

APPENDIX B

Response to Scoping Comments

A. Comments related to the accuracy of the Biological Opinion.

Comment A.1: Gardner finds optimal canopy cover as 80 percent, whereas the BA and BO define optimal canopy cover as 60 percent. Also, the BA uses stand ages for a habitat component rather than canopy cover. This overestimates habitat.

Response: Gardner (1991) evaluated Indiana bat summer roost characteristics around 48 roost trees in Illinois. Most of the roost trees occurred in forested habitats: 32 occurred within closed (80-100%) canopies and 12 within intermediate (30-80%) canopies. Four roost trees were found in non-forested habitats. From this study, it is clear that Indiana bats prefer forests and nearly complete forest canopies for roosting. This study, however, does not provide a quantitative evaluation of preferred canopy cover for foraging because percent forest canopy closure readings were taken only at each roost tree and not in foraging areas.

The BA and BO adopted the canopy cover range of 60-80% as optimal forage habitat after Romme (1995). In Romme's model, optimal Indiana bat habitat consists of areas that are within 0.6 mi. of open water and contain at least 30% forest canopy cover. Within this area, Romme describes optimum roosting habitat in stands with 60-80% canopy cover and optimum foraging habitat in stands with 50-80% canopy cover.

The BA used a combination of stand age and stand condition to estimate canopy cover because of the availability of this data on all stands on the Forest and the difficulty in collecting reliable canopy cover estimates. It was assumed that 40 years of growth would be necessary to develop significant forest canopies. This method probably underestimates, not overestimates, foraging habitat because it is well known that many stands below 40 years in ages have greater than 60% canopy cover.

Comment A.2: Bats do not prefer fragmented habitat. (See Callahan and Gardner). It is not readily understood how adaptable bats are.

Response: There is no suggestion in the BA or BO that bats prefer fragmented habitat. We agree with the Service, that actions allowed in the BO would not result in habitat conditions that would fragment habitat suitable for bats. On the contrary, maps of current and future forest conditions (BA appendix D) show extensive, contiguous areas of suitable and optimal habitat conditions for the Indiana bat. More importantly, no project or combination of projects will decrease Indiana bat habitat suitability by more than 5% in the immediate project area (Term and Condition # 2, BO, pg 68). This will further reduce the impact of fragmentation of Indiana bat habitat across the landscape.

No studies have been completed that identify Indiana bat habitat fragmentation parameters. However it is likely that bats may avoid some fragmentation effects and

barriers between suitable habitat by their ability to forage for great distances. Laval et.al (1976, 1977), Laval and Laval (1980) found maximum forage distance of 1.2 miles for males. Garner et.al (1991) found lactating bat might fly up to 1.5 miles to forage. Indiana bat maternity colony foraging areas have been shown to range from a linear strip of creek vegetation .5 mi. in length (Belwood 1979, Cope et al. 1974, Humphrey. 1977) to a foraging area .75 mi. in length, within which bats flew over a wooded river or around the riverside trees (Cope et al. 1978). In the fall, male Indiana bats tend to roost and forage in upland and ridgetop forests, but may also forage in valley and riparian forest; movements of 1.8-4.2 mi. have been reported in Kentucky and Missouri (Kiser and Elliot 1996, 3D/International 1996, MacGregor, in litt., June 1997). In addition, the greatest amount of bat activity was found to occur along edges between intact forest and cut areas, though rarely next to a large clear-cut (Barclay and Brigham 1998).

Bats have been found to forage and roost in a large variety of habitat conditions ranging from upland forest, old fields, pastures with scattered trees, hog lots, and shelterwood cuts in Kentucky, (USDI Fish and Wildlife Service 1999). These observations suggest that the Indiana bat may be a more adaptable species than previously thought.

Comment A.3: The BO ignores foraging habitat. Laval and others cite a distinct preference for floodplain and upland forested areas with relatively complete canopy closure.

Response: The BO addresses foraging habitat (page 33-34) and concluded that suitable IB foraging habitat is not limited in distribution or abundance across the NFsNC. Based on Continuous Inventory and Stand Condition data, and Forest Inventory plot data, the Forest Service concluded that there is no lack of foraging habitat for Indiana bats on the Nantahala and Pisgah NFs.

We agree that Indiana bats are a forest species and prefer floodplains and upland forested areas. However, because all forests would fall in either a floodplain or upland forest category, more habitat detail is needed to evaluate Indiana bat suitability and provide for their habitat preferences. Therefore the BA, and consequently the Service, used a habitat suitability index that combines habitat components identified by Romme (1995) to evaluate Indiana bat forage and roost habitat suitability on the Forest.

Comment A.4: Due to the lack of numerical take limits, the Forest Service is in violation of this vital ESA provision.

Response: The annual incidental take is stated in numerical terms in the BO on page 64. The annual take of 4,574 acres is the sum of all annual activities estimated by the Forest Service to be implemented in Graham, Macon, Swain, and Cherokee counties during each year from 2000 to 2004. These specific numerical limits are listed, by activity, in Table 15 of the BO.

Take is expressed in acres disturbed to allow a more accurate evaluation of compliance with required limits. In other words, it is easier to measure acres of activities than to locate injured or dead bats and determine their cause of death. Numerical take limits for

bats are identified in the BO on page 64, footnote 13 “Though measuring the actual number of Indiana bats that might be “taken” either by killing, harming, or harassing is virtually impossible, it is estimated that this habitat-disturbance level could impact 25-100 Indiana bats per year (one maternity colony).”

Comment A.5: No studies have been done here, so no one knows what roosting habitat parameters the bats prefer in the southern Appalachians.

Response: We acknowledge the lack of information on Indiana bat specific to the southern Appalachians. However, the BA and BO used the best available scientific information on Indiana bats. This consisted of over 90 articles that included 25 studies relating to Indiana bat roosting habitat parameters that cover the entire range of the species, exclusive of North Carolina.

The Service also acknowledged the lack of information on Indiana bat specific to the southern Appalachians and therefore require in their Terms and Conditions (#7) that the “USFS will continue its Forest Plan monitoring efforts to determine use by Indiana bats...” and “continue monitoring efforts to refine the distribution and abundance of the Indiana bat on the Forest”. Furthermore, “The habitat at identified maternity sites will be characterized and quantified...”. It is also understood that if this monitoring information reveals new insights into Indiana bat management that would conflict with conclusions made in the BA or BO, reinitiating of formal consultation is required (pg 72 BO).

Comment A.6: The amendment makes allowances for protecting only a third of all large snags with exfoliating bark from wind throw, but doesn’t give guidance as to how many protective living trees should be retained.

Response: It is clear that the intent of retaining living trees is to protect snags from wind throw and provide them with partial shade. We agree with the Service that setting more specific guidance is not practical and may not result in better protection of snags. The number of live trees needed to protect snags depends upon too many factors to presuppose at a programmatic level. These factors include: site orientation, size and quality of snags, availability and size of live trees adjacent to snags, and geographic location in regard to weather patterns. These factors are variable and must be evaluated on a site-specific level.

How well we interpret live tree retention for snag protection can be evaluated periodically through monitoring. This required monitoring includes a pre- and post-harvest inventory of Indiana bat habitat components (BO, pg. 67).

Comment A.7: We see a conflict in emphasis on retaining as many snags as “practicable” in timber harvest areas. We recommend this section should address human safety more profoundly.

Response: Human safety is addressed in the BO on page 68. This allows for the removal of snags where they pose a risk to human safety. The BO states that “When standing snags need to be removed between April 15 and October 15 (other than those marked as

unsuitable) because they pose either a safety hazard or a project cannot be relocated, evening checks, mist-netting (per Indiana Bat Recovery Plan protocol), or mist-netting with the Anabat system for bat use shall be conducted by qualified personnel prior to removal.”

Comment A.8: The notion that intermittent streams play a significant role in the ecology of the bat has no basis and has not been justified in the biological opinion. We believe that restricting silvicultural activities to the extent recommended would be counter productive.

Response: Intermittent streams are defined in the Nantahala and Pisgah Land and Resource Plan (FEIS, volume I) as “A stream that flows 30-90 percent of the time in most years, generally only in the wetter streams.” These streams would contain some facultative wetland species and part of the riparian ecosystem. Riparian systems have been found to provide preferred Indiana bat habitat (USDI Fish and Wildlife Service, 1998 - recovery plan). Specifically, Gardner et.al. (1991) identified the significant role that intermittent streams play in the ecology of bats. Gardner found that Indiana bat roosts were generally closer to intermittent streams than perennial streams.

Comment A.9: It seems that the effects analysis in the BO (pg. 42-26) imply that timber harvesting (clear-cut and shelterwood) would be adverse to bat management, but this is not backed by adequate research.

Response: The BO relied on a Forest Service evaluation of potential effects of timber harvest on Indiana bat habitat (BA, pg 33-36). In this analysis, effects of timber harvest on four components of habitat were considered: the number of live 9” dbh potential roost trees, the number of live 16” dbh potential roost trees, canopy cover as it relates to forage quality, and the number of dead 9” dbh potential roost trees (snags). These structures provide roost and forage habitat and are considered the most important habitat components required to support the Indiana bat (Romme 1995). Each component can be evaluated to determine if a stand meets the minimum level considered suitable habitat. It was assumed that stands having suitable levels of all components would provide suitable to optimal Indiana bat roost and forage habitat. It was also assumed that removal of one component or reduction below minimal levels would result in some impact to Indiana bat habitat suitability. In general, impacts increase in proportion to reduction in habitat components.

The BA and BO concluded that thinning, individual tree selection, and group selection may reduce live potential roost trees but not necessarily below minimum habitat suitability levels. Likewise, canopy cover would be reduced but not below minimum habitat suitability levels and dead potential roost trees may actually increase. These activities would therefore maintain forage and roost habitat for the Indiana bat.

The BA and BO concluded that two-aged shelterwood systems may result in the reduction of live, large potential roost trees below Indiana bat suitability levels but would retain sufficient small potential roost trees and sufficient snags. Canopy cover would probably be reduced below 60% and therefore forage habitat would become unsuitable.

These activities would therefore maintain some live and dead tree potential roost trees but would eliminate, at least temporarily, forage habitat.

The BA and BO concluded that clear-cut and traditional shelterwood harvests would reduce live and dead tree potential roost trees and canopy cover below suitable levels for the Indiana bat. These activities would therefore result in the elimination, at least temporarily, of both forage and roost habitat for Indiana bat.

The BA also concludes that continued implementation of the NP Plan may result in indirect effects to Indiana bat through the temporary elimination or degradation of habitat but that this is unlikely to jeopardize the continued existence of the Indiana bat on the Forest or throughout its range.

Comment A.10: Habitat conditions at hibernacula-not summer ecological relationships appear to be the primary factor limiting Indiana bat populations.

Response: We agree that habitat conditions at hibernacula are the primary factor limiting Indiana bat populations. It is well-known that a serious cause of Indiana bat decline has been human disturbance of hibernating bats during the decades of the 1960s through the 1980s. Direct mortality due to human vandalism has also been documented. However, even in areas where hibernacula have been protected, population declines have been recorded. The Indiana bats' maternity range has been changed dramatically from pre-settlement conditions: forest has been fragmented in the upper Midwest, fire has been suppressed, and prairie has been supplanted with agricultural systems. These changes in habitat, not hibernacula, are thought to be one cause of the decline of the species (USDI Fish and Wildlife Service, 1999)

B. The EA must disclose a full range of alternatives.

Comment B.1: The EA must evaluate alternatives to prohibit commercial logging.

Response: There is no record in the Biological Opinion or Biological Assessment that recommends a prohibition on commercial logging in order to protect or recover Indiana bat populations. Based on the best available scientific and commercial data, the FWS opined "that forest management and other activities authorized, funded, or carried out by the NPNF's, in accordance with the Forest Plan for the NPNF's, are not likely to jeopardize the continued existence of the Indiana bat" (BO, p. 55). The forest management activities listed in the BA and BO include timber harvest and regeneration. We recognize that future timber regeneration activities will be conducted with careful consideration for IB habitat. However, we find no reason for total elimination of this use for forest management as it pertains to protection and recovery of Indiana bat.

Comment B.2: The EA must evaluate alternatives to undertake restoration, including road closures.

Response: The forest plan does not compel action, but instead, sets the sideboards for the amount, type and way projects are implemented. The Forest Plan includes goals for restoration; “Rehabilitate ecosystems damaged by indiscriminate logging and fire before Federal acquisition so as to sustain their diversity and productivity” (Forest Plan, p. III-1). Therefore, the agency already has the action forcing goal under NEPA to propose and implement restoration projects.

Comment B.3: The EA must evaluate alternatives to implement conservation measures cited in the BO.

Response: The conservation recommendations listed in the BO (p. 70) are discretionary. Many of the recommendations are current FS practices, such as: “Pursue additional funding and partnership opportunities..”; “...work with landowners, the general public, and other agencies to promote education and information about endangered bats and their conservation” (BO, p.70). For the purpose and need of this amendment, these types of recommendations do not require codification in the Forest Plan at this time.

All conservation recommendations will be considered as we develop a conservation strategy, which is required under the Plan Amendment 10, General Direction 16 (See Appendix A). We believe it is prudent to have the Final Recovery Plan and additional data before developing our conservation strategy.

Comment B.4: We urge you to consider an alternative that would ban the removal of any potential roost tree within the Nantahala and Pisgah national forests.

Response: The BA and BO describe the potential for adverse effects if potential roost trees are removed. However, the proposed action limits the removal of tree with the highest likelihood of occupancy. By retaining standing live trees with more than 25percent exfoliating bark (Standard 14(1)(a)), relevant hickories (Standard 14(1)(b)), standing snags (Standard 14(1)(c)), hollow or cavity trees (Standard 14(1)(d)), we believe potential roosting sites are provided at the site level scale.

Comment B.5: Why not mandate in the LRMP that forest managers follow Romme’s HSI model? Why not make it a requirement that any stand within .6 miles of open water retain 60-80% of its overstory and all snags above 9 inches dbh?

Response: We developed a landscape approach to conserving habitat that no project or combination of projects would decrease habitat suitability index by more than 5 percent (Standard 14(4)(a)). The habitat suitability index includes all HIS factors used by Romme. Estimates in the BA show expected increases of suitable bat habitat of about 10 percent as the forest becomes older over the next 5 years. The intent of Standard 14(4)(a) is to restrict taking all the increase of older forests, so that we will have more bat habitat in 5 years than we have now. We believe this landscape approach, that considers all habitat components, provides adequate recovery opportunities.

The proposed action does require some site level restrictions. For example, it calls for the retention of snags (Standard 14(1)(c)), unless it absolutely must be removed but after careful evaluation and determination of occupancy (Standard 14(3)(c)).

Comment B.6: The proposed amendment should ban salvage logging outright in potential roosting areas.

Response: Timber salvage must meet the requirements of the plan amendment.

Comment B.7: It is important that the Forest Service not be overly restrictive with regard to the full landscape of the N/P Forests. It is not necessary to protect the whole landscape, but rather to place restrictions in areas most likely occupied.

Response: Built into the plan amendment is a timing mechanism (General Direction 14), that imposes requirements for counties listed by the FWS as having summer occurrences or likely occupied summer habitat for Indiana bat. At this time, only 4 counties are affected. If new occurrences are recorded in other counties, the FWS list will expand automatically triggers the expansion of these amendment requirements to the additional counties.

Comment B.8: Given the unknown impacts of logging on Indiana bats, the Forest Service must apply extra prudence and protect all WNC national forests from degradation to protect Indiana bats that will use these areas for recovery habitat, not just the 4 counties.

Response: Alternative C has been added to the environmental analysis to disclose the effects of this suggestion.

C. Survey methods are insufficient to confirm Indiana bat occupancy.

Comment C.1: According to Gannon, mistnetting will not ensure detection of Indiana bat. Anabat should be used in combination with mistnetting.

Response: The proposed action specifies the use of FWS protocols for determining occupancy of habitat. Currently, the protocols are documented in the Draft Recovery Plan. If the Final Recovery Plan specifies other practices, we will follow them.

Our strategy is to use Anabat software along with mistnetting. This procedure was used to find the maternity colony in July, 1999. We expect the Anabat technology will be refined and become more accurate in detecting Indiana bat.

Comment C.2: Without confident survey protocols, conclusions about the occupancy of the species are inaccurate.

Response: We will follow established protocols to verify occupancy of habitat. We also intend to use Anabat as extra measures to determine occupancy.

Comment C.3: We disagree with the amendment's proposal that either surveys be conducted, or that the new RPM standards be implemented. Both should be mandatory, especially since mistnetting or Anabat by themselves are insufficient to detect the presence of the species. How can anyone be confident that harvested areas are not important roosting areas, especially if survey is optional under the plan amendment?

Response: If surveys are not conducted, then the standards require special protection of habitat where the IB are most likely to roost. This would reduce substantially any chance of directly taking the species. We realize this system is not perfect, and, there is a slight but real chance of inadvertent taking of the species, which is our conclusion in our 10/18/1999 Biological Assessment and the reason for the formal consultation with FWS. Subsequently, the FWS issued an incidental take statement with the Biological Opinion. We realize that surveys will not reveal perfect information. However, we have trained biologists in Anabat technology and intend to use this survey method along with mistnetting to enhance the rate of capture for bats. By exceeding the standards for survey protocols, we can provide a reasonable determination of occupancy. Then, if habitat is not occupied, the IB would not be taken by our actions.

D. Comments related to the issues in the scoping notice and environmental effects.

Comment D.1: The long-term sustained yield capacity should not be an issue because federal agencies must act to conserve endangered species at whatever the cost, even if long term sustained yield is sacrificed.

Response: A significant issue with the Forest Plan was the sustainability of timber harvest and supply (FEIS, p. II-3). The sustainability of timber supply was evaluated in context with other multiple uses of the forest, including management of threatened or endangered species. The analysis in the EA provides a check to see if the long-term sustained yield capacity estimates in the plan should be revisited.

Comment D.2: It is not just adverse effects, but protecting the Indiana bat will have a plethora of advantages for other listed species.

Response: The Environmental Assessment will evaluate the beneficial effects of the proposed action for other species.

Comment D.3: The EA must disclose the effect on tree species composition from implementing the standard for intermittent and perennial streams. The cove and upland forests will change to mostly tolerant species.

Response: We have estimated effects of the intermittent and perennial stream standards in the EA.

Comment D.4: The proposed amendment makes no attempt to address perhaps the greatest potential impact to roosting bats within timber sale activity areas: the eviction of

a bat colony from its roosts by noise and other direct disturbances. Prohibiting all mechanized land disturbance from April 15 to October 15 would seem the prudent thing to do.

Response: The direction and standards of the plan amendment are intended to prevent the direct taking of Indiana bat. We recognize the potential for “the inadvertent taking of Indiana bat” (USFS, Biological Assessment, 10/18/1999) , and, therefore the FWS issued an incidental take statement with their Biological Opinion. However, we believe the measures outlined in the amendment provide the necessary precautions to protect the Indiana bat, along with careful implementation.

Comment D5: Terms such as “minimize risk” invites abuse and includes an inherent bias toward actions for extractive purposes. What one manager would call minimizing, another might call high risk.

Response: The term “minimize risk” occurs as a General Direction statement. The interpretation of minimize is provided by the standard, which limits actions to reduce incidental take. Every manager is bound to implement the standard under NFMA.