites for Indiana bats, though the generally low quality habitat at these sites would make this benefit negligible to the species overall.

Cumulative Impacts
As development pressures increase throughout the southern Appalachians, along with continued logging of mature forests, habitat for Indiana bats is being lost. This is countered by increases in mature forests in some areas as second-growth woods continue to age. Many areas along the Parkway are in this situation and would provide improved habitat for Indiana bats in the future. These areas, however, are not sites that are also quality habitat for CNFS and so are not affected by the activities considered under this alternative.

Conclusion
Under Alternative C, Indiana bats would not likely be harmed or benefit significantly. The low quality of the habitat, the small size of each site and the discontinuous array of the sites make it unlikely that Indiana bats would be harmed at all and also likely that any benefit would be negligible to the species overall. Implementation of this alternative would not lead to an impairment of these resources on the Blue Ridge Parkway.

Wildlife

Direct/Indirect Impacts
Under Alternative C, spruce and birch would increase at these sites and so species that benefit from these two trees could see a slight benefit at some of the larger sites or where several small sites are grouped. Species that prefer edges rather than forests would lose habitat though edge habitat would still be abundant along the Parkway.

Cumulative Impacts
In general, wildlife throughout the southern Appalachians is declining due to habitat loss resulting from development, logging, agricultural activities and other causes. Populations of species that are able to adapt to these changes are increasing or remaining stable. Others that require more “natural” conditions are declining. For most of these declining species habitat loss is the major cause of their decline.

Conclusion
The impact on wildlife would vary significantly depending on the species being considered, though most species should benefit or at least be neutrally affected under Alternative C. Impacts to wildlife under this

alternative would be negligible to minor, depending on the species being considered. Duration of these benefits would be long-term and there would be no impairment to wildlife resources on the Blue Ridge Parkway under Alternative C.

Neotropical Migratory Birds

Direct/Indirect Impacts
Several bird species are dependent on spruce-fir and northern hardwood forests and have been identified as high priority species by PIF. While the vegetation management under this alternative would not result in "natural" spruce-fir-northern hardwood forests, it would provide additional lands that provide many of the benefits at a slightly lower quality.

Cumulative Impacts
Spruce-fir forests are still highly impacted by development and environmental pressures despite the protection of much of this habitat type by governmental agencies and land conservation organizations.

Conclusion
While most species of neotropical migratory birds would not be impacted either beneficially or negatively by this alternative, those that use spruce-fir and northern hardwood forests would benefit by the creation of new habitat. Impacts would be long-term and negligible to moderate with the most significant impacts on birds that use spruce-fir or northern hardwood forests. Implementation of Alternative C would not lead to an impairment of the Blue Ridge Parkway's Neotropical migratory bird species or habitat.

Cultural Landscapes

In accordance with Section 106 of the NHPA, the NPS consulted with the North Carolina SHPO in October 2007 requesting SHPO input on the proposed project (see **Figure A-5**). The consultation resulted in no comment from the SHPO. The NPS prepared a *Section 106 Assessment of Actions* with a No Adverse Effect determination which would also result in better management of cultural landscapes (see **Figure A-6**).

Direct/Indirect Impacts
By establishing a desired future condition for each of the overlooks and roadside vistas, the scenic quality and cultural landscape could be maintained, though changed from wholesale removal of vegetation. Views would be framed and dotted by evergreen and deciduous trees and not entirely blocked. If the establishment of rhododendron in vistas is used by and/or provides cover for CNFS, then many of the vista clear-cuts that are currently impacting CNFS could be modified to include a shrub layer. In either case, the cultural landscape would be preserved, though somewhat different. The proposed changes under this alternative would be in keeping with the initial philosophy of management of vistas by trial and error (adaptive management). The impact of removing 20 vistas from the viewshed program, and reducing 38 others in size, would be negligible. The discussion of intactness under the recreational/visual resources section has a direct correlation with impacts to the cultural landscape.

Cumulative Impacts
Under Alternative C, nine of the vistas would be left as they are while 20 other vistas would be closed. The remaining 138 vistas would be retained, but vegetation would be managed differently. Though the vista integrity would change, by some being reduced in size and others retaining a larger amount of vegetation, views would still be intact, though selectively framed with vegetation needed by CNFS.

Conclusion
Alternative C would preserve the cultural landscape by retaining 138 vistas and managing them in a way to protect CNFS. Though a change in shape and size of individual vistas would occur, the view would be minimally impacted and in some instances greatly enhanced or restored. Change would be minor over the long-term. There would no impairment to cultural landscapes under this alternative.

Recreational/ Visual Resources

Direct/Indirect Impacts
Surveys of Parkway visitors and travelers to the area have shown that if the scenic quality of the Parkway were greatly changed, fewer visitors would make return visits. Implementation of Alternative C would maintain and enhance both potential CNFS habitat and the visitor's recreation experience of viewing scenery. Specific desired future conditions developed at each vista would allow park management, through selective vegetation removal, to direct a visitor's view and screen undesirable land uses and development while providing potential CNFS habitat. The inclusion of conifer species and den trees within the vista would provide visual variety and foreground landscape elements not found in a typically clear cut vista. Clumping and grouping of rhododendron and laurel with spruce-firs and other conifers would provide visual variety and cover for squirrel movement along the ground. As conifers mature they would be thinned to maintain the 80% height to spacing ratio. Typically, all woody vegetation except some spruce-fir and groupings of rhododendrons would be removed within the first 20 feet of the vista.

Tall mature trees at some vista edges would be trimmed or removed to provide valley views that over time have become obliterated. Dependent on recommendations by the park's plant ecologist, some tall trees that are not CNFS dependent species may be selectively managed for cavity nesting trees.

Cumulative Impacts
Cumulative impacts would be overall positive and improved over both historic and current vista management. Visitors would be able to view scenery much as they have done since the Parkway was opened, however, under this alternative, park managers would be able to obscure unattractive land uses and development and frame aesthetic views, thus enhancing the visitor's satisfaction of viewing scenery.

The current vista clearing contract identifies several species of conifers and ornamental trees and shrubs to be left in the vistas, including flowering dogwood, rhododendron, laurel, and flame azalea. The exclusion of cutting or thinning these types of vegetation over time has reduced or eliminated the intactness of approximately 25% of vistas. To maintain a visitor's ability to view scenery, a review of these exclusions would be necessary at each vista. In addition, approximately 20% of vistas have lost intactness due to trees at the current vista clearing limits growing too tall, thus, blocking valley views. To maintain the historic view it would be necessary to cut, prune or create cavity tree candidates for some tall tree species every 40 to 50 years as these trees at the vista edge mature and obscure the view. Currently vistas average 60% intactness due to the moratorium on cutting vistas and excluding conifers and flowering trees and shrubs. It is expected that if cutting were to commence as outlined for each vista in **Appendix B** that an average intactness of 86% could be obtained.

Figure 5 **Vista 85% Intact (Alternative C: Preferred Alternative)**

Conclusion

Cumulative impacts would be positive under Alternative C. Implementation of mitigation measures outlined in **Appendix B** would benefit CNFS and visitors would be able to view scenery much the same as they have done since the Blue Ridge Parkway was opened. More variety of plant species would be found within the vistas providing an increase in visual variety during all viewing seasons. Cutting of tall mature trees (45-50 year cycles) without expanding the vista would have the potential to create cavity nesting trees and would restore valley views.

Human Health and Safety

Direct/Indirect Impacts

Under Alternative C, maintaining vistas would have both positive and negative health and safety impacts for employees, contractors and park visitors. Improper use of chainsaws could injure employees and contractors. However, potential injuries caused by maintenance equipment could be reduced through education and proper contractor/employee training.

Opportunities to view scenery or wildlife could provide a distraction for drivers causing vehicle accidents. Driver distractions could also be caused by a number of other reasons, thus this hazard would still exist where natural openings in vegetation exist. Maintaining vistas under this alternative would provide the opportunity to focus views along the road in safer locations and could provide improved site distance, as well as provide better day lighting of road pavement for snow melt.

Vistas created on steep slopes could be difficult for employees/contractors to negotiate causing loss-time injuries; vegetation cleared on vistas could leave stobs that trip or puncture employees or contractors. This hazard exists all along the Parkway even in areas where vista management has not occurred in the past.

Roadside vistas could pose a hazard to visitors trying to stop along the motor road to take photographs. Maintaining a variety of vistas would allow park visitors multiple vantage points in which to view scenery.

Vista clearing removes trees that could become hazards along the motor road and in pull-outs.

Cumulative Impacts
Human health and safety impacts to visitors, employees and contractors would be positive and long-term under implementation of this alternative. There could be minor, short-term negative impacts during maintenance activities which could be reduced through education and worker awareness.

Conclusion
Under Alternative C, there would be positive, long-term human health and safety impacts on visitors, employees and contractors. Maintaining vistas would provide driver's improved site distance and better day lighting of road pavement where ice and snow tend to accumulate along the motor road.

Socioeconomic Environment

Direct/Indirect Impacts
Under Alternative C, management of vistas would have positive impacts on visitors while driving along the scenic motor road of the Blue Ridge Parkway. Views of the surrounding national forest and Great Smoky Mountains National Park would be maintained and degraded views would be screened from visitors. Hiring of local workers needed to assist in vista clearings would reduce unemployment in the surrounding areas.

Cumulative Impacts
Meeting visitor expectation and guaranteeing the opportunity to view scenery as past generations have viewed them would have positive impacts to adjoining counties through increased visitation. Under this alternative, unemployment within surrounding counties would be decreased as local workers would be hired to perform vista clearing work.

Conclusion
There would be positive, long-term effects to the local tourism industry under Alternative C as visitation would increase due to visitors seeking views of undeveloped forested slopes which are becoming a rarity in the region. Local workers would be provided opportunities for jobs as vista clearing contracts would be utilized, which would positively impact the local and regional economy through expenditures from workers accessing local hotels, restaurants, etc.

CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT

The purpose of the scoping process, as outlined in CEQ's regulations for implementing NEPA (40 CFR 1501.7), is to determine the scope of issues to be addressed in the EA and to identify significant issues relating to the proposed action. The lead agency is required to invite input from federal, state, and local agencies, affected Native American tribes, project proponents, and other interested parties (Section 1501.7 (a)(1)). To satisfy scoping requirements for this project, scoping letters were mailed out requesting public and agency input on issues to be addressed in the EA. **Table A-1** in **Appendix A** lists all persons, agencies/organizations to whom the scoping letters were sent. The public scoping letter is presented as **Figure A-1**, and the news release that announces that the Parkway was seeking public input as **Figure A-2**.

The public scoping period for the project began on October 1, 2007 and ended on November 19, 2007. Only one comment was received from the public during this period and this comment was in favor of the proposed project. The NPS also underwent consultations with several state and federal agencies regarding the project. These consultation letters are presented in **Figures A-3** through **A-5** in **Appendix A**.

PREPARERS AND CONTRIBUTORS

U.S. Department of the Interior, National Park Service, Blue Ridge Parkway

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COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The following laws and associated regulations provided guidance for the development of this EA, the decision on the Preferred Alternative and alternatives, the analysis of impacts, and the creation of mitigation measures to be implemented as part of the Preferred Alternative. Summaries of the following laws, as well as a complete list of environmental laws and regulations relevant to the project, are provided in **Appendix E** of this EA.

Endangered Species Act of 1973, as amended (ESA) (16 USC 1531-1544):

Section 7 of the ESA requires that a Federal agency consult with the USFWS on any action that may affect endangered, threatened, or candidate species, or that may result in adverse modifications of critical habitat. Implementing regulations that describe procedures for interagency cooperation and consultation with regards to effects on threatened, endangered, or proposed species are contained in 50 CFR 402.

The United States Fish and Wildlife Service (USFWS), the NC Wildlife Resources Commission and the NC Natural Heritage Database were contacted regarding potential impacts of the project on natural heritage resources, including rare, threatened, or endangered plant and animal species. The CNFS would benefit under the Preferred Alternative by the increase in available land and habitat. The USFWS responded in a letter dated November 1, 2007 (see **Appendix A**). Mitigation measures to ensure protection of this species was provided by the NCWRC in a letter dated October 25, 2007, and have been incorporated in the proposed project.

National Environmental Policy Act of 1969 (NEPA) (42 USC 4321-4370):

This Act requires Federal agencies to evaluate the environmental impacts of their actions and to integrate such evaluations into their decision-making processes. Implementing regulations for NEPA are contained in 40 CFR 1500 through 1508. This EA was prepared in accordance with NEPA and its implementing regulations.

National Historic Preservation Act of 1966, as amended (NHPA) (16 USC 470 et seq.):

Section 106 of the NHPA requires Federal agencies to consider the effects of their proposals on properties listed or eligible for listing in the National Register of Historic Places. Section 106 also directs Federal agencies to provide the state historic preservation officer, tribal historic preservation officers, and, as appropriate, the Advisory Council on Historic Preservation, a reasonable opportunity to review and comment on these proposals.

The NPS has consulted with the North Carolina SHPO, as required by Section 106 of the NHPA, as amended, and it's implementing regulations (36 CFR 800). The NPS initiated consultation in October 2007 requesting SHPO input on the project. The consultation resulted in no comment from SHPO (see **Figure A-5**). The *Section 106 Assessment of Actions* was determined to be No Adverse Effect, signed by the Parkway Superintendent on March 10, 2008 (see **Figure A-6**).

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APPENDIX A

PUBLIC SCOPING AND AGENCY COORDINATION

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Figure A-1. Scoping Letter

United States Department of the Interior

National Park Service
Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, North Carolina 28803

IN REPLY REFER TO

L7617
PIN 11396

October 1, 2007

Dear Interested Party:

Pursuant to the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) NEPA regulations (40 Code of Federal Regulations (CFR) 1500 to 1508), and the National Park Service (NPS) NEPA compliance guidelines (DO-12), the NPS has decided to prepare an Environmental Assessment (EA) for Vista Management within Carolina Northern Flying Squirrel (CNFS) Habitat along the Blue Ridge Parkway (BLRI). The Parkway currently manages 264 overlooks along its 469-mile length. One hundred thirty-eight vistas and overlooks are in potential CNFS habitat and will be considered under this plan.

Vistas including overlooks and roadside vistas were designed along the Parkway to provide long-distance views to the visiting public. The sequence of views through individual sections of the Parkway was carefully planned. Many of these planned vistas had specific points of interest such as a scenic mountain peak, a rock outcrop, waterfall, lake, stream, or farmstead that were showcased as focal points. Designers envisioned the planned scenic vistas to remain open as a window to the scenic beauty as is evident on the original design drawings that show where they were located and how large an area they included.

The need to actively manage vistas through vegetation removal is essential to keeping this recreation opportunity available to future generations. By virtue of the geographical location and placement of the Parkway motor road along the southern Appalachian chain in North Carolina, the habitat for Carolina Northern Flying Squirrel (*Glaucomys sabrinus coloratus*) was traversed. Listed as an endangered species in 1985, some 25-30 years after the construction of the Parkway through its habitat, the CNFS now receive additional protection through the Endangered Species Act and through NPS Management Policies. Several areas along the Parkway have been identified in the US Fish & Wildlife Service (USFWS) Recovery Plan as Geographic Recovery Areas.

The EA will investigate the potential for effects on any environmental resources resulting from this proposal. We welcome your comments, suggestions, or other inputs concerning this project to help us identify issues of concern and interest and ensure that the EA thoroughly addresses potential effects of the proposal. Your participation will aid BLRI in making a well-informed decision about whether and how to proceed with this project.

TAKE PRIDE IN AMERICA

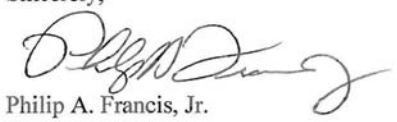
If you would like to provide comments on this project or request a copy of the EA, you may do so using the NPS Planning, Environment, and Public Comment (PEPC) Internet-based system. Persons wishing to provide comments on the proposed project are asked to please submit all comments by **November 19, 2007**. Comments can be made directly online by going to the following link: *http://parkplanning.nps.gov/projectHome.cfm?parkId=355&projectId=11396*

Written comments may also be submitted to:

Blue Ridge Parkway
Attn: Suzette Molling
199 Hemphill Knob Road
Asheville, North Carolina 28803-8686

It is the practice of the NPS to make all comments, including the names and addresses of respondents who provide the comments, available for public review following the conclusion of the scoping process. Individuals may request that the NPS withhold their name and/or address from public disclosure. If you wish to do this, you must state this prominently at the beginning of your comment. Commentators using the PEPC website can make such a request by checking the box "keep my contact information private." The NPS will honor such requests to the extent allowable by law, but you should be aware that the NPS may still be required to disclose your name and address pursuant to the Freedom of Information Act.

Sincerely,



Philip A. Francis, Jr.
Superintendent

Figure A-2. News Release

National Park Service
U.S. Department of the Interior

Blue Ridge Parkway
www.nps.gov/blri

199 Hemphill Knob Road
Asheville, NC 28803

Blue Ridge Parkway News Release

October 1, 2007

For Immediate Release

Contacts: Bob Cherry (828) 295-7591; email bob_cherry@nps.gov

Parkway Seeks Public Input
For Vista Management within Carolina Northern Flying Squirrel Habitat

(Asheville)—The Blue Ridge Parkway (Parkway) is seeking public input, through November 19, to identify issues and additional study that will be needed to develop an Environmental Assessment (EA) for managing vistas within Carolina Northern Flying Squirrel (CNFS) habitat along the Parkway. Listed as an endangered species in 1985, some 25-30 years after the construction of the Parkway through its habitat, the CNFS now receive additional protection through the Endangered Species Act and through NPS Management Policies.

Parkway officials said that they currently manage 264 overlooks along its 469-mile length. One hundred thirty-eight vistas and overlooks are in potential CNFS habitat and would be considered under this plan.

The project scoping phase, now underway, is the initial step in the development of an Environmental Assessment that will analyze alternatives and their potential impacts.

For more information and to comment on this project, visit the National Park Service website: http://parkplanning.nps.gov. Select Blue Ridge Parkway from the park dropdown menu and then click on project title "EA for Vista Management within Carolina Northern Flying Squirrel Habitat." Information is also available, and comments may be made by writing to: Blue Ridge Parkway, ATTN: Suzette Molling, 199 Hemphill Knob Road, Asheville, NC 28803. Comments must be postmarked by November 19.

Comments are typically treated as a public record and made available for public review. Individuals may request that the National Park Service withhold their name and address from disclosure. Such requests will be honored to the extent allowable by law.

##

EXPERIENCE YOUR AMERICA
The National Park Service cares for special places saved by the American people so that all may experience our heritage.

Figure A-3. USFWS Comment Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

November 1, 2007

Ms. Suzette Molling
National Park Service
Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, North Carolina 28803

Dear Ms. Molling:

Subject: Proposed Clearing of Vistas on the Blue Ridge Parkway in North Carolina

We received a letter from Superintendent Philip A. Francis, Jr., dated October 1, 2007, in which he requested our comments on the subject project. The following comments are provided in accordance with the provisions of the National Environmental Policy Act; the Migratory Bird Treaty Act (16 U.S.C. 703-711); and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

According to Mr. Francis's letter, the National Park Service, Blue Ridge Parkway (Parkway), will prepare an Environmental Assessment (EA) for vista management within Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*) habitat along the Parkway. The Parkway currently manages 264 overlooks along its 469-mile length. One hundred thirty-eight vistas and overlooks are in potential Carolina northern flying squirrel habitat, several of which have been identified by the U.S. Fish and Wildlife Service as Geographic Recovery Areas. The following sections of the Parkway have been identified as containing suitable habitat for the Carolina northern flying squirrel:

- Mileposts 350.6 - 366.9 (Mt. Mitchell/Craggy area) - 16.3 miles, 42 sites (45.5 acres);
- Mileposts 407.5 - 408.4 (Mt. Pisgah area) - 0.9 mile, 8 sites (3.2 acres);
- Mileposts 417.9 - 433.3 (Graveyard Fields/Richland Balsam area) - 15.4 miles, 49 sites (48.2 acres); and

- Mileposts 445.8 - 458.2 (Waterrock Knob area) - 12.4 miles, 39 sites (25.8 acres).

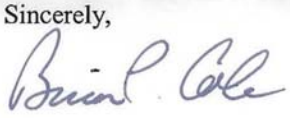
Vistas, including overlooks and roadside vistas, were designed along the Parkway to provide long-distance views to the visiting public. The sequence of views through individual sections of the Parkway was carefully planned. Many of these planned vistas had specific points of interest that were showcased as focal points, such as a scenic mountain peak, a rock outcrop, waterfall, lake, stream, or farmstead. Vistas must be actively managed through vegetation removal in order to keep this recreation opportunity available to future generations.

We have been working on this project with the Parkway over the past several years and recently completed an informal consultation regarding vista management (35 vistas, 1 of which was in potential Northern flying squirrel habitat) in Haywood County, North Carolina. Thus, at this time, we have no additional information to provide regarding the Carolina northern flying squirrel for you use in preparation of the EA. The scoping comments sent to you by the North Carolina Wildlife Resources Commission (their letter dated October 25, 2007) provides a good overview of the possible impacts of vista management and some possible mitigative measures.

In addition to your consideration of potential impacts to the Carolina northern flying squirrel, we recommend surveying the affected areas (if suitable habitat is present) for other rare species prior to any on-the-ground activities to ensure that no populations of these species are inadvertently lost. Please reference our web site (*http://www.fws.gov/nc-es/es/countyfr.html*) for lists of species for Alleghany, Ashe, Avery, Buncombe, Caldwell, Haywood, Henderson, Jackson, McDowell, Mitchell, Swain, Watauga, Wilkes, and Yancey Counties that are on the *Federal List of Endangered and Threatened Wildlife and Plants* and federal species of concern that may occur in the project impact area. Federal species of concern are not legally protected under the Act and are not subject to any of its provisions, including section 7, unless they are formally proposed or listed as endangered or threatened. We are including these species in our response to give you advance notification.

In any future correspondence pertaining to this matter, please reference our Log Number 4-2-07-382. Questions regarding our comments should be directed to Mr. Allen Ratzlaff of our staff at 828/258-3939, Ext. 229.

Sincerely,



Brian P. Cole
Field Supervisor

cc:
Mr. David McHenry, Mountain Region Reviewer, North Carolina Wildlife Resources Commission, 20830 Great Smoky Mtn. Expressway, Waynesville, NC 28786

Figure A-4. NCWRC Comment Letter

North Carolina Wildlife Resources Commission

MEMORANDUM

TO: Suzette Molling, Environmental Protection Specialist
National Park Service, Blue Ridge Parkway

Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: Dave McHenry, Mountain Region Coordinator
Habitat Conservation Program

DATE: October 25, 2007

SUBJECT: Vista Management within Carolina Northern Flying Squirrel Habitat

OLIA No. 08-0106

The National Park Service (NPS), Blue Ridge Parkway will prepare an Environmental Assessment (EA) for vista management within Carolina Northern Flying Squirrel (CNFS) habitat along the Blue Ridge Parkway (BRP). The Commission has identified issues and been involved in discussions with the NPS and U.S. Fish and Wildlife Service regarding management of BRP vistas in CNFS habitat. Comments from the North Carolina Wildlife Resources Commission (Commission) are provided under provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the North Carolina Statutes (G.S. 113-131 et seq.), and the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). These comments are based primarily on knowledge of CNFS populations, habitats, and threats acquired via annual surveys as well as research by others.

The Commission appreciates the NPS's effort to modify vista management to minimize impacts to CNFS and their habitat. Habitat along the BRP may be used for nesting, foraging, diurnal den sites, and dispersal to other patches of habitat. Squirrel box surveys and telemetry studies have demonstrated that

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

squirrels will den in boxes and natural cavities in close proximity to scenic roadways such as the BRP and that an extremely wide road prism can be a barrier to dispersal. Maintaining den sites, foraging habitat, crossing points, and forested dispersal corridors is a high priority for this species given its isolated distribution and restriction to high elevation mountaintop islands.

Management of large vistas and vistas containing the highest quality habitat (spruce-fir-northern hardwood) are the greatest concern. Moreover, vista maintenance in potential CNFS habitat prevents areas from developing into suitable habitat. The following are concerns about vista management and recommended measures to help mitigate adverse effects on CNFS:

(1) Minimize management of large vistas in CNFS habitat. If partial management is slated for a large vista, scattered trees should be retained to allow squirrels to glide across the opening.

(2) Avoid creation of new vistas in suitable habitat.

(3) CNFS require trees for launching into a glide, which is their preferred mode of locomotion. Habitats could become fragmented and squirrel movements impaired or effectively blocked where two managed vistas are situated directly opposite each other.

(4) Management of a small vista may not be as detrimental as management of a large vista. However, the cumulative loss of habitat resulting from the management of several small vistas could harm populations, particularly in the absence of mitigation.

(5) CNFS do occur in high elevation red oak forest, though at lower abundance, and will move through it to access preferred habitat. Impacts to this habitat type should include retention of some trees to facilitate dispersal through the area.

The Commission recommends mitigating for the cumulative loss of habitat from vista management and encourages the NPS to develop a management strategy for the habitat. The following are specific mitigation approaches to consider:

(1) Planting where appropriate red spruce within the CNFS range (Black-Craggy Mountains, Great Balsams, Plott Balsams).

Figure A-5. NCSHPO Comment Letter

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

RECEIVED
OCT 4 2007

STATE NUMBER: 08[illegible]-0000-0106 H09
DATE RECEIVED: 10/03/2007
AGENCY RESPONSE: 10/29/2007
REVIEW CLOSED: 11/03/2007

MS RENEE GLEDHILL-EARLEY
CLEARINGHOUSE COORD
DEPT OF CUL RESOURCES
ARCHIVES-HISTORY BLDG - MSC 4617
RALEIGH NC

OCT 2007
RECEIVED
Secretary's Office
DOA

REVIEW DISTRIBUTION
CC&PS - DEM, NFIP
DENR LEGISLATIVE AFFAIRS
DEPT OF AGRICULTURE
DEPT OF CUL RESOURCES
DEPT OF TRANSPORTATION
SWNC PLANN & ECON DEV COMM

PROJECT INFORMATION
APPLICANT: US Dept of Interior-National Pk Service
TYPE: National Environmental Policy Act
ERD: Scoping
DESC: Proposal to develop alternative strategies to protect & preserve Northern Flying Squirrel Habitat in Haywood County

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED:

☒ NO COMMENT

☐ COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley

DATE: 10-10-07

Figure A-6. Section 106 Assessment of Effects

National Park Service

ASSESSMENT OF ACTIONS HAVING AN EFFECT ON CULTURAL RESOURCES
BLUE RIDGE PARKWAY

Environmental Assessment for Vista Management Within Carolina Northern Flying Squirrel Habitat (PIN 11396)

The Park manages 847 vistas throughout the 469 miles of park. Some are located at parking overlooks while others occur along the motor road. Maintaining vistas requires annual selective clearing and thinning of fast growing trees, shrubs, and bushes with approximately one-third of the Parkway's vistas targeted each year.

Elongated and fairly narrow in many places, spruce-fir forest are present along the Parkway in North Carolina. Some of the park's vistas occur in spruce-fir forest above 4,500 feet, which is also habitat for the Carolina Northern Flying Squirrel (CNFS)(*Glaucomys sabrinus coloratus*), a federally listed Endangered animal. Listed primarily because of habitat loss and fragmentation throughout its range, the Parkway motor road and associated vistas passes through the middle of habitats, and is a major cause of habitat fragmentation.

In 2002, the Fish and Wildlife Service asked the park to undertake an analysis to determine if vista clearing activities along the Parkway adversely impacted CNFS. Data collection in 2004 and 2005 evaluated the forest type in and around park vistas. Potential habitat was compared to actual habitat data where squirrels had been captured. A summary of the results follows, and specific details of the park's analysis and findings are documented in an *Environmental Assessment for Vista Management Within Carolina Northern Flying Squirrel Habitat.*

Located along four sections of the Parkway motor road, one hundred thirty-eight vistas and overlooks in potential Carolina Northern Flying Squirrel habitat were analyzed:

- **MP 350.6 – 366.9** (Mt. Mitchell/Craggy area) -16.3 miles, 42 sites covering 45.5 acres;
- **MP 407.5 – 408.4** (Mt. Pisgah area) - 0.9 mile, 8 sites covering 3.2 acres;
- **MP 417.9 – 433.3** (Graveyard Fields/Richland Balsam area) - 15.4 miles, 49 sites covering 48.2 acres; and
- **MP 445.8 – 458.2** (Waterrock Knob area) - 12.4 miles, 39 sites covering 25.8 acres.

The study found that allowing trees to remain in overlooks that provide CNFS habitat would not alter the short-term or long-term views. On many steep slopes the trees that would be

retained would not block the view. On less steep slopes, spruce and fir trees spaced approximately 60 feet apart, might enter a portion of the viewing frame, it would not block the view and may serve to frame the view. Spruce-fir trees would be removed from the first 20 feet of the view, preventing total blockage of any view.

ASSESSMENT OF EFFECT:

Potentially Affected Resource(s): Parkway vistas are considered an integral part of the cultural landscape.

Potential Impacts of the Proposal: The proposed action will **NOT** destroy, remove, or alter features/elements from a historic structure; replace historic features/elements in kind; add non-historic features/elements to a historic structure; alter or remove features/elements of a historic setting or environment (inc. terrain); add non-historic features/elements (inc. visual, audible, or atmospheric) to a historic setting or cultural landscape; disturb, destroy, or make archeological resources inaccessible; disturb, destroy, or make ethnographic resources inaccessible; potentially affect presently unidentified cultural resources; begin or contribute to deterioration of historic features, terrain, setting, landscape elements, or archeological or ethnographic resources; or involve a real property transaction (exchange, sale, or lease of land or structures).

Preferred Alternative: While this alternative would not completely protect the cultural scene and views, there are mitigating measures that would preserve the majority of these sites. Though some viewing areas would be eliminated (17 within a 45 mile area; averaging one vista per 2.5 miles) under this alternative, several of the vistas that would be eliminated provide a view or contain a view that no longer meet Park standards, e.g., rock quarries. Many of those vistas that would be modified under this alternative involve a change in the vegetation footprint that would be managed (e.g., allowing some trees to grow within a prescribed mathematical arrangement) but not the viewing area (the distant view would still be visible). This alternative does not significantly reduce the viewing platform offered to visitors of the Park, and thus does not adversely impact the cultural landscape. The changes proposed in this alternative should not reduce visitation to the Park or adversely impact local businesses. Alternative C would also provide improved habitat for CNFS and would benefit other wildlife and vegetation.

Measures to prevent or minimize loss or impairment of historic/prehistoric properties:

- On many steep slopes the trees that would be retained would not block the view.
- On less steep slopes, spruce and fir trees spaced approximately 60 feet apart, might enter a portion of the viewing frame, it would not block the view and may serve to frame the view.
- Spruce-fir trees would be removed from the first 20 feet of the view, preventing total blockage of any view.

Assessment of Effect: No Adverse Effect

Compliance requirements: Compliance requirements satisfied by use of NEPA. An EA/FONSI has been developed to meet the requirements of 36 CFR 800.3 through 800.6

APPROVALS:

☑ *The proposed work conforms to the NPS Management Policies and Cultural Resource Management Guideline, and I recommend approval of the proposed project:*

Bambi Teague 2/4/2008
Bambi Teague, Chief, Resource Management and Science Date

☑ *I have reviewed and approve the recommendations and mitigations provided in this form:*

3-10-08
Philip A. Francis, Jr. Date

Attachment: Environmental Assessment

Table A-1. Persons Who Received the Scoping Letter		
Arthur Allen President, SHCG 207 River Ridge Road Asheville, NC 28803	Owen Anderson Mountain Region Coordinator Habitat Conservation Program NC Wildlife Resources Commission 1721 Mail Service Center Raleigh, NC 27699-1721	Chrys Baggett Environmental Policy Act Coordinator State Clearinghouse 1301 Mail Service Center Raleigh, NC 27699-1301
Jim Borawa Regional Fishery Biologist NC Wildlife Resources Commission 37 New Cross North Asheville, NC 28805-9213	Andy Brown Equinox Environmental 37 Haywood Street Asheville, NC 28806	Bob Gale, Ecologist Western North Carolina Alliance 29 North Market Street, Suite 610 Asheville, NC 28801
Renee Gledhill-Earley Environmental Review Coordinator NC Dept. of Cultural Resources 109 East Jones Street Raleigh, NC 27601-2807	Johnny G. Hensley 225 White Oak Circle Burnsville, NC 28714	Mari Sue Hilliard Forest Supervisor National Forests in North Carolina 160A Zillicoa Street Asheville, NC 28801
Greg Kidd Senior Program Manager Blue Ridge Field Office National Parks Conservation Association One Page Avenue, Suite 109 Asheville, NC 28801	Ron Linville, Regional Coordinator Habitat Conservation Program NC Wildlife Resources Commission Division of Inland Fisheries 1721 Mail Service Center Raleigh, NC 27699-1721	Dave McHenry Mountain Region Reviewer Habitat Conservation Program NC Wildlife Resources Commission 20830 Great Smoky Mountain Exp Waynesville, NC 28786
Houck Medford, Executive Director Blue Ridge Parkway Foundation Post Office Box 10427 - Salem Station Winston-Salem, NC 27108	Susan Mills Executive Director Friends of the Blue Ridge Parkway, Inc. 1946 Tucker Lane Salem, VA 24153	Dan Pittillo 675 Cane Creek Road Sylva, NC 28779
Allen Ratzlaff Fish and Wildlife Service Asheville Field Office 160 Zillicoa Street Asheville, NC 28801	Curtis Smalling Audubon North Carolina Mountain Office 667 George Moretz Lane Boone, NC 28607	Chris Kelly Wildlife Diversity Biologist NC Wildlife Resources Commission 1721 Mail Service Center Raleigh, NC 27699-1721

APPENDIX B

VEGETATION ANALYSIS FOR POTENTIAL NORTHERN FLYING SQUIRREL HABITAT

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Vegetation Analysis for Potential Northern Flying Squirrel Habitat

In 2005, the resource management staff at the Blue Ridge Parkway began a project to identify lands under NPS jurisdiction that met the criteria for suitable habitat for the endangered Carolina Northern Flying Squirrel, specifically, which scenic vistas were within CNFS potential habitat. A combination of Geographic Information System (GIS) analysis and field verification was used to identify a total of 167 vistas (148.2 acres) between Parkway Mileposts 350 and 460. This document describes the process that was used to arrive at this conclusion.

The Recovery Plan for CNFS prepared by the U.S. Fish and Wildlife Service describes suitable habitat as "sites occurring between 4,500 and 6,000 feet elevation, or sites located between 4,000 and 4,500 feet elevation but on north facing slopes, and containing a mixture of yellow birch and conifers." Using 10 meter digital elevation models (DEM) in a GIS, all sites were identified that met the elevation and aspect criteria, which revealed 292,419 acres of potential CNFS habitat occurs across the entire southern Appalachian region, and 10,419 acres (3.5%) occurs on Parkway lands. Of those 10,419 acres, 148 acres (1.2%) were currently being maintained on a cyclic basis under the vista management program.

A database of all nest box locations and their capture rates was constructed. Since all nest boxes were geo-referenced it was possible to generate a range of DEM derived environmental variables where CNFS were captured. Maps were created that corresponded to the environmental range of nest box locations. Essentially, similar acreages were revealed, verifying the accuracy of the parameters listed in the Recovery Plan. The Recovery Plan map was used thereafter to identify vistas that occurred within potential CNFS habitat.

To address the vegetation requirement of CNFS, field surveys were conducted around each identified vista. Since each vista was essentially a "clear cut," vegetation was observed of areas immediately adjacent to each vista. Several quick vegetation plots were established randomly around each target vista within a 50 m buffer. The following data was collected at each quick plot: basal area prism tally of all living trees (by species) and grouped by canopy status; prism tally of all dead trees (snags) and dead trees with cavities; percent cover of shrubs; aspect and slope. This data was analyzed and classified into broad community types by the park plant ecologist. Vistas were then ranked in terms of being surrounded by vegetation preferred by CNFS.

In the final step, the park's plant ecologist and wildlife biologist field reviewed each vista and made final decisions on CNFS habitat suitability. General mitigation that would be employed for each vista in CNFS habitat:

- Do not cut conifers except as identified by park resource management staff.
- Manage for health of conifers, thin to promote growth of specimens.
- Distance between conifers should not be more than 80% of the height of the trees (50' tall trees should be no more than 40' apart).
- Retain large birch trees as nest cavity trees in vistas of suitable size.

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Table B-1. Site Specific Recommendations for Vistas within Potential CNFS Habitat

Vista ID #	MP	Size (Ac)	Vegetation Notes	Squirrel Activity	Notes & Recommendations	Intactness		Action			
								Retain vista for view by cutting trees	Modify Vista		Remove from vista program
						Current %	DFC %		By changing veg. mgmt	By changing size	
541	350.6 PwL	1.511	Hemlocks around vistas with very few below. No spruce or fir.	One line along vista but no captures.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. OK to thin hemlocks as they die or when spruce become taller. Favor retaining spruce over hemlock.	80 Depth may be outside boundary. Explore edge cutting.	70 Spruce should not block vista.		X		
542	350.6 PwL	1.592	Hemlocks in and around vista, but few below. No spruce or fir.	One line along vista but no captures.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. OK to thin hemlocks as they die or when spruce become taller. Favor retaining spruce over hemlock.	5 Large trees at edge of boundary, may not be able to cut.	75 If large trees can be cut at vista edge.		X		
544	351.3 PwL	1.403	Scattered hemlocks and some spruce in and around vista.	One line about 1/2 mile northeast but no captures.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. OK to thin hemlocks as they die or when spruce become taller. Favor retaining spruce over hemlock.	0 Cut not to edge of boundary. May not be able to cut.	0-60 Cannot see out. Drop if large trees cannot be cut at vista edge.		X		

546	351.6 PwL	1.424	Scattered conifers in and around vistas. Not high quality habitat.	One line about 1 mile east but no captures.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. OK to thin hemlocks as they die or when spruce become taller. Favor retaining spruce over hemlock.	60 Cut not to edge of boundary. May not be able to cut.	75 Cannot see out. Drop if large trees cannot be cut at vista edge.		X		
547	352.4 PwR	1.512	Vista is open with several 10’ hemlocks. Medium sized hemlocks all around vista. Very few spruce.	Nearest lines are more than 1 mile away. No squirrels caught in those lines.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. OK to thin hemlocks as they die or when spruce become taller. Favor retaining spruce over hemlock.	100	95 No change if spruce in lower 2/3 of vista.		X		
548	354.7 PwR	1.179	Vista grown up with large spruce and hardwood trees. Lots of good habitat all around vista.	Only 1 box in four lines within ½ mile had a squirrel.	Removal recommended by BRP Landscape Architect Will Orr. Remove vista from program and let vegetation grow up.	0	0				X

549	354.8 PwR	1.633	Vista mostly gone. Lots of spruce trees, most at least medium height with many larger trees. Good habitat all around.	Only 1 box in four lines within ½ mile had a squirrel.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	10	70 Remove large deciduous trees. Reduce evergreens. Shorten vista.		X	X (Reduce to 0.5 acres)	
550	355.1 PwR	0.513	Has many spruce including some medium large trees. Lots of good habitat all around.	Only 1 box in four lines within ½ mile had a squirrel.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	75	85 Remove large deciduous trees at bottom edge of vista.		X		
551	355.3 PwR	0.669	Good habitat all around and in vista.	Squirrels caught in box 0.2 mile north, but not in two lines to the east.	Ridge Junction Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Vista is 150' deep. Remove bottom 1/3 of vista.	90	95		X	X (Reduce to 0.4 acres)	
552	355.4 PwL	1.672	Few medium sized spruce. Generally open. Good habitat all around.	Squirrels caught in box 0.2 mile north but not in two lines to the east.	Remove the northern half of the vista from program. Cut vegetation in south half within 20' of parkway and thin spruce as they grow up. Leave at least one large birch for den tree.	55 1st half of vista has no view.	70 2nd half of vista. Manage. Remove deciduous trees, establish conifer at bottom edge of vista.		X	X (Reduce to 0.8 acres)	

553	355.5 PwL	1.414	Just a couple spruce trees in the vista.	Squirrels caught in one box in line adjacent to vista.	Removal recommended by BRP Landscape Architect Will Orr. Remove vista from program and let vegetation grow up.	0	0				X
554	356.0 PwL	0.964	Few spruce in vista. Good habitat all around.	Squirrels caught in several boxes 1/4 mile to the north and south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Vista is deep (140') and should be made shallower (100').	90	90 Manage non-CNFS dependent vegetation.		X	X (Reduce to 0.7 acres)	
555	356.2 PwL	2.164	Few spruce in vista, generally small with some medium sized. Lots of good habitat all around, though not as good as within 2 miles west of here.	Squirrels caught in several boxes 1/4 mile to the north and south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 2 -3 large birch trees for den trees. Bring bottom of vista up a little and still maintain view. Change depth from 110' to about 90' at deepest point.	90	90 Can reduce depth and retain view. Thin spruce and large trees in front ½ of vista.		X	X (Reduce to 2.0 acres)	
556	356.3 PwL	0.464	Large vista. Lots of spruce in vista (most small or medium size) and all around vista.	Squirrels caught in several boxes 1/3 mile to east.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	75 Good example of DFC.	90 Thin spruce to maintain 80% ratio.		X		

557	356.4 PwL	1.380	Large vista. Lots of spruce in vista (most small or medium size) and all around vista.	Squirrels caught in several boxes 1/3 mile to east.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	75 Good example of DFC after thin spruce.	80 Thin spruce to maintain 80% ratio.		X		
558	356.6 PwL	0.874	Lots of large spruce with many smaller trees. Good habitat all around vista.	Squirrels caught in several boxes 1/2 mile to east.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	25 Remove non-CNFS hard-woods.	55 Thin spruce to maintain 80% ratio.		X		
559	356.9 PwL	2.945	Many spruce, including medium/small sizes. Large spruce at bottom of vista. Good habitat above, not so good (lack of spruce) below.	Squirrels caught in 1 box about 1/3 mile to west but not in lines 1/3 mile north and south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 3 - 4 large birch trees for den trees. Reduce size of vista by not cutting spruce at bottom 25’ of vista.	75	75 North ½ thin spruce to maintain 80% ratio. Thin Rhododendron.		X	X (Reduce to 2.5 acres)	

560	357.1 PwL	0.415	Repair of road slide in middle of vista so there is an open area with no veg. Vista has a lot of spruce with most at least med. size and many, especially at the edges, very large. Vista is surrounded with good spruce and CNFS habitat.	Squirrels caught in one box about ¼ mile to west but not in lines 1/3 mile north and south.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	85	85 Manage non-CNFS dependent deciduous vegetation at edges and throughout vista.		X		
561	357.7 PwL	2.393	Very thick with all sizes of spruce, including very large. Good squirrel habitat.	Squirrels caught in box less than 1/10 mile north.	Allow spruce and birch to enter vista. OK to thin spruce as they grow if enough are left to allow squirrel movement through vista. Leave 3 - 4 large birch trees for den trees.	0 Most all of vista lost.	20 Remove or top tall deciduous trees at vista edge.		X		
562	357.9 PwL	3.094	Very long, fairly shallow vista. Lots of spruce in vista and all around vista.	Squirrels caught in one box about ¼ mile to east.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 3 - 4 large birch trees for den trees.	80	90 Southern ½ vista manage non-CNFS vegetation.		X		

563	358.1 PwL	2.541	Very large vista. Lots of spruce in vista (most small or medium size), above vista and far below vista. No spruce immediately below vista.	Squirrels caught in one box about ¼ mile to east.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Do not thin much at lower end of vista. Leave 2 - 4 large birch trees for den trees.	90	90 DFC will affect 15% vista. Thin conifers to 80% ratio.		X	
564	358.3 PwL	0.281	Lots of spruce in vista, generally small with some about 30’ tall. Surrounded by good habitat. Narrow and fairly shallow vista.	Squirrels caught about ½ mile east, 1 mile north and ½ mile south.	Vista is very small with good habitat all around. Maintain in vista management program at present size and shape.	65	85 Thin conifers to 80% ratio.	X		
565	358.4 PwL	0.222	Small spruce along edge of parkway. Surrounded by good habitat.	Squirrels caught about ½ mile east, 1 mile north and ½ mile south.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Very shallow and very steep vista. Vista is less than 50’ deep and can be bypassed by squirrels.	40	75		X	

566	358.5 PwL	0.348	Fairly solid row of 20’ – 30’ spruce in vista though the spruce in and below the vista are larger, with some at least 60’. Good spruce and birch all around the vista.	Squirrels caught about ½ mile east 1 mile north and ½ mile south.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Fairly shallow vista.	90	90		X		
567	358.9 PwL	0.727	Scattered row of 20’ – 40’ spruce in vista. Good spruce and birch all around the vista.	Squirrels caught in lines about 1 mile both northwest and south.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Relatively small vista in large patch of good habitat. Reduce the depth by about one third.	80	90 Remove non-CNFS hardwood. Thin conifers to 80% ratio.		X	X (Reduce to 0.6 acres)	
568	359.4 PwL	1.406	Solid row of 20’ – 30’ spruce in vista. Good spruce and birch all around the vista.	Three lines with squirrels within 0.4 mile to the north and west.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Relatively small vista in large patch of good habitat. Reduce depth by 1/3.	80	90 Remove non-CNFS hardwood. Thin conifers to 80% ratio.		X	X (Reduce to 1.0 acres)	

569	359.5 PwL	0.439	Solid row of 20' – 30' spruce in vista. Good spruce and birch all around the vista.	Three lines with squirrels within 0.4 mile to the north and west.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Relatively small vista in large patch of good habitat. Reduce the depth by about 1/3.	5	70		X	X (Reduce to 0.3 acres)	
570	359.9 PwR	0.524	Solid row of 20' – 30' spruce in vista. Good spruce and birch all around the vista.	Three lines with squirrels within 0.3 mile.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Relatively small vista in large patch of good habitat. Reduce depth by 1/3.	30	60		X	X (Reduce to 0.4 acres)	
571	360.1 PwR	0.498	Solid row of 20' – 30' spruce in vista. Good spruce and birch all around the vista.	Three lines with squirrels within 0.3 mile.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Relatively small vista in large patch of good habitat. Reduce the depth by about one third.	50	75		X	X (Reduce to 0.3 acres)	
572	360.6 PwR	0.653	Spruce in vista and around/below vista. A lot of birch. Homogenous habitat all around.	Three lines within ½ mile with squirrels.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	80	90 Remove non-CNFS hardwood.		X		

573	360.7 PwR	0.487	Couple spruce in vista. Lots of birch.	Three lines within ½ mile with squirrels.	Supposed to be 150' but appears to be a narrow vista and easy for CNFS to move around vista. Maintain in vista management program at present shape and size (though smaller than what is in park database), which is about 50' deep.	95	95	X			
574	361.2 PwL	0.184	Only a couple spruce nearby. Lots of birch.	CNFS caught in lines about 1 mile to north.	Glassmine Falls Overlook - Small vista, easy for CNFS to go around it. Maintain in vista management program at present size and shape.	95	95	X			
575	361.2 PwL	0.158	No spruce nearby. Lots of birch. Sharp drop off. Very small vista.	CNFS caught in lines about 1 mile to north.	Upper Glassmine Falls OL - Small vista and easy for CNFS to go around it. Maintain in vista management program at present size and shape.	100	100	X			
576	361.2 PwR	0.426	Hardwood forest, very few conifers nearby. Shallow vista.	CNFS caught in lines about 1 mile to north.	Small vista and easy for CNFS to go around it. Maintain in vista management program at present size and shape.	20	85 Thin and remove non-CNFS vegetation.	X			
577	361.6 PwR	1.195	Several spruce in vista. Wide homogenous forest with birch around entire vista.	Nearest lines about 1-1/4 miles north and south. CNFS caught at both.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Very steep vista that could be reduced by about ½ in depth to about 60' deep.	100	100		X	X (Reduce to 0.6 acres)	

578	361.8 PwR	1.271	Some 40' tall birch with very few spruce or hemlocks in vista and nearby. Surrounded by homogenous hardwood habitat.	Nearest lines about 1-1/4 miles north and south. CNFS at both.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Steep slope. Reduce depth of vista about 30' (from 105' down to 75') and still not affect view.	100	100		X	X (Reduce to 1.0 acres)	
579	362.1 PwR	1.128	Hard to tell where the vista is. Solid 40' tall birch trees. Very few scattered spruce trees. Solid habitat all around.	Nearest squirrel box more than one mile to south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	100	100		X		
580	362.8 PwR	1.13	Very few scattered spruce above vista and just a couple below. Abundant birch. Homogenous habitat all around.	Squirrel in one box in line about 0.5 mile to south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	100	100		X		

581	363.1 PwR	1.5	Scattered spruce trees along parkway above vista and in distance below parkway. Very steep. Trees in this area are fairly small (about 30' tall) due to harsh conditions.	Squirrel in one box in line about .2 mile to southwest	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Reduce depth of vista from 150' to about 100' to allow trees to grow up at base of vista.	99	99		X	X (Reduce to 1.1 acres)	
582	363.4 PwL	0.331	Small patch of spruce about 150m to north, otherwise homogenous hardwood habitat all around vista. No spruce across parkway.	Squirrel in one box in line about ¼ mile to the west.	Greybeard Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1large birch tree for den tree.	100	100		X		
583	363.9 PwR	0.46	Birch abundant. Vista looks the same as non-vista area on PwL. No conifers. Homogenous habitat all around.	Squirrel in one box in line down slope, 1/4 mile away.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	97	97		X		

589	366.9 PwL	0.575	No spruce, fir, hemlocks. Abundant birch.	Squirrels in 4 of 6 lines nearby, both north and south.	Removal recommended by BRP Landscape Architect Will Orr. Remove vista from program and let vegetation grow up.	0	0				X
664	407.5 PwR	0.484	Scattered hemlocks in vista. Spruce nearby. Fair habitat all around.	Squirrels caught in line adjacent to vista, box about 1/3 mile southwest.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	30-40 Back-ground views	80 Remove non-CNFS vegetation and clumps of Rhododendron .		X		
665	407.7 PwR	0.236	Vista consists of large hardwood trees and some hemlocks. Good habitat below and fair above.	Squirrels caught in box about 0.1 mile southwest.	Remove vista from program and let vegetation grow up.	0	0				X
667	407.7 PwR	0.699	Very few spruce trees with some hemlock in and around vista. Mainly hardwoods and Rhododendron - Fair habitat all around.	Squirrels caught in line below vista, box about ¼ mile away.	Buck Springs Gap Overlook (North) - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	80	80-90 Trim Rhododendron - leave clumped groupings to showcase flowers.		X		

669	PwL	0.453	Very few spruce trees with some hemlock in and around vista. Mainly hardwoods and Rhododendron - Fair habitat all around.	Squirrels caught in box in line ¼ mile southwest.	Mt. Pisgah Parking Area - Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	50-60	75-85 Remove non-CNFS dependent deciduous vegetation. Remove several large oaks as directed.		X		
670	407.8 PwR	0.713	Very few spruce and hemlocks in vista but overall vista is relatively open. Many conifers around vista. Good habitat all around vista.	Squirrel caught in box next to vista and box less than ¼ mile to south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	50-60	80 Remove non-CNFS dependent deciduous vegetation. Manage Rhododendron in clumped groupings for flowers.		X		
671	407.8 PwR	0.150	Spruce and hemlocks in vista. Large trees, both hardwood and conifers, in vista. Good habitat all around.	Squirrel caught in two boxes next to vista.	Remove vista from program and let vegetation grow up. Very good habitat with large trees.	0	0 Remove from vista program, clean out deciduous vegetation from Rhododendron - showcase flowers.				X

672	408.3 PwR	0.227	Couple spruce but no birch in vista. Many large hardwoods in vista. Fair habitat all around vista.	Squirrels caught inbox ¼ mile to north and two boxes ½ mile to north.	No Name Overlook - Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	0	60-70 Remove non-CNFS dependent deciduous vegetation and several large oaks and locusts as directed.		X		
673	408.4 PwR	0.205	Very few spruce but no birch in vista. Fair habitat all around vista.	Squirrels caught inbox ¼ mile to north and two boxes ½ mile to north.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	80	85-95 Remove non-CNFS dependent deciduous vegetation. Manage Rhododendron in clumped groupings for flowers.		X		
710	417.9 PwL	1.081	Scattered spruce. Poor habitat all around.	Nearest line about 4 miles to west.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	60-70	90 Remove non-CNFS dependent deciduous vegetation and several large locusts at vista edge. Manage Rhododendron in clumped groupings for flowers.		X		

715	419.1 PwR	1.157	Few scattered spruce in vista. Poor habitat all around.	Nearest lines about 3 miles to west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Area is also used by Northern Saw-whet Owls.	100	100 At some point (it might be years) spruce may block some of the view.		X		
716	419.6 PwL	0.383	Few scattered spruce in vista. Poor habitat all around.	Nearest lines about 3 miles to west. Several squirrels caught.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	65	85 Remove non-CNFS dependent deciduous vegetation and several large oaks. Manage Rhododendron in clumped groupings for flowers.		X		
717	419.6 PwR	0.856	Few scattered spruce in vista. Poor habitat all around.	Nearest lines about 3 miles to west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	90	95 Remove non-CNFS dependent deciduous vegetation and several large oaks. Manage Rhododendron in clumped groupings for flowers.		X		

718	419.8 PwR	0.714	Very few spruce. Mainly Rhododendron with some hardwood, including birch. Fair habitat above, poor below.	Nearest lines about 2 miles west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	50-60	85 Remove non-CNFS dependent deciduous vegetation.		X	
719	420.3 PwL	0.416	Spruce, including mix of small and large trees, in vista. Good habitat all around.	Nearest lines about 2 miles west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	40-50	85 Thin laurel and Rhododendron. Manage spruce-fir to 80% ratio. Clump Rhododendron around Spruce-fir.		X	
720	420.4 PwL	0.555	Very deep and steep vista. Scattered spruce and fir within vista. Good habitat all around.	Nearest lines about 2 miles west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Bring bottom up from 110’ to about 50’.	70	80-85 Manage spruce-fir to 80% ratio.		X	X (Reduce to 0.3 acres)

721	420.5 PwL	1.748	Scattered spruce throughout vista and along upper edge. Very steep. Good habitat all around.	Nearest lines about 2 miles west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	90	95 Remove foreground vegetation next to wall. Manage spruce-fir to 80% ratio.		X		
722	420.7 PwL	1.017	Most of the vista is a boulder field with little vegetation, though there are a few conifers. Spruce and fir along parkway road shoulder. Good habitat all around. Steep and deep vista.	Nearest lines about 2 miles west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Bring bottom of vista up from 150’ to 75’, though boulder field may prevent colonization by vegetation.	N ½ 95 S ½ 40	95 Thin laurel and Rhododendron. Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir.		X	X (Reduce to 0.5 acres)	
723	420.8 PwL	0.823	Vista has scattered spruce and hemlocks both along parkway shoulder and in vista. Many large trees. Good habitat all around.	Nearest lines about 2 miles west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Vista is 140’ and very steep. Reduce to about 75’.	50-60	80-90 Manage spruce-fir to 80% ratio at top of vista.		X	X (Reduce to 0.5 acres)	

724	421.1 PwL	0.744	Very steep slope. Fir, spruce and hemlocks in vista and along road shoulder. Good habitat above and fair below.	Nearest lines about 1.5 miles west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Bring bottom of vista up about 1/3.	65-70	85-95 Manage Rhododendron in clumped groupings for flowers.		X	X (Reduce to 0.5 acres)	
725	421.4 PwL	0.497	Few scattered spruce within vista. Good to fair habitat all around.	Nearest lines about 1 mile west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	80	90 Manage Rhododendron in clumped groupings for flowers.		X		
726	421.7 PwL	0.218	Except for small patch directly below overlook, vista is grown up with large hardwood and conifers. Few spruce in vista below overlook. Good habitat all around.	Three lines within 1/2 mile west. Several squirrels caught.	Fetterbush Overlook - Only maintain vista directly below the overlook resulting in a vista about 60’ wide by 50’ deep. OK to remove spruce and fir in compressed vista but any where else remove only enough trees to open view while allowing squirrel movement.	70	95 Remove large trees at bottom edge of vista. Remove non-CNFS deciduous vegetation.		X	X (Reduce to 0.1 acres)	

727	421.9 PwL	1.689	Spruce along parkway shoulder with some within vista. Very steep with boulder field in middle of vista. Rock face on uphill side of parkway that blocks squirrel movement across parkway. Good habitat all around.	Three lines within 1/2 mile west. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Vista listed as 200' at deepest. Bring up to 100' and can still maintain view.	75	90 Manage spruce-fir to 80% ratio at top of vista. Remove and trim Rhododendron.		X	X (Reduce to 1.0 acres)	
728	422.3 PwL	0.596	Scattered spruce, including some large ones, especially along upper edge of vista and few scattered within vista.	Three lines within ½ mile west. Several squirrels caught.	Devil's Courthouse Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	85	85		X		

729	422.3 PwR	0.29	Vista is solid with spruce and fir. Good habitat all around.	Not included in list of 124 vistas. Three lines within ½ mile west. Several squirrels caught.	Remove vista from program and let vegetation grow up. Good habitat within and around vista.	0	0				X
730	423.5 PwL	0.612	Spruce and fir growing up along edges with smaller trees in middle of vista. Good habitat all around. Overlook and parkway create barrier to squirrel movement.	Three lines within 1 mile. Several squirrels caught.	Courthouse Valley Overlook (North) - Leave large trees at Courthouse Valley Overlook on both north and south sides. OK to thin spruce trees below overlook and in center of vista as they grow if enough are left to allow squirrel movement through vista. Leave 1large birch tree for den tree.	95	95		X	X (Reduce to 0.4 acres)	
731	423.6 PwL	0.964	Vista grown up with spruce and hardwoods. Good habitat all around. Vista and parkway create barrier to squirrel movement.	Three lines within 1 mile. Several squirrels caught.	Courthouse Valley Overlook (South) - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Maintain open view through middle of vista but maintain sides of vista as they are with large spruce. Maintain as 50’ deep vista.	10	75 Remove non-CNFS dependent deciduous vegetation and manage spruce-fir to 80% ratio.		X	X (Reduce to 0.5 acres)	

732	424.4 PwL	1.382	Solid patch of 20' conifers in center of vista directly below overlook. Fair to good habitat all around.	Two lines within 1 mile. Several squirrels caught.	Herrin Knob Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	N ½ 0 S ½ 90	N ½ 75 S ½ 90 Remove non-CNFS dependent deciduous vegetation and manage spruce-fir to 80% ratio.		X		
733	424.6 PwL	~1.4	Vista creates a barrier to squirrel movement across parkway. Scattered spruce and fir throughout vista. Boulder fields in much of vista. Fair habitat above parkway, good habitat elsewhere.	Two lines within 1.5 miles. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Allow spruce to grow up in the middle of the vista to allow a place for squirrels to cross parkway, effectively creating two vistas. Leave 1 or 2 large birch trees for den trees.	95-100	95-100 Manage Rhododendron in clumped groupings for flowers within 1st 20 feet.		X	X (Reduce to 0.4 acres)	
734	424.8 PwL	0.484	Few conifers, including three large trees at overlook, in vista. Steep slope. Good habitat all around.	Two lines within 2 miles. Several squirrels caught.	Wolf Mountain Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave the large trees near the Wolf Mountain Overlook. Leave 1 or 2 large birch trees for den trees.	95	95		X		

735	425.0 PwL	0.840	Scattered conifers, mainly along upper edge of vista. Boulder fields in much of vista. Very steep. Good habitat all around.	Two lines within 2 miles. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. According to database the vista is supposed to be only 50' deep. In many places closer to 100', in part due to boulder fields.	70-80	100 Manage Rhododendron in clumped groupings for flowers within 1st 20 feet open valley view.		X		
736	425.2 PwL	1.012	Large boulder field in vista. Scattered spruce and fir along shoulder of parkway, very few in vista. Good habitat all around.	Two lines within 2 miles. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Shown as 50' deep in database but with boulder field it is actually much deeper. Maintain as 50' deep only.	95	95		X	X (Reduce to 0.7 acres)	
737	425.4 PwL	0.277	Scattered large spruce in and around vista. Good habitat all around.	Two lines within 1 mile northwest-several squirrels caught.	Rough Butt Bald Overlook - Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	65	85 Remove non-CNFS dependent deciduous vegetation and manage spruce-fir to 80% ratio.		X		

738	426.5 PwL	0.876	Many spruce 20’ to 30’ tall along upper portion of vista, mainly at southern end. Good habitat all around.	Two lines within 1/4 mile and several more within 2 miles. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees in middle and northern parts of vista as they grow if enough are left to allow squirrel movement through vista. Leave spruce patch at southern end. Leave 1 or 2 large birch trees for den trees.	10	65 Remove non-CNFS dependent deciduous vegetation and manage spruce-fir to 80% ratio.		X		
739	426.7 PwR	1.517	Some large spruce in the south end of vista and around vista. View is open on the north end. Good to fair habitat all around.	Two lines within 1/4 mile and several more within 2 miles. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Southern half of vista is only about 50’ deep, gets deeper at north end. Remove southern 200’ from vista and let it grow up into forest. Keep northern 200’ open, thinning conifers as they block view.	70	85-90 Remove large trees at bottom edge vista. Thin or remove Non-CNFS dependent vegetation.		X	X (Reduce to 0.75 acres)	
740	427.6 PwL	0.161	Vista filled with spruce and other large trees. Good habitat all around.	Several lines within 1 mile. Several squirrels caught.	Bear Pen Gap Overlook - Remove vista from program and let vegetation grow up. Good habitat within and around vista. Other vistas nearby make this very small one unnecessary.	0	0				X

741	427.8 PwR	0.335	Many spruce growing in vista including several > 40' tall and smaller trees in a thicket in middle of vista. Good habitat all around.	Several lines within 1 mile. Several squirrels caught.	Spot Knob Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	65	75 Remove non-CNFS hardwood vegetation. Thin conifers to 80% ratio.		X		
742	427.8 PwL	0.647	Boulder field in middle of vista with no vegetation. Scattered spruce along road shoulder and within vista. Good habitat all around vista.	Several lines within 1 mile. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	40	80 Remove non-CNFS dependent vegetation. Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir.		X		
743	428.0 PwL	0.515	Scattered spruce in vista with many of them greater than 30' tall. Steep slopes. Good habitat all around vista.	Several lines within 2 miles. Several squirrels caught.	Caney Fork Overlook - Allow thinning below overlook to keep view open. Let spruce grow up in rest of vista and thin for filtered view while still allowing squirrel movement.	75	75		X		

744	428.3 PwL	1.267	Spruce thicket along roadside at north end of vista and along edges. Good to fair habitat all around. Fairly steep slope in vista.	Several lines within 1 mile. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Bring vista up in the center of the vista to make vista 50' deep rather than 100'.	N ½ 90 S ½ 40-50	85-95 Remove non-CNFS hardwood vegetation. Thin conifers to 80% ratio.		X	X (Reduce to 0.8 acres)	
745	428.5 PwR	0.418	Lower half of vista is a thicket of 10' to 30' conifers with top half blackberries. Good habitat all around.	Several lines within 1 mile. Several squirrels caught.	Beartrap Gap Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	95	95		X		
746	428.6 PwL	1.173	Scattered spruce along road and in vista. Good habitat all around. Boulder field in central portion of vista. Steep vista.	Several lines within 1 mile. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Steep slope would allow vista bottom to be brought up making a shallower vista and reducing size by about one-third.	50-60	90 Remove non-CNFS hardwood vegetation. Highlight boulders. Manage laurel and Rhododendron in clumps.		X	X (Reduce to 0.7 acres)	

747	429.8 PwR	1.232	Many medium sized spruce and fir along roadside with many trees scattered throughout vista. Good habitat all around.	Three lines within 1 mile. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Thin or remove Rhododendron along roadside.	10-20	80 Thin conifers to 80% ratio. Leave one tall spruce and thin smaller conifers to promote healthy growth.		X		
748	430.0 PwR	2.431	Spruce, a few up to 40’ tall, and fir along road shoulder and in vista. Good habitat all around. Steep drop off. Rock face on PwL.	Three lines within 1 mile. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Vista is a barrier to movement with rock face on uphill side of parkway. Bring bottom of vista up about halfway to reduce size of vista while still maintaining view.	N ½ 40-50 S ½ 80-100	N ½ 75-85 S ½ 90-100 N ½ Repeat above.		X	X (Reduce to 1.2 acres)	
749	430.1 PwR	0.933	Spruce and fir in vista, especially along top edge. Good habitat all around. Rock face on parkway.	Three lines within 1.5 miles. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Bring up bottom of vista about halfway at lowest point to make maximum depth 50’.	100	95 Ok to reduce depth of vista. Review to ensure tall trees don’t obscure valley.		X	X (Reduce to 0.6 acres)	

750	430.2 PwR	1.086	Very steep talus slope in much of vista. Few small firs growing in between rocks and many along road shoulder. Good habitat all around. Tall rock face on PwL.	Three lines within 1.5 miles. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	85	95 Thin spruce-fir to 80% ratio at top edge of vista. Thin to single conifer to promote large tree growth.		X		
751	430.4 PwR	0.798	Solid row of spruce along road and at top of vista. Good habitat all around, though the overlook and vista present a large barrier to movement.	Three lines within 1.5 miles. Several squirrels caught.	Allow spruce and birch to enter vista. OK to thin spruce trees, especially along road edge as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	0	75 Thin spruce-fir to 80% ratio at top edge of vista. Thin to single conifer to promote large tree growth.		X		
752	430.7 PwL	3.226	Old bald? Spruce at south & north ends with very few in center. Good to fair habitat around. Bald and overlook combined makes a large barrier.	Three lines within 1.75 miles. Several squirrels caught.	Cowee Mountain Overlook - Let spruce come in on the north (300') and south (200') ends with thinning to keep view open in the middle.	100	100		X	X (Reduce to 1.5 acres)	

753	431.0 PwR	1.052	Spruce in vista and below. Good habitat all around but vista/OL make barrier to movement across parkway at this site.	One line within 1 mile with squirrel in one box.	Haywood Jackson Overlook - OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	90	95 Thin spruce-fir to 80% ratio. Leave single spaced conifers to promote large tree growth.		X		
754	431.2 PwL	1.154	Good habitat in vista and all around.	One line within 1 mile with squirrel in one box.	Remove vista from program and let vegetation grow up. Vista is barrier to squirrel movement. Plenty of other good views in area.	95	0				X
755	431.4 PwL	1.360	Scattered spruce in vista with large opening directly below overlook. Good habitat all around.	One line within 1 mile with squirrel in one box..	Richland Balsam Overlook - Maintain view to southeast by thinning spruce. Leave the rest of the vista alone and let spruce grow up.	90	90		X	X (Reduce to 0.7 acres)	
756	431.6 PwL	1.564	Scattered large spruce in vista with row of small conifers along shoulder. Good habitat all around.	One line within 1.5 miles with squirrel in one box.	OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Allow birch to enter vista. Leave 1 or 2 large birch trees for den trees.	40-50	75-85 Thin spruce-fir to 80% ratio at top edge of vista. Thin to single conifer to promote large tree growth.		X		

757	431.9 PwL	0.415	Many spruce and fir, including medium and large sizes, in vista. Good habitat all around.	One line within 1.5 miles with squirrel in one box.	Remove vista from program and let vegetation grow up. Good habitat all around. Good views nearby at other vistas	65	85				X
758	432.1 PwL	2.960	Steep slope with many spruce and fir in vista. Several trees 20' to 30' tall. Food habitat all around.	One line within 1.5 miles with squirrel in one box.	OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Allow birch to enter vista and leave 2 or 3 large birch trees for den trees. Southern half of vista is deep enough to bring bottom of vista up about 50' without losing view. For the northern half maintain tree line at bottom of vista where it is. Leave spruce clump at northern end.	70-80	85-95 Remove non-CNFS dependent hardwood vegetation. Thin conifers to 80% ratio.		X	X (Reduce to 2.0 acres)	
759	432.7 PwL	0.401	Just a couple conifers in vista. Good habitat all around.	One line within 2 miles with squirrel in one box.	Lone Bald Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	85	95 Remove non-CNFS hardwood vegetation and trees at bottom edge of vista to open view.		X		

760	432.7 PwR	1.337	Row of large trees (spruce and hardwoods) about 40' below shoulder at south end and about 100' at north end of vista. Also a row along shoulder at north end. Small firs in vista. Good habitat around.	One line within 2 miles with squirrel in one box.	Decrease depth from 125' to about 40' where the large spruce trees begin at south end of vista and about 10' at north end. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	60-70	90 Remove non-CNFS hardwood deciduous vegetation and tall trees at vista edge.		X	X (Reduce to 1.0 acres)	
761	433.0 PwR	0.904	Fairly thick 10' to 30' tall spruce in vista with solid wall blocking most of the view. Good habitat above and to sides with fair habitat below.	One line within 2 miles with squirrel in one box.	OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	0	75 Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir.		X		
762	433.3 PwL	0.401	Scattered spruce within vista. 'Fair habitat all around.	One line within 3 miles with squirrel in one box.	Roy Taylor Forest Overlook – Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	65	85 Remove non-CNFS hardwood deciduous vegetation and tall trees at vista edge.		X		

811	446.8 PwL	0.522	Only a couple spruce nearby. Vista is open surrounded by hardwood forest.	Nearest line 1.5 miles northwest with squirrels in 2 boxes.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	65	75 Reduce depth by 50%. Clump Rhododendron at 1st 20 feet to showcase flowers.		X	X (Reduce to .25 acres)	
812	446.8 PwR	0.283	Waterfall view. Few spruce and hemlocks. Poor habitat all around.	Nearest line 1.5 miles northwest with squirrels in 2 boxes.	Remove vista from program and let vegetation grow up.	0	0				X
818	448.2 PwL	1.227	Three spruce in vista. Fair habitat around vista.	Line with squirrels about 1 mile north.	Scott Creek Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	50-60	90-95 Remove non-CNFS hardwood deciduous vegetation. Manage vegetation annually in 1st 20 feet.		X		
819	448.5 PwL	1.813	Scattered spruce within vista. Fair habitat all around.	Line with squirrels about 3/4 mile north.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	0	75-85 Remove non-CNFS hardwood deciduous vegetation and tall trees at vista edge.		X		

820	448.7 PwL	0.973	Row of spruce and Rhododendron along parkway shoulder at upper end of vista with just a few below. Fairly narrow vista with fair habitat around.	Line with squirrels about 1/3 mile north and 1 mile west.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Remove Rhododendron and thin spruce along parkway to open view.	30-40	85 Remove non-CNFS hardwood vegetation. Manage Rhododendron in clumps to showcase flowers.		X		
821	448.8 PwL	0.58	Row of spruce and Rhododendron along parkway shoulder at upper end of vista with just a few below.	Line with squirrels about 1/3 mile north and 1 mile west.	Fork Ridge Overlook - OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Allow spruce at south end to grow up.	0	80 Remove non-CNFS hardwood vegetation. Manage Rhododendron in clumps to showcase flowers.		X		
822	449.0 PwL	0.449	Thick patch of spruce at overlook with scattered spruce at south end.	Line with squirrels next to vista with another 1 mile west.	Fork Ridge Overlook - OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Allow spruce at south end to grow up.	75	85 Remove non-CNFS dependent hardwood vegetation. Thin conifers to 80% ratio.		X		

823	449.1 PwL	0.654	Scattered spruce throughout vista with fair habitat all around.	Line with squirrels next to vista with another 1 mile west.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	65	90		X		
824	449.2 PwL	0.41	Scattered spruce just below parkway with virtually none in lower part of vista. Fair habitat above and below vista.	Line with squirrels ¼ mile east and 1 mile west.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	70	90 Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir.		X		
825	449.3 PwL	0.2	No spruce in vista or across parkway.	Line with squirrels ¼ mile east and 1 mile west.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	40	90 Manage 1st 20-30 feet. OK to reduce depth of vista. Monitor height of trees at lower vista edge to maintain views.		X		

826	449.4 PwL	1.348	Row of scattered spruce just below parkway with virtually none in lower part of vista. Fair habitat above and below vista.	Lines with squirrels about ½ mile southeast and southwest	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	65-75	90 Manage 1st 20-30 feet of vegetation and spruce-fir to 80% ratio.		X	
827	449.6 PwL	0.793	Spruce and some Rhododendron along upper edge of vista with a few in the rest of the vista. Fair habitat all around.	Lines with squirrels about ½ mile southeast and southwest	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	55	90 Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir.		X	
828	449.8 PwL	0.369	Solid row of spruce and Rhododendron along road shoulder. Boulder field down middle of vista with few spruce trees and little other vegetation. Very steep vista. Good to fair habitat.	Lines with squirrels about 1/3 mile southwest and 1 mile east.	OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Bring bottom of the vista up about halfway. Remove Rhododendron along road shoulder.	60	75-85 Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir.		X	X (Reduce to 0.2 acres)

829	450.0 PwL	0.573	Scattered spruce, including large trees, in vista and many spruce and good habitat all around. Rhododendron and spruce along parkway for much of vista.	Lines with squirrels about ¼ mile southwest and 1 mile east.	OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Remove Rhododendron along road shoulder and thin spruce to open view.	75	85 Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir.		X		
830	450.1 PwL	0.424	Vista is covered by a boulder field with no vegetation except for row of spruce and Rhododendron along parkway shoulder. Good habitat around vista.	Line with squirrels within ¼ mile to southwest.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch trees for den trees. Remove Rhododendron and thin spruce along parkway to open view.	95	95 Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir.		X		

831	450.2 PwL	2.647	Scattered spruce throughout vista, but virtually none directly below overlook. Fair habitat all around.	Line with squirrels within ¼ to south.	Yellow Face Overlook - Allow spruce to grow up within vista at both ends. Retain enough spruce to allow squirrel movement through vista. Directly below overlook allow maintenance of view by removing spruce close to the overlook while thinning spruce farther down slope. Let birch enter vista and allow 1 or 2 large birch trees for den trees.	95	100 Remove tall non-CNFS vegetation at edge of vista in S ½.		X	
832	450.6 PwL	0.878	Scattered spruce throughout vista with fair habitat all around.	Lines with squirrels about ½ to southeast and west.	Allow spruce or birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	75	85-90 Manage spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir in 1st 20 feet of vista.		X	
833	450.8 PwL	0.759	Scattered spruce throughout vista with fair habitat all around. Much of the vegetation is low and with the steep slope is not blocking the view.	Lines with squirrels about ½ mile north and 1 mile southwest. Line with no squirrels nearby to south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	65-75	90 Manage spruce-fir 80% ratio. Clump Rhododendron around spruce-fir in 1st 20 feet of vista. Remove tall deciduous vegetation to focus view.		X	

834	450.9 PwL	0.472	Few scattered spruce throughout vista. Good to fair habitat all around vista.	Lines with squirrels about ½ mile north and southwest. Line with no squirrels adjacent to east.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	70	90 Manage spruce-fir 80% ratio. Clump Rhododendron around spruce-fir in 1st 20 feet.		X	
835	451.0 PwL	0.8	Very few spruce, most 10' to 30' tall. Good to fair habitat all around except for parkway above.	Lines with squirrels about ½ mile north and southwest. Line with no squirrels adjacent to northeast.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	65	90 Manage spruce-fir 80% ratio. Clump Rhododendron around spruce-fir in 1st 20 feet of vista. Remove tall deciduous vegetation.		X	
836	451.2 PwL	0.627	Scattered large spruce throughout vista. Good habitat all around. There are natural views along parkway to the north with low vegetation that provides good views.	Lines with squirrels adjacent to the south and within ½ mile north.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	95	95 Manage spruce-fir 80% ratio. Clump Rhododendron around spruce-fir in 1st 20 feet of vista.		X	

837	451.2 PwR	0.307	Scattered spruce, most 10’ to 30’ tall. Good habitat all around except for parking lot adjacent above and parkway below.	Lines with squirrels about ½ mile north and southwest. Line with no squirrels adjacent to northeast.	Browning Knob - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1large birch tree for den tree.	75	90 Remove and trim non-CNFS vegetation. Thin and shape large oak in center.		X NPS to complete tree work
838	451.2 PwR	1.235	Scattered spruce, most 10’ to 30’ tall. Good habitat all around except for parking lot above and parkway below.	Lines with squirrels about 1/4 mile north and ½ mile southwest. Line with no squirrels ¼ mile east.	First Parking Area at Top - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	95	95 Remove and trim non-CNFS vegetation. Manage specimen trees to focus views.		X NPS to complete tree work
839	451.2 PwR	0.167	Abundant spruce, with thick patches, in vista and good habitat all around except for parking lots.	Lines with squirrels about 1/4 mile north and ½ mile SW. Line with no squirrels ¼ mile east.	Third Parking Area - OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	70	90 Thin spruce-fir to 80% ratio at top edge of vista. Thin to single conifer to promote large tree growth.		X NPS to complete tree work

840	451.2 PwR	0.185	Abundant spruce, with thick patches, in vista and good habitat all around except for parking lots.	Lines with squirrels about 1/4 mile north and ½ mile southwest. Line with no squirrels ¼ mile east.	Fourth Parking Area - OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	20	80 Thin spruce-fir to 80% ratio at top edge of vista. Thin to single conifer to promote large tree growth.		X NPS to complete tree work		
841	451.2 PwR	~0.1	Laurel with three spruce. Good habitat all around except for parking lot immediately below.	Lines with squirrels about 1/2 mile north and 1/4 mile southwest. Line with no squirrels 1/2 mile northeast.	Between Third and Fourth Parking Areas - Remove vista from program and let vegetation grow up to create additional CNFS habitat.	0	0				X
842	451.3 PwL	0.228	Vista has many spruce and little of the view remains. Good habitat all around.	Lines with squirrels about 1/2 mile north and 1/4 mile southwest. Line with no squirrels 1/2 mile northeast.	Remove vista from program and let vegetation grow up to create additional CNFS habitat.	0	0				X

843	451.3 PwL	0.288	Many spruce along edge of parkway, very few in rest of vista. Good habitat all around.	Lines with squirrels about 1/2 mile north and 1/4 mile southwest. Line with no squirrels 1/2 mile northeast.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	40-50	85 Thin many spruce-fir to 80% ratio. Clump Rhododendron around spruce-fir in 1st 20 feet of vista.		X		
844	451.5 PwL	0.290	Many spruce in vista including several over 40’ and many 10’-20’ along edge of parkway. Good habitat all around.	Lines with squirrels about 1/4 mile northeast and 1/2 mile south. Line with no squirrels 1/2 mile east.	OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista.	30-40	85 Same as above		X		
845	451.7 PwL	1.827	Very few spruce trees in vista and immediately below vista. Otherwise good habitat all around. Few trees blocking view in vista.	Lines with squirrels about ½ mile east and 1/2 mile south. Line with no squirrels 3/4 mile southeast.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	N ½ 10 S ½ 65	90 Remove non-CNFS deciduous vegetation. Clump Rhododendron around spruce-fir 1st 20 feet of vista.		X		

846	451.9 PwL	0.333	Lots of spruce in vista and good habitat all around	Lines with squirrels about 1/4 mile east and 1/2 mile southeast.	Good CNFS habitat. Several vistas close by before and after this one make this one unnecessary. Remove vista from program and let vegetation grow up.	0	0				X
847	452.1 PwL	0.580	Lots of spruce in vista and good habitat all around. Some birch around vista.	Lines with squirrels adjacent to vista and ¼ mile northeast.	Cranberry Ridge Overlook - On sides of vista OK to thin spruce to maintain view. Directly below vista remove spruce to maintain view.	80	90 Thin spruce-fir to 80% ratio at top edge of vista. Thin to single conifer to promote large tree growth.		X		
848	452.2 PwL	0.663	Row of 30' spruce along parkway with good habitat all around vista. Birch all around vista.	Lines with squirrels adjacent to vista and ¼ mile northeast.	Good CNFS habitat. Several vistas before and after this one make this one unnecessary. Remove vista from program and let vegetation grow up.	0	0				X
849	452.3 PwL	0.774	Lots of 20' to 30' spruce in vista. Good habitat all around with lots of spruce and birch.	Lines with squirrels adjacent to vista and ¼ mile south.	Woolyback Overlook - Allow birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	75	90 Thin spruce-fir to 80% ratio at top edge of vista. Thin to single conifer to promote large tree growth.		X		

850	452.5 PwL	0.405	Small vista (looks less than 0.4 acres) with fairly solid spruce. Good habitat all around.	Lines with squirrels adjacent to vista and ½ mile south.	Very small vista with good habitat all around. Remove vista from program and let vegetation grow up.	0	0				X
851	452.7 PwL	1.034	Line of spruce along parkway shoulder with interspersed Rhododendron -Good habitat all around though few spruce below.	Lines with squirrels within 1 mile south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Remove Rhododendron along road to open view. Favor cutting Rhododendron instead of spruce.	0	75 Remove non-CNFS deciduous vegetation. Clump Rhododendron around spruce-fir 1st 20 feet of vista.		X		
852	452.8 PwL	0.728	Few spruce and birch in vista but lots of good habitat all around vista. Many Rhododendrons along road that are beginning to block the view.	Lines with squirrels within 1 mile south.	OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Thin or remove Rhododendron to open view. Cut Rhododendron before cutting any spruce to open view.	40	85 Remove non-CNFS deciduous vegetation. Clump Rhododendron around spruce-fir 1st 20 feet of vista.		X		

853	452.9 PwL	0.600	Good habitat in vista and all around. View being blocked by row of spruce, fir and Rhododendron along edge of parkway.	Lines with squirrels within 1 mile south.	OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Thin or remove Rhododendron to open view. Cut Rhododendron before cutting any spruce to open view.	45	85-90 Remove non-CNFS deciduous vegetation. Clump Rhododendron around spruce-fir 1st 20 feet of vista.		X		
854	453.2 PwL	0.585	Dying hemlocks and a few spruce trees in vista. A few birch and beech around edges.	Lines with squirrels within 1 mile south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	65	85 Remove non-CNFS deciduous vegetation and large trees at edges of vista.		X		
855	453.3 PwL	0.656	Large spruce at north end. Dying hemlock in vista and lots of dead hemlocks nearby. Birch along edges.	Lines with squirrels within 1 mile south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree. Could bring bottom of vista up about 30’ without impacting view.	70	85 Remove non-CNFS hardwood vegetation 1st 20 feet of vista and large trees at vista edges.		X	X (Reduce to 0.5 acres)	
856	453.35 PwL	0.278	Small vista at north end of overlook. Birch along edges of vista.	Lines with squirrels within 1 mile south.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. OK to remove birch in vista.	50	85 Remove non-CNFS deciduous vegetation.		X		

857	453.4 PwL	1.072	No view from overlook. Laurel and azalea in vista along road shoulder. Birch along edges. Spruce nearby at overlook but not in vista.	Lines with squirrels within 1 mile south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	20	90 Remove non-CNFS hardwood vegetation 1st 20 feet of vista and large trees at vista edges.		X		
858	453.7 PwL	0.442	Small spruce at north end. Laurel and azalea along roadway. Nice view.	Lines with squirrels within 1 mile south.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	85	95 Remove non-CNFS hardwood vegetation 1st 20 feet of vista.		X		
859	453.8 PwL	0.365	One 30' hemlock along road. View is on inside of curve and not very visible to traffic.	Lines with squirrels within 1 mile south.	Allow spruce to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Allow southern 75' of vista to grow up. Will not affect view.	10	75 Remove tall non-CNFS hardwood vegetation as directed and 1st 20 feet at front of vista.		X	X (Reduce to 0.2 acres)	
860	454.1 PwL	0.813	No birch, beech or spruce.	Lines with squirrels within 1.5 miles south.	Maintain in vista management program at present size and shape.	10	90 Remove tall non-CNFS hardwood vegetation as directed and 1st 20 feet at front of vista.	X			

861	454.4 PwL	0.761	Two dead hemlocks. Mainly locust and cherry in and around vista.	Lines with squirrels within 1.5 miles south.	Thunderstruck Ridge Overlook - Maintain in vista management program at present size and shape.	30	90 Remove tall non-CNFS hardwood vegetation as directed and 1st 20 feet at front of vista.	X			
862	454.5 PwL	1.9	Many 20'-40' hemlocks and one 40' spruce. Lots of mountain laurel and Rhododendron along the parkway.	Nearest squirrel records from about 3 miles away, though there are not boxes set nearby.	Leave spruce in vista and allow other spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 2 large birch trees for den trees.	0	90 Remove non-CNFS deciduous vegetation. Clump Rhododendron around spruce-fir 1st 20 feet of vista.		X		
863	455.0 PwL	0.81	No view remains due to thick vegetation. Vista is on inside of curve and not easily viewed. Birch nearby and two large hemlocks in vista.	Nearest squirrel records from about 23 miles away, though there are not boxes set nearby.	Remove vista from program and let vegetation grow up.	0	0				X

864	455.1 PwL	0.513	Hemlocks scattered throughout vista. Hemlocks nearby are all dying. Lots of Mountain Laurel along parkway.	Nearest squirrel records from about 2 miles north and 2+ miles south, though there are not boxes set nearby.	Rename to Fed Cove Remove vista from program and let vegetation grow up.	30	0				X
865	456.2 PwR	0.13	No vista at this site.	Nearest squirrel records from about 1.5 miles west and 3 miles south, though there are not boxes set nearby.	Jonathan Creek Overlook - Vista is no longer there. Remove vista from program and let vegetation grow up.	0	0				X
866	456.9 PwR	0.73	Poor view at this site. Several dead hemlocks with some large birch on edges of vista.	Nearest squirrel records from about 1 mile west and 3 miles south.	Remove dead hemlocks. Remove tall trees at vista edge. Focus view to mountain.	0	85 Remove tall non-CNFS hardwood vegetation as directed and 1st 20 feet at front of vista.				X

867	457.9 PwL	3.175	Couple of large hemlocks in vista with spruce just outside to the south.	Squirrels found about ¼ mile west and nests about 1/3 mile north.	Plott Balsam Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 2 - 3 birch trees for den trees. Allow vegetation at 100' of north end to grow up. This would have little effect on the view.	40-50	85 Remove tall non-CNFS hardwood vegetation as directed at vista edge and 1st 20 feet at front of vista. Clump Rhododendron with spruce-fir.		X	X (Reduce to 2.5 acres)	
868	458.2 PwL	0.34	Three spruce (20'-30') in vista. Birch at north corner. Otherwise maple and oak. Nice view but partially blocked.	Squirrels found 1/4 mile south and nests found 1/3 mile north and ½ mile northwest.	Wolf Laurel Gap - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	10	65-75 Remove tall non-CNFS hardwood vegetation at edges and center as directed and 1st 20 feet at front of vista.		X		
869	458.2 PwR	0.399	MP 0.4 Heintooga Rd. Vista is grown up with no view remaining.	Squirrels found ½ mile south and nests found ¼ mile and 1 mile west.	Heintooga Spur Road. Vista is not there. Remove vista from program and let vegetation grow up.	0	0				X

870	458.2 PwL	0.728	MP 0.9 Heintooga Rd. About six spruce in vista. Lots of birch nearby. View is primarily while driving south.	Squirrels found ½ mile south and nests found ¼ mile east and ½ mile west.	Heintooga Spur Road Mollie Gap - View is while driving towards parkway. Allow 100' at the west end of vista to grow up (west of large spruce). Allow other spruce trees to grow up. OK to thin if enough are left to allow squirrel movement through vista. Leave 1 large birch tree as den tree.	10	65 Remove tall non-CNFS hardwood vegetation as directed at bottom edge of vista.		X		
871	458.2 PwR	0.638	MP 1.36 Heintooga Rd. No spruce or birch. Few beech. Very nice view.	Squirrels found 1mile south and nests found ½ mile south and ½ mile southwest.	Heintooga Spur Road. Mile High Overlook - Maintain in vista management program at present size and shape.	100	100	X			
872	458.2 PwR	0.41	MP 1.42 Heintooga Rd. Mainly oak and cherry. No spruce or birch. Nice view.	Squirrels found 1mile south and nests found ½ mile south and ½ mile southwest.	Heintooga Spur Road - Maintain in vista management program. NPS staff will cut occasional large trees along bottom of edge of vista to maintain view while not enlarging vista.	10	95 Remove tall non-CNFS hardwood vegetation as directed at bottom of vista edge.		X		

873	458.2 PwR	0.772	MP 1.5 Heintooga Rd. One small birch at shoulder, otherwise locust, cherry and oak. Nice view.	Squirrels found 1mile south and nests found ½ mile south and ½ mile southwest.	Heintooga Spur Road - Maintain in vista management program at present size and shape.	90	90	X	
874	458.2 PwR	0.319	MP 2.0 Heintooga Rd. Mainly oak and maple. Nice view.	Squirrels found 1mile southwest and nests found ½ mile and 1 mile west.	Heintooga Spur Road. Lake Junaluska Overlook - Maintain in vista management program. NPS staff will cut occasional large trees along bottom of edge of vista to maintain view while not enlarging vista.	0	95 Remove tall non-CNFS hardwood vegetation as directed and at bottom edge of vista.		X
878	458.4 PwL	0.751	Single hemlock in middle of vista. Nice view.	Squirrels found 1/4 mile south and nests found ½ mile northwest and north.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	70	95 Remove non-CNFS hardwood vegetation at edges and center as directed and 1st 20 feet at front of vista.		X

879	458.6 PwL	1.065	Canopy cut. All large trees in the vista are oaks with one 20' hemlock and birch at north end.	Squirrels found 1/3 mile south and nests found ½ mile northwest and northeast.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees. Allow birch to replace oaks as the primary canopy tree. NPS to selectively cut.	20	85 Remove Non-CNFS hardwood vegetation at edges and center as directed. Limb and thin other large trees selectively.		X NPS to cut Vista, not part of contract	
880	458.7P PwL	0.5	50' hemlock in middle of vista. Large birch in vista.	Squirrels found 1/3 mile south and nests found ½ mile northwest and northeast.	Leave hemlock as long as it lives. Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave large birch as den tree.	65-75	95 Remove non-CNFS hardwood vegetation 1st 20 feet at front of vista.		X	
881	458.9 PwL	0.917	No conifers except for two small hemlocks along parkway. Very nice view.	Squirrels found ½ mile southeast. Squirrel nest about 1/3 mile north.	Lickstone Ridge Overlook – Maintain in vista management program. NPS staff will cut occasional large trees along bottom of edge of vista to maintain view while not enlarging vista.	75	95 Remove non-CNFS hardwood vegetation 1st 20 feet of vista and large trees at vista edges.		X	

882	459.0 PwL	0.775	Birch along downhill edge. No conifers. Beech nearby. View is poor.	Squirrel nest on private lands adjacent to Parkway to north.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	85	95 Remove tall non-CNFS hardwood vegetation as directed and at bottom and edges of vista.		X		
883	459.3 PwL	2.438	Two dying hemlocks in vista. Two small (5') birch along road. Beech nearby.	Squirrel nest on private lands adjacent to Parkway to north.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	40	80 Remove non-CNFS hardwood vegetation 1st 20 feet of vista and large trees at vista edges.		X		
884	459.5 PwL	1.444	Spruce at south end of vista.	Squirrel nest about 1/4 mile southeast.	Bunches Bald Overlook - Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 or 2 large birch trees for den trees.	65-75	90 Remove non-CNFS hardwood vegetation 1st 20 feet of vista and large trees at vista edges and behind sign.		X		
885	459.7 PwL	0.697	No spruce in vista or visible nearby.	Squirrel nest about 1/2 mile southeast.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	65-75	90		X		

886	460.0 PwL	0.483	No spruce in vista or visible nearby. One dying hemlock in vista.	Squirrel nest about 1 mile southeast.	Allow spruce and birch to enter vista. OK to thin spruce trees as they grow if enough are left to allow squirrel movement through vista. Leave 1 large birch tree for den tree.	5-10	90		X		

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APPENDIX C

LIST OF RARE ANIMAL SPECIES WITHIN BLUE RIDGE PARKWAY LANDS

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Table C-1. List of Federally Listed Animal Species within Blue Ridge Parkway Lands

Scientific Names	Common Names	Habitat
Alasmidonta raveneliana (E)	Appalachian Elktoe	Tennessee drainages – Little Tennessee and Nolichucky
Antrolana lira (T)	Madison Cave Isopod	Subterranean, freshwater, phreatic lakes
Clemmys muhlenbergii (T-S/A)	Bog Turtle	Bogs, wet pastures, wet thickets
Corynorhinus townsendii virginianus (E)	Virginia Big-eared Bat	Roosts in caves (rarely mines) especially in limestone areas
Glaucomys sabrinus coloratus (E)	Carolina Northern Flying Squirrel	High elevation forests, mainly spruce-fir
Haliaeetus leucocephalus (T)	Bald Eagle	Most nest sites are found in the midst of large wooded areas adjacent to marshes or bodies of water
Microhexura montivaga (E)	Spruce-fir Moss Spider	In moss of spruce-fir forests
Myotis sodalis (E)	Indiana Bat	Roosts in hollow trees or under loose bark, in caves
Patera clarki nantahala (T)	Noonday Globe	Nantahala Gorge
Pegias fabula (E)	Littlewing Pearlymussel	Little Tennessee River
Percina rex (E)	Roanoke Logperch	Warm, moderate to large size streams and rivers with a succession of riffle-run-pool habitat
Pleurobema collina (E)	James Spinymussel	Endemic to the James River drainage
Puma concolor couguar (E)	Eastern Cougar	Extensive forests, remote areas
Stygobromus stegerorum (T)	Madison Cave Amphipod	Subterranean

Table C-2. List of North Carolina State Listed Animal Species within Blue Ridge Parkway Lands

Scientific Names	Common Names	Habitat
Aegolius acadicus pop 1 (PT)	Northern Saw-whet Owl – Southern App. Population	Spruce-fir forests or mixed hardwood/spruce forests (for nesting) [breeding season only]
Alasmidonta raveneliana (E)	Appalachian Elktoe	Tennessee drainages – Little Tennessee and Nolichucky
Alasmidonta viridis (E)	Slippershell Mussel	Little Tennessee River
Ambystoma talpoideum (SC)	Mole Salamander	Breeds in fish-free semipermanent woodland ponds, forages in adjacent woodlands
Aneides aeneus (E)	Green Salamander	Damp shaded crevices of cliffs or rock outcrops in deciduous forests
Apalone spinifera spinifera (SC)	Eastern Spiny Softshell	Large streams in the French Broad system
Appalachina chilhoweensis (SC)	Queen Crater	Southern half of mountains
Cambarus chaugaensis (SC)	Oconee Stream Crayfish	Streams in Savannah drainage
Cambarus georgiae (SC)	Little Tennessee River Crayfish	Streams in Little Tennessee Drainage
Certhia americana (SR – PSC)	Brown Creeper	High elevation forests, favoring spruce-fir mixed with hardwoods
Clemmys muhlenbergii (T)	Bog Turtle	Bogs, wet pastures, wet thickets
Clinostomus funduloides ssp 1 (SC)	Little Tennessee River Rosyside Dace	Little Tennessee drainage
Contopus cooperi (SC)	Olive-sided Flycatcher	Montane conifer forests (mainly spruce-fire) with openings or dead trees (breeding season only)
Crotalus horridus (SR – PSC)	Timber Rattlesnake	Rocky, upland forests
Cryptobranchus alleganiensis (SC)	Hellbender	Large and clear fast-flowing streams
Cyclomaias tuberculata (E)	Purple Wartyback	New River
Cyprinella monacha (T)	Spotfin Chub	Little Tennessee River
Elliptio dilatata (SC)	Spike	Little Tennessee, New River drainages
Etheostoma acuticeps (T)	Sharphead Darter	Streams in Nolichucky system
Etheostoma inscriptum (SC-PT)	Turquoise Darter	Streams in Savannah drainage
Etheostoma jessiae (SC)	Blueside Darter	Streams in Mills River system
*Etheostoma vulneratum (*SC)	Wounded Darter	Streams of the Little Tennessee system
Eurycea longicauda longicauda (SC)	Longtail Salamander	Moist woods and floodplains; small ponds for breeding
Falco peregrinus (E)	Peregrine falcon	Cliffs (for nesting) [nesting evidence]
Fumonelix jonesiana (T)	Big-tooth Covert	Newfound Gap GRSM
Fumonelix orestes (T)	Engraved Covert	Plott Balsam
Fumonelix wheatleyi clingmanicus (T)	Clingman Covert	Clingman's Dome GRSM
Fusconaia barnesiana (E)	Tennessee Pigtoe	Little Tennessee River
Glaucomys sabrinus coloratus (E)	Carolina Northern Flying Squirrel	High elevation forests, mainly spruce-fir
*Glyphyalinia junaluskana (*SC)	Dark Glyph	Southwestern mountains
Glyphyalinia pentadelphia (SC)	Pink Glyph	Southwestern mountains
Glyphyalinia vanattai (SC)	Honey Glyph	Mountains

Scientific Names	Common Names	Habitat
Haplotrema kendeighi (SC)	Blue-footed Lancetooth	Southwestern Mountains
Helicodiscus bonamicus (SC)	Spiral Coil	Nantahala Gorge vicinity
Hemidactylium scutatum (SC)	Four-toed Salamander	Pools, bogs and other wetlands in hardwood forests
Hiodon tergisus (SC)	Mooneye	French Broad River
Inflectarius subpalliatus (SC)	Velvet Covert	Central mountains
Inflectarius ferrissi (T)	Smoky Mountain Covert	Great Smoky Mountains and Plott Balsams
Lampsilis fasciola (SC)	Wavy-rayed Lampmussel	French Broad, Pigeon and Little Tennessee River
Lanius ludovicianus ludovicianus (SC)	Loggerhead Shrike	Field and pastures (breeding season only)
Lasmigona holstonia (E)	Tennessee Heelsplitter	Mills River
Lasmigona subviridis (E)	Green Floater	New and Watauga River drainages
Leptaxis dilatata (T)	Seep Mudalia	New River drainage in Ashe, Allegheny and Watauga Counties
Loxia curvirostra pop 1 (SR – PSC)	Red Crossbill – southern Appalachian population	Coniferous forests, preferably spruce-fir [breeding season only]
Mesodon orestes (T)	Engraved Covert	Rock ledges and during wet weather the forest floor around rocks.
Microtus chrotorrhinus carolinensis (SC)	Southern Rock Vole	Rocky areas at high elevations, forests or fields
Myotis leibii (SC)	Eastern Small-footed Bat	Roosts in hollow trees (warmer months), in caves and mines (winter)
Myotis sodalis (E)	Indiana Bat	Roosts in hollow trees or under loose bark, in caves
Myotis septentrionalis (SC)	Northern Long-eared Bat	Roosts in hollow trees and buildings (warmer months), in caves and mines (winter)
Necturus maculosus (SC)	Common Mudpuppy	Rivers and large streams (French Broad drainage)
Neotoma floridana haematoreia (SC)	Eastern Woodrat – southern Appalachian Population	Rocky places in deciduous or mixed forests, in southern mountains adjacent to Piedmont
Neotoma magister (SC)	Allegheny Woodrat	Rocky places and abandoned buildings in deciduous or mixed forests in the northern mountains
Notropis lutipinnis (SC)	Yellowfin Shiner	Savannah, Little Tennessee and Broad drainages
Noturus flavus (E)	Stonecat	Nolichucky, French Broad and Little River drainages
Pallifera hemphilli (SC)	Black Mantleslug	High elevation forests, mainly spruce-fir
Paravitrea andrewsae (SC)	High Mountain Supercoil	Northern half of mountains
Paravitrea clappi (SC)	Mirey Ridge Supercoil	High elevations GRSM
Paravitrea placentula (SC)	Glossy Supercoil	Mountains
Paravitrea varidens (T)	Roan Supercoil	Mountains

Scientific Names	Common Names	Habitat
Passerculus sandwichensis (SR)	Savannah Sparrow	Grassy fields and pastures [breeding season only]
Patera clarki (SC)	Dwarf Proud Globe	Southwestern mountains
Patera clarki nantahala (T)	Noonday Globe	Nantahala Gorge
Pegias fabula (E)	Littlewing Pearlymussel	Little Tennessee River
Percina caprodes (T)	Logperch	Tennessee and New River drainages
Percina nigrofasciata (SC-PT)	Blackbanded Darter	Savannah drainage
Percina oxyrhynchus (SC)	Olive or Sharpnose Darter	New River drainage
Percina squamata (SC)	Olive Darter	Tennessee drainage
Phenacobius teretulus (SC)	Kanawha Minnow	New drainage
Pituophis melanoleucus melanoleucus (SC)	Northern Pinesnake	Dry and sandy woods, mainly in pine/oak sand hills
Plethodon ventralis (SC)	Southern Zigzag Salamander	Moist areas of talus slopes or rock outcrops in hardwood forests
Plethodon wehrlei (SC)	Wehrle's Salamander	Upland forests (low mountains near Virginia border)
Plethodon welleri (SC)	Weller's Salamander	High elevation forests in northern mountains, mainly in spruce-fir, and to a lesser degree in northern hardwood forests
Plethodon yonahlossee Pop 1 (SC)	Crevice Salamander	Crevices n moist shaded rocks in the Hickory Nut Gorge area
Pleurobema oviforme (E)	Tennessee Clubshell	Little Tennessee and Hiawassee drainages
Poecile atricapilla practica (SC)	Black-capped Chickadee	High elevation forests, mainly spruce/fir (breeding season only)
Pseudacris brachyphona (SC)	Mountain Chorus Frog	Forests near temporary pools or ponds, in extreme southwestern mountains
Puma concolor couguar (E)	Eastern Cougar	Extensive forests, remote areas
Regulus satrapa (SC-PD)	Golden-crowned Kinglet	Spruce-fir forests, hardwood forests mixed with spruce or hemlock
Sorex dispar (SC)	Long-tailed Shrew	Stream banks in montane forests
Sorex palustris punctulatus (SC)	Southern Water Shrew	Stream banks in montane forests
Spyhrapicus varius appalachiensis (SR-PSC)	Appalachian Yellow-bellied Sapsucker	Mature, open hardwoods with scattered dead trees [breeding season only]
Stenotrema depilatum (SC)	Great Smoky Slitmouth	GRSM mountains
Strophitus undulatus (T)	Squawfoot	Many river systems
Thryomanes bewickii altus (E)	Appalachian Bewick's Wren	Woodland borders or openings, farmlands or brushy fields, at high elevations
Tritogonia verrucosa (E – PEX)	Pistolgrip	New River near the Virginia border
Ventridens coelaxis (SC)	Bidentate Dome	Northern mountains
Villosa iris (SC)	Rainbow Mollusk	French Broad, Hiawassee and Little Tennessee Rivers
Zonitoides patuloides (SC)	Appalachian Gloss	Southwestern mountains

APPENDIX D

Summary of Proposed Changes in Vista Management under Alternative C

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Summary of Proposed Changes in Vista Management under Alternative C

All Sections Combined

MP 350 - 460 (At Present 167 vistas, 148.235 acres, Proposed under Alternative C 147 vistas, 120.135 acres)

Vistas not changed	
Number of vistas	9
Acres	4.520
Vistas with changes in vegetation management	
Total number of vistas	138
Beginning acres	133.547
Vistas kept the same size	100
Vistas made smaller	38
Acres left in vistas with vegetation management	115.615
Acres removed when vista made smaller	17.932
Vistas removed from program	
Number of vistas	20
Acres	10.168

Section 1

MP 350 - 367 Mt. Mitchell area (At Present 42 Vistas, 45.699 acres, Proposed under Alternative C 39 vistas, 37.011 acres)

Vistas not changed	
Number of vistas	5
Acres	1.536
Vistas with changes in vegetation management	
Total number of vistas	34
Beginning acres	40.995
Vistas kept the same size	20
Vistas made smaller	14
Acres left in vistas with vegetation management	35.588
Acres removed when vista made smaller	5.407
Vistas removed from program	
Number of vistas	3
Acres	3.168

Section 2

MP 407 – 409 Mt. Pisgah area (At Present 8 Vistas, 3.167 acres, Proposed under Alternative C 6 vistas, 2.781 acres)

Vistas not changed	
Number of vistas	0
Acres	0
Vistas with changes in vegetation management	
Total number of vistas	6
Beginning acres	2.781

Vistas kept the same size	6
Vistas made smaller	0
Acres left in vistas with vegetation management	2.781
Acres removed when vista made smaller	0
Vistas removed from program	
Number of vistas	2
Acres	0.386

Section 3

MP 418 - 434 Great Balsam area (At Present 49 vistas, 47.918 acres, Proposed under Alternative C 45 vistas, 34.810 acres)

Vistas not changed	
Number of vistas	0
Acres	0
Vistas with changes in vegetation management	
Total number of vistas	45
Beginning acres	45.898
Vistas kept the same size	26
Vistas made smaller	19
Acres left in vistas with vegetation management	34.810
Acres removed when vista made smaller	11.088
Vistas removed from program	
Number of vistas	4
Acres	2.020

Section 4

MP 446 - 460 Plott Balsam/Waterrock Knob (At Present 68 vistas, 51.451 acres, Proposed under Alternative C 57 vistas, 45.420 acres)

Vistas not changed	
Number of vistas	4
Acres	2.984
Vistas with changes in vegetation management	
Total number of vistas	53
Acres under new vegetation management	43.873
Vistas kept the same size	48
Vistas made smaller	5
Acres left in vistas with vegetation management	42.436
Acres removed when vista made smaller	1.437
Vistas removed from program	
Number of vistas	11
Acres	4.494

APPENDIX E

ENVIRONMENTAL LAWS AND REGULATIONS

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Affected Resource(s)	Relevant Laws and Regulations
All	**National Environmental Policy Act (NEPA)** (42 USC 4321-4370)
All	**Council on Environmental Quality (CEQ) Regulations** (40 CFR 1500-1508)
All	**National Park Service Organic Act of 1916 (**16 USC et seq.)
All	**General Authorities Act** (1970)
All	**National Park Service Director's Order #12:** ***Conservation Planning, Environmental Impact Analysis, and Decision-making***
All	**E.O. 12372:** ***Intergovernmental Review of Federal Programs***
Cultural Landscapes	**National Historic Preservation Act (NHPA)** (16 USC 470 et seq.); **40 Code of Federal Regulations 1500** (regulations for implementing the National Environmental Policy Act); **National Park Service Director's Order #12**; **National Historic Preservation Act**; **Native American Graves Protection and Repatriation Act (NAGPRA)** (25 USC 3001 et seq.); **National Park Service Director's Order #28:** ***Cultural Resources Management***
Human Health and Safety	**National Park Service** ***Management Policies 8.2.5***, 2006; **E.O. 12898:** ***Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations;*** **E.O. 13229:** ***Protection of Children from Environmental Health Risks and Safety Risks***
Recreational / Visual Resources	**National Park Service** ***Management Policies 8.2,*** 2006
Socioeconomics	**40 Code of Federal Regulations 1500** (regulations for implementing National Environmental Policy Act)
Soils	**National Park Service** ***Management Policies 4.8.2.4***, 2006
Threatened and Endangered Species	***Endangered Species Act (ESA)*** (16 USC 1531-1544)***;*** **National Park Service** ***Management Policies 4.4,*** 2006***;*** **North Carolina Department of Environment and Natural Resources**
Vegetation	**National Park Service** ***Management Policies 4.4.2.4,*** 2006
Wildlife	**E.O. 13186:** ***Responsibilities of Federal Agencies To Protect Migratory Birds;*** **National Park Service** ***Management Policies, 4.4.1.1,*** 2006

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APPENDIX F: GLOSSARY

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GLOSSARY

Canopy: The uppermost layer of a forest where a layer of tree branches spread.

Critical habitat: Habitat approved in the *Federal Register* as critical for a particular listed species under Section 4 of the Endangered Species Act. (1) The specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features (a) essential to the conservation of the species and; (b) which may require special management or protection. (2) Specific areas outside the geographical area occupied by the species at the time it is listed that are considered essential to the conservation of the species.

Deciduous: Shedding or losing foliage at the end of the growing season.

Degradation (natural resources): Refers to negative impact(s) to natural resources or natural processes. The impact may be singular or cumulative; the extent may be local or ecosystem-wide. The term degradation is used broadly and may refer to: reduction in habitat size, declining species vigor exhibited as reduced population numbers, reduced reproductive success, increased mortality rates, and/or decreased percent of available habitat utilized.

Diameter Breast Height (DBH): A standard method of expressing the diameter of the trunk of a tree.

Digital Elevation Model (DEM): A digital representation of ground surface topography or terrain often used in geographic information systems. (GIS)

Ecosystem: A system formed by the interaction of a community of organisms with their physical environment, considered as a unit.

Exotic: Plant or animal species introduced into an area where they do not occur naturally; non-native species.

Fauna: Refers to animal life.

Foraging: The act of looking or searching for food or provisions.

Geographic Information System (GIS): System for capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to the Earth.

Hectare (ha): Unit of area in the metric system equivalent to 2.471 acres.

Hibernacula: A shelter occupied during the winter by a dormant animal.

Partners in Flight (PIF): A consortium of hundreds of private organizations, natural resource agencies, private businesses, industry associations, private landowners, foundations, universities, and individual citizens dedicated to maintaining healthy bird populations in the United States and throughout the Western Hemisphere.

Stob: A stake or stump.

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