



United States  
Department of  
Agriculture

Forest  
Service

National Forests in North Carolina  
Pisgah National Forest  
Grandfather Ranger District

109 E Lawing Dr  
Nebo, NC 28761-9827  
828-652-2144

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File Code: 1950-1

Date: May 15, 2006

Dear Interested Citizen:

I have signed the Decision Notice (DN) and Finding of No Significant Impact (FONSI) for the Old House Gap Project Environmental Assessment (EA) within the Grandfather Ranger District, Avery and Caldwell Counties. The DN discusses in detail my decision and rationale for reaching it.

Copies of the DN and FONSI are enclosed. The March 2006 EA has been modified and clarified to correct typographic errors and address issues and concerns raised by members of the public during the 30-day notice and comment period and to be more responsive to new information. The May 2006 EA is the result of this effort and is available on our web site (<http://www.cs.unca.edu/nfsnc/nepa/nepa.htm>) or upon request.

This decision is subject to appeal pursuant to 36 CFR 215.11. A written appeal, including attachments, must be postmarked or received within 45 days after the date this notice is published in *The McDowell News*. The Appeal shall be sent to National Forests in North Carolina, ATTN: Appeals Deciding Officer, PO Box 2750, Asheville, North Carolina, 28802. Appeals may be faxed to (828) 257-4263. Hand-delivered appeals must be received within normal business hours of 8:00 a.m. to 4:30 p.m. Appeals may also be mailed electronically in a common digital format to: **[appeals-southern-north-carolina@fs.fed.us](mailto:appeals-southern-north-carolina@fs.fed.us)**.

Those who provided comments or otherwise expressed interest in a particular proposed action by the close of the comment period may appeal this decision (as per the recent *The Wilderness Society v. Rey* ruling). Appeals must meet content requirements of 36 CFR 215.14. For further information on this decision, contact Greg Van Orsow, Project Leader, Grandfather Ranger District at 828-652-2144 or Michael Hutchins, Pisgah National Forest NEPA Coordinator at 828-682-6146. Thank you for your continued interest in management of the Pisgah National Forest.

Sincerely,

*/s/ Joy W. Malone*

JOY W. MALONE  
District Ranger

Enclosure





United States  
Department of  
Agriculture

Southern Region  
Forest Service



May 2006

# **Old House Gap**

## **Decision Notice**

**And**

## **Finding Of No Significant Impact**

**Grandfather Ranger District, Pisgah National Forest  
Avery & Caldwell Counties, North Carolina**

Decision Notice  
& Finding of No Significant Impact

Old House Gap Project

USDA Forest Service  
Grandfather Ranger District, Pisgah National Forest  
Avery & Caldwell Counties, North Carolina

**Decision and Rationale**

**Decision**

Based upon my review of the alternatives, I have decided to select **Alternative B** (Selected Alternative) of the Old House Gap Project Environmental Assessment (EA – see Section 1.3, Chapter 1) on the Grandfather Ranger District, Pisgah National Forest and the Project Design Features listed in Section 2.4, Chapter 2 and Appendix F of the Old House Gap Project EA. The Selected Alternative will:

- ◇ Harvest about 133 acres using the two-age regeneration harvest prescription (15-20 ft<sup>2</sup> basal area retained per acre).
- ◇ Harvest approximately 3 acres of white pine to develop a wildlife field along Forest Service Road (FSR) 4081 in and between stands 50-17 and 50-18 near Barn Ridge (seed clover under the predominantly oak, residual overstory).
- ◇ Use and maintain the existing road system.
- ◇ Construct about 1¼ miles of temporary road to access stands 70-14, 77-01, and 77-10. Following harvest activities, the temporary roads would be scarified, seeded, and closed to restrict motorized use on them.
- ◇ Site prepare and subsequently release, if needed, all stands being regenerated using herbicides (Glyphosate and Triclopyr) and manual methods. Site preparation includes post-harvest cutting of residual trees 2 to 10 inches in diameter and treating the stumps of the “undesirable” species with herbicide to prevent sprouting. This includes but is not limited to species such as maple, dogwood (when available, maintain up to 10 trees per acre of 4”+ dbh), and black gum. The objective is to promote sprouting of desirable species, particularly the oaks, but control competing vegetation by treating the stumps to prevent them from sprouting back at the same time.

- ◇ Use herbicides (Glyphosate and Triclopyr) to control a total of about 10 acres or less of invasive exotic (non-native) plants.
- ◇ Following harvest activities disc and seed all unsurfaced temporary roads, skid roads, and log landings created during harvest.
- ◇ Plant individuals or groups of an old variety of apple trees in log landings.
- ◇ Identify a contiguous 424 acre medium patch of old growth in the Upper Wilson Creek AA and contiguous 50 acre small patches (100 acres total) in compartments 70 and 77.

**Rationale**

The purpose and need for the proposal is disclosed in Section 1.4, Chapter 1 and summarized below:

- ◇ Provide habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer, and travel corridors and foraging habitat for black bear across the project area by dispersing early successional habitat across the landscape by regulating the amount of 0-10 year age class;
- ◇ Create a network of small, medium, and large sized old growth areas across the landscape to serve as permanent reservoirs of biological diversity;
- ◇ Using herbicides to control/manage pest populations.

I believe the Selected Alternative will move the resources in the project area towards the desired future condition, achieving the purpose and need for the project while addressing the public’s concerns. (See Appendix G for public comment highlights and the Agency’s response.)

In reaching my decision, I began by once again reviewing the purpose and need for the project and all of the alternatives presented in the Environmental Assessment (EA). I then carefully weighed the effects analyses of the alternatives analyzed in detail and the public comments received on the EA. The

Old House Gap Interdisciplinary Team (IDT) conducted field surveys, database queries, and other localized analysis in order to determine effects the alternatives analyzed in detail could have on the area's ecology, including threatened and endangered species. During their analyses, they took a hard look at past, present, and reasonably foreseeable future actions that could be combined with expected effects from the Old House Gap proposal. I believe they provided me sufficient analyses and conclusions to make a reasoned decision.

The Selected Alternative will harvest less than one percent of the area within the ~15,500-acre analysis areas (AAs).

## Other Alternatives Considered

In addition to the Selected Alternative, I considered one other alternative in detail: Alternative A – No Action. A comparison of these alternatives can be found in Section 2.5, Chapter 2.

### Alternative A – No Action

Under Alternative A, current management plans, such as existing wildlife management, wildfire suppression, general road maintenance, and special use permit operations, would continue to guide management of the project area (see Section 2.2.1, Chapter 2). I did not select this alternative for several reasons. This alternative would not have provided habitat conditions for wildlife species; designated medium or small patch old growth, nor used herbicides to control/manage pest populations. I believe active management is needed to move the area towards the Forest Plan's desired future condition.

### Other Alternatives Not Considered

Section 2.3 of the EA disclosed four alternatives I considered but eliminated from detailed study. Since they were not considered in detail in the EA, they were not considered in the range of alternatives for my decision.

## Public Involvement

The proposal was listed in the October 2005 Schedule of Proposed Actions. The proposal was initially provided to the public and other agencies for comment during scoping from June 9, 2005 thru July 11, 2005—seven individual comments were received

during scoping. On November 1, 2005, a second scoping comment period was initiated and the Proposed Action was modified by removing harvesting, temporary road construction, and prescribed burning from within the Wilson Creek Inventoried Roadless Area (IRA). This comment period was completed on November 18, 2005—eight individual comments were received during that period. A 30-day Notice and Comment period was initiated on March 21, 2006. Four timely letters or e-mails were submitted by members of the public during this period and one untimely letter. The comments received and the Agency's response is attached to this decision notice in Appendix G.

## Finding of No Significant Impact

After considering the environmental effects described in the EA, I have determined that these actions will not have a significant effect on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). Thus, an environmental impact statement will not be prepared. I base by finding on the following:

1. My finding of no significant environmental effects is not biased by the beneficial effects of the action (Section 1.4, Chapter 1 and Sections 3.2 and 3.3, Chapter 3).
2. There will be no significant effects on public health and safety and implementation will be in accordance with project design features (Section 2.4 Chapter 2; Section 3.6, Chapter 3; and Appendix F).
3. There will be no significant effects on unique characteristics of the area, because there are no park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas in the project area, nor are there local law or requirements imposed for the protection of the environment (Section 3.10, Chapter 3).
4. The effects on the quality of the human environment are not likely to be highly controversial because there is no known scientific controversy over the impacts of the project (Sections 3.1.2, 3.2.2, 3.3.3, 3.4, 3.5, 3.6.2, 3.7.2, 3.8.2, and 3.9.3.2, Chapter 3).
5. We have considerable experience with the types of activities to be implemented. The effects analysis shows the effects are not uncertain, and do not involve unique or unknown risk (Sections

- 3.1.2, 3.2.2, 3.3.3, 3.4, 3.5, 3.6.2, 3.7.2, 3.8.2, and 3.9.3.2, Chapter 3).
6. The action is not likely to establish a precedent for future actions with significant effects, because the project is site specific and effects are expected to remain localized and short-term (Sections 3.1.2, 3.2.2, 3.3.3, 3.4, 3.5, 3.6.2, 3.7.2, 3.8.2, and 3.9.3.2, Chapter 3).
  7. The cumulative impacts are not significant (Sections 3.1.2.5, 3.2.3, 3.3.3, 3.5, 3.6.2, 3.7.2, 3.8.2, 3.9.3.2, Chapter 3; and Appendix A).
  8. The action will have no effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (Section 3.7, Chapter 3). The action will also not cause loss or destruction of significant scientific, cultural, or historical resources (Section 3.7, Chapter 3). A heritage report was completed for this project and mailed to the State Historic Preservation Office (SHPO) on April 7, 2006, and the Eastern Band of the Cherokee Indians Tribal Heritage Protection Office (THPO) on April 10, 2006.
  9. A Biological Evaluation (BE, Appendix A) was completed for this project on February 23, 2006, that concluded for threatened and endangered (T&E) species, *There would be no adverse direct, indirect, or cumulative effects to any T&E plant, aquatic, or wildlife species populations or their habitat.* For the sensitive (S) species Eastern small-footed bat the BE concluded, *The cumulative impact within the AAs on this species would be minimal and not affect population viability across the Nantahala and Pisgah National Forest—neither alternative is likely to cause a trend toward federal listing.* For the S species Diana Fritillary the BE concluded, *Cumulatively the local populations will not be impacted as both the positive and adverse impacts to individuals of this species and its habitat from past, foreseeable future and this proposal will be minimal. Implementation of Alternative B is not likely to cause a trend toward federal listing or a loss of population viability locally or across the Forests. No other sensitive wildlife, botanical, or aquatic species has been determined to occur within the Forest Plan AAs and therefore would not be impacted by any alternative selected.* The BE was included within the EA that was provided to members of the public and the US Fish and Wildlife Service (USFWS) on March 21, 2006. The USFWS concluded on April 18, 2006, that *Based on a review of our records and the information provided in the EA, we do not believe*

*the proposed project will affect any federally listed species. Therefore, we believe the requirements under section 7 of the Act are fulfilled*

10. The action will not violate Federal, State, and local laws or requirements for the protection of the environment. Applicable laws and regulations were considered in the EA. The action is consistent with the Nantahala and Pisgah National Forests Land and Resource Management Plan Amendment 5 (Sections 1.1.1, 1.2, and 1.4.1, Chapter 1).

## Findings Required by Other Laws and Regulations

My decision to implement the Selected Alternative is consistent with the intent of the long-term goals and objectives listed on pages III-1 and III-2 of Forest Plan Amendment 5. The project was designed to meet land and resource management plan standards and incorporates appropriate land and resource management plan guidelines (Sections 1.1.1, 1.2, and 1.4.1, Chapter 1).

## Administrative Review and Contacts

This decision is subject to appeal pursuant to 36 CFR 215.11. A written appeal, including attachments, must be postmarked or received within 45 days after the date this notice is published in *The McDowell News*. The Appeal shall be sent to:

National Forests in North Carolina  
 ATTN: Appeals Deciding Officer  
 160-A Zillicoa Street  
 Asheville, North Carolina 28801

Hand-delivered appeals must be received within normal business hours of 8:00 a.m. to 4:30 p.m. Appeals may be faxed to (828) 257-4263 or mailed electronically in a common digital format to: [appeals-southern-north-carolina@fs.fed.us](mailto:appeals-southern-north-carolina@fs.fed.us).

Those who provided comments or otherwise expressed interest in a particular proposed action by the close of the comment period may appeal this decision (as per the recent *The Wilderness Society v. Rey* ruling). Appeals must meet content requirements of 36 CFR 215.14. For further information on this decision, contact Greg Van Orsow, Project Leader, Grandfather Ranger District at 828-652-2144 or Michael Hutchins, Pisgah National Forest NEPA Coordinator at 828-682-6146.

## Implementation Date

As per 36 CFR 215.9, if no appeal is received, implementation of this decision may occur on, but not before, the 5<sup>th</sup> business day following the close of the appeal-filing period (215.15). If an appeal is filed, implementation may occur on, but not before the 15<sup>th</sup> business day following the date of appeal disposition.

*/s/ Joy W. Malone*

*5/15/06*

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**JOY W. MALONE**  
District Ranger  
Grandfather Ranger District

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**Date**

**APPENDIX G – RESPONSE TO COMMENTS  
FOR THE  
OLD HOUSE GAP PROJECT  
ENVIRONMENTAL ASSESSMENT**

### **General Discussion**

The formal 30-day Notice and Comment period for the Old House Gap Project Environmental Assessment (EA) began March 21, 2006, and ended on April 19, 2006. Four timely letters or e-mails were submitted by members of the public during this comment period and one untimely letter. The following individuals provided comments on the EA:

- Commenter 1: Bob Gale, Western North Carolina Alliance (WNCA)**
- Commenter 2: Hugh Irwin, Southern Appalachian Forest Coalition (SAFC)**
- Commenter 3: Ben Prater, Southern Appalachian Biodiversity Project (SABP)**
- Commenter 4: Brian Cole, USDI Fish and Wildlife Service (USFWS)**
- Commenter 5: Ron Linville, North Carolina Wildlife Resources Commission (NCWRC)**

## Letter 1 – Bob Gale, WNCA

### Comment 1-1

***Invasive Exotic Species*** -- *The District is to be commended for including control for the invasive exotic species Paulownia tomentosa, Ailanthus altissima, and Miscanthus sinensis along roads and within/ around wildlife openings. We also applaud the District for including before, during and after monitoring plots regarding control efforts for these invasive species. We would be very interested in accompanying District staff when some of these plots are established and on some of the followup monitoring trips, as our organization has been active in invasive non-native species education, inventory, control and monitoring efforts within the last two years.*

### Agency Response

Comment is noted.

### Comment 1-2

*Regarding post-activity monitoring, the EA states (page 13, “Monitoring”) the intent for followup monitoring for only a nine-month period. We believe this period is inadequate. It is likely that roots or rhizomes from plants that appear to have been virtually eliminated might lie dormant, or become reestablished unnoticed, and reemerge from the soil a full growing season or two after control efforts. The EA states as much, in the same Monitoring narrative, noting that up to three treatments would be required within about a five-year period to “adequately reduce non-native invasives in the activity area.” Does this latter statement mean that the District will, indeed, continue monitoring for significantly more than nine months following activities, and retreat the areas until control has been successful? We urge the District to do so, and to clarify this in the final EA/DN. This is one of the first projects we have seen that is beginning to seriously address the invasives issue and it is a great opportunity for developing better information on successes/failures of control and for feedback into future monitoring and treatment methodology. We urge the District to give this effort sufficient time, funding and follow-through for real success in the areas to be treated.*

### Agency Response

Monitoring efforts are directly tied to funding availability. The monitoring disclosed in Section 2.4, Chapter 2 of the EA is the minimum that can be expected with limited funding the District receives. Additional funding may allow monitoring over a longer period.

### Comment 1-3

*We also note that three species are specifically targeted for control in the EA text discussion of alternatives, and are listed in Table 3-4 “Non-native Invasive Species Summary” and Table 3-5 “Treatment of Non-native Species in the Activity Areas by Alternative”. Yet, another serious invasive non-native, Celastrus orbiculatus, mentioned on Page 7 (“Why Here, Why Now?”) is included neither in the subsequent text nor in Table 3-4. Curiously, Celastrus scandens, is listed in both tables, however it is a native species, and shouldn’t be included with exotics. It is also becoming less common. Adding to this confusion, both C. orbiculatus and C. scandens are listed for treatment (Table 3-5) in Alternative B.*

### Agency Response

The listing of *Celastris scandens* is a mistake in the document. All mention of *C. scandens* should be *C. orbiculatus*. *C. scandens* does not occur within the AAs.

### Comment 1-4

*The above listings are clearly in error and in need of correction. We are entirely in support of control efforts for C. orbiculatus and want to be sure the District includes that species with the first three targeted for control. This is a*

*species for which control efforts can be successful and on which a focus is needed. On the other hand, we are not supportive of control efforts directed toward the native C. scandens.*

Agency Response

See Comment 1-3 above.

Comment 1-5

*In addition, Rosa multiflora is listed in both of the above tables, but again, not listed in any text, making it unclear if it is to be controlled or not. We believe, and certainly hope, that the species is intended to be included in control efforts, as indicated in Table 3-5; clarification would be helpful here, as well.*

Agency Response

Less than one acre of *Rosa multiflora* would be treated under Alternative B as disclosed in Table 3-5.

Comment 1-6

*The EA states (Page 7, “3. Non-native Invasives”) that Japanese barberry, Berberis thunbergii, is invading the forest via the road system, but does not target the plant for control. While this species is becoming problematic in the Southeast, it has not generally been among the top 10–15 plants of concern in the mountain forests in the past. How numerous are the occurrences of B. thunbergii in the project area? If this species is just beginning to show up, or occurs in small numbers of individuals, the best control strategy would be to make every attempt to eradicate it now, before it becomes widely established (especially if it happens to be one that spreads quickly). Please give this further analysis.*

Agency Response

This species is not identified to be at levels characteristic of a threat to the AA.

Comment 1-7

**Temporary Roads** -- *The EA calls for 1.25 miles of temporary road construction to access Stands 77-01, 77-10 and 70-14 for cable logging. The EA (page 95) incorrectly compares the value of the timber for the entire project with the road construction costs for those three stands in justifying their construction. “Some temporary road construction is necessary to access some units; however road construction costs are estimated to be \$37,500, well below the value of the timber to be removed, which is estimated to be as high as \$158,000.” The \$37,500 road construction costs should be weighed against only the timber to be taken from those stands accessed by the construction.*

Agency Response

Forest Service policy is to determine financial efficiency for each timber sale proposal expected to exceed \$100,000 in advertised value (Forest Service Manual 2432.22c). A timber sale is a group of units proposed for harvest under a timber sale contract. The Old House Gap project involves 136 acres from within eight stands. Individual stands within a timber sale proposal of multiple stands are not separately analyzed for financial efficiency, but as part of the entire timber sale proposal.

Comment 1-8

*A measure of the significance of this error can be seen in an example looking at largest segment of road proposed in one of the smallest of the stands with temporary road construction, Stand 77-10.*

Agency Response

See Comment 1-7 above.

### Comment 1-9

*Assuming the timber is of equal value in all of the stands (it is likely not, but this is simply an example), and noting that Stand 77-10 is 11% of the project total (15 acres divided by 136 total acres), the timber revenue from this stand, alone, amounts to about \$17,420 (11% of \$158,370). The road mileage in this stand (estimated from the maps at about 45%) would cost about \$16,875 (45% of \$37,500). Subtracting the cost of \$16,875 from the stand revenue of \$17,420 equals a total profit of \$545 in Stand 77-10. This is entirely too little revenue when compared to the act and expense of building more than a half mile of new road through the forest. It becomes a significant loss when considering the costs of ecological impacts from the road construction. (The road in this particular stand also appears to involve more cutting vertically through contours than paralleling contours when compared to the other stands, causing even more impact).*

### Agency Response

See Comment 1-7 above.

### Comment 1-10

*The WNC Alliance is opposed to any new road construction (temporary roads are, in fact, new roads even if closed off after activities) given the number of miles already existing in the national forest, even if they are built to access cost-effective timber stands. (Performing the same example above with Stands 77-01 and 70-14 does, in fact, appear to show significant return of revenue, though the environmental damage negates this in our opinion.) But we strongly urge the Grandfather District to, at the very least, drop Stand 77-10 from this project, since it is clearly economically and environmentally unjustified, especially when compared to the other stands. Omitting the stand would seem to significantly increase the benefit/cost ratio for the overall project.*

### Agency Response

Comment is noted. The project has been designed to adhere to Forest Plan standards and Forest Service policies in relation to road and vegetation management. Stand 77-10 will not be dropped from the proposal (see Comment 1-7 above).

### Comment 1-11

*In conclusion, we strongly urge the Grandfather District to make changes/clarifications regarding the invasive species monitoring and control concerns noted above, and eliminate or reduce the temporary roads proposed, especially by deleting Stand 77-10.*

### Agency Response

See Comments 1-2 thru 1-6, and 1-10 above.

## **Letter 2 – Hugh Irwin, SAFC**

### Comment 2-1

*We have followed with interest the development of the Old House gap Project. Below are comments on the proposal sent on March 16, 2006. Stands proposed for logging and thinning fall within Upper Wilson Creek Mountain Treasure area (Thomas J. McClure, "North Carolina's Mountain Treasures: The Unprotected Wildlands of the Nantabala and Pisgab National Forests", The Wilderness Society, 1993). This area was a roadless area of approximately 6,590 acres during RARE II. By 1996, when the Southern Appalachian Assessment roadless inventory was conducted, the roadless acreage of the Wilson Creek area was reduced to 4,990 acres. This illustrates the progressive erosion of roadless and wild areas that has occurred since RARE II. A number of the proposed stands lie within the Upper Wilson Creek Mountain Treasure area boundary which generally corresponds to the RARE II boundary. Stands 70-14, 77-1, 77-10, 77-3 all fall within this area. SAFC and a number of our member groups (including*

*The Wilderness Society, Sierra Club, Western North Carolina Alliance, and Southern Environmental Law Center) have long maintained that the roadless area boundaries should properly include more of the original RARE II acreage. The roadless inventory improperly delineated the roadless boundaries too restrictively. Logging should not be planned within roadless or Mountain Treasure area boundaries. The emphasis should be on restoration of wildland conditions to as much of the original RARE II area as practicable, including removing and rehabilitating logging roads.*

#### Agency Response

Roadless Areas as designated per the current Forest Plan are not proposed for harvesting or road construction. To remove stands 70-14, 77-1, 77-10, and 77-3 from the proposal would not allow it to meet part of the purpose and need, which is to *Provide habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer, and travel corridors and foraging habitat for black bear across the project area by dispersing early successional habitat across the landscape by regulating the amount of 0-10 year age class* (EA, Section 1.4).

#### Comment 2-2

*Stand 77-10 lies on an inventoried trail near FS Route 451. This is an important recreation area, and this trail extends all the way into the roadless area and the designated Wilson Creek Wild and Scenic River. The impacts to this trail should be carefully considered as project plans go through the NEPA process.*

#### Agency Response

The Old House Gap project has specific design features to reduce adverse effects on resources. For scenery resources, the proposal would *Reduce linear openings along roads and trails to meet Forest Plan standards* (EA, Section 2.4). A portion of the two-age harvest within 77-10 and along FSR 451 would be dropped.

#### Comment 2-3

*The views shed impacts of the project are mentioned in the Draft EA. However, while acknowledging the potential impacts and stating that the impacts could be avoided, the Draft EA fails to specify how these impacts would be avoided.*

#### Agency Response

Specific design features were developed for each stand to ensure protection to scenery resources (EA, Section 2.4). A map was developed by the landscape architect that identifies the stands and specific portions of each stand to be dropped.

#### Comment 2-4

*The cumulative effects of past activities and projects in this portion of the Pisgah National Forest and adjacent lands in conjunction with this project and other proposed projects should be better addressed.*

#### Agency Response

Cumulative effects were disclosed in Chapter 3 of the EA for each resource. The Agency believes the cumulative effects disclosures are adequate as per 40 CFR 1508.7

#### Comment 2-5

*Project level old growth surveys should be conducted in the project area per the Region 8 Old Growth Guidance. Any existing old growth that satisfies FS definitions of existing old growth should be protected. Old Growth surveys conducted by SAFC and Western North Carolina Alliance have identified on the ground an area of existing old growth in stands 78-5, 78-6, 78-7, 78-8, 78-9, 78-10, 78-11, and 78-12. This area should be given top priority as*

*designation as an old growth patch. In addition, distribution and representation of large, medium, and small old growth patches should be addressed in the context of the project area and consideration given to adding patches to the old growth network that contain existing old growth or maturing forest.*

#### Agency Response

The proposal meets Forest Plan standards for old growth and would designate over 400 acres of medium patch old growth in the Upper Creek analysis area and 100 acres in Compartments 70 and 77. Additional old growth designation was not determined to be necessary at this time, particularly since both the Wilson Creek Wild and Scenic Area and existing old growth large patch 24 are in the analysis areas.

### **Letter 3 – Ben Prater, SABP**

#### Comment 3-1

***Impacts to Upper Creek Mountain Treasures Area.*** *The Upper Stands proposed for logging and thinning fall within Upper Wilson Creek Mountain Treasure area (Thomas J. McClure, “North Carolina’s Mountain Treasures: The Unprotected Wildlands of the Pisgah and Pisgah National Forests”, The Wilderness Society, 1993). This area was a roadless area of approximately 6,590 acres during RARE II. By 1996, when the Southern Appalachian Assessment roadless inventory was conducted, the roadless acreage of the Wilson Creek area was reduced to 4,990 acres. This illustrates the progressive erosion of roadless and wild areas that has occurred since RARE II.*

#### Agency Response

See Comment 2-1 above.

#### Comment 3-2

*A number of the proposed stands lie within the Upper Wilson Creek Mountain Treasure area boundary which generally corresponds to the RARE II boundary. Stands 70-14, 77-1, 77-10, 77-3 all fall within this area. SABP has long maintained that the roadless area boundaries should properly include more of the original RARE II acreage. The roadless inventory improperly delineated the roadless boundaries too restrictively. Logging should not be planned within roadless or Mountain Treasure area boundaries. The emphasis should be on restoration of wildland conditions to as much of the original RARE II area as practicable, including removing and rehabilitating logging roads.*

#### Agency Response

See Comment 2-1 above.

#### Comment 3-3

***Impacts to USFWS Bird Species of Concern.*** *In the Wildlife Habitat section of the EA the Worm-eating warbler and Wood Thrush are listed as USFWS Bird Species of Concern. The EA describes the habitat requirements for each species and discusses the levels of decline that has been observed. The EA fails to address how the Old House Gap Project will impact these species. The language in the EA seems to hint that the proposed activities will benefit the species by providing early-successional habitat. We find this argument to be misleading and contrary to the fact that each of these species is an indicator of unfragmented interior forests. While foraging and nesting behavior has been observed in early successional habitats it is inappropriate to assume that sacrificing primary habitat is necessary to protect the species. This is especially true considering that deforestation is a principle factor contributing to the decline of the species. For this reason we recommend that Stands 78-14 and 77-01 be dropped from consideration.*

### Agency Response

The EA discloses in Section 3.2.2.1, Chapter 3 that 1.2% of wood thrush preferred forest communities would be harvested and 0.6% of the worm-eating warbler habitat would be harvested by Alternative B. The EA further states that if harvesting occurred during nesting season, the worm eating warbler young may be adversely affected over approximately 30 acres. Multiple research was cited demonstrating the high levels of fledging use of early successional habitat and the increased fledgling mortality rates when early successional habitat is too wide-spread across the landscape. With the small amount of preferred forest communities being proposed for harvest, for either species, along with the increased availability and spatiality of early successional habitat, the overall conclusion was that these species would benefit over the next planning period. No deforestation would occur with the Old House Gap project—deforestation is the permanent elimination of forest vegetation.

### Comment 3-4

***Impacts to Recreational Resources.*** 77-10 lies on an inventoried trail near FS Route 451. This is an important recreation area, and this trail extends all the way into the roadless area and the designated Wilson Creek Wild and Scenic River. The impacts to this trail should be carefully considered as project plans go through the NEPA process.

### Agency Response

See Comment 2-2 above.

### Comment 3-5

***Impacts to Old Growth.*** Old growth forests are a vital and diminished component of our public lands. We request that all stands in the project area that exceed 100 + years and represent the greatest variety of community types be designated as old growth as part of the Old House Gap project. Furthermore, compartment 77 is listed as the oldest compartment within the project area. We recommend that all stands in this compartment proposed for logging be omitted from the project to protect old growth communities.

### Agency Response

See Comment 2-5 above.

### Comment 3-6

***Impacts of Road Building and Management.*** We oppose all new and temporary road building on public lands and urge the FS to take necessary steps to protect the roadless and wild character of remaining un-interrupted forests. The Old House Gap Project will exacerbate current conditions associated with roads and their maintenance. The FS must cope with their backlog of road maintenance before it considers building new or temporary roads. All road construction associated with Natural Heritage areas must be abandoned out right. Temporary road construction or otherwise creates corridors for exotic invasives, pathogens, and illegal activity. As the only temporary road construction associated with this project encroaches in compartment 77 we strongly urge this activity to be abandoned to ensure protection of the integrity of the forests in this area.

### Agency Response

See Comment 1-10 above. Temporary roads in the proposal would be scarified, seeded, and closed to access—there would not be any road maintenance required. The temporary road to access stands is necessary to effectively meet objectives of the proposal.

### Comment 3-7

**Concerns about Restoration Alternative.** *Each of our organizations values the option of managing NF's to restore ecosystem integrity. A healthy ecosystem is resilient to pests and stochastic events and when properly restored can function with no maintenance while providing invaluable resources to the public. We advocate for FS projects to include restoration alternatives and were disappointed to see that no such alternative was considered for the Old House Gap Project.*

### Agency Response

Alternative A and Alternative 3 (EA, Sections 2.2.1 and 2.3.3 respectively) address this comment but neither were selected for reasons described above in the decision.

### Comment 3-8

**Concerns about Economics.** *NF's generate vast economic benefits simply by existing as natural ecosystems. When forests are logged, these benefits are lost, resulting in externalized costs to communities, businesses, and individuals that derive economic benefits from unlogged forests. By law, the United States FS must fully account for all benefits and all costs of natural resource management decisions and make those decisions in a manner that maximizes net public benefits. To claim that this issue is out of the scope of the analysis is a direct contravention of these laws. These requirements appear frequently in the Multiple-Use Sustained Yield Act ("MUSY"), the Forest and Rangeland Renewable Resources Planning Act of 1974 ("RPA"), the National Environmental Policy Act ("NEPA"), the Administrative Procedure Act ("APA"), the National Forest Management Act ("NFMA"), the Global Climate Change Prevention Act ("GCCPA"), and FS Regulations and Rules.*

### Agency Response

The Agency does not disagree with the importance determining market and non-market values potentially generated by National Forest System lands has in the land management decision-making process. The question comes down to when the market and non-market values should be determined. An economic analysis of the scale mentioned is best completed at the Forest Plan level as the Plan has the ability to set broad management objectives for large portions of the Forest. The Old House Gap proposal is a specific project designed to meet specific objectives based on management prescriptions set by the Forest Plan by management area. A financial efficiency analysis (see Comment 1-7 above) was completed that addressed the potential for a timber sale to be above or below the cost to harvest the timber (EA, Appendix E). The analysis disclosed that if a timber sale were sold at base rates (i.e. no bidding up by potential buyers), it would generate more revenue than the cost to harvest the timber.

### Comment 3-9

*In terms of ecosystem services, it is estimated that between 3,511- 74,696 people are served within each of the five major watersheds where Pisgah National Forest is located. The Old House Gap project analysis did not consider the economic impacts of reducing water quality. The water quality of the Pisgah is economically important not only for providing drinking water but also as a recreational resource. In 1996 the economic value of fishing on national forest lands in the southeast was almost \$482 million dollars. The Pisgah NF supports premiere fishing opportunities and is renowned for its trout fish. People who enjoy kayaking and paddling also support local economies. How will the Old House Gap project benefit local economies long term? Timber production is short term and does not provide steady revenue while at the same time it degrades water quality.*

### Agency Response

The aquatics and water quality analysis summarized that, Turbidity and sediment loading may increase slightly during culvert installation and implementation of watershed project. Should diminish downstream and cease with site rehabilitation (Table 3.1, Chapter 3). The proposal has

been designed to minimize potential for adverse effects to resources, including water quality by adhering to Forest Plan standards. As disclosed in the EA, The Forest Plan does not allow vegetation management within riparian zones for perennial streams unless it is specifically for the enhancement of riparian values (page III-181). This standard was designed to allow vegetation along streams to become old and decadent and to serve as a long-term source of LWD to stream channels. (Section 3.1.2.1, Chapter 3). In addition, the project had specific design features to reduce adverse effects to aquatic resources (Section 2.4, Chapter 2). These include: 1) *Trees accidentally felled across stream channels (that prevent or block stream flow) would be lifted (when possible) away from the water. If this is not possible, each tree would be pulled away from the water where it fell and temporary decking would be used to support the weight of the tree as it is pulled across the channel. These removals would be perpendicular to the stream channel whenever possible to minimize stream bank disturbance. Bare soil would be seeded and mulched if native vegetation does not start to recolonize the area by the time timber removal from the unit is complete.* 2) *Skid roads would avoid stream crossings and paralleling perennial channels within designated riparian areas.* 3) *Landings and skid trails should be vegetated as soon as possible after use to avoid off-site soil movement.* 4) *Temporary roads (if needed) would be constructed to avoid runoff into area streams. In addition, silt fence, straw bales, or brush barriers would be placed along the length of the road where it parallels or crosses a stream as needed to control runoff and stream sedimentation.*

### Comment 3-10

*In terms of supporting local economies what guarantee is there that any of the timber proposed for harvest will enter the revenue stream of local communities. In our experience we have documented timber companies winning bids out of state and crossing state lines to log NF's in other states. As a national resource the FS cannot restrict this practice and therefore it is wrong to assume that local economies will benefit from logging in the Old House Gap Project.*

### Agency Response

The sale of timber will be awarded to the highest approved bidder. It is possible that timber may be sold to a timber company in another state; however, their transportation costs would be higher than for a company closer to the sale area. The reverse can also occur for possible Forest Service timber sales in Virginia, Tennessee, Georgia, or South Carolina—a North Carolina timber company could be the highest approved bidder in any of these states, thus returning revenue from another state to North Carolina.

### Comment 3-11

*In analyzing the economic impacts of the Old House Gap Project the FS failed to incorporate information about the economic value of unlogged forests. These include the economic benefits associated with: 1) Recreational opportunities and tourism; 2) Commercial and recreational fisheries within the boundaries of the Pisgah NF's and downstream and offshore; 3) Habitat for important game species and hunting both within and outside of the Pisgah NF; 4) Water for cities, industries, businesses, and individual households downstream from the Pisgah NF; 5) The regulation of water flowing through rivers and streams, including flood control; 6) Non-timber forest products such as wild mushrooms, herbs, and medicinal plants; 7) Mitigation of global climate change through absorption and storage of vast amounts of carbon; 8) Enhancing the quality of life of neighboring communities; 9) Harboring biological resources that either have value now or have as yet unknown but potentially large economic and social value; 10) Harboring biological and genetic resources that can improve the long-term productivity of all forest land; 11) pest-control services provided by species that prey on agriculture and forest pests, and; 12) Pollination services provided by species that pollinate important forest and agricultural crops.*

### Agency Response

See Comments 1-7, 3-8, and 3-10 above.

### Comment 3-12

*The FS has failed to incorporate externalized costs into timber sale planning decisions at the national, forest, and site specific level. The White Bull Project fails to incorporate information about externalized costs passed on to communities, businesses, and individuals when NF's are logged. These include the direct, indirect, and cumulative economic costs associated with: 1) Lost recreational opportunities and decreased tourism; 2) Degraded commercial and recreational fisheries within the boundaries of the Pisgah NF and downstream; 3) Degraded habitat for important game species and loss of hunting opportunities both within and outside of the Pisgah NF; 4) Increased pollution of water for cities, industries, businesses, and individual households downstream from the Pisgah NF and increased costs of water filtration; 5) Increased flooding and disruption of the normal flows in rivers and streams. 6) Loss of non-timber forest products such as wild mushrooms, herbs, and medicinal plants; 7) Exacerbation of global warming through release of greenhouse gasses; 8) Diminished quality of life of neighboring communities; 9) Loss of biological resources that either have value now or have as yet unknown but potentially large economic and social value; 10) Loss of biological and genetic resources that can improve the long-term productivity of all forest land; 11) Diminished pest-control services provided by species that prey on agriculture and forest pests; 12) Diminished pollination services provided by species that pollinate important forest and agricultural crops. 13) Lost jobs and income associated with timber production on private lands that is displaced by Pisgah NF timber sales; 14) Lost jobs and income associated with the production of alternative and recycled products that is displaced by subsidized Pisgah NF timber sales; 15) Death, injury, and property damage associated with logging on the Pisgah NF; and 16) Increased risk of wildfires caused by adverse changes in microclimate, increased human access, and slash generated by timber sales.*

### Agency Response

See Comments 1-7, 3-8, and 3-10 above. The White Bull project is on the Highlands Ranger District of the Nantahala National Forest.

### Comment 3-13

*These externalized costs are generated by NF logging in every part of the nation, including the Pisgah NF. The FS has extensive literature and sources of data that it can rely upon to quantify the magnitude of these externalized costs at the national, forest, and project level. Failure to incorporate externalized costs into the Old House Gap Project violates numerous statutes, regulations, and rules governing FS management activities.*

### Agency Response

See Comments 1-7, 3-8, and 3-10 above.

## **Letter 4 – Brian Cole, USFWS**

### Comment 4-1

*We have no major concerns regarding the proposed actions and support the maintenance of both early successional stage habitats and old-growth forest, particularly for many of the Neotropical migratory birds known to be in decline. As with other projects we have recently commented on, we are pleased to see the USFS actively controlling invasive exotic species.*

### Agency Response

Comment is noted.

### Comment 4-2

*The Environmental Assessment (EA) indicates that there will be about 1.25 miles of temporary road construction. Given the impacts of culverts on streams detailed in the EA, we encourage you to use techniques employed to cross ephemeral channels (e.g., simple log stringers or prefabricated decking, culverts, or channel armor [stone or brush]) for*

*all stream crossings for temporary roads. These crossings could then be removed when the road is rehabilitated, and overall project impacts would be lessened.*

#### Agency Response

The Agency employs all of these types of crossings when and where appropriate. The EA disclosed the following in Section 3.1.2.2, Chapter 3: *The temporary road construction within 77-10 will involve the placement of three culverts in two UTs to Rockhouse Creek. The placement of these **temporary culverts** (emphasis added) will directly impact approximately 22 to 24 linear feet of stream bottom at each crossing (66 to 72 feet of the total ~3,850 feet of the two UTs in the AA; less than 2% affected). There is no fish habitat within these UTs however aquatic invertebrate habitat exists. One culvert is proposed to be installed in UT Cary Flat Branch to protect it during skidding. This stream is subsurface in several areas of its headwaters and does not support fish habitat. Very few aquatic invertebrates (non rare) were found during field surveys within this UT. More mobile aquatic species such as aquatic salamanders, crayfish and fish would emigrate downstream away from the disturbed area during culvert installation. The loss of less mobile individuals such as macroinvertebrates would likely occur during this process. The sizes for these pipes have been determined using the "Forest Culvert Sizing Protocol" which considers species present and need for aquatic organism passage as well as need for non-failure during large storm events. The culverts would be removed following completion of harvest-related activities.*

#### Comment 4-3

*Based on a review of our records and the information provided in the EA, we do not believe the proposed project will affect any federally listed species. Therefore, we believe the requirements under section 7 of the Act are fulfilled. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.*

#### Agency Response

Comment is noted.

### **Letter 5 – Ron Linville, NCWRC (untimely)**

#### Comment 5-1

*After reviewing the proposed actions, we believe that the proposed activities will benefit various wildlife species and help control non-native species. These actions should enhance biodiversity and native flora and fauna through provision of a network of permanent biological reservoirs. Accordingly, we support the US Forest Services preferred alternative.*

#### Agency Response

Comment noted.

#### Comment 5-2

*Streams in the area either support or are located above waters supporting wild (reproducing) Brown and/or Rainbow trout. Any instream work and land disturbance within the 25-foot wide buffer zone should be prohibited during the trout spawning seasons of October 15 through April 15 to protect the egg and fry stages of trout. Woodruff Branch flows to Anthony Creek which supports Rainbow trout. Instream work and land disturbance within the 25-foot wide buffer zone should be avoided there during the rainbow trout spawning season of January 1 through April 15 to protect the egg and fry stages of trout. We recommend that Land disturbance not occur during winter months when stabilizing vegetation can not be adequately established.*

### Agency Response

The EA disclosed the following direct effects in Section 3.1.2.2, Chapter 3: *Access to proposed units 70-14, 77-01, and 77-10 would involve the construction of 1.25 miles of temporary road construction as well as the development of skid trails and log landings. The temporary road construction within 77-10 will involve the placement of three culverts in two UTs to Rockhouse Creek. The placement of these temporary culverts will directly impact approximately 22 to 24 linear feet of stream bottom at each crossing (66 to 72 feet of the total ~3,850 feet of the two UTs in the AA; less than 2% affected). There is no fish habitat within these UTs however aquatic invertebrate habitat exists. One culvert is proposed to be installed in UT Cary Flat Branch to protect it during skidding. This stream is subsurface in several areas of its headwaters and does not support fish habitat. Very few aquatic invertebrates (non rare) were found during field surveys within this UT. More mobile aquatic species such as aquatic salamanders, crayfish and fish would emigrate downstream away from the disturbed area during culvert installation. The loss of less mobile individuals such as macroinvertebrates would likely occur during this process. The sizes for these pipes have been determined using the "Forest Culvert Sizing Protocol" which considers species present and need for aquatic organism passage as well as need for non-failure during large storm events.*

*Riparian areas have been identified as 100 feet on either side of perennial channels and 30 feet on either side of intermittent channels. **No activity, including the placement of log landings and skid trails, would occur in this area with the exception of access at four stream crossings** (emphasis added).*

*The road drainage on all temporary roads within the activity area would be designed so water flows off the roaded area and enters into vegetation rather than directly into activity area streams. Following harvest activities, disc and seeding of all unsurfaced temporary roads, skid roads, and log landings will occur.*

Minimal winter activity is proposed with the project; however, if any is undertaken, it would adhere to Forest Plan standards and guidelines.



United States  
Department  
of  
Agriculture

Forest  
Service

May  
2006



# Environmental Assessment

## Old House Gap Project

**Grandfather Ranger District, Pisgah National Forest  
Avery & Caldwell Counties, North Carolina**

# Old House Gap Project

## Environmental Assessment

Location of Action: Grandfather Ranger District  
Pisgah National Forest  
Avery and Caldwell Counties, North Carolina

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## CHAPTER 1 – PURPOSE AND NEED

### 1.1 Document Structure

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The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses direct, indirect, and cumulative environmental effects that would result from the proposed action and alternatives. The document is organized into five parts:

- ◇ *Chapter 1 – Purpose and Need:* This section includes information on the history of the project proposal, the purpose of and need for the project, and the agency’s proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal.
- ◇ *Chapter 2 – Alternatives:* This section provides a detailed description of alternative methods for achieving the stated purpose as well as the No-action Alternative. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes project design features. This section also provides a summary of the environmental consequences associated with each alternative.
- ◇ *Chapter 3 – Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by issues. Within each section, the affected environment is described first, followed by the effects of the No-action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- ◇ *Chapter 4 – Preparers and Public Involvement:* This section provides a list of preparers and members of the public consulted during the development of the environmental assessment.
- ◇ *Appendices:* The appendices provide more detailed information to support the analyses presented in the EA.

#### 1.1.1 Project Record

This EA incorporates by reference (40 CFR 1502.21) the project record. The project record contains specialist reports and other technical documentation used to support the analysis and conclusions in this EA. The specialist reports provide additional detailed analysis. This EA incorporates by reference the Nantahala and Pisgah Management Indicator Species (MIS) Report. This report along with Monitoring and Evaluation Reports for the National Forests in North Carolina contains the most current information about forest population trends for MIS species.

### 1.2 Background

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This EA documents the results of site-specific analyses concerning proposed activities of the Old House Gap Project on the Grandfather Ranger District, Pisgah National Forest.

The 15,512-acres for analysis are located within the 8,479 acre Upper Wilson Creek Forest Plan Analysis Area (AA) and the 7,033 acre Anthony Creek Forest Plan AA and are about 16 miles northeast of Marion, North Carolina. The Forest Plan AAs include, but are not limited to, compartments 50, 51, 70, and 77 in Avery and Caldwell Counties (see Vicinity Map at the end of

the EA) and may be different from the AAs individual resources use to analyze effects. The activity areas and AAs are defined at the beginning of Appendix A, Biological Evaluation.

The proposed activities are within Management Areas (MAs) 3B and 4A as designated in the Land and Resource Management Plan, Amendment 5 for the Nantahala and Pisgah National Forests North Carolina (1994) and hereafter called the Forest Plan. Management Area 3B is managed to *Emphasize sustained yield timber management. Close most roads to motorized vehicles. Permit road construction. Base method of harvest on site-specific analysis. Manage habitat of mixed ages of forests primarily for turkey, and animals requiring similar environments* (Forest Plan page, III-55). Management Area 4A is managed with an emphasis placed [o]n *providing high quality wildlife habitat, particularly for black bear* and to [p]ermit *timber production, modified to emphasize visual quality and wildlife habitat* (Forest Plan, page III-77). Management Area 5 is also designated within the AAs, but no ground disturbing activities are proposed within it. This MA is managed with an emphasis [o]n *providing large blocks of backcountry where there is little evidence of humans or human activities other than recreation use. [T]hese lands are managed to provide a unique forest environment where primitive settings are provided. Motorized recreation use is not allowed, but forest users can enjoy hiking and hunting or walking* (Forest Plan, page III-89). The Wilson Creek Inventoried Roadless Area (IRA) is within this MA; however, no ground disturbing activities are proposed within it or MA 5.

This EA tiers to the Final Environmental Impact Statement (FEIS) for the Forest Plan and to the FEIS for Vegetation Management in the Appalachian Mountains (VMAM).

### 1.3 Proposed Action

The Proposed Action (Alternative B) has been developed by the Forest Service to meet the Purpose and Need of this project and would meet Forest Plan direction by: providing habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer, and travel corridors and foraging habitat for black bear across the AAs; creating a network of small and medium patch old growth across the landscape to serve as permanent reservoirs of biological diversity; and using herbicides to control/manage non-native invasive plant populations. The following table summarizes harvest-related information for the Proposed Action.

**Table 1-1: Summary of Alternative B, Harvest-related Activities**

Stand	Ac	MA	Harvest Method	Logging System	Temp Road
50-13	30	3B	Two-Age <sup>1</sup>	Cable	
51-06					
51-24	10	3B	Two-Age	Tractor	
70-14	20	4A	Two-Age	Tractor	¼ mi
77-01	28	4A	Two-Age	Cable	½ mi
77-03	30	4A	Two-Age	Cable	
77-10	15	4A	Two-Age	Cable	½ mi
White pine removal/wildlife field development	3	MA 3B	Clearcut	Tractor	
<b>Total</b>	<b>136</b>				<b>1.25 miles</b>

<sup>1</sup> – 15-20 ft<sup>2</sup> basal area retained per acre

In addition, the Proposed Action would:

- ◊ Use and maintain the existing road system.

- ◇ Site preparing and subsequent release, if needed, in all stands being regenerated using herbicides (Glyphosate and Triclopyr) and manual methods. Site preparation includes post-harvest cutting of residual trees 2 to 10 inches in diameter and treating the stumps of the “undesirable” species with herbicide to prevent sprouting. This includes but is not limited to species such as maple, dogwood (when available, maintain up to 10 trees per acre of 4”+ dbh), and black gum. The objective is to promote sprouting of desirable species, particularly the oaks, but control competing vegetation by treating the stumps to prevent them from sprouting back at the same time.
- ◇ Harvest approximately 3 acres of white pine to develop a wildlife field along Forest Service Road 4081 in and between stands 50-17 and 50-18 near Barn Ridge (seed clover under the predominantly oak, residual overstory).
- ◇ Use herbicides (Glyphosate and Triclopyr) to control a total of about 10 acres or less of invasive exotic (non-native) plants.
- ◇ Following harvest activities, disc and seed all unsurfaced temporary roads, skid roads, and log landings created during harvest.
- ◇ Plant individuals or groups of an old variety of apple trees in log landings.
- ◇ Identify a contiguous 424 acre medium patch of old growth in the Upper Wilson Creek AA and contiguous 50 acre small patches (100 acres total) in compartments 70 and 77.

## 1.4 Purpose and Need for Action \_\_\_\_\_

The purpose of this proposal is to:

1. Provide habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer, and travel corridors and foraging habitat for black bear across the project area by dispersing early successional habitat across the landscape by regulating the amount of 0-10 year age class in MA 3B (Forest Plan, page III-31). Forest Plan direction would be met in MA 4A by providing habitat conditions for species such as black bear, eastern wild turkey, pileated woodpecker, golden-crowned kinglet, bats, white-breasted nuthatch, and gray squirrel by creating dispersed 0-10 year age class (Forest Plan, page III-31). Forest Plan standards for 0-10 year age class distribution in MA 3B is 5 – 15%, and 0 – 10% for MA 4A (Forest Plan, page III-31).
2. Create a network of small, medium, and large sized old growth areas across the landscape to serve as permanent reservoirs of biological diversity (Forest Plan, pages III-26 and III-27). In each compartment containing more than 250 acres, 5% of the compartment acres or 50 acres, whichever is greater, must be selected as a contiguous small patch prior to the first ground disturbing activity of 5 acres or more in the compartment (Forest Plan, page III-27). In each administrative watershed containing more than 2,500 acres, 5% of the watershed acres must be selected as a contiguous medium patch prior to the first ground disturbing activity of 5 acres or more in the compartment (Forest Plan, page III-27). Large patches identified in Appendix K of the Forest Plan must be evaluated and 2,500 contiguous acres or more must be selected in or near the large patches identified in the Forest Plan prior to the first ground disturbing activity of 5 acres or more in the watershed where one of the large patches occur (Forest Plan, page III-26). Areas designated as an old growth patch may satisfy other patch requirements thereby negating the need for additional designation of old growth; e.g. 5% of watershed acreage in a designated large patch of old growth satisfies the medium patch requirement for the watershed (Forest Plan, page III-27).

- Using herbicides to control/manage pest populations (Forest Plan III-52).

### 1.4.1 Why Here, Why Now?

The existing condition of the Old House Gap area has been evaluated and compared against the desired future condition for the area as described in the Forest Plan. Where resources in the area are found to be outside the desired future condition, opportunities for moving the resources towards the desired future condition exist. The Old House Gap area was chosen at this time for vegetation management over other areas on the Grandfather Ranger District because of its planned order of entry in the *Nantahala and Pisgah National Forests, A Schedule of Entry By Analysis Area*. The last appreciable entry in the Upper Wilson Creek AA was about 20 years ago (1980's) and an estimated 150 acres; and in the Anthony Creek AA was over 10 years ago (1991-95) and 218 acres. Forest Plan standards schedule to revisit each stand in Management Area 3B every 10 years and stands in MA 4A every 10-15 years to meet early succession habitat standards (Forest Plan, pages III-75 and III-85). Stands in the watershed currently do not meet Forest Plan standards for early successional habitat (Forest Plan, page III-29); compartments in the watershed currently do not meet Forest Plan standards for old growth (Forest Plan, page III-27); and non-native invasive plant populations are established in the watershed (Forest Plan III-52). Harvesting is proposed to ensure early successional vegetation in the watershed achieves desired ranges identified in the Forest Plan. The Proposed Action was developed to move resources in the area towards the desired future condition using active management.

- Habitat Conditions: Currently, the 0-10 year age class is 0% in the project area and the Upper Wilson Creek Forest Plan Analysis Area (AA), while there is less than 1% of the 0-10 year age class in the Anthony Creek AA. Desired wildlife habitat would also be provided by creating permanent grass and forb openings for species such as eastern wild turkey; desired amount is 3% (Forest Plan, pages III-74 and III-84).

Currently, there is 0.3% permanent grass and forb habitat within the AAs. Provide a 30-foot feathered edge of 0-10 year age class surrounding existing grass/forb openings to improve the species diversity and utilization of the grass/forb habitat.

- Old Growth: Currently, compartments 50 and 51 contain small patches of designated old growth, while compartments 69, 70, 77, and 78 do not contain designated small patches of old growth. The Anthony Creek watershed contains a portion of the designated Large Patch 24 which satisfies the medium patch requirement for this watershed, however; a medium patch must be designated in the Upper Wilson Creek watershed. Large Patch 24 is the only large patch that is within the analysis area of the project and has been evaluated and designated as an old growth large patch.
- Non-native Invasives: Currently, the invasive species royal paulownia, oriental bittersweet, multiflora rose, and Japanese barberry are invading the Forest via the road system. Dense fescue is established in grass/forb openings which is less desirable than warm-season grasses.

## 1.5 Decision Framework

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Based on the analysis disclosed in this EA, the Responsible Official will make a decision and document it in a Decision Notice and Finding of No Significant Impact. The Responsible Official can:

- ◇ Select an action alternative that has been considered in detail, or
- ◇ Select a modified action alternative, or
- ◇ Select the No-action Alternative.

## 1.6 Public Involvement

---

The proposal was listed in the October 2005 Schedule of Proposed Actions. The proposal was initially provided to the public and other agencies for comment during scoping from June 9, 2005 thru July 11, 2005—seven individual comments were received during scoping. On November 1, 2005, a second scoping comment period was initiated and the Proposed Action was modified by removing harvesting, temporary road construction, and prescribed burning from within the Wilson Creek Inventoried Roadless Area (IRA). This comment period was completed on November 18, 2005—eight individual comments were received during that period.

Using comments received from the public, agencies, and organizations during this period as well as internal review, the interdisciplinary team (IDT) developed a list of issues to address.

## 1.7 Issues

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Issues are defined as a point of discussion, debate, or dispute about environmental effects. Issues are used to develop alternatives, mitigation measures, or analyze environmental effects. The Forest Service separated issues into two groups: significant and other. All comments received during scoping have been reviewed and a determination on significance was made. The issue tracking sheet in the project record lists each comment received and the determination of significance. Following review of comments received during scoping, no significant issues were identified that necessitated development of an additional action alternative that could meet the purpose and need in a different way (see also Sections 2.1, 2.2, and 2.3, Chapter 2).

### 1.7.1 Issue 1 – Threatened, Endangered, Sensitive Species (TES) and Management Indicator Species (MIS)

*The proposed action may adversely impact TES and MIS or their habitat*

**Indicator:**

- ◇ Acres/miles of habitat adversely impacted

### 1.7.2 Issue 2 – Old Growth Habitat

*The proposed action may adversely impact old growth habitat*

**Indicators:**

- ◇ Acres treated by age class
- ◇ Acres of newly designated old growth

### 1.7.3 Issue 3 – Water Quality and Aquatic Habitat

*Constructing and reconstructing roads may adversely impact water quality and aquatic habitat*

**Indicators:**

- ◇ Miles of temporary road constructed

- ◇ Miles of road reconstructed
- ◇ Number of new stream crossings

#### **1.7.4 Issue 4 – Wildlife Habitat**

*The proposed action may adversely impact wildlife habitat*

**Indicators:**

- ◇ Acres of early-successional habitat
- ◇ Acres of grass/forb
- ◇ Acres of hard mast

#### **1.7.5 Issue 5 – Botanical Resources/Non-native Invasives**

*Harvest related activities may adversely impact botanical resources and increase non-native invasives*

**Indicators:**

- ◇ Miles of temporary road construction
- ◇ Acres of timber harvest

#### **1.7.6 Issue 6 – Herbicides**

*Herbicide use may adversely affect wildlife, water quality, and humans*

**Indicator:**

- ◇ Acres and location of herbicide application

#### **1.7.7 Issue 7 – Archaeological Resources**

*Harvest related activities may adversely affect archaeological sites*

**Indicator:**

- ◇ Number, class, and location of archaeological sites in the activity areas

#### **1.7.8 Issue 8 – Soil Resources**

*Harvest related activities may adversely impact sensitive soils*

**Indicators:**

- ◇ Miles of temporary road construction
- ◇ Acres of timber harvest

#### **1.7.9 Issue 9 – Scenery Resources**

*Harvest related activities may adversely affect scenic resources*

**Indicators:**

- ◇ Acres of modification visual quality objective (VQO)
- ◇ Acres of partial retention VQO

### **1.7.10 Issue 10 – Other Areas of Concern**

*Harvest activities may adversely affect park lands, prime farmlands, wetlands, wild and scenic rivers, ecologically critical areas, or local law or requirements imposed for the protection of the environment*

**Indicator:**

- ◇ Presence of park lands, prime farmlands, wetlands, wild and scenic rivers, ecologically critical areas, or local law or requirements imposed for the protection of the environment

## CHAPTER 2 - ALTERNATIVES

Chapter 2 is the “heart” of an EA (40 CFR 1502.14) and describes alternatives the agency considered in addition to the proposed action. This chapter compares each alternative considered in detail and lists project design features.

### 2.1 Range of Alternatives \_\_\_\_\_

The range of alternatives developed and analyzed by the interdisciplinary team (IDT) was driven by the purpose and need underlying the proposal (Chapter 1, Section 1.4). An alternative should (1) reasonably respond to the purpose and need, and (2) address one or more significant issue. The only exception is the No Action Alternative, which is required by regulation [40 CFR 1502.14(d)]. Following review of the comments received during scoping, no significant issues were identified that necessitated development of an additional action alternative to be considered in detail (see also Section 1.7, Chapter 1).

The IDT considered six alternatives. Following internal review, two were considered in detail and four were eliminated from consideration.

### 2.2 Alternatives Considered in Detail \_\_\_\_\_

Three alternatives were developed by the IDT in response to the issues and concerns regarding the proposal; Alternative A – No Action and Alternative B – Proposed Action. The action alternatives fulfill the specific purpose and need for these actions. Project design features for activities in each action alternative are also described in this chapter.

#### 2.2.1 Alternative A – No Action

Under this alternative the actions described in the proposed action (Chapter 1, Section 1.3) would not be accomplished. No management actions would take place at this time to improve the existing condition of the environment in the project area. There would be no regeneration or timber stand improvements, treatment of non-native invasive species, nor designation of small or medium patches for old growth restoration. This alternative serves as the environmental baseline for analysis of effects.

#### 2.2.2 Alternative B – Proposed Action

A complete description of the Proposed Action can be found in Chapter 1, Section 1.3 above.

### 2.3 Alternatives Considered but Eliminated from Detailed Study \_\_\_\_\_

As per 40 CFR 1502.14(a), the following alternatives were considered but eliminated from detailed study:

#### 2.3.1 Alternative 1 – Original Proposed Action

On June 9, 2005, a proposal for harvesting, temporary road construction, and burning in the AAs was made available for public review. Following the review, it became evident part of the

proposal was located within the Wilson Creek IRA. Current interim direction from the USDA Forest Service's National Headquarters states that *Inventoried roadless areas shall, as a general rule, be managed to preserve their roadless characteristics*. Under this interim direction, with few exceptions, any proposed *road construction or reconstruction or timber projects* within IRAs would require the prior approval of the Chief of the Forest Service. The proposal within the IRA has been dropped from detailed study as the purpose and need for action can be achieved without entry into the IRA at this time.

### **2.3.2 Alternative 2 – Daylight Along Existing Forest Service Roads**

This alternative was eliminated from detailed study as ~2/3 of the appropriate roads for daylighting are located within to the Wilson Creek Inventoried Roadless Area (IRA). Activities that require ground disturbance that could adversely affect the roadless character of the IRA would not be proposed within the IRA at this time.

### **2.3.3 Alternative 3 – No Timber Harvesting or Temporary Road Construction Outside the Wilson Creek IRA**

This alternative was eliminated from detailed study as it does not meet the purpose and need of providing habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer, and travel corridors and foraging habitat for black bear across the project area by dispersing early successional habitat across the landscape. Part of this alternative is addressed in Alternative A – No-action.

### **2.3.4 Alternative 4 – Thinning/Advanced Oak Treatments**

This alternative was eliminated from detailed study at this time due to the presence of the white pine regeneration seed source located throughout many of the suitable acres surveyed for this project and that the site index where most of the current management is proposed is less than 75. This is the index which is believed to be at a level where adequate oak regeneration would occur without advanced oak treatments. This does not preclude future treatments during good mast years in stands which may meet such pre-harvest criteria.

## **2.4 Project Design Features Common to Action Alternatives \_\_\_\_\_**

The action alternatives share these project design features and would become mandatory if the responsible official selects an action alternative for implementation (see also Appendix A and Appendix F).

### Biologic

- ◇ During timber stand improvement, 4 inch diameter soft mast species of holly, black gum, and dogwood would be maintained to ensure continued production of food utilized by numerous bird species and mammals.
- ◇ Species priority for residual tree designation would be; white oak, red oak, and hickory, where present within harvest stands.
- ◇ All known populations of *Miscanthus sinensis*, *Paulownia tomentosa*, and *Ailanthus altissima* should be controlled prior to disturbance activities. *Miscanthus sinensis* was found along Forest roads. All populations total less than 1 acre. Control of *Miscanthus sinensis*, *Paulownia tomentosa* and *Ailanthus altissima* is most easily and effectively done by the use of herbicide (Glyphosphate).

- ◇ If possible, use native plants in wildlife grass/forb improvements and roadside erosion control plants.
- ◇ Trees accidentally felled across stream channels (that prevent or block stream flow) would be lifted (when possible) away from the water. If this is not possible, each tree would be pulled away from the water where it fell and temporary decking would be used to support the weight of the tree as it is pulled across the channel. These removals would be perpendicular to the stream channel whenever possible to minimize stream bank disturbance. Bare soil would be seeded and mulched if native vegetation does not start to recolonize the area by the time timber removal from the unit is complete.
- ◇ Skid roads would avoid stream crossings and paralleling perennial channels within designated riparian areas.
- ◇ Landings and skid trails should be vegetated as soon as possible after use to avoid off-site soil movement.
- ◇ Temporary roads (if needed) would be constructed to avoid runoff into area streams. In addition, silt fence, straw bales, or brush barriers would be placed along the length of the road where it parallels or crosses a stream as needed to control runoff and stream sedimentation.
- ◇ During timber stand improvement soft mast species of holly, black gum, and dogwood would be maintained to ensure continued production of food utilized by numerous bird species and mammals (see also Section 1.3 above).
- ◇ Species priority for residual tree designation would be; white oak, red oak, and hickory, where present within harvest stands.

### Scenic

- ◇ Eliminate geometric shapes or straight lines where viewed in middleground.
- ◇ Create foreground buffers along travel corridors.
- ◇ Move boundaries off ridges to avoid a “Mohawk” or “thin-timber” effect along ridge-tops.
- ◇ Reduce linear openings along roads and trails to meet Forest Plan standards (see map titled “Old House Gap Timber Sale Scenery Mitigation” map, project record).

### Monitoring

- ◇ National objectives include reducing impacts from invasive species and to improve the effectiveness of treating selected invasive species on the Nation’s forests and grasslands. Control plots would be established to monitor control efforts. Plots would be established before control treatment, checked during treatment, and within nine months after treatment. A post-treatment evaluation report will be completed and filed in the project file according to direction in the Forest Service Handbook 2109.14 Chapter 70 paragraph 72 – POST-TREATMENT EVALUATION. It is expected that up to three applications of herbicide treatment would be required within about a five year period to adequately reduce non-native invasives in the activity areas.

## 2.5 Summary Comparison of Actions by Alternative \_\_\_\_\_

The following table summarizes management activities within each of the alternatives:

**Table 2-1: Comparison of Management Activities by Alternative**

Activity	Alternative <sup>1</sup>	
	A	B
Regeneration harvest	0	133
Site prepare and subsequent release in all stands being regenerated, if needed, with herbicides (Glyphosate and Triclopyr) and manual methods	0	<133
Harvest approximately 3 acres of white pine to develop a wildlife field along Forest Service Road 4081 in and between stands 50-17 and 50-18 near Barn Ridge (seed clover under the predominantly oak, residual overstory)	0	3
Manually use herbicides (Glyphosate and Triclopyr) to control less than 10 acres of invasive exotic plants along Forest Service Roads and around wildlife fields outside the Wilson Creek Inventoried Roadless Area.	0	10
Designate small patch old growth	0	100
Designate medium patch old growth	0	424
New temporary road construction to stands 70-14, 77-01, and 77-10 (miles)	0	1.25
Following harvest activities disc and seed all unsurfaced temporary roads, skid roads, and log landings created during harvest.	No	Yes
Plant individuals or groups of an old variety of apple trees in log landings.	No	Yes

1 Measurements are in acres unless otherwise specified

## CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES

Included in this chapter are disclosures of direct, indirect, and cumulative effects of the alternatives on the different resources. Reports from different resource specialists supplied information for portions of the analysis in this chapter.

### 3.1 Aquatic Habitat & Water Quality

Additional analysis on aquatic habitat is disclosed in Appendix A, [Biological Evaluation (BE)]; Section 3.4 [Threatened, Endangered, and Sensitive (TES) and Forest Concern (FC)]; Section 3.5 [Management Indicator Species (MIS)]; and the aquatic resource report, project record. This analysis addresses activity area waters and aquatic biological AA waters. Activity area waters are defined as those in the area of potential site-specific impacts on aquatic habitat and populations. The AA encompasses waters downstream that potentially could be impacted by project activities, in addition to activity area waters.

#### 3.1.1 Existing Condition

Existing data for aquatic resources within the aquatic AA is used to the extent it is relevant to the project proposal. This data exists in two forms: 1) general inventory and monitoring of Forest aquatic resources and 2) data provided by cooperating resource agencies from aquatic resources on or flowing through the Forest. Both of these sources are accurate back to approximately 1980 and are used regularly in project analyses. Data collected prior to 1980 is used sparingly (mostly as a historical reference). Project-specific surveys are conducted to obtain reliable data where none exists.

Fish habitat exists within the analysis areas of Rockhouse Creek, Woodruff Branch, and Cary Flat Branch. There is limited habitat for fish species within the activity area waters, due to small stream size and restricted flow regimes. Activity area waters provide habitat for macroinvertebrates.

##### 3.1.1.1 Rockhouse Creek

Rockhouse Creek is located within Compartments 77 and 78. Forest Service Road (FSR) 981 crosses Rockhouse Creek with a bridge on National Forests System land. This area is located below the activity area but within the aquatic analysis area. Habitat data was collected from the bridge upstream 100 meters. The average width of Rockhouse Creek is approximately 22 feet at the crossing located on FS 981 and approximately 7 feet adjacent to the activity area. Substrate consists of 32% bedrock and large boulders, 36% small boulder and cobble, 18% sand and gravel, and 14% organic material. The pool to riffle ratio is approximately 1:2 in the lower section and 1:3 upstream in compartment 78. Fish habitat exists within Rockhouse Creek to approximately 100 meters above the crossing on FSR 421.

Each unnamed tributary (UT) to Rockhouse Creek was evaluated for aquatic habitat and organisms. These 10 unnamed tributaries are characterized by higher gradients and restricted flow regimes. Substrate in all of these tributaries is characterized by cobble embedded with silt and sand. These streams also displayed high concentrations of sand and silt embedding the cobble substrate. A greater percentage of riffle habitats exist within these tributaries as opposed

to the amount of pool habitat, which is to be expected in smaller tributaries. No fish habitat is present within these tributaries however, some fish may move into these smaller streams during spawning season, but likely only inhabit the first few hundred meters due to restricted flow regimes.

### **3.1.1.2 Woodruff Branch**

Visual habitat estimations within Woodruff Branch and the unnamed tributaries associated with this project were conducted during the spring of 2005. Substrate within Woodruff Branch consisted of 30% bedrock, 50% boulders, and 20% gravel. Streams from stands 50-13 and 51-06 flow into Woodruff Branch. Habitat within Woodruff Branch supports brown trout, rainbow trout and blacknose dace.

The unnamed tributary to Woodruff Branch (UT 1 Woodruff Branch) is associated with stand 50-13. The section of this tributary that runs adjacent to the stand contains no fish habitat due to restricted flow regimes and little surface flow (1-2 inches). Substrate consists of 50% bedrock with 40% organic material and 10% small boulders.

UT 2 Woodruff Branch begins as a spring head within 50-13. There is no fish habitat within this stream due to restricted flow regimes and high gradient. Substrate consists of 60% cobble, 20% gravel and 20% organic. The average depth of UT 2 Woodruff Branch is 1 to 2 inches and the average width is 4 to 5 feet wide.

UT 3 Woodruff Branch also begins as a spring head within 50-13. There is no fish habitat within this stream due to restricted flow regimes and high gradient. Substrate consists of 60% organics/silt, 20% small cobble and 20% gravel.

### **3.1.1.3 Cary Flat Branch**

Cary Flat Branch is a medium sized stream with habitat for fish (primarily brown trout). Upper portions of the creek would probably support trout however, there are several impoundments (or ponds) located on Cary Flat Branch that inhibit fish migration or passage.

UT Cary Flat Branch begins as a spring in stand 70-14. This stream has very limited flow and actually goes subsurface within the stand a few times before becoming free flowing. The substrate within this stream is primarily organic material and silt with very little gravel and cobble. Although no fish habitat exists, there is limited habitat for aquatic insects and salamanders within the activity area.

Culverts along Forest Service Roads (FSRs) 981, 451, 4062, 4081, State Road (SR) 1514 and SR 45, the roads themselves, and existing old roads and skid trails in the activity area are the existing threats to streams and drainages. Impacts from these sources are limited to down slope movement of sediment from road runoff and culvert fills. FSR 451 has several existing problems with water drainage off of the road and movement of sediments into tributary streams and in Rockhouse Creek. A user created and unauthorized ford is causing some minor sedimentation problems in Rockhouse Creek just above the bridge crossing on FSR 451. A road slope failure that occurred during the tropical storms in the fall of 2004 has caused and continues to cause off-site movement of soil into Rockhouse Creek. Temporary seeding has occurred until the slide can be fixed. In most other cases, it is suspected that a majority of sediments from these sources are deposited in the natural vegetative filters before they reach areas of perennial streams.

### 3.1.2 Effects Analysis

Effects are disclosed below for 1) general direct and indirect effects of the alternatives on aquatic resources, 2) direct and indirect effects of access on aquatic resources, 3) direct and indirect effects of timber harvesting on aquatic resources, 4) direct and indirect effects of other activities, and 5) cumulative effects to aquatic resources.

#### 3.1.2.1 General Direct and Indirect Effects of Alternatives on Aquatic Resources

##### Introduction

Examples of direct effects of a proposed action on aquatic species include, but are not limited to, activities such as crushing individual insects, fish, or redds during stream crossing installation. Such effects are more likely to occur to less mobile aquatic organisms such as aquatic insects, freshwater mussels, and fish eggs and larvae, whereas more mobile species such as crayfish, aquatic salamanders, and juvenile and adult fish are often able to escape direct effects by simply leaving the area. Direct effects may also include changes in the quality, quantity, or diversity of habitat available resulting from sedimentation. It is important to note that effects to aquatic habitats from management activities can be positive or negative, depending on the nature of the proposed actions and site-specific conditions.

Examples of indirect effects of a proposed action on aquatic species include, but are not limited to, altered reproductive or foraging success and increased occurrence of disease as a result of sedimentation, degraded water quality, and altered community structure as a result of migration. Indirect effects may also include changes in the quality, quantity, or diversity of habitat available resulting from changes in riparian vegetation. Specifically, the transport of large woody debris (LWD), an integral component of aquatic habitat diversity, to stream channels is a function of riparian vegetation structure and composition. The Forest Plan does not allow vegetation management within riparian zones for perennial streams unless it is specifically for the enhancement of riparian values (page III-181). This standard was designed to allow vegetation along streams to become old and decadent and to serve as a long-term source of LWD to stream channels. However, areas exist across the Forests where vegetation can be managed within designated riparian areas to facilitate LWD transport and to serve as a short-term source of habitat improvement.

##### Alternative A – No Action

There would be no direct or indirect effects as a result of this alternative as no actions are proposed. The existing description as described above would be maintained. Current activities such as general road maintenance, wildlife suppression, and recreation would also continue in the AA.

##### Alternative B – Proposed Action

Sedimentation of aquatic habitats within the activity area may occur with the maintenance of existing system roads, the reconstruction of roads and skid trails, and the replacement of culverts. There are four new pipes or culverts proposed for access into the Old House Gap activity units. There are three stream crossing locations on a temporary haul road accessing Compartment/stand 77-10. These crossings will be in two unnamed tributaries to Rockhouse Creek. Another culvert location associated with the action alternative is within Compartment/stand 70-14. This culvert will be needed to protect the stream channel during skidding operations and will be located in the

UT to Cary Flat Branch. Sediment loading and turbidity can result in the loss of interstitial habitat (the space between substrate particles) and cause direct mortality by crushing or smothering of less mobile organisms such as aquatic invertebrates, fish eggs and juveniles. Long term, the proposal has potential to cumulatively affect aquatic resources in a positive manner within the area. This includes correcting erosion issues caused by the tropical storms of 2004 on FSR 981 and correcting some of the issues causing sedimentation along FSR 451.

### **3.1.2.2 Direct and Indirect Effects of Access on Aquatic Resources**

This discussion assumes all Forest Service timber sale contract clauses, Forest Plan standards, North Carolina Forest Best Management Practices (BMPs) and North Carolina Forest Practices Guidelines (NC FPGs), and any other required management practices relating to water quality would be implemented successfully. If an implemented contract clause or BMP should fail during project implementation, immediate corrective action would take place to reduce impacts to aquatic resources. For example, should a culvert fail, State BMPs require it be replaced immediately before operations resume.

#### Alternative A

Implementation of this alternative would perpetuate the existing condition described above. Aquatic habitat quality, quantity, and populations would continue in their natural dynamic patterns. It is important to note that natural processes include aspects such as extinction of species and loss of habitat types. There would be no direct or indirect impacts aquatic resources.

#### Alternative B

**Direct Effects:** Access to proposed units 70-14, 77-01, and 77-10 would involve the construction of 1.25 miles of temporary road construction as well as the development of skid trails and log landings. The temporary road construction within 77-10 will involve the placement of three culverts in two UTs to Rockhouse Creek. The placement of these temporary culverts will directly impact approximately 22 to 24 linear feet of stream bottom at each crossing (66 to 72 feet of the total ~3,850 feet of the two UTs in the AA; less than 2% affected). There is no fish habitat within these UTs however aquatic invertebrate habitat exists. One culvert is proposed to be installed in UT Cary Flat Branch to protect it during skidding. This stream is subsurface in several areas of its headwaters and does not support fish habitat. Very few aquatic invertebrates (non rare) were found during field surveys within this UT. More mobile aquatic species such as aquatic salamanders, crayfish and fish would emigrate downstream away from the disturbed area during culvert installation. The loss of less mobile individuals such as macroinvertebrates would likely occur during this process. The sizes for these pipes have been determined using the "Forest Culvert Sizing Protocol" which considers species present and need for aquatic organism passage as well as need for non-failure during large storm events.

Riparian areas have been identified as 100 feet on either side of perennial channels and 30 feet on either side of intermittent channels. No activity, including the placement of log landings and skid trails, would occur in this area with the exception of access at four stream crossings.

The road drainage on all temporary roads within the activity area would be designed so water flows off the roaded area and enters into vegetation rather than directly into activity area streams. Following harvest activities, disc and seeding of all unsurfaced temporary roads, skid roads, and log landings will occur.

**Indirect Effects:** There may be off-site movement of soil into activity area waters from temporary road construction and culvert placements; however project design should reduce the potential for this to occur. Turbidity and sediment loading can cause mortality by injuring and stressing individuals or smothering eggs and juveniles. Available habitat, including the interstitial space within substrate used as spawning and rearing areas, may be covered with sediments. Episodic fluctuations in turbidity may occur after soil disturbance ends because sediments deposited within the stream bed may be re-suspended during high flow events (Swank *et al.* 2001). If habitat complexity is lost through sedimentation, a shift in the aquatic insect community could occur that favors tolerant macroinvertebrates. Larger, more mobile aquatic species, such as fish are able to temporarily escape the effects of sedimentation by leaving the disturbed area. Eggs and juveniles may be lost due to reduced habitat or suffocation. This can result in the loss of, or reduced, year-class strength, which can lead to accelerated population fluctuations and suppressed population levels. Over time, these species would recolonize areas as habitat conditions improve.

Smaller, less mobile organisms such as crayfish and aquatic insects may not be able to move to more suitable habitat. Individuals of these species may decline locally or be lost through reduced productivity. These may recolonize from reaches of undisturbed streams as conditions improve with site rehabilitation. Implementation of contract clauses and erosion control precautions described above would minimize sediment effects and accelerate site rehabilitation.

Skid trails and the temporary road construction may also cross ephemeral streams or spring seeps that feed these streams and others in the activity area. If heavy rains occur while these ephemeral crossings are exposed, bare soil can be transported down slope to intermittent and ephemeral stream channels. Temporary stream crossings should be used across ephemeral channels to avoid the potential for sedimentation of down slope aquatic resources. These crossings could include the use of temporary bridges (e.g. simple log stringers or pre-fabricated decking), culverts, or channel armor.

### **3.1.2.3 Direct and Indirect Effects of Timber Harvesting on Aquatic Resources**

#### Alternative A

The existing condition of aquatic resources as described above would be maintained under this alternative. Natural fluctuations in population stability, and habitat quality and quantity would continue.

#### Alternative B

North Carolina Forest Practices Guidelines and Forest Plan standards would be implemented during harvest activities. Applications of Forest Plan standards are intended to meet performance standards of the state regulations. Visible sediment derived from timber harvesting, defined by state regulations, should not occur unless there is a failure of one or more of the applied erosion control practices. Should any practice fail to meet existing regulations, additional practices or the reapplication of existing measures would be implemented as specified by state regulations.

There is no plan to harvest within any 100 foot riparian area of perennial streams within the Old House Gap Timber Sale area. According to Volume 1 of the Final Environmental Impact Statement for the Forest Plan, *Under these conditions, no increase in water temperature is anticipated under any of the alternatives. Since riparian-area treatment is not expected under*

*any alternatives, availability of woody debris would be positively influenced if there was no harvest anywhere within the riparian zone on each streambank (page IV-36).*

Water quality should not be adversely affected as long as Forest Plan standards and NC-FPGs are followed, and timber sale contract clauses are implemented. Stream temperatures would not be affected because adequate shade would be maintained along perennial and intermittent streams. Water Quality is expected to improve over time with project implementation because highly eroded sites along FSR 451 would be repaired.

There is no plan to harvest within the 100 foot riparian area of any analysis or activity area streams. The only cutting within the riparian areas will be associated with stream crossings discussed above. There is the possibility that as trees are cut, they would cross a stream channel or spring. While LWD in and adjacent to stream channels is desirable for aquatic habitat diversity, it needs to be of the same scale as the channel size and type. If the scales of the trees and stream channels do not match, there is the possibility that leaving large tree boles in the channels and across springs could result in flow obstruction. This can lead to accelerated bank scouring and failure, and subsequently, sedimentation of local and downstream channels. To avoid the potential for this habitat loss, trees accidentally felled across stream channels or springs would be removed. "Drag lanes" should not be designated for the removal of these trees to avoid severe bank disturbance. Rather, trees should be removed individually, from where they fell. It is unlikely that pulling individual trees across would result in permanent stream bank damage. Any damage done to the stream banks would most likely be temporary (less than one year), as there is an abundance of herbaceous vegetation along the banks that would quickly recolonize bare soil.

### 3.1.2.4 Direct and Indirect Effects of Other Activities

#### Alternative A

The existing condition of aquatic resources has been described above. Natural fluctuations in population stability, and habitat quality and quantity would continue. It should be noted that the encroachment of exotic invasive species throughout the riparian areas of the aquatic resources within the area will likely occur as a result of non-treatment, including burning and the use of herbicides (personal communication with USFS Botanist, David Danley 2005).

#### Alternative B

**Use of Herbicides:** Herbicide use for silvicultural treatments and their impacts to aquatic resources is analyzed in detail in the Vegetation Management Environmental Impact Statement for the Southern Appalachians (VMEIS). Included in this document is a detailed analysis of the effects of silvicultural treatments on aquatic resources. Please refer to this document for a description of such effects. No herbicide would be used within 30 feet of any perennial streams within the Old House Gap Project. No herbicide would be sprayed within the 30 foot designated riparian area of any intermittent streams within the activity area. The following table summarizes potential effects to aquatic resources by the proposal:

**Table 3.1: Summary of Potential Effects to Aquatic Resources by Project Alternatives**

Issue	Alternative A	Alternative B
Effects on aquatic MIS	Existing habitat and population trends continue.	Existing habitat may improve with watershed restoration work on FSR 451. Existing populations and trends

Issue	Alternative A	Alternative B
Effects on water quality (Associated with the amount of soil disturbance)	Slight risk of degradation from erosion issues associated with FS 451.	will continue. Turbidity and sediment loading may increase slightly during culvert installation and implementation of watershed project. Should diminish downstream and cease with site rehabilitation.
Effects on aquatic habitat and populations	Existing habitat and population trends continue.	May temporarily negatively affect aquatic habitat within UT Cary Flat Branch and UTs to Rockhouse Creek (during culvert installation) but will cease with site rehabilitation.
Effects to riparian areas	Remain in present state. Aquatic habitat will improve, as riparian areas grow older.	Remain in present state except at stream crossings. Aquatic habitat would improve, as riparian areas grow older, increasing large woody debris in streams.
Effects of herbicide	No treatment could cause the replacement of native riparian vegetation with exotics.	No impact as no spraying will occur within 30 horizontal feet of streams.
Effects of Wildlife Habitat Enhancement Work	Existing condition will continue.	No impact to aquatic resources as no wildlife enhancement activities will occur inside the 100 foot riparian area of activity or analysis area streams.

### 3.1.2.5 Cumulative Effects to Aquatic Resources

Cumulative effects on aquatic species and habitat are the integration of any direct or indirect effects into the existing condition—and include past, present, and future actions, including those not occurring on National Forest System (NFS) lands. Most often, cumulative effects are seen as either a degradation or improvement of an already impacted situation, but they can also be the first step in the degradation or improvement process. Cumulative effects on aquatic habitats and populations from management activities can be positive or negative, depending on the nature of the proposed actions and site-specific conditions.

#### Alternative A and Alternative B

Expected cumulative effects should not be any greater than the direct and indirect effects disclosed above for each alternative and there should be no adverse cumulative effects to AA aquatic resources, based on the project's design features included in this analysis.

Past actions analyzed include: Woodruff Ridge Timber sale (1992/1993), Barn Ridge Timber Sale (1994), Anthony Ridge Timber Sale (1995), Rock Horse control burn ( 235 acres, 1999), Bee Branch control burn (2003), Laurel Mt. control burn (425 acres,1998, 2005), and the September 2004 tropical storms.

Remnants of past timber activities where access was associated with the projects are in many cases on-going contributors of adverse impacts to aquatic resources. Undersized culverts and other degrading stream crossings have caused constant sources of problems for aquatic resources including unstable stream banks and channelization. The Old House Gap proposal has been designed to not exacerbate these types of problems. Within the Old House Gap AA no

undersized culverts have been identified for improvement; however FSR 451 has existing erosion issues, but not associated with past timber harvest. These issues include off-site movement of soil and an illegal ford across an upper reach of Rockhouse Creek. Corrective actions have been included with this proposal.

Controlled burning usually occurs in late winter to early spring. These are usually low intensity burns, which do not destroy enough of the soil layer to produce large amounts of ash. Riparian areas are generally moist enough that the fire burns out and riparian vegetation is not destroyed. Fires generally do not burn through the riparian areas to the edge of streams—this provides buffer areas large enough to filter any off-site movement of ash. Cumulatively, prescribed burning in the AA presents a slight risk that nutrient input could increase through groundwater to area waters from the burned areas. These impacts are short-term (less than one year) and would not contribute to adverse cumulative impacts to aquatic resources because cold-water streams are generally nutrient poor and temporary fluctuations from ash may benefit the aquatic community.

Two tropical storms moved through the project and analysis areas during September of 2004 during an eight day period. These storms each released up to 14 inches of rain within 48 hours. Many streams within the Catawba River drainage were heavily impacted by the storm events. Streams within the Old House Gap Activity area were affected by the storm events. As observed in other watersheds across the Pisgah National Forest, these large storms (100 year floods or greater) often act as a “restart mechanism” for cumulative effects. Substrates in the upper reaches of the tributaries to Rockhouse Creek and Wilson Creek have been cleaned or washed out, creating habitat for aquatic organisms which rely on interstitial space. Interstitial space is especially important for trout species which spawn over clean substrates that allow for oxygen to reach the eggs and juveniles.

Ongoing actions that are contributing adversely to cumulative impacts on aquatic resources include the run-off and erosion issues associated with FSR 451. This road has several drainage problems that are contributing to off site movement of soil into Rockhouse Creek and its tributaries. The action alternative proposes to improve this road and therefore would not contribute to any adverse cumulative impacts to aquatic resources.

The slide on FSR 981 that occurred as a result of the tropical storms has not been repaired yet. This slide which was a fill slope failure is a constant source of sediment into Rockhouse Creek. Repair work is planned for 2006 and is a part of the storm recovery across the Nantahala and Pisgah National Forests. The repair of this slide will have positive effects on aquatic resources and habitat by eliminating this source of sediment. Other drainage issues will be addressed with the repair work on this road during this same project.

## 3.2 Wildlife Habitat

Additional analysis on wildlife habitat is disclosed in Appendix A, BE; Section 3.4 (TES and FC); Section 3.5 (MIS); and the wildlife resource report, project record. The wildlife biological analysis area (AA) is the Upper Wilson Creek and Anthony Creek watersheds (about 15,500 total acres). The following tables display forest type and habitat, and age-class information:

**Table 3-2: Forest Type**

Forest Type	Acres <sup>1</sup> (CISC)	% of AAs	Alternative B <sup>2</sup> (Acres Reduced)
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Forest Type	Acres <sup>1</sup> (CISC)	% of AAs	Alternative B <sup>2</sup> (Acres Reduced)
White Pine	337	2	3
Red Spruce-Fraser Fir	36	<1	0
Hemlock – Hardwood	378	2	0
White Pine – Cove Hardwood	204	1	0
White Pine – Upland Hardwood	246	2	0
Yellow pine – Oak	126	1	0
Yellow Pine (pitch pine)	70	<1	0
Cove Hardwood – White Pine – Hemlock	589	4	10
Upland Hardwood – White Pine	617	4	0
Oak – Yellow Pine (scarlet, black, white, and chestnut oak)	1,260	8	30
Yellow Poplar	240	2	0
N. Red Oak – Hickory – Yellow Pine	190	1	0
White Oak – N. Red Oak – Hickory	5,198	34	30
Yellow Poplar – White Oak – Red Oak	4,185	27	48
Scarlet Oak	395	3	0
Chestnut Oak – Scarlet Oak	942	6	0
Chestnut Oak	343	2	15
Sugar Maple-Beech-Yellow Birch	156	1	0
<b>Total</b>	<b>15,512</b>	<b>100%</b>	<b>136</b> (<0.9% of the AAs)

1: Alternative A = no change from current forest type represented

2: Alternative B = two-aged harvest

**Table 3-3: Age Class Representation and Proposed Change by Alternative**

Age Class – Habitat Vegetation Component	Acres (CISC)	Percentage of AAs	Alternative B (ac/% chg)
0-10 age – Early Successional	75	<1	133/<1%
11-20 age – Early Successional	526	3.4	
21-50 age – Mid Successional	467	3	
51-100 age – Mature Forest	12,049	77.7	60 ac/-0.4%
101- 140 age – Old Forest	2,395	15.4	73 ac/-0.5%
<b>Total</b>	<b>15,512</b>	<b>100%</b>	
Grass/forb habitat	29	0.19	*6 ac/ +0.04%
<b>Open road - mi/mi<sup>2</sup> (NFS and non-NFS lands)</b>	<b>**5.1mi/mi<sup>2</sup></b>	<b>N/A</b>	<b>No change</b>

\* Acres in grass/forb habitat considered includes a new 3 ac opening and the 3 ac expansion of landings attached to linear grass/forb habitat (temporary roads)

\*\* Approximately 0.9 mi/mi<sup>2</sup> (or 22 miles) are Forest Service roads

### 3.2.1 Alternative A – Direct, Indirect, and Cumulative Effects

Under this alternative, the early successional habitat (0-20 years) would remain at about 600 acres, or about four percent of the wildlife AA; the grass/forb openings would remain at <0.2 percent—both of which currently do not meet required Forest Plan minimum standards (Forest Plan, page III-23); and habitat connectivity would be maintained. There would be no adverse cumulative effects with this alternative when combined with other activities listed in Section 3.2.3 below.

### 3.2.2 Alternative B – Direct and Indirect Effects

#### 3.2.2.1 US Fish and Wildlife Service Bird Species of Concern

The AAs lay within the USFWS Appalachian Mountains (BCR 28) Birds of Concern. Bird surveys recorded the wood thrush and worm-eating warbler as occurring within the AAs. The Partners in Flight (PIF) Conservation Plan (Hunter et. al. 1999) states the southern Blue Ridge area remains the most heavily forested habitat in the Southeast United States. Nevertheless, breeding bird survey (BBS) data indicates bird population declines in excess of those in other areas in the region. Declines are seen in long-distance migrants, short-distant migrants, and permanent residents. One possible explanation is that BBS routes are situated along roads and most roads in the Southern Blue Ridge area are in valleys where private development and habitat loss in recent years has been greatest (Hunter, et.al. 1999).

High elevation forest types and early successional conditions have declined in recent years due to insect, disease, and low levels of management activities. Low elevation riparian forest loss and fragmentation remains most affected by private development and agricultural growth.

#### Worm-eating Warbler

The worm-eating warbler was recorded in Stand 78-14 a white oak-red oak-hickory community. There are 5,198 acres of this forest type within the AA. Alternative B proposes to harvest 30 acres or 0.6% of this forest type.

This bird is known to breed within the Appalachian region, occurring in ravines and mountainsides in the mountains of Western North Carolina. The preferred habitat is deciduous or mixed forests with a dense or abundant shrub layer, often composed of rhododendron or laurel. Nests are well hidden in the leaf litter on the forest floor. Adults forage for insects and other invertebrates (rarely on worms) found on the forest floor or shrubs.

Rhododendron and laurel understory habitat is found throughout the AAs. If harvesting activities occur during nesting season, young may be adversely affected over approximately 30 acres. The BBS 20 year population trend data demonstrates little change in this species.

#### Wood Thrush

The wood thrush was recorded in Stand 77-01, a yellow poplar-white oak-red oak forest type. There are 4,185 acres of this forest type within the AA. Alternative B proposes to harvest 48 acres or 1.1% of this forest type. Wood thrush favor habitats in bottomland hardwoods and rich deciduous forests, especially near streams. The BBS trend data show wood thrush populations in North Carolina have decreased 2.53 from 1966 to 2002. Alternative B would harvest 58 acres of cove forest type or 1.1% while increasing spatiality and availability of early successional habitat near riparian corridors without decreasing large areas of mature forest communities. Overall, this alternative would benefit wood thrush populations across the AAs over the next planning period.

This bird is known to have a high breeding population within the watersheds of Western North Carolina. The preferred habitat is mixed pine-hardwood forest types where deciduous shrubs are numerous, especially where moist conditions exist. Nests are built in the shrub/saplings about 5–15 feet from the ground. The thrush forages for insects and other invertebrates, mainly on the forest floor among the leaf litter.

Rivera et.al. (1997) and Anders et.al. (1998) found that wood thrush fledglings disperse to early successional shrub/sapling forest patches at a rate of 96.7%. Powell et.al. (2000) found that mortality in fledglings occurred immediately upon long-distance dispersal from nest sites. No male mortality was recorded and female mortality occurred during the nesting period, at or very

near the nest site. Low mortality was recorded by Powel during August and early September in both adults and fledglings, corresponding to a dramatic move towards denser habitat (Lang 1998, Powell 1998). Anders et.al. (1998) concluded that large tracts of mature deciduous forest with a mosaic of early and mid-successional forest stands, along with mature riparian forests, would accommodate both breeding and post-dispersal habitat requirements of wood thrush and other neotropical migratory birds.

Anders et al (1998) determined that the Wood Thrush fledglings and other forest interior species fledglings were found at much higher rates within early successional habitat with dense vegetation. The other two habitats utilized by these fledgling birds were forest edge and riparian habitats. The study also found juvenile Red-eyed Vireo, Ovenbird, Kentucky Warbler, and Black-and-White Warbler's were all utilizing the dense, early successional/brush habitat. Anders et. al. (1998) determined that although it is possible that juveniles of some of these species fledged from nests within early successional habitat (Kilgo et. al. 1996), the presence, as well as the high densities of individuals in these areas, indicate that forest-breeding migrants other than Wood Thrushes are using early successional, riparian, and edge habitat during the post-dispersal period. Anders et. al. (1998) theorized that protective, dense cover from aerial predators (i.e. hawks) and food availability in the form of insects and blackberries, or other soft mast within an early successional/brush habitat setting, is the most likely attraction for juvenile birds to use this habitat. Keith Watson stated an increase of early successional habitat at high elevations was also desirable to improve the conditions for Golden-winged warbler and other species of early successional high elevation habitat that are experiencing decline. The need for early successional habitat to support Wood Thrush fledglings is critical, given their decrease in numbers and habitat. Hunter et. al. (2001) concluded that many disturbance dependent species may, in the near future, require greater levels of legally based conservation action, such as federal listing, in the absence of aggressive restoration of disturbance-maintained communities.

### **3.2.3 Alternative B – Cumulative Effects**

#### **3.2.3.1 Historical Activities Potentially Affecting Wildlife Habitat**

Timber sales over the past twenty years have resulted in a total of 601 acres of early succession habitat (0-20 age class) and 0.5 miles of road construction. The Maple-Sally timber sale and EA for the area south of this AA will result in approximately 1.7% 0-10 age class.

There have been approximately 60 acres of wildfires within these analysis areas since 1981 and approximately 1,960 acres of prescribed fire. This 10 year fire history has resulted in an average of approximately 202 acres per year being burned. Where fires occurred, the shrub layer was temporarily reduced and scattered tree mortality occurred. The shrub layer sprouts back within 3 years with more vigor, unless it is a part of the planned rotational (3-5 year) District prescribe burn program. Wildfires and prescribe burns rarely enter riparian areas where they exhibit cool, low intensity flame heights within this moist environment.

The southern pine beetle (SPB) epidemic within the past 5 years has resulted in large clumps and scattered yellow pine species mortality, especially along ridge tops. Natural regeneration is occurring, especially where prescribe fires have occurred in the past five years reduced the dead and down debris which may be interfering with regeneration.

The Southern Appalachian Assessment or SAA (1996) summary reported that the Southern Appalachian region is 70% forested with the remainder of the area being agricultural and various

forms of development. An assessment of fragmentation over this region completed by the Forest Service found the Nantahala and Pisgah National Forests were in a fully forested condition (>90%), and unfragmented. Mark Johns the North Carolina Coordinator for Partners in Flight (PIF) has stated there is a concern among many in the national PIF organization that the early successional habitat is becoming too fragmented.

### **3.2.3.2 Foreseeable Future Actions and Ongoing Actions Potentially Affecting Wildlife Habitat**

Upper Johns River and Upper Mulberry AAs are scheduled for analysis in 2006 as the Globe proposal. The current early successional 0-10 age class within these analysis areas is 1%. It is expected that these future analysis areas will have some harvest proposed to improve the 0-10 age class from their existing condition. These AA's are found east of the Old House Gap AA.

Effects from the Upper Creek Project about eight miles to the southwest of the Old House Gap activity areas are not expected to cause adverse cumulative effects to this species because effects from each project are not expected to be cumulatively added together due to each project being in separate watersheds, the project design of each, and adherence to Forest Plan standards.

The proposed Roseboro-Edgemont Road (FSR 981) repairs are not expected to cause adverse cumulative effects to this species because the actions are expected to improve riparian habitat and are not expected to be cumulatively added together due to project design of each and adherence to Forest Plan standards.

The majority of prescribed burns within the Upper Wilson Creek and Anthony Creek AAs are on a 3-5 year rotational burn cycle; therefore, approximately 200 acres a year would continue to be burned over the next planning period. The effect of this action will continue to rejuvenate the shrub layer within the forested communities.

There is little likelihood of an increase in the number of private residences increasing on the western portion of this AA. However, the northeast portion of this AA is undergoing an increased pressure of residential development. The Blue Ridge Parkway and privately owned Grandfather Mountain Biosphere are both found directly north of this analysis area and their management is expected to continue as is with no harvest and areas of high recreational use into the future.

## **3.3 Non-native Invasives**

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### **3.3.1 Existing Condition**

There are 124 species of non-native plant species documented to occur on the Pisgah and Nantahala National Forests (Danley and Kauffman). An increase of non-native plant species in the proposed activity area is expected. Many of these species, both native and non-native, have benefits for wildlife and erosion control. However, as succession progresses, most ruderal species tend to become much less prevalent and generally do not persist in the area. Most ruderal plant species are expected to decrease to non significant population levels within ten years after the initial disturbance.

The persistence of most non-native plant species is not considered desirable to natural ecosystem health. There are primarily two ways in which non-native plant species may persist in the forested ecosystems. A non-native plant species may persist by the introduction of an "invasive non-native species" to the ecosystem or by modification of the ecosystem in such a way that an

invasive species becomes dominant. Out of the 124 species of non-native plants known to occur on the Pisgah Nantahala National Forest, 25 are currently recognized as having aggressive invasive qualities that can dominate local communities (Danley and Kauffman, Regional Foresters, May 2001, List of Invasive Exotic Plant Species). The proliferation of these species can have a devastating and long lasting effect on natural communities and native species. Kudzu, *Pueraria montana*, is a familiar example of this sort of non native persistent species. Consideration was given to the possible effect this proposal may have to invasive non-native species.

Surveys for invasive species were conducted (2004) within the activity areas and around roads to the activity areas. Eleven species on the Regional Forester's invasive non native plant species are known within the AA (see following table). It is recommended that the known populations of *Miscanthus sinensis*, *Paulownia* and *Ailanthus altissima* be controlled to mitigate possible adverse effect of invasive plant species to this proposal (see management recommendation given below). The invasive plants *Microstegium vinineum*, *Lonicera japonica* and *Allium vineale* (wild garlic) are so well established in parts of the AA that control by any currently known method is entirely impractical. It is not known what affect, if any, this proposal will have on the populations of *Microstegium vinineum*, *Lonicera japonica* and *Allium vineale* within the AA.

The populations of *Lespedeza cuneata*, *Lolium arundinaceum* and *Coronilla varia* are not known to be invasive within natural forested communities within the mountains. While *Lespedeza cuneata*, *Lolium arundinaceum* and *Coronilla varia* may be invasive in Coastal Plain, Piedmont regions and rare natural areas (i.e. serpentine glades), they are not expected to be a concern in this proposal and/or the AA as they are not known to be invasive within natural forested communities within the mountains. Therefore, it is not recommended that these species be controlled. The following table displays non-native invasive plant species in the activity areas:

**Table 3-4: Non-native Invasive Species Summary**

Species	Regional Category	Location in Activity Areas	Recommendation
<i>Ailanthus altissima</i>	1	FSRs 4081, 192	Control all populations prior to disturbance on FS land
<i>Rosa multiflora</i>	1	FSRs 4081, 192	Control all populations prior to disturbance on FS land
<i>Celastrus orbiculatus</i>	1	FSRs 192, stand 77-1 and adjacent wildlife field	Control all populations prior to disturbance on FS land
<i>Lespedeza cuneata</i>	1	Wildlife Fields, roadsides	This species does not display invasive tendencies. Not recommended to control.
<i>Paulownia tomentosa</i>	1	FSRs 4081, 192	Control all populations prior to disturbance on FS land
<i>Lolium arundinaceum</i>	1	Wildlife Fields	This species does not display invasive tendencies. Not recommended to control.
<i>Lonicera japonica</i>	1	Alluvial Forest along Wilson Creek	No effective control method known. No recommendation to control.
<i>Microstegium vinineum</i>	1	Mostly in Alluvial Forests and cove. Very well established bottoms. Stands 77-	No effective control method known. No recommendation to control.

Species	Regional Category	Location in Activity Areas	Recommendation
		10, 50-13	
<i>Miscanthus sinensis</i>	2	FSRs 4081, 192	Control all population prior to disturbance on FS land
<i>Allium vineale</i>	1	Wildlife Fields	Wildlife Fields
<i>Coronilla varia</i>	2	Found only along system roads	This species does not display invasive tendencies. Not recommended to control

### 3.3.2 Alternative A – Direct, Indirect, and Cumulative Effects

Under this alternative no actions are proposed. There would be no potential increase in non-native plant species as a result of ground disturbing actions. However, there would also be no control measures implemented to reduce the continued spread of these species. It is expected that non-native plant species would continue to increase with or without planned activities. There are no other known foreseeable actions in the activity areas that could adversely affect non-native plants.

### 3.3.3 Alternative B – Direct, Indirect, and Cumulative Effects

It is expected that there will be a temporary increase of ruderal (weedy) species of plants within the activity areas. These species are often prevalent during the initial stages of succession and decrease with age. This is particularly true near constructed roads and log landings. A high percentage of these ruderal species are non-native. The action alternatives all propose to treat non-native plants. The following table displays the actions and the maximum acreages of proposed herbicide and manual treatment by alternative:

**Table 3-5: Treatment of Non-native Plant Species in the Activity Areas by Alternative**

Species	Treatment	Alt A	Alt B
<i>Ailanthus altissima</i>	Control all populations prior to disturbance on FS land	0ac	<1 ac
<i>Rosa multiflora</i>	Control all populations prior to disturbance on FS land	0 ac	<1 ac
<i>Celastrus orbiculatus</i>	Control all populations prior to disturbance on FS land	0 ac	<3 ac
<i>Lespedeza cuneata</i>	This species does not display invasive tendencies. Not recommended to control.	0 ac	0 ac
<i>Paulownia tomentosa</i>	Control all populations prior to disturbance on FS land	0 ac	<1 ac
<i>Lolium arundinaceum</i>	This species does not display invasive tendencies. Not recommended to control.	0 ac	0 ac
<i>Lonicera japonica</i>	No effective control method known. No recommendation to control.	0 ac	0 ac
<i>Microstegium vinineum</i>	No effective control method known. No recommendation to control.	0 ac	0 ac
<i>Miscanthus sinensis</i>	Control all population prior to disturbance on FS land	0 ac	<1 ac
<i>Allium vineale</i>	Wildlife Fields	0 ac	<1 ac
<i>Coronilla varia</i>	This species does not display invasive tendencies. Not recommended to control	0 ac	0 ac
<b>Acres Treated</b>		<b>0 ac</b>	<b>&lt;9 ac</b>

The other way in which non-native plants may persist in the area is by continual disturbance. For example, a maintained road shoulder or wildlife field often has persistent ruderal and non-native plant species. These areas are often maintained in an early successional state for wildlife or human benefit. Therefore, it is expected that this proposal could slightly increase the persistence of non-native vegetation in the AA. To mitigate this effect, it is recommended that native plants be utilized in wildlife improvement and roadside erosion control plantings. It is recognized that erosion control and wildlife production are the primary goals of seeding areas and some non-native plant species may be highly beneficial to accomplish these goals. However, a presidential executive order [Executive Order 11987, Title 3- The President] recognizes the need to reduce the impact of non-native species by reducing the amount in which non-native plant species are planted on federal property. All the goals of erosion control, wildlife production and encouragement of native plant species may be met by planting native plant species or a suitable mixture of native and non-native mixture of species.

Effects from the Upper Creek Project about eight miles to the southwest and effects from the proposed Globe Project about five miles to the northeast are not expected to cause adverse cumulative effects from spread of non-native invasive plants because effects from each project are not expected to be cumulatively added together due to each project being in separate watersheds, the project design of each, and adherence to Forest Plan standards. Each project is designed to reduce the spread of non-native invasives.

## **3.4 Threatened, Endangered, Sensitive and Forest Concern Species \_\_\_\_\_**

### **Introduction**

This section discloses the determination of effects the proposal may have on threatened and endangered (T&E); Regional Forester's sensitive (S); and Forest Concern (FC) aquatic, wildlife, and botanical species—see Appendix A, BE for complete disclosure of surveys, habitat, species, and effects analyses. There would be no effect to any TES or FC species under Alternative A as no actions are proposed—current conditions would be maintained.

### **3.4.1 Threatened and Endangered Species**

There would be no adverse direct, indirect, or cumulative effects to any T&E plant, aquatic, or wildlife species populations or their habitat by any alternative considered. Consultation with USDI Fish and Wildlife Service is not required.

### **3.4.2 Sensitive Species**

The Eastern small-footed bat, *Myotis leibii*, is a Regional Forester's S species. With project design features outlined and the greatest amount of preferred rock habitat being located outside the activity area, the potential of adverse direct impacts to individuals would be greatly reduced or less than 1% of the population. There would be an adverse impact to <1% of the habitat within these AAs. In summary, the impacts would be minimal with adverse impacts of <1% of the local population being effected with the implementation of Alternative B, the minimal adverse impact to the local habitat. The cumulative impact within the AAs on this species would be minimal and not affect population viability across the Nantahala and Pisgah National Forest—neither alternative is likely to cause a trend toward federal listing.

The Regional Forester’s S species, Diana Fritillary, *Speyeria diana*, is known to occur within the AAs. Alternative B may adversely impact individuals, eggs or larvae, on about 1% of their total suitable habitat. Indirect impacts of harvesting under Alternative B would improve nectar species habitat on 133 acres over the short term and six acres of grass/forb habitat over the long term. Both the beneficial indirect habitat effects (<1%) and the adverse direct effects (<1%) would be minimal across the AAs. Historic wildfire, although generally outside the growing season and riparian areas, may have destroyed eggs laid on dead or dying violets—this adverse direct impact would be minimal with both alternatives. As adverse direct impacts (wildfire) of either alternative would be minimal on this species and Alternative B’s actions would result in minimal positive indirect impacts; the local population will not be measurably impacted. Cumulatively the local populations will not be impacted as both the positive and adverse impacts to individuals of this species and its habitat from past, foreseeable future and this proposal will be minimal. Implementation of Alternative B is not likely to cause a trend toward federal listing or a loss of population viability locally or across the Forests.

No other sensitive wildlife, botanical, or aquatic species has been determined to occur within the Forest Plan AAs and therefore would not be impacted by any alternative selected.

### 3.4.3 Forest Concern Species

The following table lists the FC species that could occur within the AAs along with potential effects by species from Alternative B:

**Table 3-6: FC Species and Potential Effects from Alternative B**

Species	Habitat	Occurrence	Potential Effect
<b>Aquatic FC Species</b>			
<i>Micrasema burksi</i> (a caddisfly)	Lotic- streams	May occur in both the activity and analysis areas.	*May impact individuals
<i>Palaeagapetus celsus</i> (a caddisfly)	Lotic-streams	May occur in both the activity area and analysis areas.	*May impact individuals
<i>Rhyacophila amicus</i> (a caddisfly)	Lotic-streams	May occur in both the activity area and analysis areas.	*May impact individuals
<i>Ascetocythere cosmata</i> (Grayson crayfish ostracod)	Symbiotic on crayfish in sub-surface waters of burrows	May occur in both the activity area and analysis areas.	*May impact individuals
<i>Gomphus adelphus</i> (moustached clubtail)	Lotic-small rivers with rapids	May occur in both the activity area and analysis areas.	*May impact individuals
<i>Gomphus descriptus</i> (harpoon clubtail)	Lotic-large streams and rivers	Not Likely to occur based on habitat requirements.	None. Species' habitat is not present within the aquatic analysis area.
<i>Gomphus lineatifrons</i> (splendid clubtail)	Rivers	Not Likely to occur based on habitat requirements.	None. Species' habitat is not present within the aquatic analysis area.
<i>Ophiogomphus mainensis</i> (Maine snaketail)	Lotic- rapids of rivers and streams	May occur in the activity area and analysis area.	*May impact individuals
<i>Somatochlora elongata</i> (ski-tailed emerald)	Lotic-slow to moderately flowing	May occur in the activity area and analysis area.	*May impact individuals

Species	Habitat	Occurrence	Potential Effect
	streams		
<i>Stylurus scudderi</i> (zebra clubtail)	Lotic- streams and rivers	May occur in the activity area and analysis area.	*May impact individuals
<i>Cottus carolinae</i> (banded sculpin)	Lotic-inhabit clear, cool upland streams flowing over cobble, rubble, and flat rocks, but they also occur in large flowing streams and upland rivers	Does not occur within the activity or analysis area based on project surveys and historical surveys	*May impact individuals
<i>Cyprinella zanema</i> (Santee chub)	Lotic- small to medium sized streams with sand and rocky substrates	Does not occur within the activity or analysis area based on project and historical surveys	*May impact individuals
<i>Baetopus trishae</i> (a mayfly)	Lotic- streams	May occur in the activity area and analysis area.	*May impact individuals
<i>Drunella longicornis</i> (a mayfly)	Lotic-streams and rivers	May occur in the activity area and analysis area.	*May impact individuals
<i>Habrophlebiodes sp.</i> (a mayfly)	Lotic-very small streams	May occur in the activity area and analysis area.	*May impact individuals
<i>Bolotoperla rossi</i> (a stonefly)	Lotic-streams	May occur in the activity area and analysis area.	*May impact individuals
<b>Wildlife FC Species</b>			
<i>Neotoma magister</i> (Alleghany woodrat)	Rock/boulder areas	May occur in the activity area and analysis area.	No effect as riparian corridors would not be affected.
<b>Botanical FC Species</b>			
<i>Botrychium matricariifolium</i> (vascular plant)	Rich Cove Forest	Not known to occur in AA or activity area.	5 acres impacted, 7% of total potential habitat in AA
<i>Botrychium oneidense</i> (vascular plant)	Rich Cove Forest	Not known to occur in AA or activity area.	5 acres impacted, 7% of total potential habitat in AA
<i>Campanula aparinoides</i> (vascular plant)	Alluvial Forest	Not known to occur in AA or activity area.	Not impacted
<i>Carex leptonevia</i> (vascular plant)	Rich Cove Forest	Not known to occur in AA or activity area.	5 acres impacted, 7% of total potential habitat in AA
<i>Carex projecta</i> (vascular plant)	Rich Cove Forest	Not known to occur in AA or activity area.	5 acres impacted, 7% of total potential habitat in AA
<i>Carex woodii</i> (vascular plant)	Rich Cove Forest	Not known to occur in AA or activity area.	5 acres impacted, 7% of total potential habitat in AA
<i>Coeloglossum virde var. virescens</i> (vascular plant)	Rich Cove Forest	Not known to occur in AA or activity area.	5 acres impacted, 7% of total potential habitat in AA
<i>Entodon sullivantii</i> (moss)	Acidic Cove Forest, Rich Cove Forest	Not known to occur in AA or activity area.	17 acres impacted, 0.04% of total potential habitat in AA

Species	Habitat	Occurrence	Potential Effect
<i>Liparis loeselii</i> (vascular plant)	Rich Cove Forest	Not known to occur in AA or activity area.	5 acres impacted, 7% of total potential habitat in AA
<i>Meehania cordata</i> (vascular plant)	Rich Cove Forest	Not known to occur in AA or activity area.	5 acres impacted, 7% of total potential habitat in AA
<i>Plagiochila virginica</i> var. <i>virginica</i> (liverwort)	Spray Cliff in Acidic Cove Forest	Not known to occur in AA or activity area.	Not impacted

\* No rare species were found at the crossings in the activity area but they have been included because the species' habitat exists within or immediately below the crossings. Although crossing replacements may impact individuals, implementation would not affect viability across Forest.

## 3.5 Management Indicator Species

### 3.5.1 Introduction

An assessment of habitat changes linked to management indicator species (MIS) and habitat components is documented in this section based on the new species list that became effective Forest-wide on October 1, 2005. The assessment provides a checkpoint of project level activities, the anticipated change in habitat used by MIS, and the likely contribution to Forest-wide trends. Additional information on MIS, as well as other species, is located in the wildlife, aquatics, and botanical resource reports located in the project record.

### 3.5.2 Process

The Forest-wide list of MIS was considered as it relates to this project analysis area. Only those MIS that occur or have habitat within the project analysis area and may be affected by any of the alternatives were carried through a site-specific analysis. The documentation below shows which MIS were and were not analyzed along with the reasons.

Consistent with the Forest Plan and its associated FEIS (Volumes I and II), the effects analyses focus on changes to MIS habitat. These project-level effects are then put into context with the Forest-wide trends for populations and habitats.

To process and document the information efficiently, a series of tables are used as follows:

- 1) **Table 3-7:** This table displays biological communities and associated MIS, and reasons species were, or were not selected for analysis in the project. The source of these tables is Amendment 17 to the Nantahala and Pisgah Land and Resource Management Plan effective October 1, 2005, and associated environmental assessment (EA) and project record.
- 2) **Table 3-8:** This table displays the habitat components and associated MIS, and reasons species were, or were not selected for analysis in the project.
- 3) **Table 3-9:** This table displays by MIS the Forest-wide population trend along with the associated biological community or special habitat. The information in this table is taken from the MIS Report for the Nantahala and Pisgah National Forests.
- 4) **Table 3-10:** This table compares the effects (expressed as changes in habitat) by alternative to the Forest-wide estimates of habitats for each habitat component considered

in the project-level analysis. This table explains how the project's effects to habitats affect Forest-wide population cumulative trends for the species considered.

Following these tables is a discussion of the direct, indirect, and cumulative effects for the selected species and habitats.

**Table 3-7: Biological Communities, associated MIS, and why Species were Chosen or Eliminated from Analysis**

Biological Community	MIS	Analyzed Further/ Evaluation Criteria*
Fir dominated high elevation forests	Fraser fir	No/1
Northern hardwood forests	Ramps	No/1
Carolina hemlock bluff forests	Carolina hemlock	No/1
Rich Cove forests	Ginseng	Yes
Xeric yellow pine forests	Pine warbler	No/1
Reservoirs	Largemouth bass	No/1
Riparian forests	Acadian flycatcher	Yes
Coldwater streams	Brook, brown, and rainbow trout; blacknose dace	Yes
Coolwater streams, Warmwater streams	Smallmouth bass	No/1

- \*1 Biological Community and its represented species do not occur within the activity area; therefore, this biological community would not be affected by any of the alternatives. Given no effects to the community, the alternatives in this project would not cause changes to forest-wide trends or changes in population trends of species associated with this community.
- 2 Biological Community and its represented species will be protected in accordance with Forest Plan standards and guidelines. Populations would not be affected by management activities because the associated habitat will not be entered by the proposed activities, pursuant to forest plan direction; therefore, there will be no change to forest-wide population trends.

**Table 3-8: Habitat Components associated MIS and why Species were Chosen or Eliminated from Analysis**

Habitat Components	MIS	Analyzed Further/ Evaluation Criteria*
Old Forest Communities (100+ years old)	Black bear	Yes
Early successional (0-10 years old)	Rufous-sided (eastern) towhee	Yes
Early successional (11-20)	Ruffed grouse	No/1
Soft mast producing species	Ruffed grouse	Yes
Hard mast-producing species (>40 yrs)	Black bear	Yes
Large contiguous areas with low levels of human disturbance	Black bear	No/1
Large contiguous areas of mature deciduous forest	Ovenbird	No/1
Permanent grass/forb openings	White-tailed deer	Yes
Downed woody debris	Ruffed Grouse	Yes
Snags	Pileated woodpecker	No/2

- \*1 Habitat and its represented species do not occur within the project area; therefore, this special habitat will not be affected by any of the alternatives. Given no effects to the habitat, the alternatives in this project will not cause changes to forest-wide trends or changes in population trends of species associated with this habitat.

- 2 Habitat and its represented species will be protected in accordance with LRMP standards and guidelines. Populations will not be affected by management activities; therefore, there will be no change to forest-wide population trends.

**Table 3-9: MIS Estimated Population Trend and Biological Community or Habitat Component**

Species	Estimated Population Trend	Biological Community and/or Habitat Component
Black Bear	Increasing	Old forest communities, hard mast-producing species, contiguous areas with low disturbance
White Tailed Deer	Static to decreasing	Permanent grass-forb
Pileated Woodpecker	Increasing	Snags
Ovenbird	Decreasing	Large contiguous areas of mature deciduous forest
Rufous-Sided (Eastern) Towhee	Decreasing	Early-successional (0-10)
Pine Warbler	Static	Xeric yellow-pine forests
Ruffed Grouse	Static	Early successional (11-20)
Acadian Flycatcher	Static to Increasing	Riparian
Wild Brook, Brown and Rainbow Trout,	Static	Coldwater streams
Largemouth Bass	Static	Reservoirs
Blacknose Dace	Static	Coldwater streams
Smallmouth Bass	Static	Warmwater streams
Fraser Fir	Static	Fraser fir forests
Carolina Hemlock	Decreasing	Carolina hemlock bluff forests
Ginseng	Decreasing	Rich cove forests
Ramps	Static	Northern hardwoods

**Table 3-10: Habitat Component, Forest-wide Estimates, and Expected Changes Resulting from the Alternatives**

Habitat Component	Forest-wide Estimate	Alternative A	Alternative B
Rich Cove	110,316 ac (yr 2000)	No change	5 acres impacted
Downed woody debris	High accumulation small wood: 18,000; Large wood: 386,000; Low accumulation (approximately 600,000)	No change	133 acres High accumulation
Riparian/alluvial forests	257,822 ac	No change	No change
Early successional 0-10 years	26,800 ac (yr 2000) 2,040 ac (5 yr avg)	-192 acres aged beyond early successional	133 acres developed
Hard mast producing community	High El Red oak: 40,600 ac Mesic Oak/H: 283,340 ac Dry Mesic Oak/H: 21,800 ac Chestnut Oak/H: 8,600 ac Upland hwd (other): 6,900 ac	None affected	High quality: 30 ac harvested. Low Quality: 93 ac harvested
Soft-mast producing community	13,144 ac early seral (yr 2000), highest potential on 5,650 ac	No change	133 acres developed

Habitat Component	Forest-wide Estimate	Alternative A	Alternative B
		Permanent grass/forb openings	3,000 ac
Invasive Exotic Plant Species	2,684 miles of road construction <25 years	No change	1.25 miles of temporary road constructed

### 3.6 Herbicides

#### 3.6.1 Alternative A – Direct, Indirect, and Cumulative Effects

Under this alternative, there would be no adverse direct, indirect, or cumulative effects to wildlife, water quality, and humans as related to herbicide use as none would be applied. The existing condition would remain the same; invasive and invasive exotic plant species would likely continue to spread in the AAs. There are no other known foreseeable actions in the activity areas that could affect pesticide use.

#### 3.6.2 Alternative B – Direct, Indirect, and Cumulative Effects

The following table displays expected maximum acreages of herbicide treatment (Glyphosate and Triclopyr) that may occur.

**Table 3-11: Maximum Acres of Pesticides Applied Manually by Alternative<sup>1</sup>**

Pesticide	Alternative A	Alternative B
Triclopyr/Glyphosate (ac) <sup>2</sup>	0	143

1 – Not all acreage is treated, i.e. buffers along streams and “non-target” species would not be treated. Pesticides are applied manually and would not be applied aerially (see also Appendix F)

2 – Acres include timber stand improvement, site preparation, exotic invasive species, and wildlife fields

Use of pesticides is not expected to have measurable adverse effects on wildlife, water quality, and humans due to proper application as per Material Safety Data Sheets (MSDSs), product labels, risk assessments, fact sheets, mitigation measures contained in the *Vegetation Management in the Appalachian Mountains* (VMAM) FEIS, issued in July 1989, Forest Plan standards and guidelines (Forest Plan, page III-181), and design features disclosed in Appendix F. The use of pesticides poses some risk to wildlife, water quality, and humans; however, any pesticides applied would be done according to the labeling information, at the lowest rate effective at meeting project objectives in accordance with guidelines for protecting the environment, and manually (not aerially). This risk is further reduced by requiring the applicator to be trained in safety precautions, proper use, and handling of pesticides. Other factors reducing risk are the low level of active ingredient per acre and placement of notice signs in areas where pesticides have been applied. The signs include information on the pesticide used, when it was applied, and who to contact for additional information. It is expected that up to three applications of herbicide treatment would be required within about a five year period to adequately reduce non-native invasives in the activity areas.

Herbicide with the active ingredients Glyphosate and Triclopyr are not considered soil active. In addition, with the provision of riparian buffer strips on stream zones, the risk of herbicide spills or movement into stream zones is further reduced. Due to project design, effects of the treatment

would be limited to individual trees/plants and the immediate area near them and is not expected to adversely affect private residences downstream. All applicable mitigation measures contained in the VMAM FEIS and Forest Plan standards and guidelines would be followed. A complete discussion of the effects of herbicides is contained in this FEIS, to which this document tiers. Current pesticide information for Glyphosate and Triclopyr may be found at: <http://www.fs.fed.us/foresthealth/pesticide/risk.shtml>

Impacts of pesticide use to wildlife, water quality, and humans are expected to be low due to proper handling and application. The use of herbicides would have no measurable impact on water quality because according to the Vegetation Management FEIS *“No herbicide is aerially applied within 200 horizontal feet, nor ground-applied within 30 horizontal feet, of lakes, wetlands, or perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-labeled herbicides) may occur within these buffers only to prevent significant environmental damage such as noxious weed infestations. Buffers are clearly marked before treatment so applicators can easily see and avoid them”* (Veg. Mgt. FEIS, page II-67). There would be no adverse effects (direct, indirect, or cumulative) of the usage of pesticides associated with the action alternatives if no spills occur within riparian areas—no pesticides would be applied within 100 feet of riparian areas. According to the Veg. Mgt. FEIS, *“The greatest hazards to surface and ground water quality arise from a possible accident or mishandling of concentrates during transportation, storage, mixing, and loading, equipment cleaning, and container disposal phases of the herbicide use cycle”*. Herbicides would be mixed at the pesticide storage building at the Grandfather Ranger District Work Center and not in the field and applicators do not carry concentrated amounts of herbicide in the field. There are no other known foreseeable applications of herbicides on NFS lands in the Old House Gap area that could affect herbicide use with this proposal—the last measurable herbicide use on NFS lands in the Old House Gap area was about 10-15 years ago in Compartments 47, 48, 50 and 51. The Forest Service is unaware of any large-scale quantities of herbicide being applied on adjacent non-NFS lands within the watershed that could cause adverse cumulative effects. Individual home owners are expected to use herbicides on their properties; however, determining measurable amounts, formulations, locations, frequency, and timing of their use would be speculative. Additional project design features are listed in Appendix F below.

Effects from the Upper Creek Project about eight miles to the southwest of the Old House Gap activity areas are not expected to cause adverse cumulative effects from herbicide use because effects from each project are not expected to be cumulatively added together due to each project being in separate watersheds, the project design of each, and adherence to standards in the Vegetation Management FEIS.

The expected Roseboro-Edgemont Road (FSR 981) repairs are not expected to cause adverse cumulative effects to cultural resources because the actions are expected to improve riparian habitat and are not expected to be cumulatively added together due to project design of each and adherence to Forest Plan standards.

## 3.7 Archaeological Resources

### 3.7.1 Alternative A – Direct, Indirect, and Cumulative Effects

There are no expected adverse direct, indirect, or cumulative effects to cultural resources with this alternative because no ground disturbing activities are proposed.

### 3.7.2 Alternative B – Direct, Indirect, and Cumulative Effects

An archaeological review has been completed and any sites eligible or potentially eligible for the National Register of Historic Places (NRHP) under Criteria D (36 CFR 60.4). Class III sites are not eligible to the NRHP and may be affected by the proposed activities. There would be no adverse direct, indirect, or cumulative effects to Class I and unevaluated sites (Class II) with implementation of this alternative as identified cultural sites would be protected by excluding them from the treatment areas.

Effects from the Upper Creek Project about eight miles to the southwest of the Old House Gap activity areas are not expected to cause adverse cumulative effects to cultural resources because effects from each project are not expected to be cumulatively added together due to each project being in separate watersheds, the project design of each, and adherence to Forest Plan standards (Forest Plan, pages II-9 and III-10).

## 3.8 Soil Resources

The following is an analysis of the soils that would be impacted by logging or temporary road construction activities in the project area. The following table lists the soil map units found by stand number:

**Table 3-12: Primary Soil Map Units by Stand by Alternative**

Stand	Primary Soil Map Unit Name	Logging System	Avg. Slope Percent <sup>1</sup>	Alternative A (acres)	Alternative B (acres)
50-13 & 51-06	Chestnut Gravelly Loam/Chestnut & Edneyville	Cable	50-80	n/a	30
51-24	Chestnut and Edneyville	Tractor	15-50	n/a	10
70-42 <sup>2</sup>	Chestnut-Buladean Edneytown-Pigeonroost	Tractor	15-50 8-50	n/a	13 7
77-01 <sup>3</sup>	Chestnut-Ashe	Cable	15-50	n/a	28
77-03	Chestnut-Ashe	Cable	15-95	n/a	30
77-103	Chestnut-Ashe, Chestnut-Buladean	Cable	15-95	n/a	15
White pine removal	Chestnut Gravelly Loam	Tractor	50-80	n/a	3
<b>Total Chestnut-related Complex</b>				<b>n/a</b>	<b>129</b>
<b>Total Edneytown-related Complex</b>				<b>n/a</b>	<b>7</b>

1 – Average slope percent ranges are for the soil type, not necessarily the average slope within the stand

2 – Requires ¼ mile of temporary road construction for access

3 – Requires ½ mile of temporary road construction for access

The following table displays characteristics of each soil map unit:

**Table 3-13: Comparison of Soil Map Units**

Map Unit Name	Characteristics
Ashe	The Ashe series consists of moderately deep, somewhat excessively drained soils on gently sloping to very steep ridges and side slopes of the Blue Ridge (MLRA 130). They formed in residuum that is affected by soil creep in the upper part, and weathered from felsic or mafic igneous and high-grade metamorphic rocks such as granite, hornblende gneiss, granodiorite, biotite gneiss, and high-grade metagraywacke.
Buladean	The Buladean series consists of deep, well drained soils with moderately rapidly permeability. They formed in residuum affected by soil creep in the upper part, that is weathered from felsic or mafic, high-grade metamorphic or igneous rock such as granite, hornblende gneiss, granodiorite, biotite gneiss, and high-grade metagraywacke.
Chestnut	The Chestnut series consists of moderately deep, well drained soils on gently sloping to very steep ridges and side slopes of the Blue Ridge (MLRA 130). They formed in residuum that is affected by soil creep in the upper part, and weathered from felsic or mafic igneous or high-grade metamorphic rocks such as granite, hornblende gneiss, granodiorite, biotite gneiss, and high-grade metagraywacke.
Edneytown	The Edneytown series consists of very deep, well drained, moderately permeable soils on ridges and side slopes of the Blue Ridge (MLRA 130). They formed in residuum that is affected by soil creep in the upper part, and weathered from felsic to mafic, igneous and high-grade metamorphic rocks.
Edneyville	The Edneyville series consists of very deep, well drained soils on gently sloping to very steep ridges and side slopes of the Blue Ridge (MLRA 130). They formed in residuum that is affected by soil creep in the upper part, and is weathered from felsic or mafic igneous or high-grade metamorphic rocks such as granite, hornblende gneiss, granodiorite, biotite gneiss, and high-grade metagraywacke.
Pigeonroost	The Pigeonroost series consists of moderately deep, well drained, moderately permeable soils on ridges and side slopes of the Blue Ridge (MLRA 130). They formed in residuum affected by soil creep in the upper part and weathered from felsic to mafic, igneous and high-grade metamorphic rocks.

### 3.8.1 Alternative A – Direct, Indirect, and Cumulative Effects

There would be no adverse effects to soils with this alternative because no activities are proposed. Any areas with current erosion would not be corrected. Soil displacement and compaction related to temporary road construction and landing construction would not occur.

### 3.8.2 Alternative B – Direct, Indirect, and Cumulative Effects

#### 3.8.2.1 Direct and Indirect Effects

There are no anticipated adverse effects to soils with this alternative because the soil types in the project area are moderately to very deep and well to excessively drained (reducing potential for compaction); would not be taken out of production through permanent road construction; and would have project design features (Section 2.4, Chapter 2) and Forest Plan standards (BMPs) applied to further reduce potential for compaction and long-term damage. There would be some minor, short-term erosion with the construction of 1¼ miles of temporary road. However, the effects would be short-term and limited in their extent when applied to the total area of operation. This alternative proposes to harvest 103 acres with cable logging systems (partial suspension of logs) and 33 acres of harvest with ground based logging equipment (skidders or caterpillars); only about 0.10% of the two AAs. Cable logging systems afford higher protection

to soils than ground based systems, but adverse effects to soils are not expected to occur for the reasons stated above.

### 3.8.2.2 Cumulative Effects

Effects from the Upper Creek Project (decision notice signed February 1, 2006) in the Upper Creek and Lower Wilson Creek Forest Plan AAs about eight miles southwest of the Old House Gap Project and the proposed Globe Project in the Upper Johns River and Upper Mulberry Forest Plan AAs about three miles northeast of the Old House Gap Project are not expected to cause adverse cumulative effects to soil resources because effects from each project are not expected to be cumulatively added together due to each project being in separate watersheds, the project design of each, and adherence to Forest Plan standards (BMPs). The Upper Creek Project would harvest about 385 acres (1.6% of the Upper Creek and Lower Wilson Creek AAs) and construct ¼ mile of temporary road while the Globe Project proposes to harvest about 231 acres (2.1% of the Upper Johns River and Upper Mulberry AAs) and construct about 1.1 miles of temporary road.

Pursuant to 23 CFR 771.117(c)(9) and 23 USC 125 along FSR 981 (Roseboro Edgemont Road), the Federal Highway Administration proposes in 2006 to excavate fill soil down to bedrock of Rockhouse Creek, replace boulders at the toe of the slope, and place additional rock embankment to stabilize portions of the road that were damaged by the September 2004 storms. The construction site would be dewatered to maintain a dry working area and all disturbed areas would be seeded and covered with straw mulch. Effects of the FSR 981 road stabilization proposal are not expected to cause adverse cumulative effects when combined with effects of the Old House Gap proposal because both proposals would adhere to Forest Plan standards (BMPs) to reduce potential for adverse effects to soil. Cumulatively there should be positive effects in relation to soil stability and sedimentation to Rockhouse Creek from the streambank stabilization project.

## 3.9 Scenery Resources

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### 3.9.1 Existing Condition

Old House Gap project area is located on the Pisgah National Forest, Grandfather Ranger District. Management Areas in the project area include 4A & 3B. Management Area 4A has a Visual Quality Objective (VQO) of Retention (R) in Foreground (FG), Sensitivity Level 1 areas, and Partial Retention (PR) for all other Sensitivity Levels (SL) and Distance Zones (DZ). Management Area 3B has an assigned VQO of Modification (M) for all SL and DZ, except where seen from the Blue Ridge Parkway (BRP). Any activities visible from the BRP must meet PR VQO. Retention VQO must be met within one growing season, PR is allowed two and M is allowed three. Refer to the Nantahala and Pisgah Land and Resource Management Plan (LRMP) for specific definitions of visual management terminology, and Management Area standards.

Scenery consists of the combination of landforms, rock outcrops, water bodies, and vegetation as seen across the landscape. From viewpoints analyzed for this project, modifications to the landscape can be seen on public lands in the form of clearings, roads, and timber harvests. National Forest lands seen in the middleground appear as a continuous hardwood-conifer forest with patches of younger trees in areas of past timber management. The logging roads and landings used to harvest these areas are seen as well. Existing harvest areas vary in size and the

degree to which they blend-in with the surrounding forest. Many views are screened by foreground vegetation during leaf-on season, and would be filtered during leaf-off season; others are open and unobstructed. Foreground views are of mixed hardwood-conifer forests with an open understory in places and dense Rhododendron in others. Middleground views are generally of forested lands on the mountain slopes and residential or agricultural lands in the valleys.

Recreation use in the project area consists of hunting, fishing, hiking, backpacking, mountain biking, horseback riding, nature study, swimming, rafting and kayaking. There are no developed Forest Service recreation sites in the project area. Wilson Creek Wild and Scenic River is in the project area, but no activities are proposed in the river corridor.

All potential impacts to recreation would be of a temporary nature. Hunting opportunities may be improved. Mountain bikers, hikers and horseback riders may encounter logging trucks or harvest activities when using Forest Service system trails or system roads, and views of additional timber harvest areas would be seen along these roads and trails. The same would be true of those using other FS system roads that are not designated as trails. Wilson Creek users may hear the sounds of logging activities and see logging trucks on access roads, but this would be of a short duration. No recreation opportunities would be permanently altered or diminished by proposed management activities.

### **3.9.2 Scenery Analysis**

Viewpoint locations and potential visibility of treatment areas were determined in the field using a topographic map and compass; and were recorded using GPS and digital photography. Computer generated 3D terrain simulations were later used to verify visibility, analyze how proposed treatments would appear from each viewpoint, and how they would appear in conjunction with other existing and proposed management activities. All public travel corridors, water bodies and use areas in and around the project area were considered for potential viewpoints.

The following list identifies the location of VPs considered in the analysis. Many of the locations are specific points, while others are segments of trail or road. Some of the views would be seen as the viewer is moving (in a vehicle, walking, horseback, etc.), others are stationary. Views may be filtered or seasonally screened by foreground vegetation; others are open and unobstructed. The degree of potential impact varies with these and several other factors such as distance from viewer, viewer position, slope, size, shape and type of proposed harvest or road, landing, etc. All of these factors are considered when determining what activities would meet assigned VQOs or what mitigation would be required.

#### **3.9.2.1 Viewpoints**

1. BRP near Big Lost Cove Cliffs
2. BRP near Black Rock Cliffs
3. BRP near Pilot Knob
4. Grandfather Mt.
5. Wilson Creek
6. FSR4062
7. FSR451
8. FSR45
9. SR1514

10. SR1362
11. SR1516
12. TR258
13. TR258A
14. TR256
15. TR269

### 3.9.3 Effects by Alternative

#### 3.9.3.1 Alternative A Direct & Indirect Effects

Under this alternative all VQOs would be met.

#### 3.9.3.2 Alternative B Direct & Indirect Effects

This alternative proposes 133 acres of two-age regeneration harvest in six stands, and creation of a 3 acre wildlife field. It also proposes 1.25 miles of temporary road construction and maintenance of existing system roads.

From analyzed viewpoints, portions of each treatment area are visible. Treatment areas are visible in the foreground from several Forest Service roads and trails; and in the middle and background from the Blue Ridge Parkway and Grandfather Mountain. Proposed treatments would create openings of various sizes and shapes, or the canopy may appear thinner as seen from specified viewpoints. Assigned VQOs from analyzed viewpoints range from Partial Retention to Modification. With slight modifications to proposed unit boundaries, all assigned VQOs would be met from all analyzed viewpoints.

#### Cumulative Effects

Past timber harvest areas and existing roads are visible on NFS lands from analyzed viewpoints. From most VPs, existing harvest areas may not be noticeable to the average viewer. Existing roads and landings may remain visible for many years, but are primarily seen during leaf-off season. Proposed treatments would also be seen in conjunction with landscape modifications on private lands from some viewpoints. Cumulative effects of the planned Globe timber sale as potentially seen in conjunction with proposed treatments of this project were also considered.

With incorporation of specified scenery mitigation for Alternative B, all assigned VQOs will be met where proposed treatments are seen in conjunction with existing and foreseeable future landscape modifications.

#### Project Design Features

With implementation of the following design features proposed treatments in Alternative B would meet assigned VQOs (modified unit boundaries drop or reduce visible portions of stands as seen from certain viewpoints):

- ◇ Eliminate geometric shapes or straight lines where viewed in middleground;
- ◇ Create foreground buffers along travel corridors;
- ◇ Move boundaries off ridges to avoid a “Mohawk” or “thin-timber” effect along ridge-tops; and
- ◇ Reduce linear openings along roads and trails to meet Forest Plan standards (see map titled “Old House Gap Timber Sale Scenery Mitigation” map, project record).

### **3.10 Other Areas of Concern**

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#### **3.10.1 Alternative A – Direct, Indirect, and Cumulative Effects**

Since no action is proposed under this alternative, there would be no direct, indirect, or cumulative effects to park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

#### **3.10.2 Alternative B – Direct, Indirect, and Cumulative Effects**

There would be no measurable direct, indirect, or cumulative effects from any of these alternatives because none of them propose actions within park lands, prime farmlands, wetlands (as per 1977 Executive Orders 11988 and 11990), wild and scenic rivers, or ecologically critical areas. It also would not violate local law or requirements imposed for the protection of the environment. There are no other known foreseeable actions in the activity areas that could adversely affect park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

## CHAPTER 4 – PREPARERS AND PUBLIC INVOLVEMENT

The following individuals helped develop this environmental assessment:

### 4.1 ID Team Members

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#### 4.1.1 Core IDT

Scott Ashcraft	-	Archaeologist: B.S. Archaeology, 13 years with USFS
Sandy Burnet	-	Wildlife Biologist: B.S. Biology, 21 years with USFS
David Casey	-	Project Co-leader: M.S. Forestry, 2 years with USFS
Eric Crews	-	Landscape Architect: B.L.A., 14 years with USFS
David Danley	-	Botanist: B.S. Plant Pathology & Botany, 17 years with USFS
Michael Hutchins	-	IDT Leader: B.S. Forest Management, 19 years with USFS
Lorie Stroup	-	Fisheries Biologist: B.S. Natural Resources, 9 years with USFS
Greg Van Orsow	-	Project Co-leader: B.S. Forest Management, 5 years with USFS

#### 4.1.2 Other Forest Service Personnel Providing Input

Bonnie Amaral – Acting Grandfather District Ranger  
 Miera Crawford – Grandfather District Ranger (since transferred to the NFs Alabama)  
 Gary Greer – Fire Management Officer, Grandfather RD  
 Dean Karlovich – Resource Assistant, Grandfather RD  
 Joy Malone – Grandfather District Ranger  
 Ronnie Thomas – Forest Technician, Grandfather RD  
 Barbara Watring – Acting Grandfather District Ranger

### 4.2 Federal, State, and Local Agencies Providing Input

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Jennifer Bumgarner – Office of the Governor of North Carolina  
 Brian Cole – USDI Fish and Wildlife Service  
 Dave McHenry – North Carolina Wildlife Resources Commission

### 4.3 Others Providing Input

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Bob Gale, Western North Carolina Alliance  
 Leonard Harwood  
 Steve Henson, Southern Appalachian Multiple-use Council  
 Hugh Irwin, Southern Appalachian Forest Coalition  
 Gene Piver  
 Ben Prater, Southern Appalachian Biodiversity Project  
 Doug Sanders  
 Dewey Wells

## **APPENDIX A – BIOLOGICAL EVALUATION**

**BIOLOGICAL  
EVALUATION  
OF THE  
OLD HOUSE GAP ENVIRONMENTAL ASSESSMENT**

**PISGAH NATIONAL FOREST  
GRANDFATHER RANGER DISTRICT  
AVERY AND CALDWELL COUNTY  
NORTH CAROLINA**

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## I. INTRODUCTION

The purpose of this biological evaluation (BE) is to provide the decision maker with relevant biological information as to the possible effects this proposal may have to Federally Threatened, Endangered (T&E) and Regional Forester's Sensitive (S) species.

This BE documents the possible biological effects of a proposed timber sale and improvements known as the Old House Gap Environmental Assessment (EA, 2005). Included within this proposal (Alternative B) are:

1. Regeneration by two age timber harvest of about 136 acres (Alternative B – Proposed Action).
2. Construction of about 1.25 miles of temporary road and use and maintain existing roads.
3. Wildlife planting (i.e. old variety of apple trees in log landings).
4. Site preparation and release with herbicides and manual methods.
5. Develop a three acre wildlife field, seed temporary roads and log landings to create an additional three acres of grass/ forbs habitat.
6. Reduce the spread of exotic invasive plant species by using herbicides.
7. Identify 424 acre medium old growth patch in the Upper Wilson Creek Watershed and 100 acres of small patch old growth in Compartments 70 and 77.

A detailed description of the proposal is disclosed in Section 2.2, Chapter 2 of the Old House Gap Project EA. A list of project design features and monitoring is disclosed in Section 2.4 of the same Chapter. A list of definitions, including analysis areas is located at the end of this BE.

### Location

This project is planned within the Upper Wilson Creek and Anthony Creek analysis areas (AA), totaling approximately 15,541 acres of National Forest System (NFS); this is the area that will be analyzed for wildlife. This analysis area includes Management Areas (MA) designated by the Nantahala & Pisgah Forest Plan, Amendment 5 (Forest Plan) within Avery, Watauga, and Caldwell Counties. There are 20 acres of National Forest System (NFS) lands within Watauga County. However, no activities are planned on the 20 acres with this proposal so the wildlife analysis did not consider Watauga County. The listed acres are approximate and derived from the Continuous Inventory of Stand Conditions (CISC) which usually lists slightly different acres than those in GIS (Geographic Information System).

## II. METHOD OF EVALUATION AND SURVEYS

Potentially affected T&E and S (August 7, 2001) species and habitat were identified from the following sources:

- 1) Information on TES species and their habitat on the Nantahala and Pisgah National Forests were obtained from the North Carolina Wildlife Resources Commission (NCWRC), U.S. Fish and Wildlife Service (USFWS), and North Carolina Natural Heritage Program (NCNHP) occurrence records.

- 2) Surveys completed for this analysis, past surveys, and analysis for projects within or near the analysis areas.
- 3) Consulting with individuals both in the public and private sector who are knowledgeable of the area and its biota.

### **III. SURVEY INFORMATION**

#### **A. BOTANICAL SURVEYS**

The proposed units were surveyed by David M. Danley, Forest Botanist on March 29, April 25, 26, May 26, and June 10, 11, 2005. All proposed units or activity areas were visited at least once during this time.

#### **B. WILDLIFE SURVEYS**

Bird points were conducted on April 27, 2005 by Dennis Helton, Grandfather Ranger District, and on April 19-22, 2005, Sandy Florence, Grandfather Ranger District Wildlife Biologist, surveyed the proposed stands for habitat presence as well as snail and salamander species. Surveys were conducted to determine the habitat present, survey significant habitats, and species presence.

#### **C. AQUATIC SURVEYS**

Existing data for aquatic resources within the aquatic AA exists in two forms: 1) general inventory and monitoring of Forest aquatic resources and 2) data provided by cooperating resource agencies from aquatic resources on or flowing through the Forest. Both of these sources are accurate back to approximately 1980 and are used regularly in project analyses. Data collected prior to 1980 is used mostly as a historical reference—project-specific surveys were also conducted.

Lorie Stroup, Forest Fisheries Biologist, and Kerri Lyda and Jamie Summer, Forest Service Fisheries Technicians conducted aquatic habitat and aquatic insect surveys of the proposed aquatic project and analysis areas on the Fall of 2004 (August and October) and the spring of 2005 (April, May, and June). The surveys consisted of examining streams within the aquatic activity area, noting habitat quality, quantity, and suitability for rare aquatic and management indicator species (MIS), as well as existing impacts and their source. Rockhouse Creek was surveyed for fish using a backpack electrofishing machine.

Additional information specifically addressing aquatic TES was obtained from North Carolina Wildlife Resources Commission (NCWRC) biologists, North Carolina Natural Heritage Program (NCNHP) records, North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Quality aquatic biologists, and US Fish and Wildlife Service (USFWS) biologists.

### **IV. EXISTING BIOLOGICAL CONDITION**

A detailed review of species information and habitat is within the botanical, aquatic, and, wildlife analyses located in the project record and has been prepared based on the best available information at the present time.

## A. WILDLIFE HABITAT

The Old House Gap terrestrial biological AA is the Wilson Creek and Anthony Creek Forest Plan Analysis Areas (AA).

The following tables represent the existing wildlife habitat condition within the Wildlife analysis area:

**Table A-1: Forest Type Representation and Proposed Regeneration by Alternative**

Species/Forest type	Acres <sup>1</sup> (CISC)	% of AAs	Alternative B <sup>2</sup> (Acres Reduced)
White Pine	337	2	3
Red Spruce-Fraser Fir	36	<1	0
Hemlock – Hardwood	378	2	0
White Pine – Cove Hardwood	204	1	0
White Pine – Upland Hardwood	246	2	0
Yellow pine - oak	126	1	0
Yellow Pine (pitch pine)	70	<1	0
Cove Hardwood – White Pine – Hemlock	589	4	10
Upland Hardwood – White Pine	617	4	0
Oak – Yellow Pine (scarlet, black, white, and chestnut oak)	1,260	8	30
Yellow Poplar	240	2	0
N. Red Oak – Hickory – Yellow Pine	190	1	0
White Oak – N. Red Oak – Hickory	5,198	34	30
Yellow Poplar – White Oak – Red Oak	4,185	27	48
Scarlet Oak	395	3	0
Chestnut Oak – Scarlet Oak	942	6	0
Chestnut Oak	343	2	15
Sugar Maple-Beech-Yellow Birch	156	1	0
<b>Total</b>	<b>15,512</b>	<b>100%</b>	<b>136 (&lt;0.9% of the AAs)</b>

1: Alternative A = no change from current forest type represented

2: Alternative B = two-aged harvest

**Table A-2: Age Class Representation and Proposed Change by Alternative**

Age Class – Habitat Vegetation Component	Acres (CISC)	Percentage of AAs	Alternative B (ac/% chg)
0-10 age – Early Successional	75	<1	133/+<1%
11-20 age – Early Successional	526	3.4	
21-50 age – Mid Successional	467	3	
51-100 age – Mature Forest	12,049	77.7	60 ac/ -0.4 %
101- 140 age – Old Forest	2,395	15.4	73 ac/-0.5%
<b>Total</b>	<b>15,512</b>	<b>100%</b>	
Grass/forb habitat	29	0.19	*6 ac/ +0.04%
<b>Open road - mi/mi<sup>2</sup></b>	<b>**5.1mi/mi<sup>2</sup></b>	<b>N/A</b>	<b>No change</b>

- \* Acres in grass/forb habitat considered includes a new 3 ac opening and the 3 ac expansion of landings attached to linear grass/forb habitat (temporary roads)
- \*\* Approximately 22 miles Forest Service roads or 0.9 mi/mi<sup>2</sup>

## B. BOTANICAL COMMUNITIES

The botanical AA for botanical resources is defined as the total area within two kilometers of any proposed activity area or known elemental occurrences (EO) of any plant TES species. The botanical AA consists of 9,773 acres. All potential effects (direct, indirect, and cumulative) to botanical resources in the botanical AA were analyzed using this “boundary”. The botanical AA definition was selected because it is analogous to the Natural Heritage Program and The Nature Conservancy’s plant delimitation guidelines of EO.

Three common community types are characteristic within the botanical AA. These communities are: Pine-oak Heath Forest, Chestnut Oak Forest, and Acidic Cove Forest; and to a much lesser extent the Montane Oak-Hickory Forest and Rich Cove Forest. Montane Alluvial Forest and Rocky Shore and Bar communities are associated with low elevation areas directly adjacent to major streams, but are best developed along Wilson Creek and Johns River. Small habitat areas such as small rock outcrops and forested seeps and streams can be imbedded within these communities. Natural communities often grade together and definite boundaries are usually difficult to see. However, there is often a pattern to these communities on the landscape. Within the AA, the Acidic Cove Forest often occupies areas near streams, lower cove slopes and northern aspects. Higher cove slopes, south and western slopes are often dominated by the Chestnut Oak Forest. Pine-oak Heath Community is found on dryer ridges and slopes. The Montane Oak-Hickory Forest, Montane Alluvial Forest and anthropogenic communities have the most diverse herbaceous component of the communities found within the AA. However, taken in whole, the botanical AA has very poor herbaceous diversity. All of the communities are very common community types. The primary natural communities affected by this proposal are the Chestnut Oak Forest and Acidic Cove Forest.

## C. AQUATIC ENVIRONMENT

The existing aquatic resources for the Old House Gap Project are located within Forest Plan Watershed numbers 59 (Wilson Creek) and 60 (Johns River). The streams listed in table 3 below represent the aquatic area of potential impacts. Table 3 quantifies the amount of habitat for each stream both within the activity and analysis areas and the classification of these streams designated by the Department of Environmental Management (DEM).

**Table A-3: Forest Plan Watershed #59 (Wilson Creek) and Watershed #60 (Johns River)**

Stream Name (UT denotes an unnamed tributary)	Compartment-Stand	Miles in Activity Areas	Miles in Analysis Area	DEM Classification*
Rockhouse Creek	77-01,03,10	0.38	3.5	C Tr ORW
UT 1	78		0.72	C Tr ORW
UT 2	78		0.61	C Tr ORW
UT 3	78		0.47	C Tr ORW
UT 4	78		0.49	C Tr ORW
UT 5	77-10		0.42	C Tr ORW
UT 6	77-10	0.15	0.35	C Tr ORW

Stream Name (UT denotes an unnamed tributary)	Compartment-Stand	Miles in Activity Areas	Miles in Analysis Area	DEM Classification*
UT 7	77-10	0.16	0.38	C Tr ORW
Woodruff Branch	50		0.79	C Tr
UT 1	50-13	0.23	0.57	C Tr
UT 2	50-13	0.1	0.35	C Tr
UT 3	50-13	0.1	0.37	C Tr
Cary Flat Branch	70-14		0.76	C Tr ORW
UT 1	70-14	0.15	0.38	C Tr ORW
UT Anthony Creek	50-13/51-06		0.38	C Tr
<b>Total</b>		<b>0.96</b>	<b>9.81</b>	

\*The NC Department of Environmental Management designates classifications and water quality standards known as "Classifications and Water Quality Standards Applicable to the Surface Waters and Wetlands of North Carolina." The "C" classification denotes waters suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. The "B" classification indicates waters used for primary recreation and other uses suitable for Class C. "Tr" waters are suitable for the propagation and survival of trout. "ORW" is a supplemental classification intended to protect unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance.

## D. PAST, ON-GOING, AND FUTURE ACTIVITIES WITHIN AND AROUND THE ANALYSIS AREAS

### Past Activities Potentially Affecting Habitat

Timber sales over the past twenty years have resulted in a total of 601 acres of early succession habitat (0-20 age class) and 0.5 miles of road construction. The timber sales include: Woodruff Ridge (1992-1993), Barn Ridge (1994), and Anthony Creek (1995).

There have been approximately 60 acres of wildfires within these analysis areas since 1981 and approximately 1,960 acres of prescribed fire. This 10 year fire history has resulted in an average of approximately 202 acres per year being burned. Where fires occurred, the shrub layer was temporarily reduced and scattered tree mortality occurred. The shrub layer sprouts back within 3 years with more vigor, unless it is a part of the planned rotational (3-5 year) District prescribe burn program. Wildfires and prescribe burns rarely enter riparian areas where they exhibit cool, low intensity flame heights within this moist environment.

The southern pine beetle (SPB) epidemic within the past five years has resulted in large clumps and scattered yellow pine species mortality, especially along ridge tops. Natural regeneration is occurring, especially where prescribed fires in the past five years have reduced dead and downed debris, which may be interfering with regeneration.

### Ongoing Actions Potentially Affecting Habitat

The ongoing hurricane related road repairs and reconstruction activities include repair work along FSR 981 (Roseboro-Edgemont Road) and adjacent to Rockhouse Creek. There are no known adverse effects to botanical, aquatic, or wildlife TES species or their habitat from this action and long-term this action is expected to improve aquatic habitat. The Upper Creek Project (decision notice signed February 1, 2006) in the Upper Creek Project about eight miles southwest of the Old House Gap Project is scheduled to harvest about 345 acres by two-age harvest and 40 acres by clearcut harvest with reserve trees, prescribe burn about 350 acres, and designate over 750 acres of old growth habitat.

### Foreseeable Future Actions Potentially Affecting Habitat

The Upper Johns River and Upper Mulberry Forest Plan AAs are scheduled for analysis in 2006 as part of the Globe Environmental Assessment. The current early successional 0-10 age class within these AAs is 1%. Lower Mulberry AA is scheduled for analysis in 2007 and its early successional 0-10 age class is 0%. It is expected that these future AAs will have some harvest proposed to improve the 0-10 age class from their existing condition. All three of these AAs are found east of the Old House Gap AA.

There is a high likelihood that the current 200 acres a year of fire within the Old House Gap AA will continue.

There is little likelihood of the number of private residences or current private land use increasing on the western portion of this AA. The northeast portion of this AA is undergoing an increased pressure of residential development. The Blue Ridge Parkway and privately owned Grandfather Mountain Biosphere are both located north of the AAs and their management is expected to continue as-is, with no harvest proposed and areas of high recreational use continuing.

## **E. KNOWN TES SPECIES WITHIN THE ANALYSIS AREAS**

### Wildlife

Species with occurrence records in Avery and Caldwell Counties were considered for this project. Those species that were further evaluated may be found in Table 4. Species not evaluated further are listed in the county list in Attachment 1, along with the reason for their elimination from further consideration.

**Table A-4: Potential & Known TES Wildlife Species**

Species	Type	Habitat	Likelihood of Occurrence
<b>Federally Threatened or Endangered species (T &amp;E)</b>			
<i>Corynorhinus townsendii virginianus</i> , Virginia Big-eared Bat	Mammal	Cave dwelling	Known hibernacula outside of activity area
<b>2002 Region 8 Regional Forester's Sensitive Species (S)</b>			
<i>Myotis leibii</i> , Eastern Small-footed Bat	Mammal	Winter – caves, mines, similar habitats Summer – rock crevices, hollow trees	Occurs within AA, (from Grandfather Mt.) but not known to occur in activity area. May forage within the analysis area and activity areas

<i>Speyeria diana</i> , Diana Fritillary	Butterfly	Forages on nectar species within forest openings, most often near streams. Larval species forage on violet species within or near riparian areas with rhododendron	May occur within the analysis area
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Phone conversations with US Fish & Wildlife (USFW) on July 20, 2005 confirmed a Virginia Big-eared bat hibernacula outside of the activity area. Bob Currie and Allan Ratzlaff, USFW, stated; this cave was utilized by the bat for a winter hibernacula; the nearest proposed timber activity to the hiberbernaculam is within compartment 77; the bats are hibernating in the cave throughout the winter months and leave the area when they emerge; therefore, this proposal would have no affect on Virginia Big-eared Bat.

Botanical

Of the total of 30 plant TES species known to occur in Avery and Caldwell Counties (Appendix 1), all but 12 sensitive and all T & E plant species (Table 5) were dropped from the list for further consideration and discussion for one of the following reasons: 1) lack of suitable habitat for the species in the botanical analysis area, 2) the species has a well-known distribution that does not include the analysis area or 3) based on field surveys no habitat was seen in the activity areas. Habitats, community types and ranges of plant TES species are derived from information in Classification of the Natural plant Communities of North Carolina, the Natural Heritage Program's List of Rare Plants of North Carolina or information obtained through other botanist. Based upon habitat model information, 12 sensitive species (Table 5) have apparently suitable habitat<sup>1</sup> and could occur in the analysis area, none are know to occur within the proposed activity areas or botanical analysis area. A list of TES plants that occur in Avery and Caldwell Counties is found in Attachment 1. A list of TES plants that potentially could occur in the project or activity areas is listed in Table 5 and summarizes the list of TES plant species that are known to occur, or has apparently suitable habitat in the botanical analysis area.

**Table A-5: Potential & Known TES Plant Species in the Old House Gap Botanical Analysis Area**

Species	Type	Natural Community or Habitat	Occurrence
<b>Federally Threatened or Endangered Plant Species (T &amp;E)</b>			
<i>None</i>	N/A	N/A	N/A
<b>2002 Region 8 Regional Forester's Sensitive Plant Species (S)</b>			
<i>Aconitum reclinatum</i>	Vascular Plant	Rich Cove Forest	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area

<sup>1</sup> “Apparently suitable habitat” used within in this document (same as the Natural Heritage program definition) to mean “surveyed or unsurveyed areas not known to be occupied by an element, but which appear capable (under natural conditions) of supporting viable individuals of that element, based on one or more observed or mapped factors (soils, geology, hydrology, vegetation topography, aspect, elevation, etc.) known to delimit or predict other occurrences of the same element.

Species	Type	Natural Community or Habitat	Occurrence
<i>Carex manhartii</i>	Vascular Plant	Rich Cove Forest	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Coreopsis latifolia</i>	Vascular Plant	Rich Cove Forest	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Helianthus glaucophyllus</i>	Vascular Plant	Anthropogenic, roadsides; Rich Cove Forests	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Hydrotheria venosa</i>	Lichen	Aquatic on rocks in Acidic Cove Forest.	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Juglans cinerea</i>	Vascular Plant	Rich Cove Forest	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Monotropsis oderata</i>	Vascular Plant	Chestnut Oak Forest	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Plagiochilia austinii</i>	Liverwort	Spray cliff in Acidic Cove Forest.	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Robinia hispida var. fertilis</i>	Vascular Plant	Chestnut Oak Forest	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Thermopsis fraxinifolia</i>	Vascular Plant	Pine-oak Heath Forest	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Trillium rugellii</i>	Vascular Plant	Rich Cove Forest	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area
<i>Tsuga caroliniana</i>	Vascular Plant	Chestnut Oak Forest, Pine Oak-Heath Forest.	Not known to occur in analysis or activity area. Apparently suitable habitat in the botanical analysis area

## B. AQUATIC

There are three aquatic TES species listed for Avery and Caldwell Counties which include: *Macromia margarita*, *Ophiogomphus edmodo* and *Alasmidonta varicosa* (Attachment 1). *Ophiogomphus edmodo* and *Alasmidonta varicosa* were dropped from further discussion associated with the Old House Gap Project due to the lack of habitat within the aquatic analysis area or activity area. Records for these species are in the larger streams located well below the aquatic analysis area and outside the area of potential impacts.

**Table A-6: Known TES Aquatic Species in Aquatic AA**

Species	Type	Habitat	Occurrence
<b>Federally Threatened and Endangered Species</b>			
(There are no listed proposed, threatened or endangered aquatic species listed for Avery and Caldwell Counties)			
<b>2002 Region 8 Regional Forester's Sensitive Species List</b>			
<i>Macromia margarita</i> (mountain river cruiser)	Dragonfly	Lotic-streams and rivers	May occur in the analysis area but not within the activity area due to small size of streams.

## V. EFFECTS/IMPACTS OF PROPOSAL ON TES SPECIES

This section and Table A-7 summarize the effects to TES species. Other ecological effects or possible effects to other species may be found within the attached resource reports.

**Table A-7: Summary of Effect/Impacts to TES Species**

Species	Impacts (Alternative B)
<b>Federal T&amp;E Species</b>	
<i>Corynorhinus townsendii virginianus</i> , Virginia Big-eared Bat	No direct, indirect, or cumulative impacts as species does not occur within activity area
<b>Region 8 Regional Forester's S Species<sup>1</sup></b>	
<i>Myotis leibii</i> , Eastern Small-footed Bat	Minimal adverse direct impacts to individuals, minimal adverse indirect to habitat, minimal adverse cumulative effect
<i>Speyeria diana</i> , Diana Fritillary	Minimal direct negative impacts to individuals, minimal positive indirect effect to habitat, minimal negative and positive cumulative effect
<i>Aconitum reclinatum</i>	No direct, indirect, or cumulative impacts because no individuals or their habitats are found in activity areas.
<i>Carex manhartii</i>	
<i>Coreopsis latifolia</i>	
<i>Helianthus glaucophyllus</i>	
<i>Hydrotheria venosa</i>	
<i>Juglans cinerea</i>	
<i>Monotropsis oderata</i>	
<i>Plagiochilia austinii</i>	
<i>Robinia hispida var. fertilis</i>	
<i>Thermopsis fraxinifolia</i>	
<i>Trillium rugellii</i>	
<i>Tsuga caroliniana</i>	
<i>Ophiogomphus edundo</i> , Edmund's snaketail	None. Species' habitat is not present within the aquatic analysis area.
<i>Alasmidonta varicosa</i> , Brook floater	None. Species' habitat is not present within the aquatic analysis area.

Species	Impacts (Alternative B)
<i>Macromia margarita</i> , Mountain river cruiser	May impact individuals but will not affect viability of species across the Forest. <sup>2</sup>

1 – August 7, 2001, Region 8 Regional Forester’s Sensitive species list

2 – No *Macromia margarita* were found during surveys at the stream crossings associated with Alternative B. Due to the presence of habitat within the aquatic analysis area, their may be impacts to individuals but will not affect viability across the Forest.

## A. EFFECTS/IMPACTS TO REGIONAL FORESTER’S SENSITIVE BOTANICAL RESOURCES

### Timber Harvest & Temporary Road Construction

There are no known plant T&E and S species that would be affected by timber harvest and temporary road construction because no T&E and S species are known to occur within the proposed activity areas. The general potential effects to plant species including T&E and S plant species that are direct negative effects of exposure to logging are activities such as moving heavy equipment, skidding logs, and road construction. These activities damage individual plants and have the indirect effects of modifying the habitat. Some of the expected indirect effects of timber removal will initially produce an increase in light, temperature, reduction in humidity, and a decrease in soil surface moisture. These effects may have a positive effect or negative effect depending upon the particular plant species. Some weedy and early succession species, such as *Rubus*, are expected to increase in the activity area. The long-term effect of rotational logging practices upon the general plant communities is poorly understood. There is some evidence that the repopulation of some herbaceous plant species in mixed mesophytic communities may take more than a hundred years after logging. Most species are expected to recover faster than that because of various biologic factors such as growth rate, dispersal, and current species distribution. See the Forest Plan, Standards and Guidelines for a description of these methods.

### Site Preparation and Timber Stand Improvement (TSI)

There are no known plant TES species that would be affected by site preparation and TSI because no TES species are known to occur within the proposed activity areas. Site preparation and TSI procedures will have an insignificant effect on non target species. The procedures, using chain saws or herbicide, select individual plants for treatment and generally do not indirectly adversely affect adjacent individual plants. For example, during a controlled demonstration of herbicide use for TSI and advanced oak treatments on the Grandfather Ranger District, the indirect effect of herbicide use seemed to have a positive effect on herbaceous plant species. Evidently, the effect of the increase in light (produced by killing the target tree) outweighed possible toxic effect of residual herbicides and increased the kinds and numbers of herbaceous species near the target tree. Site preparation and TSI procedures will change tree composition (the desired effect) of the community to favor oak species.

### Wildlife Planting

No plant TES species are known to be effected by wildlife planting because no TES species are known to occur within the proposed activity areas. This action will maintain a small amount of acreage to early successional species and community type.

#### Treat Exotic and Invasive Plant Species with Herbicides

No plant TES species are known to be affected by herbicide use because no TES species are known to occur within the proposed activity areas. This action will reduce the spread of *Miscanthus sinensis*, *Paulownia tomentosa* and *Ailanthus altissima*. Not treating invasive exotic plants would result in continued spread along system roads and wildlife fields.

### **B. Specific Effects to TES Plant Species**

#### Direct Effects/Indirect Effect to TES Plants

There are no known TES plant species in the proposed activity areas (or near enough to the proposed activities to directly or indirectly be affected). Therefore, this action will have no direct or indirect effects to any TES plant species. Because there is no known effect to any TES plant species, there are no specific mitigation recommendations.

#### Cumulative Effect

There are no known past, current, or foreseeable action(s) within the botanical AA that have directly or indirectly affected any TES plant species because there are no known TES plant species in the proposed activity areas.

### **C. Effect on Potential Habitat for TES Plant Species**

#### Direct & Indirect Effects to Potential Habitat for TES Plants

This discussion summarizes the possible effect on potential, or “apparently suitable habitat” for all potentially occurring TES plant species within the botanical AA. However, no TES plant species is known to occur. This analysis is based upon current knowledge of species habitat parameters. Usually, these parameters are very broad habitat concepts. This discussion does not imply species occupancy in those areas. It examines potential suitable habitat based upon a predictive model of general Forest communities and current knowledge of species habitat parameters within the botanical AA. Species occupancy could be none or a very small percentage of these potential habitat acres. For example, *Carex pedunculata* is known to occur from only one small (<2 acres) population on the Forest. Since this population is found within Rich Cove Forest, the potential habitat is all known Rich Cove Forest within the Forest (56,223 acres). The known Forest occupancy for this species is then 3 one thousandths of a percent (0.003%). This example is typical of many TES plant species with broad habitat definitions. As habitat definitions and botanical surveys become more complete, estimation of potential habitat may become more precise. Table 8 summarizes the results of this analysis within the 9,773 acre botanical AA.

**Table A-8: Effect (Alternative B) Upon Potential Habitat for T&E and S Plant Species within Botanical A.A**

Species	Natural Community or Habitat	Predicted Potential Acres Existing condition	Acres of Potential Habitat Impacted, % of Area Total (both action alternatives)
<b>Federally T&amp;E Plant Species</b>			
None	N/A	None	None
<b>2002 Region 8 Regional Forester's S Plant Species</b>			
<i>Aconitum reclinatum</i>	Rich Cove Forest	72 acres	5 acres impacted, 7% of total potential habitat in AA
<i>Carex manhartii</i>	Rich Cove Forest	72 acres	5 acres impacted, 7% of total potential habitat in AA
<i>Coreopsis latifolia</i>	Rich Cove Forest	72 acres	5 acres impacted, 7% of total potential habitat in AA
<i>Helianthus glaucophyllus</i>	Anthropogenic, roadsides; Rich Cove Forests	72 acres	5 acres impacted, 7% of total potential habitat in AA
<i>Hydrotheria venosa</i>	Aquatic on rocks in Acidic Cove Forest.	<1 acre	Not impacted
<i>Juglans cinerea</i>	Rich Cove Forest	72 acres	5 acres impacted, 7% of total potential habitat in AA
<i>Monotropsis oderata</i>	Chestnut Oak Forest	4,319 acres	69 acres impacted, 2% of total potential habitat in AA
<i>Plagiochilia austinii</i>	Spray cliff in Acidic Cove Forest.	<1 acre	Not impacted
<i>Robinia hispida var. fertilis</i>	Chestnut Oak Forest	4,319 acres	69 acres impacted, 2% of total potential habitat in AA
<i>Thermopsis fraxinifolia</i>	Pine-oak Heath Forest	4,319 acres	69 acres impacted, 2% of total potential habitat in AA
<i>Trillium rugellii</i>	Rich Cove Forest	72	5 acres impacted, 7% of total potential habitat in AA
<i>Tsuga caroliniana</i>	Chestnut Oak Forest, Pine Oak-Heath Forest.	4,319 acres	69 acres impacted, 2% of total potential habitat in AA

### Cumulative Effect

The cumulative effect to potential habitat is the total affect of past, current, and foreseeable actions within the botanical AA that have directly or indirectly affected TES plant species potential or apparently suitable habitat. Within the botanical AA, only timber harvest and

controlled burns are thought to have an influence on habitat. All other activities are minor and not analyzed. Past Actions analyzed include: Woodruff Ridge Timber sale (1992/1993), Barn Ridge Timber Sale (1994), Anthony Ridge Timber Sale (1995), Rock Horse control burn ( 235 acres, 1999), Bee Branch control burn (2003), Laurel Mt. control burn (425 acres, 1998, 2005) and storm repair work along FSR 981 (Roseboro-Edgemont Road).

Controlled burns are thought to improve habitat for up to 5 years within the communities affected by decreasing complete shrubby species. The low intensity of most controlled burns does not usually affect community type. Therefore, the Bee Branch and Laurel Mt. controlled burns are past actions that may still be influencing habitat.

**Table A-9: Summary of Cumulative Effects (Alternative B) of Controlled Burns upon Potential Suitable Habitat for TES Plant Species within Botanical A.A**

Regionally Sensitive Plant Species Potential Habitat						
Habitat	Total Acres in AA	Associated Species	Past impact(s) (<5 years old)	Proposed impact(s)/ % of total	Future Impact(s)	Total Impact/ % of Total Habitat in AA
Acidic Cove Forest	4,218	<i>Entodon sullivantii</i>	145 acres	None	None known	145 acres/ 3%
Rich Cove Forest	72	<i>Trillium rugellii</i> , <i>Juglans cinerea</i> <i>Helianthus glaucophyllus</i> <i>Coreopsis latifolia</i> <i>Carex manhartii</i> <i>Aconitum reclinatum</i>	none	None	None known	Not affected
Pine Oak Heath/ Chestnut Oak Forest	4,340	<i>Monotropsis oderata</i> Robinia hispida var. fertilis, Thermopsis fraxinifolia <i>Tsuga caroliniana</i>	505 acres	None	None known	505 acres/ 12%
Montane Oak Hickory	991	none	10 acres	Not affected by proposal 0%	None known	10 acres/ 1%
Alluvial Forest	146	none	Largely converted to pasture on private lands	None	None known	Habitat not affected by proposal, same as existing
Water Fall Spray Zones & wet rocks	<1 acre	<i>Hydrotheria venosa</i> <i>Plagiochilia austinii</i>	None known	None	None known	Habitat not affected

Past timber harvest and clearing activities greater than 40 years old are thought to be recovered for forest species requiring more mature habitat conditions and unsuitable for species requiring early successional habitat. Past timber management in the AA has reduced 23 acres of Rich Cove forest suitability (32% of the habitat in the AA) and this proposal will reduce an additional

7% of the remaining suitable habitat for a cumulative total of 39% of the habitat affected. The remaining 44 acres (61% of the suitable habitat) would not be affected at this time. The following summarizes these effects of proposed harvest actions and past harvest actions less than 40 years old.

**Table A-10 Summary Cumulative Effect (Alt. B) of Timber Harvest upon Potential Suitable Habitat for TES Species within Botanical A.A**

Habitat	Total Acres in AA	Associated Species	Past impact(s) (<40 years old)	Proposed impact(s)/ % of total	Future impact(s)	Total Impact/ % of Total Habitat in AA
Acidic Cove Forest	4,218	<i>Entodon sullivantii</i>	724 acres	17 acres/ 0.4%	None known	741 acres/ 18%
Rich Cove Forest	72	<i>Trillium rugellii</i> , <i>Juglans cinerea</i> <i>Helianthus glaucophyllus</i> <i>Coreopsis latifolia</i> <i>Carex manhartii</i> <i>Aconitum reclinatum</i>	23 acres	5 acres/ 7%	None known	28 acres/ 39%
Pine Oak Heath/ Chestnut Oak Forest	4,340	<i>Monotropsis oderata</i> <i>Robinia hispida</i> var. <i>fertilis</i> , <i>Thermopsis fraxinifolia</i> <i>Tsuga caroliniana</i>	608 acres	69 acres/ 2%	None known	677 acres/ 14%
Montane Oak Hickory	991	none	350	0 acres	None known	350 acres/ 35%
Alluvial Forest	146	none	Largely converted to pasture on private lands	None	None known	Habitat not affected
Water Fall Spray Zones & wet rocks	<1 acre	<i>Hydrotheria venosa</i> <i>Plagiochilia austinii</i>	None known	None	None known	Habitat not affected

## B. EFFECTS/IMPACTS TO REGIONAL FORESTER'S SENSITIVE WILDLIFE SPECIES

### Eastern Small-footed Bat

Although the Eastern Small-footed Bat is known only from Grandfather Mt. within the Wildlife AA it is not known from any proposed activity area. Roosting and foraging habitat may exist within the AA and activity areas. During October through March the Eastern Small-footed Bat

would be hibernating within caves, in the northern part of the AA area. There are no caves within the activity areas so this proposal would not disturb winter habitat for the Eastern Small-footed Bat. During late spring through early fall, the Eastern Small-footed Bat may be found utilizing hollow trees and rock crevices as temporary, 1-2 day, roosts. Rock crevices are most numerous along the Blue Ridge Parkway corridor and within the Grandfather Mountain Biosphere, both on the north edge of AA area. The majority of trees or snags utilized as temporary roosts by the Small-footed bat are thought to be within the riparian corridor. Therefore, the highest potential for this species is within the headwaters corridor of Stack Rock, Wilson, and Andrews Creek where riparian conditions and rock crevice habitat is highest. There is potential habitat impact in proposed harvest areas as the bat may utilize a hollow tree for roosting inside a harvest area.

**Direct Impacts:** Possible direct impacts to individual of Eastern Small-footed Bat are very unlikely because individuals temporarily roost overnight under bark and within hollow trees and logging activities would deter the use by any individuals within the logging area. Furthermore, there is no habitat for the winter hibernation period of Eastern Small-footed Bat within the activity areas.

**Indirect Impacts:** This proposal (Alt. B) may impact potential foraging and summer roosting habitat of the Eastern Small-footed Bat. However, if the bat utilizes a hollow tree for roosting inside a harvest area, Forest Plan standards require two snags or den trees per acre be retained during stand regeneration (page III-23). Dead trees should be >15 inches diameter where they occur and all den trees greater than 22 inches diameter are to be left. Together with the Forest standard of not harvesting trees within the riparian corridor, these Forest standards would greatly reduce the potential for directly affecting this bat species. The highest potential tree species with roosting bark characteristics are white oak and hickory and Alternative B proposes to harvest 88 acres of this forest type or 0.5% of the project area. The project design specifies the species priority for residual tree marking to include white oak and hickory, where they occur. With implementation of these project design features the potential of negative direct impacts to potential habitat will be greatly reduced (<1%) with Alternative B.

Although 58 acres of stands 101 years old or greater with hickory and white oak present are proposed for harvest with Alternative B, that is 2.4% of the older forest community within this AA. Eighty-one percent of the older forest community is found in the north portion of the AA near the rock crevices community. Therefore, there will be minimal indirect effects (<1%) to the Eastern Small-footed bats habitat by the low potential of white oak and hickory tree species being harvested in Alternative B.

### Cumulative Effects

Timber activity, both pre and post 1994 Forest Plan (Amendment 5), had the same standards of snag and den retention and standards to limit cutting with the vicinity of both caves and riparian corridors. The future potential timber activities with Upper Creek, Johns River, and Upper Mulberry AA's will have the same Forest Plan standards. Therefore, past and potential future harvesting, will have the same minimal adverse effects to individuals as Alternative B in this proposal.

The majority of the area's fire history was during the hibernating period of this species, with low intensity fires occurring; resulting in limited suitable snags and den trees being lost to fire within riparian areas. A minimum number of snags and dens would be lost to the potential high fire intensity wildfire with all alternatives. Therefore, negative indirect effects to the bats summer temporary roosting habitat would be minimal (<1%). The SPB epidemic would not affect this species as pine trees do not have a long lifespan as a snag and do not have bark characteristics utilized by bat species. There would be no adverse effects of selecting Alternative A, outside potential impacts of growing season wildfires.

The total cumulative effect would be a minimal adverse direct effect (<1%) on the local population with implementation of Alternative B, minimal adverse indirect effects (<1%) to the species temporary roosting habitat by this areas fire history continuing with either Alternative A or B. Together with the harvesting proposed in Alternative B, the potential future harvest in adjoining analysis will result in minimal (<1%) negative indirect effect to the bats roosting habitat. If private land development on the northeast portion of this AA includes road building, an unknown amount of the rock crevice community and temporary roosting habitat may be lost.

Alternative B, together with past and future foreseeable actions, would not affect the local species population viability and no alternative is likely to cause a trend toward federal listing.

#### Diana Fritillary

This butterfly has been documented within 15 of the 18 western-most counties of North Carolina. Greater than half of the occurrences, more than 40, are known to occur within the Nantahala and Pisgah National Forests. As a result of all the recent documentations for this species, the North Carolina Natural Heritage Program no longer formally tracks Diana fritillary (Legrand et al. 2004). This species is commonly seen utilizing nectar species found along roadsides, streams, and linear grass/forb areas.

**Direct impacts:** There are no known element occurrences of Diana fritillary in the proposed activity areas or wildlife AA. However, habitat does exist and, if Diana fritillary is present, the proposal could impact individuals during the egg or larval season. Individual eggs or larvae may be eliminated by equipment trampling existing violets (host species). Alternative B may impact individuals on <1% of their total suitable habitat.

**Indirect impacts:** The effects of this proposal upon potential habitat may be an indirect impact to Diana fritillary. Alternative B would improve habitat for these nectar species within the early successional habitat plus the edge habitat of the proposed grass/forb habitat. The butterfly would flourish within 0-10 age class areas post-harvest, for up to five years (208 acres) and the edge habitat of grass/forb openings and roads. Eggs and larvae are found on violets within a forested setting where rhododendron is numerous, usually within riparian corridors where the forest floor is moist. There are approximately 6,342 acres of suitable fritillary habitat across these AAs. If Alternative B is selected, approximately 130 acres or 1% of suitable habitat would be regenerated. There would be an increase in nectar species habitat and availability for the short term (5 years) on 130 acres and over the long term (10 years) along the edge of the 6 acres grass/forb with the selection of Alternative B. The following table summarizes the expected effects to the Diana Fritillary:

**Table A-11: Impacts to Diana Fritillary Habitat**

Diana Fritillary Habitat	Existing (Acres)	Alternative B (Acres)
Suitable habitat	6,405	-100 (1%)
Short-term habitat improvement	0	+133 (0.9%)
Long-term habitat improvement	0	6 (<1%)

Alternative B would improve nectar species habitat on 130 acres over the short term and 6 acres of grass/forb habitat over the long term resulting in beneficial (<1%) effect on habitat conditions. Both the beneficial indirect habitat effects (<1%) and the negative direct effects (<1%) would be minimal across the analysis areas.

**Cumulative impacts:** Past timber activity has maintained habitat for nectar species within regenerating stands. Future, foreseeable harvest activities will continue nectar species presence around this AA throughout the planning period (10 Years). It is assumed both activity era's would result in similar minimal negative direct and minimal beneficial indirect effects as the proposed Alternative B. Historic fire, although generally outside the growing season, may have destroyed eggs laid on dead or dying violets. The fires generally occurred outside of riparian areas and at an annual average rate of approximately 200 acres. No effects are known from the present or future use of private lands within this analysis area. The resulting mortality of the SPB epidemic will not affect this species.

Therefore, cumulative effects for all alternatives would be minimal (1%), both negative and beneficial, Alternative B is not likely affect the Fritillary population viability within this analysis area or cause a trend toward federal listing.

### C. EFFECTS/IMPACTS TO REGIONAL FORESTER'S SENSITIVE AQUATIC SPECIES

There were no aquatic TES species found within activity and analysis area surveys within the Old House Gap Project area. However, one sensitive species is included in this analysis because the presence of this habitat for *Macromia margarita* within the Aquatic AA.

Activities within the Old House Gap Timber Activity area will follow the riparian area guidelines along perennial and intermittent streams as stated in the Land and Resources Management Plan (LRMP) for the Nantahala and Pisgah National Forests and NC Best Management Practices. During specific activity area surveys, none of the members of the Sensitive species (*Macromia margarita*) were present, however habitat did exist. Direct impacts to individuals may occur if *Macromia margarita* is present during culvert installation because it could suffer direct mortality during disturbance at stream crossings. Indirect impacts may occur due to this disturbance causing temporary fluctuations in sediment and turbidity downstream.

**Alternative A:** No culverts would be replaced and no road reconstruction or construction would occur. There would be no direct or indirect effects to any Proposed, Endangered, Threatened, or Sensitive aquatic species.

**Alternative B:** There will be 4 temporary crossings (culverts) associated with the implementation of this project. Though no TES aquatic species were found during activity area surveys, habitat

exists thus they were included in the analysis. If present, individuals may be impacted by the placement of culverts in UT 6 and 7 Rockhouse Creek and in UT Cary Flat Branch associated with temporary road construction. Although individuals may be present, there would be no effect to the viability of these species across the Forest as a result of project implementation. Therefore, there would be no effects of the proposed actions for Alternative B to any aquatic TES species.

The following table displays effects determinations for Aquatic TES species:

**Table A-12: Determination of Effect of Each Alternative on the Evaluated Threatened and Endangered, and Sensitive Species**

Species	Alternative A	Alternative B
<b>Federally Threatened and Endangered Species</b>		
None present	N/A	N/A
<b>2002 Region 8 Regional Forester's Sensitive Species List</b>		
<i>Macromia margarita</i> (mountain river cruiser)	No Impact. Existing condition would continue.	*May impact individuals

\*No rare species were found at the crossings in the activity area but they have been included because the species' habitat exists within or immediately below the crossings. Although crossing replacements may impact individuals, implementation would not affect viability across Forest.

The current records for *Macromia margarita* are within larger, more riverine type habitats than what is present within the aquatic activity and analysis areas. Although *Macromia margarita* not been documented in Rockhouse Creek, there is habitat for this species. Therefore, we have considered this species in the analysis. Since the stream crossings are located in small (first order) tributaries, *Macromia margarita* would not be impacted by the project proposal. According to personal communication with Sarah McRae, NC Heritage Program Freshwater Ecologist, the record of *Macromia margarita* for Caldwell County is unclear but most likely is from the lower reaches of Wilson Creek or the Johns River. Based on activity area surveys and habitat preferences, there will be no impacts to *Macromia margarita* as a result from the implementation of the action alternatives.

## VI. PROJECT DESIGN FEATURES

The following project design features will protect wildlife, botanical and aquatic species and/ or their habitat:

1. During timber stand improvement, 4 inch diameter soft mast species of holly, black gum, and dogwood would be maintained to ensure continued production of food utilized by numerous bird species and mammals.
2. Species priority for residual tree designation would be; white oak, red oak, and hickory, where present within harvest stands.
3. All known populations of *Miscanthus sinensis*, *Paulownia tomentosa* and *Ailanthus altissima* should be controlled prior to disturbance activities. *Miscanthus sinensis* was found along Forest Roads. All populations total less than 1 acre. Control of *Miscanthus*

*sinensis*, *Paulownia tomentosa* and *Ailanthus altissima* is most easily and effectively done by the use of herbicide (Glyphosate).

4. If possible, use native plants in wildlife grass/forb improvements and roadside erosion control plants.

## VII. DETERMINATION OF EFFECT

There would be no adverse direct, indirect, or cumulative effects to any T&E plant, aquatic, or wildlife species populations or their habitat by any alternative considered. Consultation with USDI Fish and Wildlife Service is not required.

The Eastern small-footed bat, *Myotis leibii*, is a Regional Forester's S species. With project design features outlined and the greatest amount of preferred rock habitat being located outside the activity area, the potential of adverse direct impacts to individuals would be greatly reduced or less than 1% of the population. There would be an adverse impact to <1% of the habitat within these AAs. In summary, the impacts would be minimal with adverse impacts of <1% of the local population being effected with the implementation of Alternative B, the minimal adverse impact to the local habitat. The cumulative impact within the AAs on this species would be minimal and not affect population viability across the Nantahala and Pisgah National Forest—neither alternative is likely to cause a trend toward federal listing.

The Regional Forester's S species, Diana Fritillary, *Speyeria diana*, is known to occur within the AAs. Alternative B may adversely impact individuals, eggs or larvae, on about 1% of their total suitable habitat. Indirect impacts of harvesting under Alternative B would improve nectar species habitat on 133 acres over the short term and six acres of grass/forb habitat over the long term. Both the beneficial indirect habitat effects (<1%) and the adverse direct effects (<1%) would be minimal across the AAs. Historic wildfire, although generally outside the growing season and riparian areas, may have destroyed eggs laid on dead or dying violets—this adverse direct impact would be minimal with both alternatives. As adverse direct impacts (wildfire) of either alternative would be minimal on this species and Alternative B's actions would result in minimal positive indirect impacts; the local population will not be measurably impacted. Cumulatively the local populations will not be impacted as both the positive and adverse impacts to individuals of this species and its habitat from past, foreseeable future and this proposal will be minimal. Implementation of Alternative B is not likely to cause a trend toward federal listing or a loss of population viability locally or across the Forests.

No other sensitive wildlife, botanical, or aquatic species has been determined to occur within the Forest Plan AAs and therefore would not be impacted by any alternative selected.

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## Attachment 1

### TES Species Known in Avery and Caldwell Counties.

#### Wildlife

The following table lists wildlife TES species found within Avery and Caldwell Counties

**Table A-13: Wildlife TES Species within Avery and Caldwell Counties**

Species	Habitat	Type & Status	Occurrence
<i>Corynorhinus town. Virginianus</i> , VA Big-eared Bat	Caves within forested habitat	Mammal, E	No known caves/mines within activity area.
<i>Myotis leibii</i> Eastern Small-footed Bat	Winter- caves, mines similar habitat Summer- rock crevices and hollow trees	Mammal, S	May forage in the AA
<i>Speyeria diana</i> Diana fritillary	Forages on nectar species within forest openings near streams, larval species forage on violet species near riparian areas with rhododendron	Insect, S	May occur within the AA
<i>Corynorhinus rafinesquii</i> , Rafinesque's Big-eared Bat	Cave dwelling bat, Abandoned building preferred during the summer	Mammal, S	No occurrence record within analysis area .
<i>Glaucomys sabrinus coloratus</i> , Carolina northern flying squirrel	Mature spruce/fir & N. hardwoods, generally above 4000' elevation	Mammal, E	No spruce/fir or N. Hardwoods within activity area.
<i>Clemmys muhlenbergii</i> , Bog turtle	Marshy meadows, large seeps, and bogs	Reptile, T	No habitat within activity areas
<i>Thryomanes bewickii altus</i> , Appalachian Bewick's wren	Brush and fence rows in open country	Bird, S	No occurrence record within Forest Plan AA.
<i>Micotus chrotorrhinus carolinensis</i> , Southern rock vole	Rocky/boulder field within forest	Mammal, S	No occurrence records or habitat within county
<i>Sorex palustris punctulatus</i> , Southern water shrew	12-15' streams and banks with rhododendron in N. hardwood or spruce/fir forests	Mammal, S	No occurrence record in county and no habitat within activity area.
<i>Pallifera hemphilli</i> , Black mantleslug	Acidic & rich coves, spruce/fir forests	Invertebrate, S	None recorded from surveys of activity area
<i>Ventridens coelaxis</i> , Bidentate dome	High elevation wooded hill sides	Invertebrate, S	None recorded from surveys of activity area
<i>Falco peregrinus</i> , Peregrine falcon	High rock cliffs, usually near rivers or lakes	Bird, S	No occurrence record within analysis areas, no habitat within activity area.

Species	Habitat	Type & Status	Occurrence
<i>Haliaeetus leucocephalus</i> , Bald eagle	Mature trees near lakes	Bird, T	No habitat within activity area
<i>Plethodon welleri</i> , Weller's salamander	High elevation acidic forest	Amphibian, S	No occurrence record within analysis area, none recorded from surveys of activity area
<i>Microhexura montivaga</i> , Spruce-fir moss spider	Moss within spruce-fir forest	Invertebrate, E	No occurrence record or habitat within analysis areas
<i>Speyeria idalia</i> , Regal Fritillary	Open, brushy fields	Invertebrate, S	No occurrence record or habitat within analysis areas

## Botanical

The following table lists plant S species of Avery & Caldwell Counties (there are no T&E plant species in either county):

**Table A-14: Botanical S Species within Avery and Caldwell Counties**

Species	Natural Communities	Occurrence*
<i>Abies fraseri</i>	Spruce-Fir Forest, Northern Hardwood Forest	4
<i>Aconitum reclinatum</i>	Rich Cove Forest, Northern Hardwood Forest Elevation Seep Boulderfield Forest	3
<i>Bazzania nudicaulis</i>	Spruce-Fir Forest, High Elevation Rocky Summit	4
<i>Cardamine clematitis</i>	Spruce-Fir Forest, High Elevation Seep Boulderfield Forest	4
<i>Carex manhartii</i>	Rich Cove Forest, Acidic Cove Forest	3
<i>Carex misera</i>	Grassey Bald, High Elevation Rocky Summit Elevation Granitic Dome	4
<i>Carex ruthii</i>	Unknown	4
<i>Chelone cuthertii</i>	Southern Appalachian Bog	4
<i>Coreopsis latifolia</i>	Rich Cove Forest	3
<i>Gentiana austromontana</i>	Grassy Bald	4
<i>Geum geniculatum</i>	Grassy Bald, High Elevation Seep, Spruce-Fir Forest, Northern Hardwood Forest	4
<i>Helianthus glaucophyllus</i>	Rich Cove Forest,	3
<i>Huperzia appalachiana</i>	Grassy Bald	4
<i>Hydrothyria venosa</i>	Acidic Cove Forest	3
<i>Hypericum mitchellianum</i>	High Elevation Balds,	4
<i>Krigia montana</i>	Granitic Domes, High Elevation Rock Outcrop	4
<i>Leptodontium excelsum</i>	Spruce-Fir Forest	4
<i>Lilium grayi</i>	Grassy Bald, Northern Hardwood Forest Appalachian Bog	4
<i>Monotropsis odorata</i>	Chestnut Oak Forest	3
<i>Plagiochila austinii</i>	Spray Cliff, Northern Hardwood Forest, Acidic Cove Forest	3
<i>Plagiochila corniculata</i>	Spruce-Fir Forest	4
<i>Plagiochila sullivantii</i> var. <i>sullivantii</i>	Spruce-Fir Forest	4
<i>Prenanthes roanensis</i>	Grassy Bald, High Elevation Rocky Summit, Northern Hardwood Forest	4
<i>Rhododendron vaseyi</i>	Spruce-Fir Forest, Heath Bald, Grassey Bald	4
<i>Robinia hispida</i> var. <i>fertilis</i>	Northern Hardwood Forest, Acidic Cove Forest, High Elevation Granitic Dome	3
<i>Saxifraga caroliniana</i>	Northern Hardwood Forest, Montane Mafic Cliff, Spray Cliff	4
<i>Sphenolobopsis pearsonii</i>	Spruce-Fir Forest	4
<i>Thermopsis fraxinifolia</i>	Pine-Oak Heath	3

<i>Trillium rugellii</i>	Rich Cove Forest, Alluvial Forest	3
<i>Tsuga caroliniana</i>	Pine-Oak Heath, Chestnut Oak Forest, rock outcrops	3

\*1 = Found in activity area;

2 = Found within botanical analysis area but not activity area;

3 = Possibly found within botanical analysis area (based on broad habitat concepts); or

4 = No known occurrences or habitat known within botanical analysis area, (not further analyzed).

### Aquatic

**Table A-15: Known and Proposed, Threatened and Endangered Species, Sensitive Species, and Forest Concern Species in Avery and Caldwell Counties (those shaded considered further in this analysis)**

Species	Type	Habitat	Occurrence
<b>Federally Threatened and Endangered Species</b> (There are no listed proposed, threatened or endangered aquatic species listed for Avery and Caldwell Counties).			
<b>2002 Region 8 Regional Forester's Sensitive Species List</b>			
<i>Ophiogomphus edmundo</i> (Edmund's snaketail)	Dragonfly	Lotic-fast, clean substrate rivers	Not likely to occur because there is no riverine habitat within the aquatic analysis area.
<i>Macromia margarita</i> (mountain river cruiser)	Dragonfly	Lotic-streams and rivers	May occur in the analysis area but not within the activity area due to small size of streams.
<i>Alasmidonta varicosa</i> (brook floater)	Mussel	Lotic-clean, swift waters with stable gravel, or sand and gravel substrates	Does not occur within activity or analysis areas.

## Definitions

Threatened, or Endangered (T&E) A species that has been listed or is proposed for listing by the United States Fish and Wildlife Service. These species are included in every BE conducted for projects where the species is known to, likely to, or may occur. These species are also included in projects where the species occurred historically but hasn't been found during recent surveys.

Sensitive species (S) A species appearing on the Regional Forester's Sensitive Species List for the Southern Region (August 7, 2001). These species are included in every BE conducted for projects within an area where the species is known to, likely to, or may occur.

Known to occur Species in which there are records that they exist within a specified area, or it was found in the area during project specific surveys.

Likely to occur Species in which there is no documentation of the species occurring in a specified area but are expected to occur based on documentation of very similar habitat to known populations. For purposes of the BE, it should be assumed that the species does occur in specified area until presence/absence of the species is verified.

May (could) occur Species probably occurs in a specified area in the broadest sense. Only very general habitat preferences and species distribution are used to determine if a species may occur. This does not imply their existence in an area, but that their general habitat description is found in the area, so therefore the species may occur. See the attached resource reports for "may occur".

Forest Plan Analysis Area (AA) 4<sup>th</sup> order watersheds as determined by the Forest Plan.

Biological Analysis Area The maximum geographic boundary where cumulative biological effects of analyses from past, present, and reasonably foreseeable actions are expected to be combined with effects from the proposal. Analysis areas are specific to individual resources and may be different boundaries. For the Shadline project, the wildlife biological AA is Forest Plan AAs 13 (Rich Mountain and Mill Ridge) and 14 (Polecat); the botanical biological AA is Compartments 420, 421, 422, 423, 424, 425, 426, 428, and 429; and the aquatic biological AA is the Forest Plan AAs

Management Area Forest Plan designated areas with specific management objectives, standards, and guidelines.

Project Area The general location identified by the Responsible Official where actions are proposed.

Activity Area The geographic boundary where direct effects of the proposal would specifically occur, i.e. specific timber stands, haul routes, temporary roads, linear wildlife fields, trails, prescribed fire, areas where invasive exotic species would be treated, etc. and would change by alternative.

Coldwater Streams Are usually defined as those with maximum temperatures of 68 degrees F or less. In North Carolina, these streams are largely ground-water fed, have relatively stable flows and generally elevations of 1,100 feet or more. They have gradients that are steep with stable banks. Boulder-rubble dominates their bottoms, and their turbidity is low. Productivity is usually limited.

Coolwater Streams Represent the transitional community between coldwater streams and warmwater streams. Components of the community may include elements of both coldwater and warmwater habitats.

Warmwater Streams Are characterized by having annual maximum temperatures greater than 68 degrees F.

## **APPENDIX B – AGE CLASS DISTRIBUTION**

## **APPENDIX B – AGE-CLASS DISTRIBUTION**

Forest vegetation within the Old House Gap project area consists of upland and cove hardwood species such as oaks, yellow poplar, hickories, red maple, black gum, and black locust. White pine, pitch pine, shortleaf pine, and hemlock occur in varying degrees throughout the area. Understory vegetation includes rhododendron, mountain laurel, red maple, white pine, hemlock, blackgum, sourwood and various other shrubs and herbs. Most overstory oaks are scarlet oak or chestnut oak with areas of white oak, black oak and northern red oak.

Within the Anthony Creek AA, approximately 87 percent of forested acres are 71 years old or older. Less than 1 percent is in the 0-10 year age-class, and 4 percent is in the 11-20 year age-class. Within the Upper Wilson Creek AA, approximately 94 percent of forested acres are 71 years old or older. There is no acreage in the 0-10 year age-class, and only 3 percent is in the 11-20 year age-class. Within the 3,372 acre project area, approximately 94 percent of forested acres are 71 years old or older. Zero percent is in the 0-10 year age-class, and only 5 percent is in the 11-20 year age-class.

This age-class distribution is very unbalanced for MA 3B where sustainable timber harvest and provision of young forest is emphasized (Forest Plan, page III-71). The age-class distribution is also unbalanced for MA 4A where timber harvests are utilized to provide a wide variety of tree ages and wildlife habitat (Forest Plan, page III-77).

This analysis determines the minimum and maximum harvest levels for the project area according to the Forest Plan. Only alternative B would help to balance the age-class distribution. Alternative B would result in bringing the 0-10 year age-class in the project area up to 4 percent in 2006. The resulting sum of 0-10 and 11-20 year age-classes would be approximately 9 percent. All stands proposed for harvest are from 86 to 114 years old.

### **Forest Plan Direction For Distribution Of Early Successional Habitat**

The Forest Plan contains specific desired conditions for the amount of 0-10 year age-class in management areas with timber production (Forest Plan, pages III, 29-31). Regulation is at three scales: the analysis area or topographic level; the management area within the analysis area or topographic area; and the compartments within the area. The tables below summarize the existing 0-10 year age-class and regeneration goals for these areas and for the Old House Gap project compartments within each analysis area. Uncut inclusions and non-forested areas are not considered as 0-10 year old regeneration.

### **Old House Gap Compartments 50, 51, 70, 77**

For every AA with at least 250 acres in MAs 1B, 2A, 3B, 4A and/or 4D, the number of acres in each management area is multiplied by the maximum percent allowed and then summed to determine the amount of 0-10 year age-class allowed in the analysis area, or 476 acres in Anthony Creek and 364 acres in Upper Wilson Creek.

For every management area with at least 250 acres in the analysis area, the amount of 0-10 year age-class allowed in the management area is calculated by multiplying the number of acres in each management area in the analysis area by the maximum percent allowed. Each result is the amount of 0-10 year age-class allowed in that management area. In Anthony Creek there is a maximum of 410 acres allowed in MAs 1B and 3B and 66 acres in MAs 4A and 4D (Table B-1). In Upper Wilson Creek there is a maximum of 364 acres allowed in MAs 4A and 4D (Table B-2).

**Table B-1: Forest Plan Allowed 0-10 Year Age-Class for Anthony Creek AA**

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	2,730	137	410	0	137	410
2A	0	-	-	-	-	-
4A & 4D	657	0	66	39	0	27
Other	3,646	-	-	-	-	-
<b>Total</b>	<b>7,033</b>	<b>137</b>	<b>476</b>	<b>39</b>	<b>137</b>	<b>437</b>

Summary: In Anthony Creek, harvest 137 to 410 acres in MA 1B and 3B and harvest 0 to 27 acres in MAs 4A and 4D.

**Table B-2: Forest Plan Allowed 0-10 Year Age-Class for Upper Wilson Creek AA**

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	0	-	-	-	-	-
2A	0	-	-	-	-	-
4A & 4D	3,635	0	364	0	0	364
Other	4,844	-	-	-	-	-
<b>Total</b>	<b>8,479</b>	<b>0</b>	<b>364</b>	<b>0</b>	<b>0</b>	<b>364</b>

Summary: In Upper Wilson Creek, harvest 0 to 364 acres in MAs 4A and 4D.

For every compartment with at least 250 acres in MAs 1B, 2A, 3B, 4A, and/or 4D, the amount of 0-10 year age-class allowed in each compartment is calculated by determining which of the MA's has the most acres in the compartment (1B, 3B, 2A, 4A, or 4D). If MAs 1B and 3B have the most, then the maximum allowed in the 0-10 year age-class is 15 percent of all acres in the compartment. If MAs 2A, 4A, or 4D have the most acres, then the maximum amount allowed in the 0-10 year age-class is 10 percent of all acres in the compartment. The following tables display the age-class by compartment and Forest Plan standards (harvest goals):

**Table B-3: Anthony Creek AA, Compartment 50, 0-10 Year Age-Class**

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	569	35	104	0	35	104
2A	0					
4A & 4D	0					
Other	121					
<b>Total</b>	<b>690</b>	<b>35</b>	<b>104</b>	<b>0</b>	<b>35</b>	<b>104</b>

Summary: In Compartment 50, harvest 35 to 104 acres in MAs 1A, 2A, 3B, 4A and 4D.

**Table B-4: Anthony Creek AA, Compartment 51, 0-10 Year Age-Class**

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	1288	70	210	0	70	210
2A	0					
4A & 4D	0					
Other	113					
<b>Total</b>	<b>1,401</b>	<b>70</b>	<b>210</b>	<b>0</b>	<b>70</b>	<b>210</b>

Summary: In Compartment 51, harvest 70 to 210 acres in MAs 1A, 2A, 3B, 4A and 4D.

**Table B-5: Upper Wilson Creek AA, Compartment 70, 0-10 Year Age-Class**

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	0					
2A	0					
4A & 4D	201	0	201	0	0	201
Other	402					
<b>Total</b>	<b>603</b>	<b>0</b>	<b>201</b>	<b>0</b>	<b>0</b>	<b>201</b>

Summary: In Compartment 70, harvest 0 to 201 acres in MAs 1A, 2A, 3B, 4A and 4D.

**Table B-6: Upper Wilson Creek AA, Compartment 77, 0-10 Year Age-Class**

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	0					
2A	0					
4A & 4D	648	0	68	0	0	68
Other	30					
<b>Total</b>	<b>678</b>	<b>0</b>	<b>68</b>	<b>0</b>	<b>0</b>	<b>68</b>

Summary: In Compartment 77, harvest 0 to 68 acres in MAs 1A, 2A, 3B, 4A and 4D.

## **APPENDIX C – OLD GROWTH ANALYSIS**

## APPENDIX C – OLD GROWTH ANALYSIS

### Forest Plan Direction for Old Growth

The Forest Plan contains specific directions for designating large, medium, and small old growth restoration patches (Forest Plan, pages III 26-28). The administrative watersheds affected by this project are 59 (Wilson Creek) and 60 (Johns River). The requirements for this project are as follows: (1) utilize large patch 24 in the Anthony Creek AA; (2) select and designate a medium patch in the Upper Wilson Creek AA; (3) select and designate small patches for compartments 70 and 77 and utilize existing small patches for compartments 50 and 51; and (4) field check stands in the initial inventory of old growth that would be directly affected by this project.

The purpose of the **large patches** is to serve as permanent reservoirs of biological diversity and to provide preferred habitats for forest interior birds across the landscape.

**Large Patch 24:** Approximately 5,900 contiguous acres with 442 located within the Anthony Creek AA.

The purpose of the **medium patches** is to serve as permanent reservoirs of biological diversity. Alternative B would designate the following adjoining areas (an estimated 424 acres) as medium patch old growth in compartment 68:

**Table C-2: Medium Old Growth Patch in the Upper Wilson Creek AA**

Comp.	Stand No.	Est. Acres	CISC Age in 2006	Initial Inv.?	Community Type
68	09	20	80	No	Cove Forest
	10	39	80	No	Oak/Hickory Forest
	11	66	80	No	Cove Forest
	12	52	80	No	Oak/Hickory Forest
	13	60	80	No	Oak/Hickory Forest
	14 (partial)	7	80	No	Oak Forest
	18	15	80	No	Cove Forest
	19	34	80	No	Cove Forest
	20	29	80	No	Cove Forest
	25	40	80	No	Cove Forest
	31	62	80	No	Oak/Hickory Forest

The purpose of the **small patches** is to increase biological diversity and to provide structural components of old growth at the stand and landscape levels. Alternative B would designate the following areas as small patches:

**Table C-3: Small Old Growth Patches in the Upper Wilson Creek and Anthony Creek AA's**

Comp.	Min. Acres	Stand No.	Est. Acres	CISC Age in 2006	Initial Inv.?	Community Type
70	50	02 (partial)	8	97	No	Cove Forest
		07	42	80	No	Hemlock Forest
77	50	7	30	89	No	Oak/Hickory Forest
		09 (partial)	20	114	Yes	Oak/Hickory Forest

### **Initial Inventory of Old Growth**

None of the treatments are proposed in areas included in the initial inventory of old growth, so there would be no impacts to those acres.

### **Forest Plan Direction for Forest Interior Birds**

The Forest Plan contains specific directions for providing preferred habitat conditions for forest interior breeding birds in selected areas (see Forest Plan, page III-32 and Appendix F). Forest Interior Breeding Bird Habitat #36 is adjacent to the Old House Gap project Upper Wilson Creek analysis area, and would not be affected by this proposal.

## **APPENDIX D – APPROPRIATENESS OF HARVEST METHODS**

## APPENDIX D – APPROPRIATENESS OF HARVEST METHODS

Regeneration methods were discussed at length in Appendix E of the FEIS for the Forest Plan, and on pages E-1 and E-2 Forest Plan, Amendment 5. Choices include shelterwood cutting and clearcutting (even-aged management system), two-age (two-aged system), and group selection (uneven-aged system). At this time, single-tree selection (uneven-aged management) is not being considered as appropriate in meeting long-term regeneration needs to sustain productive stands of desirable tree species except in northern hardwood (beech-birch-sugar maple) or hemlock stands (all shade tolerant species). This is because regeneration objectives would not be met and single-tree selection does not work with shade intolerant species as occur in the Upper Wilson Creek and Anthony Creek AAs. Thinning and sanitation cutting may also occur, but they are intermediate treatments not meant to establish regeneration.

With any method, there must be enough quantity and quality of timber to be removed to make a sale operable, i.e. economically feasible to log at a given stumpage price (stumpage is the price paid for standing timber). The minimum quantity would generally be three thousand board feet of sawtimber per acre, although markets may develop for lower value products. Sawtimber would be defined as trees that are large enough, free enough of defects, and of commercially valuable species which could be sawed into grade 3 or better lumber. Some species like scarlet oak seldom contain any grade 3 logs because of defect. Other species like sourwood seldom reach large enough diameter to become sawtimber. Changes in markets may change operability standards in a local area as well as affecting stumpage price.

Operability and stumpage price are also affected by transportation cost, logging cost, and size of the area being logged. Costs of getting logs from the sale area to the mill are higher for timber in remote areas, where haul roads must be built, or for timber logged with specialized logging equipment, e.g. with cable systems or with a helicopter. As costs increase, prospective timber purchasers lower their bid prices on stumpage to compensate. If the price they can pay becomes less than the minimum acceptable stumpage price, the timber becomes inoperable (no one would buy it).

Each logging crew, depending on the size of their operation and the value of the timber to be logged, would have a minimum amount of timber that would be economical for them to move in and cut. For instance, in a given stand, it might be economical for a given logging crew to harvest a clearcut as small as 10 acres to obtain 50 MBF. If group selection is chosen, where only about 25 percent of the area is regenerated per entry, 40 acres would be needed to provide the crew with the same amount of sawtimber. Therefore, operability becomes an important factor in determining which regeneration methods are appropriate.

Much concern has been expressed over clearcutting as a management tool. In compliance with recent direction, other regeneration methods would be used when management objectives can be met and when the other methods are economically feasible. In a memo to Regional Foresters dated June 4, 1992, the Chief of the Forest Service stated that *Clearcutting would be limited to areas where it is essential to meet forest plan objectives and involve one or more of the following circumstances:*

1. *To establish, enhance, or maintain habitat for threatened, endangered, or sensitive species.*

2. *To enhance wildlife habitat or water yield values, or to provide for recreation, scenic vistas, utility lines, road corridors, facility sites, reservoirs, or similar development.*
3. *To rehabilitate lands adversely impacted by events such as fires, windstorms, or insect or disease infestations.*
4. *To preclude or minimize the occurrence of potentially adverse impacts or insect or disease infestations, windthrow, logging damage, or other factors affecting forest health.*
5. *To provide for the establishment and growth of desired trees or other vegetative species that are shade intolerant.*
6. *To rehabilitate poorly stocked stands due to past management practices or natural events.*
7. *To meet research needs.*

These circumstances would be referred to on a site-specific basis when showing that clearcutting is optimum for a given stand.

Regeneration using the **group selection** method is appropriate where slopes are gentle enough to allow ground skidding of timber (logging costs are relatively low) and where there is enough volume and value in the stands to make selection cutting operable. Group selection is not appropriate in very small stands, on slopes greater than 40 percent where cable logging is required, where timber volume or value is low, or in stands where insect or disease hazards are high and widespread. It is also not appropriate where partial cutting and leaving a white pine seed source would result in conversion of mixed pine/hardwood stands to almost pure pine stands, if the accompanying long-term loss of mast production would be detrimental to local wildlife populations.

The **shelterwood** method of regeneration has been traditionally used where a residual seed source was needed for stand establishment or where new seedlings developed best with partial shade or protection from exposure. In the Appalachian Mountain region, seed from reserve trees (or "leave trees") are usually not needed to establish a new stand, but visual concerns often make shelterwood desirable. Leave trees must be those that would not likely be windthrown after having the adjacent trees cut. The residual overstory of a new shelterwood cut would look more park-like with the biggest and best trees evenly distributed across the landscape, rather than having a denuded appearance like a fresh clearcut might have. Regeneration would become established under the residual overstory. Then, at some later time depending on objectives, all or part of the overstory may be removed so it would not hinder further growth and development of the new stand. Some damage to the regeneration would occur during the overstory removal. Shelterwood is not appropriate on slopes greater than 40 percent where cable logging is required unless timber volume and values are very high. Shelterwood is not appropriate in stands where leaving an overstory would make the stands inoperable, or in stands where insect or disease hazards are high and widespread. It is also not appropriate where partial cutting and leaving a white pine seed source would result in conversion of mixed pine/hardwood stands to almost pure pine stands, if the accompanying long-term loss of mast production would be detrimental to local wildlife populations.

The **two-age** regeneration method is similar to shelterwood except that overstory removal is deferred indefinitely or until another two-age cut can be done. This perpetuates at least two distinct ages of timber growing on the same site. Since leave trees do not have to support another operable sale, they do not have to be merchantable and not as many have to be left. The type of leave trees retained would depend on site-specific objectives. Basal area of leave

trees should not exceed 20-30 sq ft/acre fifteen years after harvest so they would not hinder further growth and development of the new stand. More than one harvest entry may be used to reduce basal area to this level. For example, a shelterwood removal could reduce basal area from 50 sq ft/ac to 15 sq ft/ac, thus perpetuating a two-aged stand. The two-age method is appropriate in operable stands on slopes less than 40 percent whenever there are enough leave trees that would live to be a part of the stand for 50-100 years into the future. Two-age could be appropriate to meet objectives other than timber production, e.g. if continuous acorn production is needed within a stand, or if den trees are scarce, or if aesthetics is a consideration. Two-age would be appropriate on slopes greater than 40 percent if timber value is high enough to offset increased costs of selective logging with cable systems, and if visual concerns or wildlife habitat objectives cannot be met by clearcutting. Two-age is not appropriate in stands where leaving an overstory would make the stands inoperable, or in stands where insect or disease hazards are high and widespread.

The following table describes factors to be considered in determining appropriateness of regeneration methods for each stand:

**Table D-1: Factors Considered in Determining Appropriate Regeneration Methods**

Compt. - Stand	Est. Acres	Vol./ac (MBF)	1/ Timber Quality	2/ Leave Trees	3/ Future Removal	4/ Access	5/ Special Concerns
50-13	30	10.0	Med-High	Spotty	No	Good	WL, Vis
51-06							
51-24	10	10.0	Med-High	Spotty	No	Good	WL, Vis
70-14	20	8.0	Med-High	Spotty	No	Good	WL, Vis
77-01	28	13.0	High	Spotty	No	Good	WL, Vis
77-03	30	9.0	Med-High	Spotty	No	Good	WL, Vis
77-10	15	8.0	Med-High	Spotty	No	Fair	WL, Vis
WP rem.	3	12.0	High	Spotty	No	Good	WL, Vis

1/ Timber Quality:	Very High	= Northern Red Oak, White Oak, Black Cherry;
	High	= Large White Pine, Yellow-poplar;
	Medium	= Small Diameter Sawtimber, Mixed Oak;
	Low	= Small Roundwood, Scarlet Oak, Yellow Pine.
2/ Leave Trees:	Yes	= Well distributed, long-lived, meet objectives;
	Spotty	= Available in clumps; not well distributed;
	No	= Scarce, scattered, or high mortality risk.
3/ Future Removal:	Yes	= Potential for operable removal of overstory;
	No	= Removal would not be operable within 10 years;
4/ Access:	Cable	= Slopes >40 percent require cable logging systems.
	Good	= Less than 0.5 mile from existing haul road;
	Fair	= 0.5-1.0 mile from existing haul road;
	Poor	= Greater than 1.0 mile from existing haul road.
5/ Special Concerns:	Conversion	= Risk that oak component be lost to pine; (Conv)
	Wildlife	= Modify to provide needs for wildlife; (WL)
	Visual	= Modify to mitigate aesthetic concerns; (Vis)
	Insect/Disease	= High risk of loss due to SPB and/or loss due to oak decline. (I/D)

The following table summarizes appropriate regeneration methods for each stand and what is proposed in each alternative:

**Table D-2: Appropriate Regeneration Method by Stand by Alternative**

Compt.-Stand	Acres	Forest Type	Age	Method Of Logging	Selection (groups <1 ac)		Shelter-wood BA <sup>1</sup> 30-50		Two-Age BA 20-30		Clearcut w/ Reserve Trees	
					Alt. B	Alt. C	Alt. B	Alt. C	Alt. B	Alt. C	Alt. B	Alt. C
50-13	30	Up. Hwd.	86	Cable					Yes	Yes	Yes	Yes
51-06												
51-24	10	Up. Hwd-WP	91	Skidder					Yes	Yes	Yes	Yes
70-14	20	Up. Hwd.	96	Skidder					Yes	Yes	Yes	Yes
77-01	28	Up. Hwd.	114	Cable					Yes	Yes	Yes	Yes
77-03	30	Up. Hwd.	111	Cable					Yes	Yes	Yes	Yes
77-10	15	Up. Hwd.	114	Cable					Yes	Yes	Yes	Yes
50-17 WP rem.	3	WP-Up. Hwd.	96	Skidder								

1 – Basal Area (BA)

#### **Stands 50-13, 51-06, 77-01, 77-03 and 77-10**

Since slopes are steeper than 40 percent in these stands, cable logging systems are needed to limit soil exposure. Topography precludes the use of selection cutting. Timber volume is too low in these stands to allow leaving enough merchantable trees as “overwood” to make a future cable removal cut operable, so shelterwood is not appropriate. There is adequate timber value in the stands to cover the increased cost of leaving and logging around a few leave trees per acre; therefore, two-age harvest would be appropriate. Clearcutting would be appropriate for providing regeneration, but since the same objectives can be met with two-age, clearcutting is not the optimum method. The added expense of two-age system is warranted by wildlife habitat needs in these stands.

#### **Stands 51-24 and 70-14**

These stands are located on relatively gentle slopes and all have good accessibility. However, available leave trees are not well distributed and/or stand sizes are relatively small. The small size and medium timber volume would make a future removal cut inoperable; therefore, shelterwood is not appropriate. The two-age method would be appropriate if small diameter trees are included as leave trees, and if good distribution of leave trees is not critical. In addition, many of these stands contain a significant component of mature scarlet oaks and leaving these trees in a shelterwood or thinning would result in heavy mortality losses due to wind throw, insect infestations, or disease. The added expense of the two-age system is warranted by wildlife habitat needs or aesthetic concerns in these stands. There are pockets of other tree species, which have the capacity to increase in size and value. Where white pines are left in any partial cut, thick establishment of white pine natural regeneration would occur in openings. Most of the stands contain an overstory white pine component and this would result in a reduction of the hardwood component, which would affect mast production in the long run. Therefore, a two-age cut leaving mostly hardwoods would meet wildlife objectives better than thinning or

shelterwood. Clearcutting would be appropriate for providing regeneration, but since the same objectives can be met with two-age, clearcutting is not the optimum method.

## **Timber Cutting Methods Considered**

The following is a list of timber cutting methods which were considered in this analysis. A brief description is provided to help the reader understand these terms as they are used in this document:

### **Cutting for Even-aged or Two-aged Regeneration**

#### Clearcutting

Clearcutting is the removal, in a single cutting, of older trees to establish a new stand of trees in a fully exposed microclimate. All merchantable trees on an area are harvested, and remaining trees are cut or killed in site preparation. This method would be used only when no other method is feasible.

#### Shelterwood Cutting

Similar to clearcutting, except some overstory trees are temporarily left well distributed across an area to accomplish some objective. Usually 20-40 sq ft/acre of basal area is left. Depending on diameter, this could be between 10 and 50 trees per acre (fewer large trees are required to reach a given basal area). Normally, only healthy, windfirm trees are left as overwood. After a time, usually within 10 years, the overwood is removed by logging or by other means so that it does not impede development of the younger trees that were established after the shelterwood cut.

#### Two-Age Cutting

Similar to shelterwood cutting except fewer overstory trees are left in place, and they are not subsequently removed, so that two distinct ages of trees are maintained on the same site. Trees left as overwood should be long-lived since they may be expected to live 120 years or more (Beck 1986).

### **Cutting to Establish Regeneration and Maintain at Least 3 Ages in an Area**

#### Group Selection Cutting

Group selection cutting is cutting small areas between 0.2 and 1.0 acre each, distributed over a large area, with the intent over time to establish three or more distinct age-classes. Width of an individual opening would be 1.5 - 2 times the height of trees adjacent to the opening. Small trees having good growth potential may be left standing within openings, and priority for openings would be where mature timber occurs. The number of openings would depend on the size of the area where selection would be used, the frequency of timber sale entry, and the desired age of the oldest trees. Intermediate harvests to improve the condition of the residual stand or to establish advance regeneration may be done between openings when needed.

### **Cutting to Anticipate Mortality and Improve the Growth and Vigor of the Remaining Trees without Regard for the Establishment of Regeneration**

#### Free Thinning

Cutting trees that are diseased or damaged, suppressed by other trees, or that are crowding other trees. The best trees in terms of species, size or quality are left to grow. Some minimum basal area is usually set using this type of timber stand improvement.

#### Sanitation Thinning

Sanitation thinning is cutting trees that have been attacked or appear in imminent danger of attack from injurious agents (such as disease or insects) other than competition between trees. The best trees in terms of species or vigor are left to grow. No minimum basal area is set using this type of timber stand improvement.

Selection Thinning

Cutting the larger trees in an area to improve the growth of the remaining trees, but leaving enough desirable, healthy trees to recapture the potential of the site and develop into larger merchantable trees themselves in a reasonable time. This may be done with yellow-poplar on a good site, but only once during a rotation (Beck 1988).

**Other Terms Used**

Advance Reproduction

Young trees, usually seedlings and saplings, growing in the understory of existing stands.

Rotation

The time between regeneration and final harvest.

Stand

A community of trees sufficiently uniform in composition, age, site productivity, spatial arrangement, or condition to be distinguishable from adjacent communities, thereby forming a silvicultural or management entity.

## **APPENDIX E – FINANCIAL EFFICIENCY**

## APPENDIX E – FINANCIAL EFFICIENCY

### Purpose

The purpose of a financial efficiency analysis is to present the estimated costs and revenues of the alternatives considered in the EA for the proposed timber sale and associated activities. Forest Service policy requires a financial efficiency analysis be prepared for timber sale proposals expected to exceed \$100,000 in value (Forest Service Manual 2432.12).

### Assumptions

For the purpose of this analysis, the following assumptions would apply:

1. Discount Rate is 4%.
2. Inflation rate is 0% throughout the analysis period (60 years plus).
3. Estimated timber revenues were calculated using the base prices from the Pisgah and Nantahala National Forests 1<sup>st</sup> Quarter Adjustment Sheet for Fiscal Year 2005 issued out of the Forest Supervisor's Office in Asheville, North Carolina.
4. Sale preparation costs and timber harvest administration costs were obtained from budget figures for the 2006 National Forests in North Carolina. Sale/contract preparation costs are approximately \$8.95/CCF and timber harvest administration costs are approximately \$6,000 per year of Sale (generally sale runs 3 years).
5. Reforestation and silvicultural treatment costs were taken from averages of actual contract costs on the Grandfather Ranger District plus an additional 25% to cover district preparation and administration costs.
6. Road construction is estimated at \$90,000/mile and temporary road reconstruction is estimated at \$30,000/mile.
7. A 60-year long-term projection was used to simulate the time for high quality hardwood sawtimber and as per Forest Service Handbook 2409.18, Section 13.05, Long-term Efficiency Analysis.

### Financial Analysis Worksheets

**Table E-1: Sale Revenue Estimates for all Alternatives**

Alternative	Timber Volume (CCF)	Revenues
A	0	\$0
B	3,000	\$158,362

**Table E-2: Sale Cost Estimates – Alternative B**

Activity	Units	Number	Cost/Unit	Total Costs
Silvicultural Exams	Acres	715	\$8.00	\$5,720
Sale/Contract Preparation	CCF	3,000	\$8.95	\$26,850
Sale Administration	Year	3	\$6,000	\$18,000
Road Engineering and Construction	Miles	0	\$90,000	\$0
Temp. Road Engineering and Reconstruction	Miles	1.25	\$30,000	\$37,500
Cable Yarding	CCF	2272	\$17.50	\$39,760
Site Preparation – Herbicide	Acres	133	\$80	\$10,640
<b>TOTAL</b>				<b>\$138,470</b>

**Table E-3: Benefit Cost Ratio – Alternative B**

<b>Year</b>	<b>Discount Factor</b>	<b>Revenue</b>	<b>Cost</b>	<b>PNV</b>	<b>BCR</b>
0	0	\$158,362	\$138,470	\$19,892	1.14
60	0.04	\$6,334	\$5,539	\$795	1.14

### **Salability of Old House Gap Timber Sale**

Salability is determined by accessibility of timber and current markets for timber. Old House Gap project area is mainly accessible from Forest Service Roads 451, 4062, 45 and 4081. Some temporary road construction is necessary to access some units; however road construction costs are estimated to be \$37,500, well below the value of the timber to be removed, which is estimated to be as high as \$158,362. The overall timber quality is medium-high within the proposed sale units. Market for this quality timber is good within western North Carolina. Recent timber sales sold on the Pisgah National Forest show revenues have been higher than estimated, there are no problems anticipated in selling the Old House Gap project timber sale units when offered.

## **APPENDIX F – DESIGN FEATURES FOR HERBICIDE USE**

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## APPENDIX F – DESIGN FEATURES FOR HERBICIDE USE

### Herbicide Application Design Features

1. Herbicides are applied according to labeling information and the site-specific analysis done for projects. This labeling and analysis are used to choose the herbicide, rate, and application method for the site. They are also used to select measures to protect human and wildlife health, non-target vegetation, water, soil, and threatened, endangered, proposed, and sensitive species. Site conditions may require stricter constraints than those on the label, but labeling standards are never relaxed.
2. Only herbicide formulations (active and inert ingredients) and additives registered by EPA and approved by the Forest Service for use on National Forest System lands are applied.
3. Public safety during such uses as viewing, hiking, berry picking, and fuelwood gathering is a priority concern. Method and timing of application are chosen to achieve project objectives while minimizing effects on non-target vegetation and other environmental elements. Selective treatment is preferred over broadcast treatment.
4. Areas are not prescribed burned for at least 30 days after herbicide treatment.
5. A certified pesticide applicator supervises each Forest Service application crew and trains crew members in personal safety, proper handling and application of herbicides, and proper disposal of empty containers.
6. Each Contracting Officer's Representative (COR), who must ensure compliance on contracted herbicide projects, is a certified pesticide applicator. Contract inspectors are trained in herbicide use, handling, and application.
7. Contractors ensure that their workers use proper protective clothing and safety equipment required by labeling for the herbicide and application method.
8. Notice signs (FSH 7109.11) are clearly posted, with special care taken in areas of anticipated visitor use.
9. Triclopyr is not ground-applied within 60 feet of known occupied gray, Virginia big-eared, or Indiana bat habitat. Buffers are clearly marked before treatment so applicators can easily see and avoid them.
10. No herbicide is ground-applied within 60 feet of any known threatened, endangered, proposed, or sensitive plant. Buffers are clearly marked before treatment so applicators can easily see and avoid them.
11. Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells. Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers.
12. No herbicide is ground-applied within 30 horizontal feet of lakes, wetlands, or perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-labeled herbicides) may occur within these buffers only to prevent significant environmental damage such as noxious weed infestations. Buffers are clearly marked before treatment so applicators can easily see and avoid them.
13. During transport, herbicides, additives, and application equipment are secured to prevent tipping or excess jarring and are carried in a part of the vehicle totally isolated from people, food, clothing, and livestock feed.
14. Only the amount of herbicide needed for the day's use is brought to the site. At day's end, all leftover herbicide is returned to storage.

15. Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, open water or wells, or other sensitive areas
16. During use equipment to store, transport, mix, or apply herbicides is inspected daily for leaks.

# OLD HOUSE GAP PROJECT MAPS