of the June 25, 2008, final rule goes into effect on August 25, 2008, as scheduled.

We will place the petitions we have received into the docket, and we will consider the arguments made in these petitions about the content of section 40.67(b) along with other comments that we receive. On the basis of the comments we receive and any other information available to the Department, the Department will reconsider section 40.67(b) and may retain, eliminate, or modify it.

Because this action and the decision not to take similar action with respect to section 40.67(i) also completely respond to the parallel petitions to the Federal Railroad Administration (FRA) by some of the same parties, which raise the same issues about the same provisions of part 40, FRA is not taking any separate action on the petitions concerning the implementation of the amendments to 40.67 in the railroad industry.

Issued this 21st day of August, 2008, at Washington, DC.

Jim Swart,

Director, Office of Drug and Alcohol Policy and Compliance.

[FR Doc. E8–19816 Filed 8–22–08; 11:15 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R5–ES–2008–0005; 92220–1113–0000–C6]

RIN 1018–AT37

Endangered and Threatened Wildlife and Plants; Final Rule Removing the Virginia Northern Flying Squirrel (Glaucomys sabrinus fuscus) From the Federal List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), hereby remove the Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*), now more commonly known as the West Virginia northern flying squirrel (WVNFS), from the List of Threatened and Endangered Wildlife due to recovery. This action is based on a review of the best available scientific and commercial data, which indicate that the subspecies is no longer endangered or threatened with extinction, or likely to become so within the foreseeable future. Habitat regeneration and recovery actions have resulted in a reduction in the threats, which has led to: (1) A significant increase in the number of known WVNFS captures and distinct capture locations; (2) verification of multiple-generation reproduction and persistence throughout the range; (3) proven WVNFS resiliency; and (4) substantial improvement and continued expansion of suitable habitat rangewide.

DATES: This rule becomes effective September 25, 2008.

ADDRESSES: Comments and materials we received, as well as supporting documentation used in preparation of this final rule, are available for inspection, by appointment, during normal business hours, at our West Virginia Field Office, 694 Beverly Pike, Elkins, West Virginia 26241. Call (304) 636–6586 to make arrangements.

FOR FURTHER INFORMATION CONTACT: Diane Lynch, Regional Listing Coordinator, Northeast Regional Office, 300 Westgate Center, Hadley, MA 01035 (telephone: 413–253–8628); or Tom Chapman, Field Office Supervisor, or Laura Hill, Assistant Field Supervisor, West Virginia Field Office (see **ADDRESSES**).

SUPPLEMENTARY INFORMATION:

Background

The northern flying squirrel, *Glaucomys sabrinus,* consists of 25 subspecies, including the Virginia northern flying squirrel, *G. s. fuscus.* Miller (1936, p. 143) first described *G. s. fuscus,* based on specimens collected in the Appalachian Mountains of eastern West Virginia. The Virginia northern flying squirrel was listed as endangered under the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*) effective on July 31, 1985 (Service 1985 (50 FR 26999)). However, it was subsequently determined that a more suitable common name for *G. s. fuscus* is the West Virginia northern flying squirrel, due to the majority of the subspecies' range occurring in West Virginia; thus, we refer to *G. s. fuscus* as West Virginia northern flying squirrel (WVNFS) throughout the rest of this document. Information about the WVNFS' life history can be found in our final listing rule (50 FR 26999), the Appalachian Northern Flying Squirrels Recovery Plan (Service 1990, pp. 1–11), and the WVNFS 5-year review (Service 2006a, pp. 6–10).

Previous Federal Actions

On December 19, 2006, we published a proposed rule to delist the WVNFS (71 FR 75924). Additional information regarding previous Federal actions for the WVNFS can be obtained by consulting the subspecies' regulatory profile found at: *http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=A09R.*

Recovery

In 1990, the original recovery plan was approved, and at the time, the recovery criteria as they apply to the WVNFS were deemed objective, measurable, and adequate (Service 1990, p. 19). The original recovery criteria were not specifically reviewed or updated in the 2001 recovery plan amendment (Service 2001, pp. 1–6). Instead, the focus of the 2001 amendment was an update to Appendix A, Guidelines for Habitat Identification and Management for the WVNFS. Implementation of the amended Appendix A guidelines by the Monongahela National Forest (MNF) effectively abated the main threat to the squirrel (i.e., habitat loss from timber management) throughout the majority of its range, by eliminating adverse impacts on all suitable habitat on the MNF without having to prove WVNFS presence (Service 2001, pp. 1–6; Service 2006a, pp. 3–4).

Recovery plans are not regulatory documents and are instead intended to provide guidance to the Service, States, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved. There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may have been exceeded while other criteria may not have been accomplished. In that instance, the Service may judge that, overall, the threats have been minimized sufficiently and the species is robust enough to reclassify the species from endangered to threatened or to delist the species. In other cases, recovery opportunities may have been recognized that were not known at the time the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan. Likewise, information on the species may be learned that was not known at the time the recovery plan was finalized. This new information may change the extent to which criteria need to be met for recognizing recovery of the species. Overall, recovery of species is a dynamic process requiring adaptive management, and judging the degree of recovery of a species is also an adaptive management process that may, or may

not, fully follow the guidance provided in a recovery plan.

In the case of the WVNFS, new information on the subspecies has been learned that was not known at the time the recovery plan and the amendment were finalized. This new information includes habitat modeling efforts completed in 2006, completion of a forest plan amendment in 2006 with substantial provisions for protection of WVNFS and its habitat, our compilation in 2005 of the 20+ years of survey data, and our re-analysis of WVNFS persistence and geographic distribution based upon them. This new information changes the extent to which two of the four Recovery Plan criteria need to be met for recognizing recovery of the subspecies. Further details related to each recovery criterion are available in the Service-prepared document *Analysis of Recovery Criteria for the West Virginia Northern Flying Squirrel* (Service 2007a, pp. 1–16). An attachment to this document, ''Table 3, Land use designations, restrictions, and primary management emphases in WVNFS habitat on the MNF,'' provides supplementary information for downlisting criterion number 3. Based on our analysis of the best available data, we believe that the intents of the original recovery criteria have been met.

In conjunction with the analysis of the recovery criteria, we analyzed the threats to the WVNFS under the framework of the five factors established in the Act. This analysis of the threats was based in part on the most recent 5-year review of the subspecies completed in 2006 (Service 2006a, pp. 1–20). This is available at *http://www.fws.gov/northeast/pdf/flysqrev.pdf.* A further detailed discussion of the five factors is contained in the Summary of Factors Affecting the Species section of this rule below.

Summary of Public Comments

In our proposed rule (71 FR 75924), we requested that all interested parties submit information, data, and comments concerning: (1) Biological, commercial, trade, or other relevant data concerning any threat (or lack thereof) to the WVNFS; (2) additional information on the range, distribution, and population size of the WVNFS and its habitat; (3) the location of any additional populations of the WVNFS; and (4) data on population trends. The comment period was from December 19, 2006, through April 23, 2007 (71 FR 75924; 72 FR 7852; 72 FR 9913).

During the 120-day comment period, we received a total of 4,808 comments. Of these comments, we consider 18 (6 from peer reviewers and 12 from other sources) to be substantive. The majority of comments received were form letters objecting to the proposed delisting rule but providing no new or supporting information.

A. Distribution Concerns

Issue 1—Some commenters asked us to quantify what portion of the historical range is currently occupied by WVNFS.

Response—The historical range of WVNFS essentially corresponds to the distribution of old growth red spruce-northern hardwood forest (500,000 to 600,000 acres (ac)) prior to logging and fires at the turn of the 20th century. Much of the historical red spruce has been replaced by northern hardwoods. Current estimates of the amount of WVNFS habitat vary widely from 242,000 ac (U.S. Department of Agriculture (USDA), Northern Research Station 2006, unpublished map) to 600,000+ ac (Menzel *et al.* 2006b, p. 4), across which the WVNFS is widely dispersed.

Historically, the red spruce-northern hardwood forest encompassed portions of eight counties, extending from the vicinity of Mount Storm (Grant County) in the north, to Cold Knob (Greenbrier County) in the south, east to the Allegheny Front (Pendleton and Highland Counties), and west to Webster County. Based upon monitoring from 1985 to the present, the WVNFS still occupies portions of these same eight counties, roughly corresponding to 85 percent of the extent (breadth and width) of the historical range. With exception of the extreme northern portions of Grant County (roughly 5 percent of the historical range), and the area from Briery Knob south to Cold Knob in Greenbrier County (collectively less than 10 percent of the historical range), the outer boundaries of the current distribution of the WVNFS closely match the extent of its historical range (Service 2007a, Figure 1). Additional information can be found on page 75926 of the proposed delisting rule (71 FR 75924).

B. Population Concerns

Issue 1—Some commenters expressed concern about an absence of population information and trend data. These commenters stated the Service had failed to consider population growth, population size, and linkages to other populations. Some commenters expressed concern about the use of persistence as an indicator of population health or stability and noted that the Service had not clearly defined the term ''persistence.'' The commenters stated that this approach is flawed because it is not tied to knowledge of the population, but merely to subspecies presence, which can be explained by immigration from other populations.

Response—The Service has considered population dynamics when assessing the status of the WVNFS using the best available scientific data. The Service considers persistence to be the best indicator of successfully reproducing populations for this subspecies, given its poor detectability, its life history characteristics, and the 20+ years of data from presence/absence surveys.

We define persistence as continuing captures of WVNFS over multiple generations at previously documented sites throughout the historical range. Because WVNFS first reproduces at 1–2 years, and has a relatively short life span, averaging approximately 3 years, persistence at a single monitoring site over 5 years indicates successful reproduction across multiple (three to five) generations (Service 2007c, p. 10). The Service has analyzed presence/absence data to determine persistence of WVNFS across its range, taking into consideration detectability rates, life span, reproductive capacity, dispersal capability, linkages to other populations, and the naturally patchy habitat distribution of the subspecies (Service 2007c, pp. 5–6, 9–11). These data consistently indicate a relatively high degree of persistence (roughly 80 percent) across the landscape, and are not indicative of a declining population of WVNFS. The data available for the remaining landscape (roughly 20 percent) does not represent an absence or lack of persistence of the WVNFS, but rather is indicative of the WVNFS' life history traits (i.e., elusive and hard to capture). Therefore, the data is simply less conclusive. This remaining landscape (roughly 20 percent) is still habitat for the WVNFS but success rates for capturing the WVNFS are lower. The persistence of WVNFS is likely facilitated by immigration. See *Issues 2, 3,* and *4* and their responses under this section for additional information.

Issue 2—Some commenters believe the Service must conduct a Population Viability Analysis (PVA) to identify a minimum viable population before a decision on delisting the WVNFS is made. These commenters noted that genetics-based computer models of minimum viable population sizes generally indicate that population sizes on the order of thousands of individuals (low thousands or higher) may be needed. In contrast, another commenter submitted a copy of a manuscript by Smith and Person (2007, pp. 626–636) that evaluated the estimated persistence

of a northern flying squirrel subspecies in fragmented habitats in southeast Alaska. This commenter concluded that dispersal likely will be the key to northern flying squirrel population viability, not total population size of individual patches.

Response—A genetics-based computer model to identify minimum population sizes for WVNFS does not currently exist. In our view, there is insufficient information available to support an accurate or credible genetics-based PVA model for WVNFS, and such an analysis would rely upon too many variables whose values would be speculative. Given the nature of the WVNFS life history and habitat information currently available, we believe that estimates of persistence, and an analysis of functional habitat connectivity, are the most credible form of PVA analysis. We therefore have done these analyses using the best available scientific data (for more detail, see Service 2007c, pp. 5–6, 9–11) resulting in evidence of persistence and a high degree of habitat connectivity.

We also have considered the recent work by Smith and Person (2007, pp. 626–636), who developed a birth-death process model to examine persistence of populations of a different northern flying squirrel subspecies in hypothetical, old-growth reserves isolated in managed landscapes in Alaska. We agree with these authors that functional habitat connectivity is more important to WVNFS population viability than total population size rangewide, or population sizes of individual habitat patches (See *Issues 3* and *4* and their responses below).

Issue 3—Some commenters expressed concerns that habitat reserves may be too few, small, degraded, and isolated to support viable populations of WVNFS. These commenters emphasized the importance of functional habitat connectivity.

Response—Within the range of the WVNFS in the central Appalachians, there are numerous patches of high-quality, second-growth red spruce forest, with individual trees that are near maximum size and age, within an almost continuous matrix of more highly variable, second-growth red spruce and northern hardwood forest conditions. The habitat is still relatively well connected from the standpoint of WVNFS movement and does not significantly limit dispersal and movements (Service 2007c, Figure 1). Within the range of the WVNFS, above 3,200 feet (ft), approximately 96 percent of the land is forested (627,237 ac) (USDA Forest Service 2007, unpubl. map). Patch sizes on the MNF also are fairly large and connected by numerous forested linkages, facilitating the likelihood of WVNFS dispersal (Service 2007c, p. 6, Figure 1). For example, radio-tagged male WVNFS and other subspecies of northern flying squirrels have demonstrated an ability to make sudden, long-distance movements, presumably to find females. Some individuals have traveled up to 2 kilometers (1.2 miles) in a night during the mating season, which is from late winter to early spring (Smith 2007a, p. 871; Menzel 2003, p. 77, 117; Terry 2004, p. 18; Weigl *et al.* 1999, pp. 59–62; Weigl *et al.* 2002, p. 37, 145).

Smith and Person (2007) modeled habitat reserve size for northern flying squirrels in Alaska. Habitat reserves must sustain individual insular populations, or the matrix of managed lands between reserves must allow dispersal among reserves to maintain wildlife populations within a metapopulation structure (Smith and Person 2007, p. 633). Out of an abundance of caution, Smith and Person (2007, p. 628) modeled the first scenario to estimate the persistence of northern flying squirrel populations occupying isolated fragments of habitat in a matrix of unsuitable habitat within a large 2-million-ac landscape in Alaska (p. 628).

Lacking conclusive evidence of dispersal, the authors assumed their populations were closed (i.e., no immigration or emigration). They also assumed the habitat was static (i.e., patch size and patch quality are constant over as long as a 100-year period). Neither of these assumptions fits the situation in the central Appalachians where many, if not most, of the habitat patches containing WVNFS are connected by habitat, and through passive and active management, conditions are expected to continue improving. In addition, the authors relied heavily on 3 years of local demographic data and data from a longer-term study in Canada. These demographic data may be dissimilar to those of WVNFS in West Virginia and Virginia. For example, the authors used an estimated average litter size of 2, which is low compared to the WVNFS average litter size of 2.5–3.0 (Reynolds *et al.* 1999, p. 346; Stihler *et al.* 1998, p. 178). Estimated survival rates also may have been low because the value was based on recaptures of tagged individuals, and the lack of a recapture does not mean a squirrel has died.

That said Smith and Person do provide a framework for judging the relative magnitude of patch sizes that may be needed for northern flying squirrel persistence in large forested landscapes. Smith and Person (2007, p. 631, Table 5) estimated that the minimum area of an isolated patch of contiguous habitat to confidently sustain populations for at least 100 years without immigration/emigration was 11,414 ac (4,621 hectares (ha)) (P=0.90). Furthermore, there was a high probability that *G. sabrinus* could persist in smaller (≥245-ac [99-ha]) isolated habitat patches for 25 years without migration (p. 631). Smith and Person (2007, p. 633) concluded that large reserves may not need to be contiguous, because interspersed lower-quality habitats can support northern flying squirrels for a short time and likely facilitate dispersal between patches of higher-quality habitat (Smith and Person 2007, p. 633).

Because of the many assumptions, described above, of this model, which do not transfer well to the central Appalachians, we decided to do a coarse comparison of minimum patch sizes. Because the landscape for WVNFS appears to have a higher degree of functional connectivity than the study area in Alaska, we looked at the total acreages of contiguous and connected suitable habitat within each of seven core areas. [Five ''core areas'' were identified at the time the 1990 recovery plan was written (Service 1990. p. 16) as clusters of capture sites, and are referred to in the plan as Geographical Recovery Areas. Two more clusters were later identified when surveys found additional WVNFSs. Collectively these seven areas (hereafter called ''core areas'') encompass the entire extant distribution of WVNFS.] Out of an abundance of caution, we assumed these seven core areas were geographically separated (no immigration/emigration among them), although this likely is not the case. Using these conservative assumptions, the ''minimum patch size of contiguous habitat'' within each core area ranges from 9,353 ac (3,787 ha) for the smallest core area (Stuart Knob) to 120,484 ac (48,779 ha) for the largest core area (Cheat). Six of the seven core areas exceed the minimum patch size identified by Smith and Person (2007, p. 631) as necessary to confidently sustain populations for at least 100 years without immigration/emigration (11,414 ac or 4,621 ha). Thus we infer that there is adequate habitat for persistence of WVNFS populations within most, if not all, of the core areas.

Whereas habitat conditions in Alaska (small, isolated, old-growth forest fragments in a matrix of unsuitable habitat) are quite dissimilar to those in the central Appalachians (large, well-connected patches of predominantly second-growth forest in a matrix of

suitable habitat), it appears that habitat reserves of sufficient quantity, quality, and connectivity exist to sustain populations of WVNFS with influences of immigration and emigration. This habitat matrix provides a high degree of functional connectivity, as evidenced by persistence over multiple generations at monitoring sites across a range of forest conditions (Service 2007c, pp. 9–11).

Issue 4—Some commenters asked the Service to analyze the viability of WVNFS metapopulations (multiple, relatively isolated breeding units). These commenters cited Weigl (2007, p. 903), who claimed that ''some second growth stands may well appear to support healthy densities of squirrels, but, in reality, are population sinks for migrants from neighboring old growth habitats and thus may not permanently maintain viable populations.'' These commenters suggested the WVNFS may be undergoing a population decline that is influenced by source-sink dynamics of meta-population theory.

Response—In response to this comment, the Service has conducted additional analyses to look for evidence of population sinks and sources in the central Appalachians. We found no evidence that the few remaining old growth patches of habitat in the central Appalachians, or other optimal habitat, are operating as potential sources of WVNFS recruits that disperse into suboptimal habitat (potential sinks) where populations are not sustained. Rather, our analysis of 21 years of monitoring shows no evidence of localized extirpation since the subspecies was listed. The WVNFS persists in or near all of the historical areas where it was originally known at the time of listing. Persistence of WVNFS across the range over multiple generations is consistently high, consistently distributed across habitat types (varying from 70 to 86 percent persistence) and geographic zones (varying from 80 to 85 percent persistence), and not significantly different from expected values (Smith 2007a, p. 871; Service 2007c, p. 11, Table 1). Nestlings and juveniles are routinely documented at monitoring sites (76 percent of sites) (Service 2007c, p. 9). Because WVNFS has a relatively short life span (averaging approximately 3 years), and first reproduces at age 1 or 2, persistence at a single monitoring site over 5 years indicates successful reproduction across multiple (3+) generations. In addition, the observed roughly 1:1 sex ratio (492 males, 539 females) is within the range needed for normal reproductive performance (Service 2007c, p. 11). Males are most likely to disperse, presumably to seek females (Ford 2007a). There is no indication of a predominance of dispersing males or juvenile males, which could be indicative of a meta-population sink dynamic (such as an emigration front of individuals leaving former territory), or of a meta-population source-dynamic (such as a colonizing front of individuals moving into former territory) (Ford 2007a). Collectively, these data show a relatively high degree of population stability and consistent habitat occupancy across multiple generations.

Issue 5—Some commenters noted that the chance of capturing a WVNFS in a nest box is confounded by a very low rate of occupancy, plasticity in nest site selection, availability of nest sites, and relative abundance of WVNFS. These commenters state that it is as important to understand why an individual is present as to understand why it is not present. They state that a major caveat of relying on the nest box data as a measure of persistence is that it does not tell us anything about the habitat, and that it is impossible to infer what is optimal habitat and if it is available and can support the WVNFS.

Response—The Service agrees that all of the factors mentioned above affect the chance of capturing a WVNFS; however, we disagree about inferences that can be drawn from persistence data. Continued persistence of WVNFS over the past century and occupation throughout most of its historical range tell us much about habitat and indicate that sufficient quality and quantity of habitat exists regardless of what may be perceived as ''optimal'' habitat. Therefore, a strong inference can be made regarding habitat suitability based on the persistence, successful reproduction, and sex ratios that lack any indication of population sink dynamics (Service 2007c, pp 11, Table 1).

Issue 6—Some commenters cited a paper by Weigl (2007, p. 900) as evidence that the WVNFS may have a longer life span than previously assumed. These commenters suggested that if this is true, then the Service may need to reanalyze reproductive data and conclusions about persistence.

Response—Weigl (2007, p. 900) referred to a study of a different *G. sabrinus* subspecies in the Pacific Northwest as evidence that WVNFS may be relatively long lived. In this study, three squirrels were known to be at least 7 years old at recapture; however, the majority of squirrels captured were not known to survive beyond 2–3 years (Villa *et al.* 1999, p.39). In the central Appalachians, recapture data for four WVNFS suggest the average lifespan is probably about 2 to 3 years (West Virginia Division of Natural Resources (WVDNR) and Service 2006, unpubl. data). Wells-Gosling and Heaney (1984, p. 4) also noted the average longevity of *G. sabrinus* was probably less than 4 years. Our previous conclusions about persistence remain valid based upon an average lifespan of 2–3 years.

C. Using the Best Available Science

Issue 1—Some commenters were concerned about a lack of knowledge of the WVNFS life cycle and the consideration of science regarding the subspecies' ecology.

Response—The WVNFS life cycle and ecology is fairly well known from numerous studies in peer-reviewed journals, books, and technical publications. The Service has considered the best available scientific and commercial data regarding WVNFS life history and ecology. For a full list of the literature cited in this final rule, please contact the West Virginia Field Office (see **ADDRESSES**).

Issue 2—Whereas four peer reviewers and some commenters were satisfied the best available science and data had been used in the development of the proposed rule, two peer reviewers and some commenters questioned the quality or interpretation of data used to support the proposed rule. These commenters offered manuscripts in press, or alternative literature citations or explanations of the data.

Response—The Service has reviewed the manuscripts in press (now subsequently published) and literature citations provided by commenters. We have considered and incorporated the information provided in these documents where appropriate in this final rule. We have incorporated these documents into our administrative record and cited them in this rule where appropriate (including, but not limited to, sections of the rule dealing with WVNFS population dynamics; habitat use, quantity, quality, and connectivity; and climate change). The peer-reviewed scientific journal articles, peer-reviewed agency reports, and other literature cited in the final rule represent the best available science relevant to the decision. None of the alternative explanations of the data were as persuasive as the sources we have cited in the final rule.

Issue 3—Some commenters disagreed with a choice of words in the summary sections of the proposed rule which referred to ''an increase in the number of individual WVNFSs.'' These commenters claimed that there is no evidence of an increase, noting that 1,141 captures do not represent unique squirrels, because unknown portions

were recaptures. These commenters conducted an independent analysis of a WVNFS electronic database and field data reporting forms. They reported inconsistencies in the data base, and concluded there may have been as few as 654 unique captures. These commenters believe that such a low number of captures of unique individuals diminishes the credibility of conclusions reached by the Service about persistence.

Some commenters also questioned whether an increase in WVNFS occupancy was simply a consequence of increased surveys or efficacy of survey efforts since listing. One commenter questioned our ability to detect a change in habitat occupancy.

Response—Whereas the proposed rule did identify the total number of recaptures (71 FR 75926), the Service agrees that use of the phrase ''increase in the number if individual WVNFSs'' was not accurate, as we have not estimated the size of the WVNFS population. We have corrected this wording in the final rule. Based upon data collected through 2005, there has been an increase in the total number of known captures, from 10 at the time of listing, to 1,141 captures at the time of the proposed rule, of which there were 78 total recaptures (6.8 percent). Due to multiple recaptures of some individuals, these 78 total recaptures represent 62 individuals.

Contrary to the commenters' estimate of 654 unique captures, we calculate that there were a total of 908 unique captures (760 unique captures of adults and 148 unique captures of juveniles). These estimates take into account unique recaptures and unmarked individuals. About 8 percent of the adults escaped before they could be marked. Also, contrary to the commenters' determination that ''several'' nestlings were not tagged, nearly all of the 133 nestlings and about 2 percent of the 154 juveniles captured were not marked as a precautionary measure. Researchers believe that marking small individuals with ear tags and/or pit tags is an unnecessary procedure that could increase mortality (Stihler 2007). The fact that these individuals were not marked is inconsequential when considering that there is less than a 5 percent probability of subsequent recapture. Rather, the capture of nestlings or juveniles is a good sign of reproduction (25 percent of all captures).

The increase in the number of capture locations is useful in evaluating the distribution of WVNFS within its range, but cannot be used to estimate population sizes. The number of captures has increased with increased survey effort. While the area covered by surveys has increased over time, the efficacy of capturing WVNFS remains low. Based on original methodologies used at the time of listing, and still predominantly in use today, roughly 2 percent of nest box or live trap checks result in detection of WVNFS (Terry 2004, p. 46; Service 2006b, p. 13). This estimate of detectability is a simple calculation of the proportion of nest box or live trap checks that resulted in WVNFS capture. We have not used this simple estimate of detectability to calculate changes in habitat occupancy over time as suggested by one commenter. We evaluated whether the existing data set could be analyzed using more rigorous models for estimating detectability and changes in habitat occupancy (MacKenzie *et al.* 2002, pp. 2248–2255; MacKenzie *et al.* 2003, pp. 2200–2207; MacKenzie 2005, pp. 849–860; MacKenzie 2006, 1568–1584); however, we felt it inappropriate given that model assumptions would have been violated and could not be validated. While there has been an increase overall in survey area, the techniques used were the same and the intensity of work at sites has not varied significantly in the past 20 years.

As a result of these comments, the WVDNR has checked the data base against field forms and has made a few minor corrections. These changes do not substantially alter previous statistics reported by the Service or conclusions reached about persistence.

Issue 4—Some commenters noted that monitoring sites were not randomly selected, which builds in bias. These commenters recommended that such data not be used for estimating population.

Response—The Service acknowledges that monitoring sites were not selected randomly. The goal of the presence/absence surveys was to find as many WVNFS as possible and to document their range and distribution. Consequently, few sites were placed in low-quality habitat, and many sites were placed in moderate or high-quality habitat. Because of this bias, the Service has not used these data to estimate population sizes, but rather to monitor presence/absence and persistence.

D. Genetic Concerns

Issue 1—Some public commenters were concerned about a lack of genetic research that might indicate risks due to isolation (e.g., genetic drift, inbreeding) or existence of discrete populations meriting ESA protection.

Response—We considered information from several studies using a variety of genetic markers. Allozymic analyses by Browne *et al.* (1999, pp. 205–214) found lower measures of polymorphism and heterozygosity in North Carolina, West Virginia, and Virginia populations of *G. sabrinus* compared with other northern flying squirrels, noting that population structure in the southeastern States is similar to that of other species that occupy habitat islands (Browne *et al.* 1999, p. 212). Similarly, allozyme and mitochondrial DNA data examined by Arbogast *et al.* (2005, pp. 123–133) showed lower diversity of *G. s. fuscus* and *G. s. coloratus* compared with conspecifics (other flying squirrel species), but not relative to populations of the widespread southern flying squirrel. Sparks' data from a small number of microsatellite loci showed moderate to high gene flow across populations of northern flying squirrels in West Virginia, Virginia, and North Carolina (Sparks 2005, pp. 16 and 23). In addition, the coefficient of inbreeding failed to differ between populations at Cheat Mountain, West Virginia, and at an unfragmented forested landscape in Washington State (Sparks 2005, p. 18). Also, no difference in levels of a parasitic helminth (a species of parasitic worm commonly found in the intestines of flying squirrels, the presence of which is often used as possible indicator of reduced fitness) was detected among *G. sabrinus* and two sympatric tree squirrels (Sparks 2005, pp. 19, 62).

Arbogast *et al.* (2005, p. 130) and Weigl (2007, p. 902) speculate about potential future decreases in genetic diversity due to hypothetical habitat reductions. As discussed under *Issue 3, Response to Comments, Section B—Population Concerns*, however, we believe that habitat is still relatively well connected from the standpoint of WVNFS movements. Interspersed lower-quality habitats that can support northern flying squirrels for a short time will also facilitate the low levels of dispersal necessary to maintain allelic diversity and heterozygosity while conserving local adaptations. Furthermore, Sparks (2005, p. 29) suggests that *G. sabrinus* may have a population structure adapted to some degree of inbreeding tolerance.

In summary, after review of the genetic studies referenced above, we have not detected any genetic risk to the WVNFS due to isolation. Additionally, we are aware of no genetic, behavioral, ecological, morphological, physiological, physical, or other information supporting the existence of distinct population segments within the WVNFS.

E. Habitat Modeling Concerns

Issue 1—One peer reviewer and some commenters thought the Service had applied the Menzel *et al.* (2006b, pp. 1–10) model outside of its intended scope and for purposes not supported by the study the model is based upon. Some conclude that the Service is using the model to make a case that the agency can accurately predict habitat and WVNFS viability, by assuming that the model definitively predicts presence and absence.

Response—Using logistic regression, Menzel *et al.* (2006b, pp. 1–10) developed a Geographic Information System (GIS)-based habitat model for WVNFS in West Virginia by synthesizing micro- and macro-habitat relationship data. The Service has applied this model appropriately to gauge the relative abundance and quality of habitat rangewide and to broadly estimate the predicted distribution of WVNFS on the landscape. We have not assumed that the model definitively predicts presence/absence of WVNFS. Nor have we argued that predicted habitat ensures WVNFS' viability; predicted habitat is only one component. The model can give insights, albeit coarse, on habitat quality and its distribution across the landscape. As noted in the final listing rule (50 FR 26999) and recovery plans (Service 1990, pp. 12–16) for this subspecies, the abundance and quality of habitat are keys to the recovery of WVNFS because habitat loss and degradation were the main factors that led to the subspecies being listed as endangered. We have used the model at a landscape level to predict habitat quality and look for evidence of sink-source metapopulation dynamics. We have also used the model to highlight where managers should conduct follow-up site visits to determine actual squirrel habitat or where managers could reasonably assume no occupation without a site visit. A manager could use Ford *et al.* (2004, pp. 430–438) at the individual forest stand level to verify the quality of the habitat or what the probability level of occupation would be for that specific location.

Issue 2—Some commenters criticized the Menzel *et al.* (2006b, pp. 1–10) habitat model for being unverified and untested.

Response—The model has been verified and tested and proved to be quite accurate (81 percent) when the data were subjected to ground-truthing procedures to determine correct classification rates of occupiable and non-occupiable habitat (Menzel *et al.* 2006b, p. 3–4). Staff from the WVDNR and MNF have used the model successfully to identify WVNFS habitat, corroborated by additional captures where the model had shown a high probability of occurrence.

Issue 3—Some commenters stated that the Menzel model's prediction of habitat from tracking data should have been verified in following years (different temporal frame) and on different areas of the range (different spatial frame).

Response—The actual telemetry data used by the Menzel model did span several years and different areas. The model is based on actual data, which have been verified.

Issue 4—Some commenters criticized the Menzel model for containing several untested assumptions: (a) There is a direct relationship between nest box use and preferred habitat; (b) quality of habitat is predicted by elevation and vegetative community; and (c) data from spring and summer tracking reveals information on habitat use the remainder of the year.

Response—Addressing assumptions (a) and (b), Menzel *et al.* (2004, pp. 355–368; 2006b, pp. 1–10; 2006a, pp. 204–210) does not assert that probability of occurrence equates directly to preferred habitat; however, there is a clear correlation between high probability habitat (>75 percent probability of WVNFS occupancy) and habitat components such as red spruce and high elevation that were preferred by radio-collared individuals (Menzel *et al.* 2006a, pp. 206–207). Addressing assumption (c), data from winter telemetry studies at Snowshoe Mountain Resort and Canaan Valley National Wildlife Refuge (Ford *et al.* 2007 in press, pp. 6, 8) are similar to results from spring, summer and fall reported by Menzel *et al.* (2006a, pp. 206–207). Winter data confirm that male home ranges are larger than female home ranges and both sexes key in on red spruce-dominated habitats for foraging (Ford *et al.* 2007, pp. 4, 6, 7).

Issue 5—Some commenters stated that the Menzel model was based on limited spatial and temporal data from 4 sites and 13 animals; therefore, results can be generalized only with great caution.

Response—The Menzel *et al.* (2006b, p. 3) model is not based on a limited subset of the data, but rather is based on most of the capture data through 1999 and most of the telemetry data from WVNFS tracked in a variety of stand age-classes and compositions. All squirrels tracked for which home range sizes were calculated, had reached home range size asymptotes (the point on a graph indicating the minimum number of samples needed to calculate maximum home range size), indicating that sufficient location data exists to estimate home range size. Moreover, WVNFSs were tracked in a variety of poor to excellent habitat conditions. This methodology is consistent with similar examples of wildlife habitat data being collected from tagged individuals and then used in a modeling effort to extrapolate across a larger, but similar landscape (for example, Gibson *et al.* 2004, pp. 75–89; Posillico *et al.* 2004, pp. 141–150). The Service believes it has interpreted these data appropriately.

Issue 6—Some commenters stated that the Menzel model is a simplification of existing knowledge and does not account for important variables in WVNFS biology, such as forest age, structure, tree composition, and fungi. These commenters believe the model potentially overestimates optimal habitat by treating young forest the same as old forest, and by lumping other factors together (moist conditions, high rainfall, northern aspects, forest structure, suitable nest sites, food sources, etc.) based on elevation and spruce occurrence.

Response—The Service concurs that Menzel *et al.* (2006b, pp. 1–10) is a simple habitat model that was meant to capture broad aspects of WVNFS distribution. The model tends to underestimate higher-quality habitat and to overestimate lesser-quality habitat, especially near the 50 percent predicted probability of occurrence threshold (Ford 2007b). However, we still think the model is useful and reasonably accurate for gauging the relative abundance and quality of habitat rangewide and for predicting the distribution of WVNFS on the landscape, and represents the best available scientific and commercial data.

F. Ecosystem and Habitat Concerns

Issue 1—Some commenters were concerned that delisting the WVNFS would jeopardize an entire ecosystem, especially when considering the critical role that WVNFS plays in dispersal and persistence of numerous fungi which have symbiotic relationships with trees.

Response—The Service agrees that the WVNFS plays an important role in the red spruce-northern hardwood ecosystem (Smith 2007a, p. 862–863; Weigl 2007, pp.10–12). Habitat models for this subspecies implicitly recognize the symbiosis between WVNFS and tree fungus (Odom *et al.* 2001, pp. 245–252; Menzel *et al.* 2006b, pp. 1–10). The Service does not expect that delisting the WVNFS will have negative consequences for the ecosystem. The red spruce-northern hardwood ecosystem upon which the WVNFS

depends has substantially recovered and continues to improve (also see *Issue 4* in this same subsection below). The delisting process signifies elimination of endangerment of the WVNFS and elimination of the need for the Act's protections. Delisting is a procedural acknowledgement of the recovered ecological status of this subspecies and the ecosystem upon which it depends.

Issue 2—One commenter stated that protection of habitat is serving as a proxy for the status of the subspecies. Protection of habitat is critical to protection of the subspecies but does not ensure recovery.

Response—While protection of habitat is important to the status of the subspecies, it is not serving as a substitute for other factors. In analyzing whether the WVNFS has recovered, the Service has considered the reduction of all threats to the subspecies, including the destruction, modification, or curtailment of its habitat or range; overutilization; disease or predation; inadequacy of existing regulatory mechanisms; and other factors. See the Summary of Factors Affecting the Species section below for additional information.

Issue 3—Some commenters stated that there is a lack of a clear definition of habitat for WVNFS due to insufficient information on habitat needs. Factors comprising optimal habitat are complex and poorly understood.

Response—The work of Menzel *et al.* (2004, pp. 355–368; 2006b, pp. 1–10), Ford *et al.* (2004, pp. 430–438; 2007 in press, pp. 4–7), and Mitchell (2001, pp. 441–442) clearly define WVNFS habitat and its characteristics.

Issue 4—Some commenters, including two peer reviewers, thought the Service had overemphasized spruce as a habitat component for WVNFS. These commenters note that the WVNFS inhabits deciduous forest at lower elevations without a spruce component, and therefore should not be considered an obligate to red spruce forest. These commenters state that additional hardwood forest needs to be protected. Some commenters also disputed that red spruce is preferred habitat of WVNFS, identifying biases in the work by Menzel. These commenters state that the Menzel habitat model is based on a small sample of nest boxes located in red spruce habitat, skewing this monitoring program toward a finding of red spruce as preferred squirrel habitat; however, actual squirrel capture data seem to refute the exclusive focus on red spruce (Menzel 2003, p. 93).

Response—The Service never meant to imply that the squirrel is an obligate of the red spruce forest. However, the ecosystem in which WVNFS evolved consisted of a significant red spruce component, and it would be inappropriate to de-emphasize this important habitat feature. The WVNFS can be quite cosmopolitan, living within majority red spruce to nearly complete red spruce cover types, to majority hardwood to nearly complete hardwood cover types where the red spruce-fir component is minimal (Stihler *et al.* 1995, p. 18; Menzel 2003, p. 68; Menzel *et al.* 2006a, pp. 207–208; Ford *et al.* 2004, pp. 433–434; Reynolds *et al.* 1999, pp. 347–348). However, the preponderance of the data suggest a strong link to red spruce; there is a higher probability of WVNFS presence in areas with the most red spruce (as a percentage of the cover type) (Menzel 2003, p. 68; Ford *et al.* 2004, pp. 433–434, 2007 in press, pp. 12, 15–16; Menzel *et al.* 2006a, pp. 207–208). It is well documented that the entire range of the WVNFS was a red spruce dominated forest until heavily logged during the late 1800s and early 1900s (Mielke 1987, p. 219; Schuler *et al.* 2002, p. 89; Menzel *et al.* 2006b, p. 1; Rentch *et al.* 2007, pp. 440–442). Home range sizes also are smaller in areas with more red spruce, suggesting that habitat quality is better in these areas because WVNFS do not have to travel as far to meet their ecological needs (Menzel 2003, pp. 77; Ford *et al.* 2007, p. 6).

Additionally, no data in the central Appalachians show that WVNFS are heavily dependent upon pure hardwoods. Even so, protection of northern hardwood forest of considerable size is not a concern in the central Appalachians, since, within the range of WVNFS above 3,200 ft in elevation, approximately 96 percent (627,237 ac) of the land is forested (USDA Forest Service 2007, unpubl. map). At a coarser scale, within the more than 2 million ac of northern hardwoods in the high Allegheny landscape of West Virginia, Forest Inventory Analysis shows an approximately 15 percent increase in northern hardwoods from 1989 (2,061,000 ac, SE = 4,400 ac) to 2000 (2,393,600 ac, SE = 4,200 ac) (Griffith and Widmann 2003, pp. 30, 32).

Finally, Menzel (2003, p. 93) does not support the commenters' claims about bias. Sample bias was recognized and dealt with appropriately. The Menzel *et al.* (2006b, pp. 1–10) study used a sufficiently large sample of nest box and trap sites that produced WVNFS previous to 1999 in a statistical analysis. These occupied sites were then compared to 700+ locations that failed to produce WVNFS in a logistic regression analysis. Despite the fact that nest box and trap locations were skewed towards forest stands containing red spruce, captures occurred more frequently (in a greater proportion than habitat availability would suggest) in red spruce than in pure hardwood stands.

Issue 5—Some commenters, including two of the six peer reviewers, expressed concern about the threat of extensive logging on Federal, State, and private lands within the range of the WVNFS. Some commenters claim the MNF proposes to log up to 40 percent of the area comprising Management Prescription (MP) 4.1, which focuses on red spruce and red spruce-northern hardwood restoration.

Response—A substantial amount of WVNFS habitat is protected and managed consistently with the habitat needs of the WVNFS. Approximately 79 percent of WVNFS habitat (189,785 ac) is protected from the threat of exploitive logging for the foreseeable future (Service 2007a, pp. 5–8). Privately owned lands potentially subject to continued timbering (50,997 ac or 21 percent of WVNFS habitat) occur primarily at the edge of the subspecies' range (Service 2007a, p. 8). These lands are not critical to the subspecies' conservation, given the large amount of WVNFS potential habitat protected and managed on public lands in the core of the subspecies' range. [For more details on the degree of land protection, see criterion # 3 in Service (2007a)].

The current MNF Forest Plan (USDA Forest Service 2006a, chapters II and III), protects WVNFS habitat primarily through land use designations, a predominantly passive management strategy, and binding standards that effectively remove the threat of habitat loss (via logging and other disturbances) on all WVNFS habitat on the forest (164,560 ac or 68 percent of the habitat rangewide). Standards TE 63–66 (USDA Forest Service 2006a, p, II–26–27) adopt and implement the provisions of appendix A of the recovery plan for the WVNFS, which severely limit vegetation management in all WVNFS habitat, including breeding, feeding, resting, and dispersal corridors (Service 2001, appendix A). Only specific actions that have no adverse effect to WVNFS habitat, a discountable or very minor effect, or that demonstrate a beneficial effect (such as habitat restoration) are allowed in WVNFS habitat forest-wide. Based upon the Forest Service's long-term (50+ years) desired conditions for the ecosystem (USDA Forest Service 2006a, p. III–12), the Forest Service's intent shown in a Memorandum of Understanding signed by the MNF (Service *et al.* 2007, pp. 3

and 8), conversations with MNF staff, and the absence of any information to the contrary, we reasonably expect these standards to continue to apply regardless of the Act's listing status of the WVNFS. This management strategy is also likely to continue post delisting, as the WVNFS would be managed by the Forest Service as a ''sensitive species'' (USDA Forest Service 2006c, p. 18).

The commenters' reference to potential logging of 40 percent of the area of Management Prescription 4.1 appears to stem from a misunderstanding of forest-wide standards TE63–66 and how they interplay with the other standards on specific prescription areas. Prescription area 4.1 encompasses 153,600 ac, of which 59 percent (roughly 91,332 ac) has been mapped as WVNFS habitat and is protected from commercial logging by standards TE63–66. The remaining 41 percent of the area (62,268 ac) has not been mapped as WVNFS habitat. Within this 62,268-ac area, approximately 27,300 ac (or 18 percent of the total acreage in prescription area 4.1) have been tentatively identified as suitable for timber production (USDA Forest Service 2006b, p. 3–354). These 27,300 ac may be logged contingent on site-specific project review and field checks to verify that these lands are not WVNFS habitat. Thus, at most, 18 percent of the land in MP 4.1 could be logged over the life of the Forest Plan and all of this land would need to be demonstrated to not be suitable habitat for WVNFS, prior to logging.

Logging of areas that are not WVNFS habitat will also need to comply with an array of other applicable standards in the management direction for prescription area 4.1 (USDA Forest Service 2006a, pp. III–14 to III–16), such as standards 4118 and 4119, which place limits on the amount and timing of disturbances within harvest units (USDA Forest Service 2006a, p. III–15). Standard 4118 states that no more than 40 percent of forested National Forest System lands within each 4.1 prescription area unit shall be harvested over a 10-year period. Standard 4119 requires that unforeseen activities, such as timber salvage or pipeline installation, shall be counted toward the 40 percent disturbance standard in 4118. Thus there are additional limits on timbering, even in areas that are not WVNFS habitat, that further reduce forest disturbances.

Limited logging in WVNFS habitat for purposes of restoration is also allowed in prescription area 4.1, consistent with standards TE 63–66, as long as it can be demonstrated to result in a minor/discountable adverse effect or a beneficial effect to WVNFS. The Forest Service has an objective to restore approximately 1,000 to 5,000 ac of habitat over the next 10 years (USDA Forest Service 2006a, p. III–14, objective 4107). Standard 4118 also applies to these restoration activities. Hence it places limits on the frequency of disturbances within stands.

The Service is confident that these restoration efforts would benefit WVNFS in several ways, by: (1) Increasing amounts of coarse woody debris necessary for many fungal species; (2) increasing the size and importance of red spruce (an important fungal substrate); (3) increasing habitat patch size and connectivity; (4) increasing snags available as day dens for WVNFS; and (5) decreasing hard-mast production, thereby lessening stand value to the southern flying squirrel competitor (Menzel *et al.* 2006a, p. 208).

Issue 6—Some commenters expressed a view that all old growth forest across the range of WVNFS needs to be protected. These commenters cited Smith (2007a, pp. 864–865, 877) and Weigl (2007, p. 899, 902) as evidence of concerns about ongoing harvest of old growth forest, its replacement with plantations or regenerating stands, and the increasing fragmentation of much of the remaining habitat.

Response—There is little to no harvesting occurring in old growth forests on public or private lands within the range of the WVNFS. There is very little old-growth remaining from the exploitive logging period in the late 1800s/early 1900s. On the MNF, old growth currently comprises less than 1 percent of the entire forest (USDA Forest Service 2006a, p. B–1). In addition, areas identified as old growth on the MNF are not suitable or allowed to be cut. The remaining known old-growth areas on the forest are protected by Botanical Area, National Natural Landmark, or Scenic Area designations, and are managed through specific Forest Plan direction and standards that prohibit timber removal and restrict other types of vegetation management in these areas (USDA Forest Service 2006a, p. B–4). Furthermore, ''[t]imber harvest goals and objectives are based on achieving desired conditions for vegetation and habitat, not on regional economics'' (USDA Forest Service 2006b, Final Environmental Impact Statement (FEIS), Appendix I, p. I–152), so there is little risk of the MNF having adverse impacts on the WVNFS. Concerns about a significant increase in forest fragmentation throughout much of the remaining WVNFS habitat are unsubstantiated. There are no existing or predicted activities that are anticipated to significantly adversely affect forests within WVNFS range on a landscape level.

Issue 7—Some public commenters cited a newspaper article as specific evidence that the impact of second home development in West Virginia is a significant threat to WVNFS. They requested that the Service reanalyze these impacts.

Response—The Service has reanalyzed these impacts and come to the same conclusion as in its earlier analysis, that second home development is not currently a significant threat. The greatest development pressures in West Virginia are occurring, and are projected to continue to occur, outside of the range of the WVNFS, in the far eastern panhandle, and in and around the cities of Morgantown and Charleston (Stein *et al.* 2005, Figure 2). Second home development currently is occurring at the edge of the range of the WVNFS (primarily at Canaan Valley and Snowshoe Mountain). By 2030, housing density increases are projected to occur on private forests across 0 to 5 percent of the area corresponding to the core of the range of WVNFS (Stein *et al.* 2005, Figure 2). Such losses, if they occur, would be at the periphery of the range and minor in relation to the 242,000 ac of WVNFS habitat that exist within a larger landscape encompassing the range of WVNFS that is 96 percent forested (USDA Forest Service 2007, unpub. map).

Issue 8—Some commenters thought that the impacts of roads had not been adequately considered. These commenters stated that roads create absolute barriers to flying squirrel movement. These commenters were concerned that construction of Appalachian Corridor H (a four lane divided highway running from Weston, WV, to the Virginia line), in particular, will open the region to further development and will isolate populations of WVNFS in Blackwater Canyon from populations and suitable habitat south of the highway. Commenters were concerned that populations of WVNFS in Blackwater Canyon north of the highway may not be able to survive on the remaining small island of habitat. They criticized the Service for not discussing these impacts in more detail in the proposed rule or 5-year review.

Response—Construction of Corridor H through the extreme northern part of the WVNFS range is not expected to result in significant impacts to WVNFS or its habitat. As explained in the Land Use Planning section of the Factor A

analysis below, sufficient habitat will remain on both sides of the highway to support WVNFS (Service 2006b, pp. 4–5, 16–29; 2007c, pp. 3–4, 14–26). Additionally, a cumulative effects assessment, conducted by the West Virginia Department of Transportation (2006, pp. 17–19) suggests there is an adequate amount of non-environmentally sensitive, low-elevation land, which is not WVNFS habitat, and is available to support all development reasonably expected to occur as a result of the highway construction.

Issue 9—Some commenters were concerned that mining, drilling for gas, and construction of wind turbines in the habitat of WVNFS are increasing and therefore pose a threat to WVNFS.

Response—There is no evidence that these activities have in the past, or will in the future, significantly threaten the WVNFS. This conclusion is based upon Service review of impacts to WVNFS from permit applications for coal mining, gas, and wind power projects.

Surface mine projects in West Virginia average 302 ac in size, and underground mines average 34 ac of surface disturbance (Office of Surface Mining (OSM) 2005, p. 2). Most coal mining activity is concentrated in six counties (Boone, Kanawha, Mingo, Logan, Marshall, and Monongalia) outside the range of the WVNFS (OSM 2005, p. 2). Within the range of WVNFS, small portions of Greenbrier, Randolph, Tucker, and Grant Counties have coal seams (OSM 2005, cover map); however, these areas were mined in the past and are not currently active. Given the cost of reopening a mine, it is unlikely that there would be a resurgence of active mining in these areas, considering that these sites require expensive acid-mine waste remediation (Fala 2007). In the 21 years since the WVNFS's listing, there have been only 2 or 3 projects out of thousands reviewed each year where the Service identified potential adverse effects from coal mining to WVNFS habitat, and each of these projects was in marginal habitat on the edge of the subspecies' range. The Service has no information suggesting that coal mining activities will expand into WVNFS habitat. Given this lack of evidence of a threat and the above prior history and acreages involved, the potential for future impacts to WVNFS from this activity appears remote and insignificant.

The Service has noticed a recent increase in gas drilling applications in West Virginia; however, the footprint of these projects typically is small, averaging approximately 1.5 ac per gas well. These projects also tend to use existing, short (<1 mile long) gravel access roads which do not pose a barrier to WVNFS dispersal. In the 21 years since the WVNFS's listing, few if any gas projects have resulted in adverse impacts to WVNFS habitat, and none of these projects have resulted in take of WVNFS. The Service expects these trends to continue after the WVNFS is delisted. The minor impacts of these projects do not pose a substantial threat to WVNFS.

There currently is one operating wind power project in West Virginia, two under construction, and one approved which will not be constructed. There also is one project in Virginia in the permitting application phase. These projects have ranged in size from 24 to 372 ac of disturbance. Neither the presently operative project nor the two under construction have had impacts to WVNFS or its habitat. Although the Service has noticed an increase in prospecting for wind power projects in West Virginia, only a minority of these potential projects might adversely impact WVNFS or its habitat. Three of the 13 projects the Service has reviewed initially identified potential adverse impacts to WVNFS habitat (two projects in West Virginia and one project in Virginia). Two of these projects ultimately avoided WVNFS habitat because of the Act, and one of these projects was withdrawn due to difficulties seeking access from the Forest Service. Although prospecting is currently occurring, nearly half of all prospective wind energy applications filed for grid interconnection study within the mid-Atlantic region are withdrawn (Boone 2006, pp. 1–2).

On national forest lands, project proponents currently must seek separate authorization for prospecting (surveys and setting up meteorological stations), as well as the construction and operation of wind towers. Even after the WVNFS is delisted, proposed wind farms in national forests within the range of WVNFS range would still need to be consistent with standards and guidelines in the forest plans. Therefore, we conclude that while prospecting in wind farms is increasing, only a minority may materialize, and fewer still might adversely affect the WVNFS. Based on these projections and the small acreage potentially involved, we conclude that wind power will not pose a significant threat to WVNFS or its habitat.

G. Forest Pest Concerns

Issue 1—Some commenters were concerned about the effects of beech bark disease and the hemlock woolly adelgid on the habitat of the WVNFS. Two peer reviewers noted that while these forest pests may have local impacts to WVNFS, they are not significant at the landscape level. Two peer reviewers discussed forest pests as potential threats but did not comment on their significance to WVNFS.

Response—Any impacts to WVNFS habitat from beech bark disease or hemlock woolly adelgid are considered minor in the context of the subspecies' range. A decline in American beech, as a result of beech bark disease, should provide additional snags and coarse woody debris for WVNFS. Additionally, a decline in beech nuts would also reduce the food supply of southern flying squirrels, a potential competitor of the WVNFS.

Eastern hemlock currently comprises 1 to 9 percent of forested land in counties within the range of WVNFS in West Virginia (Kish 2007, Figure 1). A predominantly eastern hemlock overstory is known to occur at 7 percent of WVNFS nest site locations (such as Blackwater Falls State Park), and its loss could affect the quality of riparian zone habitat useful for WVNFS dispersal between more isolated patches of red spruce–northern hardwood forest. Whether or not eastern hemlock is replaced by red spruce or northern hardwoods, thereby ameliorating losses, is unknown. However, research indicates that hardwood forests with little or no conifer component are not barriers to WVNFS movement (Menzel *et al.* 2006a, p. 207). Please refer to the 5-year review (Service 2006a, pp. 17–18) and Factor A of the Summary of Factors Affecting the Species below for further information on both beach bark disease and the hemlock woolly adelgid.

H. Acid Deposition Concerns

Issue 1—Two commenters expressed concern about the effects of atmospheric acid deposition (also known as ''acid rain'') on WVNFS habitat, whereas one peer reviewer believed that such effects were largely speculative.

Response—The Service agrees with the peer reviewer that such effects are largely speculative. Acid deposition is not a significant threat to the subspecies' habitat. See Factor E under the Summary of Factors Affecting the Species section below for further details.

I. Climate Change Concerns

Issue 1—All peer reviewers agreed that the impacts of climate change on WVNFS are unclear. Whereas four peer reviewers concluded that measurable effects to WVNFS were not foreseeable, two concluded that the risk to WVNFS could not be discounted and requested

further analysis. Likewise, a coalition of commenters requested a more thorough analysis of the effects of global warming on WVNFS. They provided the Service a list of references to consider and submitted several unpublished maps of bioclimatic models for northern flying squirrels provided by Lawler (2007a, unpub. maps). This coalition of commenters believes that global warming is probably the greatest threat to WVNFS existence within the next 100 years and likely will result in extinction of the WVNFS.

Response—The Service has reviewed all evidence on climate change provided by the peer reviewers and members of the public, including references cited by the commenters, as well as others. While the Service acknowledges the general scientific consensus that global scale increases in temperature have occurred and are expected to continue into the future, we disagree with the commenters' speculation that these changes will drive the WVNFS to extinction. Our ability to foresee 100 or more years into the future is limited by the current lack of reasonably accurate (Botkin *et al.* 2007, pp. 227–234; Meyers 2008) climate change projection models localized for the range of the WVNFS, and simple stochastic events over such a long timeframe.

Issue 2—Some commenters were concerned about the effect of climate change on interactions of WVNFS with the southern flying squirrel. They point to regional climate change studies projecting an increase in potential mast (nut producing) trees as evidence that the southern flying squirrel will outcompete WVNFS. In contrast, one peer reviewer noted that future climate conditions are unknown. He noted that hotter, drier summers but wetter, snowier winters might have little effect, or even a positive effect, on WVNFS if vegetation conditions remain unchanged, but wetter, snowier winters were less favorable for southern flying squirrels.

Response—Bowman *et al.* (2005, pp. 1486, 1490) speculated that southern flying squirrels in Canada had expanded their northern geographic range in response to climate warming between 1994 and 2002, followed by a population crash in 2003 that resulted from an energetic bottleneck created by the combination of a cold winter that was preceded by a failed mast crop. They hypothesize that southern flying squirrels have the opportunity to expand their range northward during these warm periods, but acknowledge that there also is the possibility of large range contractions during cold spells (Bowman *et al.* 2005, p. 1491). They conclude that continued range expansions of southern flying squirrels are likely under continued global warming, although they expect that these expansions will be limited by the distribution of mast trees (Bowman *et al.* 2005, p. 1492).

It is important to realize that projections about potential northward advance of oak forests in response to climate change relate to the potential distribution of suitable habitat wherein oaks could grow, not the actual distribution of the tree species. It is speculation that tree species will continue to move north because there are no barriers or constraints to migration (Hansen *et al.* 2001, p. 771).

Iverson *et al.* (2004a, p. 787–799; 2004b, pp. 209–219) investigated potential colonization of new suitable tree-species habitat under climate change for five eastern U.S species, including red oak. The results show the generally limited nature of likely migration over the first 100-year period following climatic change (Iverson *et al.* 2004b, p. 216). They estimate that the proportion of new habitat that might be colonized within a century is low (15 percent) for all five tree species, suggesting that there is a substantial lag between the potential movement of suitable habitat and the potential for tree species to migrate into the new habitat (Iverson *et al.* 2004a, p. 795). There is a relatively high probability of colonization within a zone of 10–20 km (depending on habitat quality and species abundance) of the current boundary, but a small probability of colonization as the distance from the current boundary exceeds about 20 km (Iverson *et al.* 2004b, p. 216).

Looking at historical patterns, Schwartz *et al.* (2001, pp. 570, 574) and Iverson *et al.* (1999, Figure 7 on p. 89) predicted that migration rates of 1 to 10 km/century might be the maximum future rates of tree colonization in fragmented habitats. Considering that the distribution of the WVNFS spans >170 km, it would take centuries for such potential shifts in oak species composition to materialize over a substantial portion of the range of WVNFS. Such slow colonization rates increase the likelihood that should red spruce decline significantly as a result of climate change, WVNFS would be able to survive in refugia of red spruce-northern hardwood habitats (as projected by Delcourt and Delcourt 1998, p. 927) and shift its range in response to similar slow, potential changes in southern flying squirrel distribution.

Issue 3—Some commenters were concerned that the risk of wildfires would increase as a result of more frequent droughts, and thus would pose a threat to WVNFS.

Response—Historically, natural fires in the Central Appalachians are believed to have been ''relatively unimportant in the past, and to remain unimportant today, because of the wet weather that usually accompanies lightning'' (Lafon *et al.* 2005, p. 129). Anthropogenic fires have played some role in the Central Appalachians for centuries as Native Americans used fire to drive game, improve wildlife habitat, maintain open meadows, and clear underbrush (Van Lear and Waldrop 1989, pp. 1–2; Delcourt and Delcourt 1997, p. 1013). European settlers also practiced widespread burning (Van Lear and Waldrop 1989, p. 3). As discussed by Weigl (2007, p. 898), wildfires ravaged the landscape during the period of industrial logging. Loggers set fires after clearcutting, and additional fires were ignited from sparks from the logging trains (Schuler *et al.* 2002, p. 89). The fires associated with the logging practices of the early 1900s are not expected to reoccur, because the clearcutting is no longer taking place. While other parts of the Central Appalachians are currently considered to be especially fire-prone, the Allegheny Plateau, which contains most of the WVNFS habitat, is considered as ''having limited fire activity'' (Lafon *et al.* 2005, p. 141). It is clear that fire has played some role in development of the current ecosystem for many centuries.

Since climate appears to have a strong influence on fire regimes, potential climate changes will influence the number of fires, the area burned, and fire intensity (Lafon *et al.* 2005, p. 140). While there is the potential for occurrence of more frequent and intense fires during drought, there is also potential during wetter climatic periods for decreased fire activity. There are no scientific means, however, of accurately, or reasonably determining the net effect on WVNFS and its habitat of any potential change in the fire regime that may occur over the next century. While a long-term regime of intense, landscape level fires could significantly impact WVNFS habitat, those potential conditions are mere speculation given our present state of knowledge.

Issue 4—Some commenters requested that the Service specifically review the potential contribution of global warming to the ''recent'' condition of red spruce, as described in several papers from the late 1980s [McLaughlin *et al.* 1987; Johnson *et al.* 1988; and Hamburg and Cogbill 1988 (miscited as Cogbill 1988 by the commenters)]. They stated that the Service should fully examine all

studies of red spruce condition and factors contributing to that condition.

Response—The Service has reviewed the three papers from the 1980s cited by the commenters, as well as other studies of red spruce condition. The three cited papers primarily focus on the northern and southern Appalachians, areas that are outside the range of the WVNFS. Although not directly applicable to WVNFS, papers covering areas outside the range of the WVNFS do provide a context for observed differences in regional trends of red spruce condition. The Service further examined potential impacts on the current and future condition of the red spruce-northern hardwood ecosystem in Factors A and E under the Summary of Factors Affecting the Species section of this final rule, as well as the responses to comments on these issues.

Issue 5—Some commenters cited a paper by Delcourt and Delcourt (1998) as specific evidence that we can foresee: (1) The extirpation of red spruce-balsam fir and spruce-Fraser fir forests south of 44 degrees north latitude (the White Mountains, New Hampshire); and (2) the movement of the southern range of these forests to northern New England in the next 100 years.

Response—We have reviewed the paper by Delcourt and Delcourt (1998) cited by the commenters. We believe the projections made by these authors are likely overestimates of risk. First, the authors did not model the full range of possible climate extremes and did not use a full array of different climate models. They modeled possible future shifts in the spruce-fir ecotone from two climate models, assuming projected summer warming of 3.0 degrees or 6.4 degrees Celsius (Delcourt and Delcourt 1998, p. 926). The Intergovernmental Panel on Climate Change (IPCC) (2007c, Table 3.1) currently recognizes a 2 to 4 degree Celsius increase by 2099 as the best estimate of warming under six climate models (with a likely range of 1 to 6 degrees). Values substantially higher than 4 degrees cannot be excluded, but agreement of models with observations is not as good for those values (IPCC 2007c, part 2.3). Thus the 3-degree warming scenario, identified by the Delcourts as their ''most conservative'' projection, falls within the middle range of the best estimate of temperature changes currently recognized by the IPCC. The Delcourts did not model the lower range (1–2 degrees) of warming currently recognized by the IPCC.

Second, the Delcourts provided little information about model assumptions and limitations, and did not attempt to validate their model, all of which greatly diminishes the usefulness of this paper. They did not quantify tree species extinction probabilities, or otherwise explain the basis for qualitative statements about their confidence in their predictions. Botkin *et al.* (2007, p. 231) notes that the type of niche-theory model used by the Delcourts is likely to overestimate the risk of tree species extinction. These types of models assume that observed distributions of trees are in equilibrium with their current environment, and that the tree species will become extinct outside of the regional values (Botkin *et al.* 2007, p. 231). However, local variation in climate due to topography or other factors could result in tree species being able to persist in suitable microhabitats even though the model projects no suitable habitat in these general regions (Hansen *et al.* 2001, p. 765). The Delcourts focused on elevation and summer temperature as the primary factors controlling where spruce-fir could grow, but other factors would likely add considerable uncertainty, such as: the seasonality of precipitation, duration of cloud cover in the growing season, winter temperatures and frost-free chronologies, and site-specific disturbances (White and Cogbill 1992, pp. 4–16).

The Delcourts suggested possible northern and upslope migration of red spruce under both a 3- and 6-degree warming scenario, with greater impacts occurring under the warmer scenario. For the moderate 3-degree warming scenario, the authors also suggested the possibility of spruce survival in refugia (Delcourt and Delcourt 1998, p. 928, Figure 4), similar to what happened during warmer and drier extremes of the post-glacial period 4000–5000 years before present (Delcourt and Delcourt 1998, p. 927, Ware 1999, pp. 45–55) under similar temperature regimes.

Although Delcourt and Delcourt (1989) modeled summer temperature changes through 2100, they provided no time frame for when vegetative responses would likely occur. They also did not provide any prediction of what the tree species composition would be in the forest that would succeed the spruce-fir forest in each of these scenarios. As discussed in climate change *Response to Comments Issues 1–3*, future vegetative changes in response to such temperature changes could possibly occur over several hundred years. However, their possible impacts on WVNFS distribution and persistence are not reasonably foreseeable given the long time frames and high degree of uncertainty. Therefore, we do not find that the projections of Delcourt and Delcourt (1989) present a climate change threat to the WVNFS' habitat that is likely to endanger the subspecies in the foreseeable future.

J. Spruce Restoration Concerns

Issue 1—Whereas one peer reviewer commented that restoration techniques have the ability to hasten improved overstory conditions and compositions favorable to WVNFS, some members of the public were concerned that spruce restoration efforts are misdirected and would not be successful. These commenters state there is only one master's level study suggesting that such recovery may be feasible.

Response—Forest management and silvicultural techniques, such as those being proposed, have long histories of implementation (Frank and Bjorkbom 1973, pp. 1–29; Frank and Blum 1978, pp. 1–15; Carey *et al.* 1999, pp. 64–66). Several studies and modeling simulations indicate that restoration silviculture could be an effective tool for increasing the amount and quality of red spruce-northern hardwood forests in the central Appalachians (Rentch *et al.* 2007, pp. 440–452; Schuler *et al.* 2002, pp. 88–98; Hornbeck and Kochenderfer 1998, pp. 197–202).

Efforts to restore or enhance red spruce-northern hardwood forests should in many cases enhance WVNFS habitat in the short-term, as well as the long term. For example, noncommercial efforts that involve red spruce release by girdling or stem-injection of herbicide will create snags suitable for day dens. In addition, removal of hard mast species such as northern red oak or American beech will lessen habitat suitability for the southern flying squirrel and therefore minimize any potential competition for dens and food, as well as lessen interspecific contact to spread the *Stronglyoides* parasite. See Factor C under the Summary of Factors Affecting the Species section below for additional information.

And lastly, red spruce-northern hardwood restoration on the MNF is targeted at maximizing patch size and habitat connectivity for WVNFS (USDA Forest Service 2006a, p. III–14). These efforts are proceeding cautiously in unoccupied habitat, with monitoring to gauge success. These efforts are not clear cuts, but rather are light thinnings of northern hardwoods that open the canopy to provide additional light for growth of spruce. Spruce is naturally adapted to regeneration in small openings such as these.

K. Overutilization Concerns

Issue 1—One public commenter was concerned that once the WVNFS was delisted, its collection would no longer

be regulated and the subspecies would be threatened by overcollection. In contrast, two peer reviewers offered evidence that overutilization of WVNFS never has been a threat and would not become a threat should WVNFS be delisted.

Response—Even for trained wildlife professionals, the WVNFS is an exceptionally difficult animal to catch. Thus the probability that a layman or commercial collector could capture or overcollect WVNFS is very remote given the subspecies' low detectability, nocturnal and secretive habits, and remote localities where it occurs. Once delisted, WVNFS collection by hunting or trapping will still be illegal under West Virginia and Virginia state laws (West Virginia Code 20–2–5(26); Code of Virginia 29.1–521.A.10, 29.1–566 and 29.1–530.A.), and its capture for scientific and educational purposes will still be regulated through collection permitting systems of the WVDNR (West Virginia Code 20–2–50) and the Virginia Department of Game and Inland Fisheries (Code of Virginia 29.1–568). For more information, see Factor B in the Summary of Factors Affecting the Species below.

L. Adequacy of Regulatory Mechanisms

Issue 1—Some commenters stated that much of the habitat believed to be important to the WVNFS is not fully protected in the long term.

Response—There are no known rangewide threats to the subspecies' forested habitat, thus full protection of this habitat is not required to maintain the WVNFS's status as recovered. (See Factor A under the Summary of Factors Affecting the Species section for further details.) Seventy-nine percent of the modeled habitat of the WVNFS is being managed for the long term by provisions of forest plans, state management plans, wilderness and backcountry recreation designations, and conservation easements. For example, in the forest plan for the MNF (USDA Forest Service 2006a, p. III–9, D–1), Management Prescription 4.1 focuses on protection, restoration and management of red spruce and red spruce-northern hardwood communities. This management prescription, as well as other management plans and agreements on state, Federal, and private lands, wilderness and backcountry recreation designations, and perpetual conservation easements will continue to apply following delisting of the WVNFS (Service 2007a, pp. 5–10). Collectively, all of these mechanisms provide reasonable certainty of protection and management of much of the habitat for WVNFS.

Issue 2—Some commenters requested clarification on the status of forest plans for the Monongahela and the George Washington National Forests. These commenters were concerned that the Forest Service would not be able to implement these plans because of a lawsuit on the land management planning rule published in 2005.

Response—In March 2007, a U.S. District court order enjoined the Forest Service from implementation and use of the land management planning rule published in 2005 until the Forest Service complied with the Court's order for two combined cases (*Citizens for Better Forestry et al.* v. *USDA* and *Defenders of Wildlife* v. *Johanns, C.A.* C05–1144 (N.D. Cal.)). The Forest Service complied in 2008 by re-issuing its forest planning regulations. Forest plans currently in effect for the MNF and the George Washington National Forest (GWNF) were based on planning rules published prior to 2005; hence, their continued implementation and use in present form is not affected by the lawsuit or the new regulations. These existing plans provide guidance for management and monitoring of the WVNFS and its habitat, including prescriptions, goals, objectives, standards, and guidelines. Any subsequent revisions or amendments to these existing plans will require compliance with any planning regulations in effect at the time. Should the MNF choose to revise or amend their existing forest plan, we believe it is highly unlikely that the current WVNFS habitat would be affected (See the Factor A—Land Use Planning section under the Summary of Factors Affecting the Species below for further information).

Issue 3—Some commenters noted the Service had entered into a Memorandum of Understanding (MOU) with the Forest Service, WVDNR, and others for continued management and protection of WVNFS. These commenters question whether the Forest Service would continue to protect a species without the force of law.

Response—By signing the MOU, signatories demonstrate that they are committed to implementing the features within their discretion and authority (Service *et al.* 2007, pp. 1–8). The MOU affirms commitments made by the U.S. Forest Service MNF to implement standards and guidelines for the WVNFS and its habitat contained in the 2006 Land and Resource Management Plan. This plan would not be invalidated by delisting the WVNFS. Also see response to *section F,. Ecosystem and Habitat Concerns—Issue 5* and *section L,. Adequacy of Regulatory Mechanisms—Issue 2,* above.

Issue 4—Some commenters questioned the ability of the Forest Service, WVDNR, and others to fulfill their obligations in the MOU, given projected staff and budget cuts.

Response—The Service is not relying upon the MOU as an enforceable regulatory mechanism under the Act. See *Response to Issue 3* in this same subsection above.

Issue 5—Some commenters were concerned that the MOU termination clause allows parties to opt out for any reason with 30 days' notice.

Response—MOUs commonly have early termination clauses. While some changes to the composition of the signatory parties to the MOU may occur over time, we expect that other parties will sign on and the MOU will continue to be implemented for the long-term by those participating at the time. See *Response to Issues 3 and 4* in this same subsection above.

M. Predator Concerns

Issue 1—One commenter noted the Service had not discussed the impact on WVNFS of the reintroduction of the fisher, a potential predator on WVNFS.

Response—Fishers (*Martes pennanti*) were reintroduced to West Virginia in the late 1960s or early 1970s, prior to the listing of WVNFS as endangered. Both animals have shown overlapping range expansions in the intervening decades, providing indirect evidence that fishers are not significant mortality agents for WVNFS. Most data from the eastern United States suggest that snowshoe hare, cottontails, voles, mice, and bird eggs comprise the majority of the fisher's diet (Powell *et al.* 2003, p. 643). Weigl (2007, p. 901) concluded that fishers probably can coexist with northern flying squirrels, with the exception of in small habitat islands, where there are fewer WVNFS and other prey is more limited.

N. Other Natural Factors

Issue 1—One peer reviewer and one public commenter thought the Service needed to give more consideration to the impact of parasites on WVNFS spread by southern flying squirrels (*Glaucomys volans*), given projections about climate change, acid deposition, oak decline in northern hardwood communities, and expansion of other seed- and nut-bearing hardwoods.

Response—Recognizing that there are ''varying intensities'' of parasitic infection of northern flying squirrels (*G. sabrinus*) in the wild, Weigl (2007, p. 901) remains concerned about infection of *G. sabrinus* by the intestinal parasite

Stonglyoides robustus, based in part on his belief that there has never been stable sympatry of *G. sabrinus* and *Stonglyoides robustus.* While that may be true for the Carolina northern flying squirrel (*G. s. coloratus*) at the sites he studied in North Carolina and Tennessee, stable sympatric occurrences of WVNFS and the southern flying squirrel (*G. volans*) have been documented for decades at the Spruce Knob geographic recovery area in West Virginia (Wallace 2007, p. 2). The southern flying squirrel has been detected within all 7 of the generalized WVNFS core areas (or population centers), and at 20 percent of the 109 WVNFS capture sites. Despite the presence of this competing species, there is no evidence of illness or mortality of WVNFS, and no evidence of local extirpation of WVNFS from any of these sites during 21 years of monitoring. Based on their documented co-occurrence in West Virginia and Virginia, and no documented lethal effects in the wild, we believe that speculation that impacts of climate change, acid deposition, or shifts in forest composition would decrease the fitness or survival of the WVNFS is unwarranted. The WVNFS has prevailed in repopulating its range in a habitat where the red spruce-northern hardwood compositions arguably favor the southern flying squirrel over the past 100 years. The Service does not believe that the WVNFS would have made this recovery if it suffered debilitating or lethal effects from sympatric relationships with parasite-bearing species (See Factor E—Competition with Southern Flying Squirrel under the Summary of Factors Affecting the Species section for further information).

O. Miscellaneous

Issue 1—Some commenters were concerned that we have ignored the WVNFS recovery plan criteria in determining that the subspecies has recovered.

Response—As summarized above in the Recovery section of this final rule, our analysis shows that the intent of each criterion for downlisting and delisting has been satisfied and that most of the criteria have been achieved or substantially achieved. Although the recovery plan criteria are out-of-date, we conducted an analysis of how well these criteria have been met and summarized that analysis in the beginning of this final rule. New information has changed the extent to which these criteria need to be met for recognizing recovery of the subspecies. Species are listed or delisted under the Act based on whether they are threatened or endangered by one or more Factors (see Summary of Factors Affecting the Species section below). Up-to-date, threats-based recovery criteria can assist the Service in analyzing whether a species meets the definition of threatened or endangered. Recovery criteria are only one tool, however, the Service uses in making a classification determination.

Issue 2—Some commenters expressed concern about not providing a post-delisting monitoring plan for public review, concurrently with the proposed rule.

Response—The proposed and final delisting decisions are based firmly on an analysis of identified threats and changes in the subspecies' status. They are not legally contingent upon future approval or implementation of the post-delisting monitoring plan. The Act contains no explicit requirements for either notifications or public comment opportunities relative to planning or implementation of post-delisting monitoring plans. Nevertheless, the Service sought input into these processes, as indicated by our request for public comment on the draft post-delisting monitoring plan (72 FR 57346), published in the **Federal Register** on October 9, 2007, prior to publication of this final rule, and by our finalization of the plan concurrent with this final decision on the delisting proposal.

Issue 3—Some commenters expressed mistrust about the motivations behind delisting and accused the Service of catering to developers, the timber industry, and other extractive resource users. Some commenters also expressed value-based reasons as to why they opposed delisting, such as spiritual importance, animal rights, and need for humans to behave as caretakers and stewards of the WVNFS, not as pillagers of its habitat. The majority of comments received were one of three various form letters stating that the proposed rule was premature and based on inadequate scientific information, but provided no substantive information to support these statements.

Response—Our decision to delist WVNFS is based solely on the best scientific and commercial data available and our five-factor analysis. This analysis indicates that the subspecies is neither threatened nor endangered. While we appreciate the values expressed by these commenters, such comments are either not relevant to the decision, or are outside the scope and authority of the final rule.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or removing species from listed status. ''Species'' is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). Once the ''species'' is determined, we then evaluate whether that species may be endangered or threatened because of one or more of the five factors described in section 4(a)(1) of the Act. We must consider these same five factors in delisting a species. We may delist a species according to 50 CFR 424.11(d) if the best available scientific and commercial data indicate that the species is neither endangered nor threatened for the following reasons: (1) The species is extinct; (2) the species has recovered and is no longer endangered or threatened; and/or (3) the original scientific data used at the time the species was classified was in error.

A recovered species is one that no longer meets the Act's definition of threatened or endangered. The analysis for a delisting due to recovery must be based on the five factors outlined in section 4(a)(1) of the Act. This analysis must include an evaluation of threats that existed at the time of listing, those that currently exist, and those that could potentially affect the species once the protections of the Act are removed.

The Act defines ''species'' to also include any subspecies or, for vertebrates, any distinct population segment. The Act defines ''endangered species'' as any species which is in danger of extinction throughout all or a significant portion of its range, and ''threatened species'' as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

For the purposes of this finding, the ''foreseeable future'' is the period of time over which events or effects reasonably can or should be anticipated, or trends reasonably extrapolated, such that reliable predictions can be made concerning the status of the species. As discussed in the Summary of Factors section, we determined that any future threat from development will be localized and minimal, based on trends over the past 10 years. In addition, the Service has no indications that management of the forest for timber will have more than a minor impact on the

WVNFS based on the discussion in Factor A. WVNFS habitat has been improving steadily for the past 50–80 years throughout its range and we expect this improvement to continue into the future.

Climate change projection models are not reasonably accurate for the localized range of WVNFS, and therefore we cannot reliably predict that climate change will pose a threat in the future. All indications suggest that the squirrel is resilient enough to adapt to and survive gradual changes in the habitat, if there are any due to climate change. Therefore, we do not foresee any threats affecting the WVNFS into the future that would lead the species to become an endangered species.

Section 4(a)(1) of the Act requires that we determine whether a species is endangered or threatened based on one or more of the five following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence. Our evaluation of these factors is presented below. Following this threats analysis, we evaluate whether the WVNFS is threatened or endangered within any significant portion of its range.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

WVNFS Distribution

At the time of listing (1985), 10 WVNFS individuals were known from Randolph and Pocahontas Counties, WV, and Highland County, VA (Service 2006a, p. 8). It was thought that vast stretches of unsuitable habitat separated the four known population centers and that the WVNFS still existed but that it was very rare, and perhaps no longer present in much of its former range (50 FR 26999). The final listing rule qualitatively described historic habitat losses and suggested that ''in these last occupied zones, the squirrels [*G. s. fuscus* and *G. s. coloratus*] and their habitat may be coming under increasing pressure from human disturbances such as logging and development'' (50 FR 26999).

The current known range of WVNFS follows the spine of the high Allegheny Plateau in a northeast to southwest alignment. Helmick Run (Grant County, WV) marks the northeast periphery and Briery Knob (Greenbrier County, WV) the southwest periphery, covering seven counties in West Virginia and Highland County, Virginia (Service 2006a, p. 25). As of 2006, there is a total of 109 WVNFS capture sites, of which 107 are in West Virginia and 2 are in Highland County, Virginia (Service 2006a, pp. 8 and Figure 2; WVDNR 2006a, pp. 1–109). These capture sites are dispersed across seven general areas of habitat in the Allegheny Highlands region (Service 2006a, pp. 9 and Figure 3). Distributed throughout the 109 capture sites, there have been 1,198 captures (including 85 recaptures) as of 2006 (WVDNR 2006a, pp. 1–109). Collectively, the proportion of sites demonstrating persistence across multiple generations (83 percent), distributed among habitat quality types and within geographic zones; the routine documentation of nestlings and juveniles (76 percent of sites); and balanced to slightly skewed sex ratios demonstrate a relatively high degree of population stability and constant habitat occupancy (Service 2007c, pp. 9–11). Locally reproducing populations are the most likely factors for continuing to find WVNFS in numerous locations within their historical range over the last couple of decades, given their low detectability, relatively short life span, and relatively low reproductive capacity, and a naturally patchy nature of suitable forest habitat distribution (Service 2007c, p. 11).

We now know that the WVNFS continues to occupy the areas identified in the 1985 final listing rule (50 FR 26999) as well as numerous additional sites dispersed throughout its historical range, suggesting that its current range roughly approximates the extent of its historical range. Studies have confirmed the ability of the WVNFS to adjust its foraging and denning behavior (i.e., the ability to nest in a wide variety of trees) to persist in and around red spruce-northern hardwood forest patches (Menzel *et al.* 2004, pp. 360, 363–364; Menzel *et al.* 2006a, pp. 1–3, 6, 7; Menzel *et al.* 2006b, p. 208; Ford *et al.* 2004, p. 430).

Habitat Quantity and Quality

Prior to European settlement, there were in excess of 500,000 ac (some sources suggest 600,000+ ac) of old-growth red spruce–northern hardwood forests, the preferred habitat of the WVNFS, in the Allegheny Highlands. These forests (occupying ridges, slopes, and drainages) in West Virginia extended from the vicinity of Mount Storm (Grant County) in the north to Cold Knob (Greenbrier County) in the south, east to the Allegheny Front (Pendleton County), and west to Webster and Nicholas Counties. These red spruce–northern hardwood forests were more contiguous across the Allegheny Highlands than are the well-known ''sky-islands'' of the Southern Appalachians, which support Carolina northern flying squirrels (*G. s. coloratus*) (Service 1990, pp. 16–17; USDA Forest Service–Northern Research Station 2006, unpublished data, pp. 2–3).

Logging activity and associated widespread fires at the turn of the 20th century decimated the red spruce–northern hardwood forests, resulting in younger forests with less red spruce and, in many areas, a mixed mesophytic (moderately moist environment), oak-dominated forest (Menzel *et al.* 2006b, p. 6; Rollins 2005, pp. 12–13; Schuler *et al.* 2002, pp. 88–89). Loggers set fires after clearcutting, and additional fires were ignited from sparks from the logging trains (Schuler *et al.*, 2002, p. 89). The fires associated with the logging practices of the early 1900s are not expected to reoccur, because the clearcutting is no longer taking place. These fires did, however, consequently, result in less, and poorer quality, WVNFS habitat because younger forests with fewer red spruce provided reduced foraging and sheltering opportunities (Service 2006a, p. 6). Also, the presence of oak and its associated mast (i.e., acorns), provided a competitive advantage of food resources for the more aggressive southern flying squirrel. The WVNFS' rarity was understood to be a consequence of its specialized use of a precipitously declining habitat type (Service 2006a, p. 11).

Currently, it is estimated that there are approximately 242,000 ac of WVNFS habitat (USDA Forest Service–Northern Research Station 2006, unpublished data, p. 4). This estimate is based in part on the results of several habitat models, and includes all ''optimal'' habitat as well as ''likely'' habitat located in close proximity to red spruce–northern hardwood forests. ''Likely'' and ''optimal'' are terms and definitions imparted by the Menzel model, with ''likely'' areas having a greater than 50 percent chance of being occupied by the WVNFS, and ''optimal'' areas having a greater than 75 percent probability of being occupied (Menzel 2003, pp. 84–85, 87–89; Menzel *et al.* 2006b, pp. 4–5). The models allow us to estimate the amount of potential and high-quality habitat in the Allegheny Highlands, prioritize areas for restoration and recovery (Menzel *et al.* 2006a, p. 7), assess anthropogenic (manmade) and geologic fragmentation of the red spruce forest, and analyze stewardship of the suitable habitat (Menzel *et al.* 2006b, p. 7).

The forested areas used by the WVNFS across most of its range have continued to mature in the 20 years since listing. For example, about half of the rangewide areas modeled as optimal habitat are red spruce-northern hardwood forest stands on the MNF that are over 75 years old (Menzel *et al.* 2006b, p. 4; Service 2006a, pp. 10–11; USDA Forest Service-Northern Research Station 2006, unpublished data, p. 2). Even though current habitat conditions are not as favorable for the WVNFS as historical conditions preceding the late 1800s/early 1900s, current conditions are much improved compared to those at the time of listing. With the exception of localized habitat impacts, forest succession has resulted in older forest stands with improved forest structure, reflecting a continuing positive rangewide trend (Service 2006a, pp. 11–14, 19–20). With regard to forest composition, the amount and extent of red spruce in the Central Appalachians also appears to be gradually increasing (Adams *et al.* 1995, p. 101; Schuler *et al.* 2002, p. 92–93; Rollins 2005, pp. 39–51). Recent evidence also suggests improving trends in health and regeneration of red spruce-northern hardwood forests within the range of WVNFS (Adams *et al.* 1995, p. 101; Audley *et al.* 1999, pp. 179–199; Hornbeck and Kochenderfer 1998, pp. 198–200; Schuler *et al.* 2002, p. 92–94; Rollins 2005, pp. 74–78). The forested landscape within the range of WVNFS provides a high degree of functional connectivity, as evidenced by large patch sizes, numerous linkages, and persistence over multiple generations at monitoring sites across a range of forest conditions (Service 2007c, pp. 5–6, 9–11).

We analyzed impacts that the balsam and hemlock woolly adelgids, insect parasites accidentally introduced from Europe (Service 1990, p. 13), may be having on the WVNFS' habitat (Service 2006a, p. 17). The balsam woolly adelgid infects balsam fir (*Abies balsamea*) trees, causing damage or mortality to the host trees (Service 1990, p. 13). However, we believe the effect of the balsam woolly adelgid on WVNFS habitat is discountable because balsam fir is limited to a minor component of the WVNFS habitat (Peart *et al.* 1992, p. 149, 165). Red spruce occurs in or near stands of balsam fir, providing the WVNFS with alternative and higher value habitat where damage from the balsam woolly adelgid may have occurred. In addition, the impact of the balsam woolly adelgid on the small component of balsam fir within WVNFS habitat has already occurred (Service 2006a, p. 17).

The hemlock woolly adeglid has been in the United States since 1924. The insect damages eastern hemlock (*Tsuga canadensis*) trees by damaging new growth, which can cause defoliation and mortality (Service 2006a, p. 17). Only 7 percent of the WVNFS capture sites are dominated by Eastern hemlock instead of red spruce (Service 2006a, p. 17). However, work conducted on the WVNFS indicates that hardwood forests with little or no conifer component are not barriers to movement (Menzel *et al.* 2006a, p. 207). While hemlock woolly adelgid may remove the montane conifer component at less than 10 percent of the known capture sites, most, if not all, of these areas are in close proximity to red spruce-northern hardwood forests, significantly reducing the occasions where loss of Eastern hemlock could be detrimental to the WVNFS (Service 2006a, p. 17). Additionally, the West Virginia Department of Agriculture has an active detection program for hemlock woolly adelgid and a treatment program that will remain in place regardless of the listing status of the WVNFS. Therefore, even though the hemlock woolly adelgid may impact a minor component of the squirrel's habitat, we consider it to pose a negligible degree of risk to the WVNFS, because of the limited role of hemlock in the subspecies' survival, and presence of red spruce in the majority of the areas (Service 2006a, p. 17).

The potential impact of beech bark disease was also analyzed. Beech bark disease is caused by the beech scale insect (*Cryptococcus fagisuga*), followed by one of two fungi (*Nectria coccinea* var. *faginata* or *N. galligena*). The scale stresses and weakens the American beech tree (*Fagus grandifolia*) and the fungi then cause either localized lesions or decay and death of the entire tree (Service 2006a, pp. 17–18). Although American beech trees are common to the red spruce-northern hardwood forests of the Allegheny Highlands, in WVNFS habitat they usually occur in combination with red spruce and other hardwoods, particularly birch and maple. Therefore, despite having a devastating impact on the American beech component of the red spruce-northern hardwood forest, beech bark disease is not thought to render WVNFS habitat unsuitable (Service 2006a, p. 18). There is actually a potential short-term benefit to the WVNFS due to the creation of new nest cavities in the holes of dead and decaying beeches. Foraging habitat for the WVNFS may also improve with increases in large woody debris on the forest floor from the dead beech trees, which could promote the growth of underground fungi, one of the WVNFS' primary food sources (Carey *et al.* 1999, p. 54; Pyare and Longland 2001, p. 1008; Rosenberg and Anthony 1992, p.161; Waters *et al.* 2000, p. 85). Additionally, the removal of beech nuts is thought to be more detrimental to the southern flying squirrel because it is a high-energy food source for that species, and, therefore, would counter any small amount of direct competition between the WVNFS and the southern flying squirrel. Therefore, while beech bark disease affects a minor component of WVNFS habitat rangewide, we consider it to pose an overall low-to-moderate degree of risk for WVNFS, and this risk may be offset by the potential benefits of creation of new nest cavities, increase in a primary food source, and potential harm to the food supply of the southern flying squirrel (Service 2006a, p. 18).

We also analyzed the potential future impacts of climate change on the WVNFS's habitat. While there is much speculation on potential future impacts of climate change on the WVNFS, it is important to recognize that there is no evidence that climate changes observed to date have had any adverse impact on WVNFS or its habitat. For example, within the range of the WVNFS, inexplicable crown dieback (Mielke 1987, pp. 221–222) and declines in red spruce radial growth were reported in the 1980s (Adams *et al.* 1985, p. 315). Since the 1980s, there has been no evidence of widespread crown decline of red spruce throughout the range of WVNFS. By the late 1990s, Audley *et al.* (1998, pp. 177, 180, 190) noted that while a small percentage of individual trees sampled exhibited symptoms of reduced health and vigor, the majority of red spruce sampled in West Virginia appeared healthy. More recent dendrochronological surveys of red spruce stands in West Virginia detected this growth decline phenomenon occurring from about 1930 to 1990 (Schuler *et al.* 2002, p. 93; Hornbeck and Kochenderfer 1998, pp. 199–200). Since this time period, the decline appears to have ended in the central Appalachians—growth rates have leveled or shown slight increases (Schuler *et al.* 2002, p. 93, figure 3; Hornbeck and Kochenderfer 1998, p. 199–200) and regeneration remains unaffected (Schuler *et al.* 2002, pp. 92–93).

Red spruce is now recolonizing areas of hardwood forest near existing red spruce stands, areas that historically were red spruce until the logging and fires at the turn of the 20th century (Schuler *et al.* p. 2002, p. 89). There is

evidence that the red spruce-northern hardwood ecotone is either stabilizing or decreasing in elevation (expanding) to approximate its former extent (Adams *et al.* 1999, p. 235, Rollins 2005, p. 76). Rollins (2005, p. ii, 74–75) found that the amount and quality of red spruce at three study sites in the central Appalachians appeared to be gradually improving through natural regeneration.

Since then, Rollins has studied 9 additional sites, for a total of 12 representative sites distributed in the northern, central, and southern portions of the range of WVNFS. Stand data on trees, saplings and seedlings, soil chemistry, red spruce foliar chemistry, and the percent of red spruce roots covered by symbiotic fungal mycorrhizae are currently being analyzed between two sampling periods (1985 vs. 2005). Although a final report is not yet available, preliminary results indicate a reversal of the crown dieback conditions observed in 1985 (Connolly 2007).

This pattern is contrary to general projections that climate changes in the next 100 years may shift the geographic ranges of flora and fauna upwards in elevation and northward (IPCC 2002, p. 1). Considering the ecotone range expansion trends documented by Rollins (2005) and Adams *et al.* (1999), we expect that the extent and quality of the habitat for WVNFS is likely to continue to increase.

We looked at the possible range of effects of climate change on the WVNFS. Under warmer scenarios, several regional models project that mixed (hardwood and conifer) forests in the northeastern United States (including West Virginia and Virginia) may decrease in potential area, as they gradually shift into Canada over the next 100 years or more. By some projections, this possible decrease in potential habitat could be as small as −11 percent to −22 percent (Iverson *et al.* 2005, p. 34) or as large as −97 percent over 100 years (Hansen *et al.* 2001, p. 769). These models also project that northeast mixed hardwood and conifer forests may gradually be squeezed from the south by the advance of southeastern mixed forests to varying degrees (Inkley *et al.* 2004, p. 6). However, some models project that the biome remains intact under cooler scenarios (Hansen *et al.* 2001, p. 769; Inkley *et al.* 2004, p. 6, figure 3). As explained by Botkin *et al.* (2007, p. 230), ''the larger the scale of the primary units of the model, the simpler it is to estimate effects over large areas and times, but also the cruder the approximation is and the more likely that undesirable assumptions will prevail.'' Given this caveat, as well as the huge variation in possible views of the future noted above, all with unknown likelihoods of occurrence, we conclude that it is not possible to translate these potential scenarios into potential effects on WVNFS or its habitat over any meaningful timeframe.

We considered the map products provided by some of the public commenters (Lawler 2007a, unpub. maps). We spoke to Dr. Joshua Lawler (2007b), University of Washington, to gain a better understanding of the continentwide bioclimatic models he ran for all subspecies of northern flying squirrels. These models do not map vegetation directly, but attempt to do so indirectly by correlating the distribution of the various subspecies of northern flying squirrels to alternative scenarios of climate change. For the WVNFS, the models project that the future climate (2071–2100) within the range of the subspecies will be different from the baseline climate conditions of 1961–1990. Contrary to the commenters' speculation that these products project the extinction of WVNFS, the unpublished map products (Lawler 2007a, unpub. maps) provided by the commenters indicate only an unquantified potential range contraction of WVNFS. Botkin *et al.* (2007, p. 231) notes that bioclimatic models vary greatly in their projections of extinction, and that Lawler *et al.* (2006) have not attempted to validate any of the models they are using. Lawler *et al.* (2006, p. 1579) recognized that it would be difficult to translate these types of predictions into threats of extinction because actual range shifts would depend on dispersal, evolutionary flexibility, and species interactions. Dr. Lawler (2007b) stated that the model had a good degree of fit at the continentwide level, but the fit would be reduced, and the degree of uncertainty would be expected to be higher, at the State level. He indicated it is not possible to determine model error for the relatively small scale of the WVNFS' range in West Virginia and Virginia.

The WVNFS and other subspecies of *G. sabrinus* have demonstrated significant adaptability, resilience, mobility, and plasticity in habitat use by surviving landscape-level habitat changes during times of glacial retreat and advance during the Pleistocene, and by surviving intense landscape-level loss of forest during the late 1800s and early 1900s (Weigl 2007, p. 898). Over the past 100+ years, the WVNFS survived a change from a red spruce-dominated forest to a loss of much of the forest habitat, to a transitional regeneration of a hardwood-dominated forest, and a more recent increase in the red spruce component. As several commenters point out, hardwood trees have always been an important component of WVNFS habitat and there is no evidence that a gradual increase in hardwoods would cause dramatic population declines for the WVNFS. In fact, Weigl (2007, p. 899), citing two other studies in the northeast, noted that ''the species is known to occupy hardwood habitat without spruce or fir.'' The Service concludes that the WVNFS is expected to survive slow, gradual changes from long-term climate change.

Based upon a review of the current scientific studies, peer-review comments, the unpublished maps provided by the commenters, and discussions with modelers, the Service concludes that there is no evidence that current changes in climate have had an adverse impact on WVNFS. Long-term projections about climate change and its possible effects on WVNFS are complex and best viewed as possible alternative views of the future that have unknown likelihoods of occurrence. Therefore, based on the above information, we have determined that we are unable to establish climate change as a threat to the WVNFS within the foreseeable future.

Land Use Planning

Available information indicates that the threat posed by past habitat loss has been largely abated across most of the WVNFS' range. Implementation of the 2001 recovery plan amendment (Service 2001, p. 4) and the 2004 amendment to the MNF Land and Resource Management Plan (USDA Forest Service 2004, pp. 84a–84c, 87, 234–234b) significantly removed the threat of habitat loss (via logging) across much of the WVNFS' range. The recovery plan amendment recommended that suitable WVNFS habitat be considered during consultation with Federal agencies. The Forest Service reinforced this recommendation through an amendment to the MNF Land and Resource Management Plan, which limited vegetation management in all ''suitable habitat'' (as determined collaboratively by the Forest Service, Service, and WVDNR) to: (1) Research activities covered under an Act section 10 permit; (2) actions to improve or maintain WVNFS populations after research has demonstrated the beneficial effects of the proposed management; or (3) when project-level assessment results in no adverse effects. This conservation strategy has been carried forward into the MNF's recent

Forest Plan Revision (USDA Forest Service 2006a, Management Prescriptions 4.1 and parts of 5.0, 5.1, 6.2, and 8.0; USDA Forest Service 2006c, pp. 12, 19–20, 27).

It is important to note that section 7 of the Act provides regulatory flexibility to Federal agencies to complete their missions. This process allows Federal agencies to incidentally ''take'' individuals of a listed species as long as they insure their actions are not likely to jeopardize the entire species or adversely modify critical habitat. This regulatory option provided the MNF the ability to harvest and manage timber even in occupied WVNFS habitat. However, the MNF has avoided impacts to the WVNFS altogether while still maintaining a viable timber harvest program, which continues under the revised plan (USDA Forest Service 2006a).

After the WVNFS is delisted, the MNF is likely to amend the Forest Plan to incorporate its latest forest planning regulations, and to formally recognize that the WVNFS is no longer an endangered or threatened species. But given the MNF's desired future condition for Management Prescription 4.1 (summarized below), and history of proactive recovery efforts directed toward WVNFS conservation, the Service believes that the MNF will continue management and monitoring the red spruce-northern hardwood ecosystem that supports the WVNFS. Furthermore, the MNF's current timber management and harvest goals are based on achieving desired forest and habitat conditions and not on a regional economic or a supply/demand basis (USDA Forest Service 2006b, FEIS, Appendix I). The desired future condition for Management Prescription 4.1 focuses on developing a late successional stage (>120 years) forest over time (50+ years) with the multi-age stand structure that likely existed prior to exploitive logging (USDA 2006a, pp. III–12). At the stand level, desired vegetation conditions include a mix of trees of different ages, complex vertical habitat structure, scattered small openings (<2 ac) dominated by shrubs and saplings, scattered over-mature trees, and an abundance of snags, den trees, and downed woody debris.

Even if the MNF revises the current or subsequent Forest Plans to increase timber harvest, it is highly unlikely that the current WVNFS habitat would be impacted. About two-thirds of the MNF is fully stocked or overstocked timber. The MNF is growing nearly four times as much timber as is being harvested or dying from natural causes (USDA Forest Service 2006b, FEIS, Appendix I, p. I–155). Therefore, with the current surplus of available timber and the relatively small portion of the available timber currently being harvested, the MNF could substantially increase its annual harvest rate within the 330,000 available ac and still have no need to harvest in WVNFS habitat. The MNF's FEIS for the Forest Plan Revision describes three forest management alternatives that would result in a greater acreage available for timber harvest than the selected alternative (from 900 to 17,300 ac more) (USDA Forest Service 2006b, FEIS, Summary). The alternative with the greatest acreage available for timber harvest also includes a greater total acreage withheld from timber harvest to protect WVNFS habitat, Indiana bat (federally listed as endangered) habitat, river corridors, scenic areas, and streams buffers (367,396 ac or 68,703 ac more) than the selected alternative (298,693 ac), providing supporting evidence that the MNF has sufficient timber reserves if it wanted to increase timber harvest and still can protect WVNFS habitat.

The MNF is harvesting its timber outside of WVNFS habitat, at a sustainable rate. Alternatives have been identified that would provide additional acreage for timber harvesting without compromising WVNFS habitat. Therefore, the Service believes it is reasonable to expect the MNF will continue not to harvest timber in WVNFS habitat; a choice that would continue the agency's previous contributions to improve the WVNFS's status. We also believe that the MNF has the current and future capability to manage timber harvest in a way that does not harm the WVNFS after delisting and will do so.

Looking beyond the MNF, there is no evidence of any new sources of habitat loss throughout the current range of the WVNFS. According to analyses using the Menzel model, approximately 68 percent of areas modeled as habitat are now considered secured by public ownership and/or managed for the protection of the WVNFS (Menzel *et al.* 2006b, p.4). These areas include Canaan Valley National Wildlife Refuge (NWR) (created in 1994), Blackwater Falls and Canaan Valley State parks, Handley Wildlife Management Area, Kumbrabow State Forest, and the MNF (Service 2006a, pp. 12–14). An additional 5 percent of habitat is considered secure in Virginia on the GWNF.

Activities that have contributed to habitat loss and degradation since the time of listing occur only locally or occur on the periphery of the WVNFS's range (Service 2006a, pp. 11, 14, 20). These activities include limited highway development, recreational development, mining and gas exploration, timber management, and wind farm development (see ''Summary of Public Comments'', part F, issue 9). With regard to activities that are reasonably foreseeable to occur, some low level of local impacts are likely to continue into the future; however, there is no indication that the activities would ever be likely to occur over a landscape level, or at such a magnitude as to pose a threat to the continued existence of WVNFS throughout its range or in any significant portion of its range (Service 2006a, pp. 11, 14, 19–20).

For example, construction of Corridor H through the extreme northern part of the range of WVNFS is not expected to result in significant impacts to WVNFS or its habitat. Roads can adversely affect WVNFS movement by fragmenting habitat, although not all roads create absolute barriers. WVNFS are capable of gliding up to 200 ft, with the majority of the glides ranging from 16 to 82 ft (Scheibe *et al.* 2007, p. 857; Vernes 2001, pp. 1028–1029). WVNFS are known to have crossed logging roads, gravel roads, and ski slopes (Ford *et al.* 2007, p. 8; Menzel *et al.* 2006a, p. 207; Terry 2004, pp. 18–19). Menzel *et al.* (2004, p. 358) noted that many WVNFS day dens were located along or near abandoned skidder trails. Weigl *et al.* (1999, p. 61) found that *G. s. coloratus* frequently crossed patches of non-forested habitat, and one crossed a paved road several times. However, telemetry studies conducted on G. s. coloratus near the 2-lane paved Cherohala Skyway in North Carolina failed to document any evidence of squirrels attempting to cross this highway, even though in many cases the home ranges of the tracked squirrels were located in close proximity to the highway right-of-way (Weigl *et al.* 1999, pp. 69–73). Mean distances between forest edges across both sides of the right-of-way for that study ranged from 125 to 175 ft, and hence may have exceeded the normal gliding capability of a majority of *G. s coloratus.*

Range-wide habitat modeling has estimated that more than 235,000 ac of suitable WVNFS habitat exists south of the proposed Corridor H alignment and an additional 4,400 ac of suitable WVNFS habitat exists in the Blackwater Canyon area to the north of the alignment (Service 2006b, p. 19). Construction of the proposed project could decrease habitat connectivity within the northern habitats, or even create a permanent barrier to dispersal of the WVNFS between northern and southern areas. However, the amount of suitable habitat north and northeast of

the Blackwater canyon (approximately 4,400 ac) is considerable and we conclude that it is large enough that the current WVNFS population is likely to persist (Service 2006b, p. 23; Smith and Person 2007, p. 631). About 24,000 acres of suitable habitat exists in the Blackwater Canyon area south of the highway and this will remain connected by dispersal corridors to the remaining 211,000 acres of suitable habitat. Although the 235,000 acres (this figure is comprised of 211,000 acres plus the 24,000 acres in Blackwater Canyon) south of the proposed Corridor H alignment is not contiguous habitat, there are no sizeable gaps preventing squirrel dispersal, so we conclude that no portion of the population south of the alignment will be meaningfully affected by the road. This leaves only the question of the impact of the road footprint itself. A total of 745 ac of habitat for the WVNFS will be lost during construction of the proposed project (Service 2006b, p. 23; Service 2008, p. 20). This equates to a total loss of only 0.1 percent of the available highly suitable and suitable habitat for the subspecies, and therefore does not represent a significant threat.

The Service analyzed possible secondary impacts to WVNFS from the proposed Corridor H project from Parsons, WV to Davis, WV (Service 2006b, pp. 1–39) and Davis, WV to Bismarck, WV (Service 2008, pp. 1–32). Construction of this four-lane divided highway is expected to increase human accessibility to surrounding lands and could spur increased development in the lands adjacent to the project. However, a cumulative effects assessment, conducted by the West Virginia Department of Transportation (WVDOT) (2006, pp. 17–19) suggests there is an adequate amount of non-environmentally sensitive, low-elevation land that is not WVNFS habitat and that is available to support all development reasonably expected to occur as a result of the highway construction. WVDOT (2006, p. 20) modeled the worst-case scenario for development that was reasonably certain to occur after the highway was built, taking into consideration development and traffic patterns, and trends in employment and population growth. They mapped the raw private land (currently undeveloped) that was available to accommodate projected development. This was defined as land that was located outside of the 100-year floodplain that did not have slopes greater than 25 percent, that did not have wetlands, and that did not have existing development or was not currently under public ownership. Thus is appears that the land identified as being available to accommodate development corresponds to those lands that have the greatest likelihood of being developed due to lack of constraints.

As a general matter, because the majority of WVNFS habitat is publicly owned and managed, future development throughout the range of the WVNFS is expected to be minimal. The entire range of the WVNFS is within the Allegheny Mountains Valley Physiographic Region, an area of steep terrain and low human population density and growth. In 2005, the proportion of land use classified as low density and high density development within this physiographic region in West Virginia was 0.4 percent and 0.1 percent, respectively (WVDNR 2006b, p. 10). During 2000, population densities in the counties in West Virginia in which the WVNFS occurs were among the lowest in the State, ranging from 9.7 to 40.4 persons per square mile (WVDNR 2006b, p. 17); and with the exception of Randolph County (0.3 percent increase), the 10-year population trend (1990–2000) in all of these counties decreased (WVDNR 2006b, p. 18).

Summary of Factor A: Although the quantity and quality of WVNFS habitat is reduced from historical levels (preceding the logging and burning era of the late 1800s and early 1900s), we now know that the WVNFS is more resilient in its habitat use than formerly thought, probably because of its mobility and plasticity in nest tree selection. Additionally, the habitat is more connected than previously thought, and habitat trends are moving in a positive direction in terms of forest regeneration and conservation. Also, the subspecies continues to persist for multiple generations at many locations across its historical range. Impacts from proposed transportation projects and potential future housing development are localized and minimal. For the foreseeable future, any localized loss of habitat due to timber harvest or development on private lands will not reduce the overall quality of habitat for the WVNFS, rather it will just slightly reduce the amount of improvement in habitat conditions. For these reasons, and the lack of any rangewide threats to WVNFS habitat, the present or threatened destruction, modification, or curtailment of its habitat or range is no longer currently a threat to the WVNFS or likely to become so in the foreseeable future.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The final listing rule concluded that the WVNFS was not known to be threatened by human utilization but noted that flying squirrels are highly desirable as pets to some persons, and collecting for such purposes is at least a potential threat to the already rare WVNFS (50 FR 26999). The WVNFS has been captured only for scientific or educational purposes through nest box and live trap methods, and not for market collecting or commercial use. Capture for scientific or educational purposes has been very limited, is regulated by state permitting systems, and has not proven to be detrimental to the continued existence of the WVNFS.

In the 21 years since listing, the Service has not received any evidence that commercial use in the pet trade or recreational use of the WVNFS is a threat. There are no law enforcement records of illegal harvesting or commercialization of the subspecies. Several factors indicate that delisting will not significantly change that. The WVNFS is a thinly dispersed, nocturnal mammal that is very difficult to catch. For example, Menzel captured the WVNFS at a rate of 0.227 captures per 100 trap nights (Menzel 2003, p. 65), and the WVDNR's nest box monitoring program has had only a 2 percent average success rate of squirrel occupancy per box checked (Service 2006a, p. 7). Additionally, once the WVNFS is delisted, its collection by hunting or trapping will still be illegal under West Virginia and Virginia state laws (West Virginia Code 20–2-5(26); Code of Virginia 29.1–521.A.10; 29.1–566 and 29.1–530A.). See further discussion in Factor D under the Summary of Factors Affecting the Species below. WVNFS is not currently defined as a game or furbearing animal that can be legally hunted or trapped in either state, and as such, there currently are no bag limits allowed for WVNFS (West Virginia Code 20–1-2; Code of Virginia 29.1–100, 29.1–530.A). Moreover, once the WVNFS is delisted, its capture for scientific and educational purposes will still be regulated through collection permitting systems of the WVDNR (West Virginia Code 20–2-50) and the Virginia Department of Game and Inland Fisheries (VDGIF) (Code of Virginia 29.1–568).

Summary of Factor B: Overutilization for any purpose is not currently considered a threat and is not anticipated to emerge as a threat in the foreseeable future.

C. Disease or Predation

The final listing rule (50 FR 26999) made no mention of disease as a threat to the WVNFS, and we are not aware of any evidence since the time of listing that suggests the health of WVNFS individuals is threatened by disease. Of the more than 1,000 squirrel captures since 1985, none have shown signs of disease (Service 2006a, p.15).

The final listing rule predicted that increasing human recreational use of northern flying squirrel habitat might result in predation on the WVNFS by pets, especially cats (50 FR 26999). While natural predators of the WVNFS may include weasel, fox, mink, owls, hawks, bobcat, skunk, raccoon, snakes, and fisher, we are not aware of any scientific or commercial evidence since the time of listing to support pets preying upon WVNFS (Service 2006c, p. 15), or to suggest that natural predation limits populations of WVNFS. As analyzed in our biological opinion for the Camp Wilderness Habitat Conservation Plan (HCP) (Service 2003, pp.12, 23), there are no documented deaths of northern flying squirrels, particularly the WVNFS, as a result of impacts of human recreational use or occupancy in, or near, its habitat, and pets are not predicted to be a substantial threat in the future (Service 2003, pp. 12, 23–25). Since the majority of WVNFS habitat is found on the MNF, human encroachment into WVNFS habitat is uncommon and localized (e.g., Canaan Valley and Snowshoe Mountain) (Service 2003, pp. 12, 23–25; Service 2006c, p. 15; Service 2006a, pp. 15, 20), and is therefore unlikely to become a threat to the WVNFS in the foreseeable future.

Summary of Factor C: Disease and predation are not currently threats to the WVNFS and are not likely to become threats in the foreseeable future.

D. Inadequacy of Existing Regulatory Mechanisms

The final listing rule stated that this factor was not known to be applicable (50 FR 26999). Currently, all threats under Factors A-C, and E have been eliminated or abated, and no regulatory mechanisms are needed to delist the WVNFS. Therefore, the inadequacy of regulatory mechanisms is not considered a threat to the subspecies. Nevertheless, even though not considered necessary for delisting, the laws discussed below will continue to provide some level of benefits to the WVNFS.

State Laws

The State of West Virginia does not currently have any State laws protecting endangered species. However, for the reasons stated in the discussions of Factors A, B, C and E, there are no current threats to the subspecies as a whole that require additional regulation. Therefore, the lack of an endangered species State law in West Virginia is not expected to negatively impact the WVNFS. See Factor B above for additional information.

In the Commonwealth of Virginia, the WVNFS has been listed as endangered under the Commonwealth's endangered species act since its Federal listing in 1985. This Commonwealth law, which is administered by the VDGIF, prohibits take of Commonwealth-listed species and is currently applicable to the WVNFS. The State has the authority to continue protection of the WVNFS under the State law once it is removed from the Federal List of Threatened and Endangered Wildlife (Virginia Code 29.1–566) and intends to do so (Reynolds 2008). Lack of current threats, along with the Commonwealth's endangered species act, ensures the WVNFS' persistence in Virginia. See Factor B above for additional information.

E. Other Natural or Manmade Factors Affecting the Continued Existence of the Species

Competition With Southern Flying Squirrel

The final listing rule (50 FR 26999) concluded that the WVNFS was threatened by competition with the southern flying squirrel for habitat and by the spread of a parasite from the southern flying squirrel to the WVNFS. However, evidence collected since the time of listing indicates that the occurrence and potential severity of the southern flying squirrel's impacts are limited. The occurrence of the two subspecies has been documented at 20 percent of the known occupied WVNFS sites with no evidence of local extirpation of WVNFS. Over-competition by the southern flying squirrel for den sites does not appear to be affecting population persistence of the WVNFS. In addition, any competition between the two subspecies may be somewhat ameliorated by the spread of beech bark disease (see Factor A above for further information), which results in the reduced availability of beech nuts, an important food source for the southern flying squirrel (Service 2006a, p. 18).

The final listing rule cited evidence from a captive study in the 1960s that a nematode parasite, possibly carried by the southern flying squirrel, might be lethal to the WVNFS (50 FR 26999). The rule stated that while the southern flying squirrels appeared healthy, all the northern flying squirrels weakened and died within 3 months, and this mortality was associated with heavy infestations of the nematode parasite. All the southern flying squirrels also carried the parasite, but they remained in apparent good health and continued to breed (50 FR 26999). Based on review of the original dissertation, the cause of the northern flying squirrel mortality was never completely understood (Weigl 1968, pp. 129–150). Weigl *et al.* (1999, pp. 74–75, 2007 p. 902) hypothesized that survival and maturation rates of the parasite are limited by below-freezing temperatures that occur within the range of the WVNFS, but were not replicated in the 1960s captive study. The conditions created in the captive study apparently do not closely relate to naturally occurring conditions, and observations of WVNFS individuals captured in the last 20 years (including areas also occupied by the southern flying squirrel) have revealed no signs of sickness, debilitation, or death due to parasitic infestation.

Other Natural or Manmade Threats

The 1985 final listing rule did not address additional threats under Factor E. However, the delisting criterion within the 1990 recovery plan addressed potential threats, such as forest pests (see Factor A) and acid rain, to the existence of the high elevation forests on which the squirrels (*G. s. fuscus* and *G. s. coloratus*) depend (Service 1990, p. 19). These potential threats were included in the overall analysis of the status of the WVNFS in the 5-year review (Service 2006a, pp. 4–6) and are analyzed in more detail below.

Acid rain (more appropriately referred to as acid deposition) has been cited as potentially damaging forest ecosystems, especially the spruce-fir forests in portions of the Appalachian Mountains (NAPAP 2005, p. 41). Although empirical data are lacking regarding specific effects on the WVNFS, the long-term potential exists for anthropogenic acid deposition to diminish the extent and quality of the boreal-like spruce forests that have survived on the high ridges and plateaus, by pushing them farther up the slopes, and, if warming continues, reducing and eventually eliminating habitat at higher elevations. However, there has been no evidence of acid deposition reducing the extent of red spruce-northern hardwood forests in the Central Appalachians since the WVNFS' listing in 1985 (Service 2006a, p. 18, Adams 1999, p. 24) (See above

Response to Comments, I—Climate Change Concerns, Issues 4 and 5).

Given the naturally acidic nature of soils in spruce forests, it is unlikely that acid deposition has contributed significantly to their further acidification (Johnson and Fernandez 1992, p. 262; Johnson et al, 1992, pp. 391, 396). These forests do not reach the very low winter temperatures observed farther north and have not exhibited the red spruce winter kill due to decreased cold tolerance that has been observed in the northern Appalachians and Adirondacks (Peart *et al.* 1992, p. 180; DeHayes 1992, p. 296; NAPAP 2005, p. 41). Sulphate deposition in the Central Appalachians has dropped by at least 25 percent in the last 10 years and pH of deposition has increased, making this runoff less acidic (Johnson *et al.* 1992, pp. 388, 391; Adams and Kochenderfer 2007, p. 99–100, Adams *et al.* 2006, pp. 4–6, 216–217). Deposition of nitrogen has either leveled off or may be slightly increasing, but the overall acid load is decreasing in high elevation red spruce forests of the Central Appalachians (Adams and Kochenderfer 2007, p. 100–101; Johnson *et al.* 1992, p. 391; Adams *et al.* 2006, pp. 4–6, 266). Also, compared to many deciduous trees, red spruce also is more resistant to ozone, which is often found in combination with high levels of acid deposition (McLaughlin and Kohut 1992, pp. 360–366; Adams 2007). Given the factors of naturally acidic soils, increasing pH of deposition, lack of extreme cold temperatures, resistance to ozone impacts, and lack of adverse impacts from nitrogen, there is no current information demonstrating a negative impact on these high elevation forests. Furthermore, the current trends of the decreasing overall acid load indicate that acid deposition is not a significant threat to the subspecies' habitat in the foreseeable future.

Thus, to the extent that the effect of acid deposition on *G. s. fuscus* and its habitat are reasonably predictable, we concluded that they are not a significant threat to the subspecies' habitat in the foreseeable future.

Summary of Factor E: Overall, our analysis of the other natural and manmade factors, either alone or in combination, indicates that the WVNFS is not in danger of extinction throughout all or a significant portion of its range, or likely to become endangered within the foreseeable future.

Conclusion of the 5-Factor Analysis

As demonstrated in our 5-factor analysis, threats to the WVNFS have been abated or sufficiently minimized over the entire range of the subspecies. Relative to the information available at the time of listing, recovery actions, forest regeneration, and a reduction or abatement of threats have led to: (1) A significant increase in the number of known WVNFS captures and distinct capture locations; (2) verification of multiple-generation reproduction and persistence throughout the range; (3) proof of resiliency of the squirrels; and (4) the substantial improvement and continued expansion of suitable habitat rangewide.

The biological principles under which we evaluate the rangewide population status of the WVNFS relative to its long-term conservation are representation, redundancy, and resiliency (Groves 2003, pp. 30–32). At the time of listing, the WVNFS was thought to be an extremely rare and declining taxon that had disappeared from most of its historical range. We now know that occupancy of available habitat has increased and is much more widespread and well connected than formerly thought, and that the geographic extent of the WVNFS' range approximates historical range boundaries. The red spruce-northern hardwood forests have substantially recovered from the vast clear-cutting at the turn of the 20th century, and continue to improve. Additionally, we have learned that the WVNFS has adapted to changes in the spruce ecosystem over the past hundred years, and can successfully exploit the existing habitat conditions throughout the landscape. Habitat patch sizes within the core of the range of WVNFS are sufficiently large and well connected by numerous linkages to facilitate adequate WVNFS dispersal among population centers (Service 2007c, pp. 9–12). Although there remains geographic separation (and likely has been since the end of the Pleistocene) between a few of the habitat areas supporting population centers at the edge of the range, this habit matrix overall provides a relatively high degree of functional connectivity, as evidenced by constant occupancy of habitat across a range of forest conditions over multiple generations. The WVNFS has demonstrated more flexibility in its habitat use than previously thought, including a capacity to move freely and become widely dispersed. Thus, there is adequate representation (i.e., occupancy of representative habitats formerly occupied by the WVNFS across its range) and redundancy (i.e., distribution of populations in a pattern that offsets unforeseen losses across a portion of the WVNFS' range) (Service 2007c, pp. 6–12).

Compared to most other North American tree squirrels, *G. sabrinus* demonstrates resilience and behavioral plasticity (Weigl 2007, p. 898). The species survived glacial advances in the Pleistocene, as well as widespread loss of forest cover from logging and burning in the late 1800s/early 1900s (Weigl 2007, p. 898; Rentch *et al.* 2007, p. 441). Studies have confirmed the ability of *G. sabrinus* to adjust its biology to survive a wide range of environmental conditions, such as: The ability to occupy forests of varying spruce and hardwood compositions (Weigl 2007, p. 898–899); the ability to survive short cold snaps by dropping its body temperature without becoming torpid (Weigl 2007, p. 898); the ability to generally subsist on fungi and lichens, buds, berries, and staminant cones, but to occasionally use mast (Weigl 2007, p. 898); the ability to delay reproduction in response to environmental variables (Weigl *et al.* 1999, p. 32, 79); the ability to nest in a wide variety of trees (Menzel *et al.* 2004, pp. 360, 363–364; Menzel *et al.* 2006b, pp. 1–3, 6, 7; Menzel *et al.* 2006b, p. 208; Ford *et al.* 2004, p. 430); and the ability to recolonize new habitat areas over time by adjusting its activity patterns to meet ecological requirements in and around patches of forest (Menzel *et al.* 2006b, p. 208).

Survey and monitoring efforts at 109 sites over the past 21 years have shown a relatively high degree of population stability, as evidenced by a high degree of persistence and successful reproduction over multiple generations throughout the historical range (Service 2007c, pp. 9–11). There is no evidence of extirpation of a local population or of a deleterious source-sink metapopulation dynamic (Service 2007c, p. 11). As previously described, the current and future trend for habitat quantity, quality, and connectivity is expected to be favorable because of the continuing recovery of the red spruce-northern hardwood ecosystem and the lack of rangewide threats to WVNFS habitat (see Factor A under the Summary of Factors Affecting the Species above, and Service (2007b, pp. 3–8)). As habitat availability increases into the future, the carrying capacity of protected habitat should continue to ensure persistence of populations of the WVNFS.

Recovery efforts have provided increased attention and focus on the WVNFS and the habitat upon which it depends. Numerous conservation actions have been implemented since 1985 by land stewards, biologists, government agencies, and conservation groups. These include: Research and recovery actions specified in the 1990 recovery plan and 2001 recovery plan update for the WVNFS; conservation

provisions incorporated into future expansion of the Corridor H highway at the edge of subspecies' range (Service 2008, pp. 3–4, 22–26; 2006b, pp. 4–8, 28–32); minimization and mitigation measures specified in two HCPs at Snowshoe Mountain, specifically the protection of approximately 200 ac of WVNFS habitat in perpetuity [BHE Environmental, Inc. (BHE) 2003, pp. 34–42, Appendix F; BHE 2005, pp. 49–55]; red spruce plantings on public and private lands; and conservation provisions in the 1986 MNF Land and Resource Management Plan (USDA Forest Service 1986, pp. X–1–X–3), 2004 Forest Plan Amendment (USDA Forest Service 2004, p. 84, 84a, 84c, 87, pp. 234–234b), and 2006 Forest Plan Revision (USDA Forest Service 2006a, Management Prescription 4.1 and portions of 5.0, 5.1, 6.2, and 8.0). Of particular note are the habitat protection initiatives that have occurred on both public and private lands, the development of habitat models and research on red spruce-northern hardwood forest restoration, and the establishment of Canaan Valley NWR.

In summary, all of the past, existing, or potential future threats to WVNFS, either alone or in combination, have either been eliminated or largely abated throughout all of its range. The major factor in listing the WVNFS was the loss of habitat due to the logging era at the turn of the 20th century. This threat has largely been abated as evidenced by the substantial recovery and continued improvement of the preferred habitat of the WVNFS, red spruce-northern hardwood forests. Therefore, we have determined that the WVNFS is not in danger of extinction or likely to become so throughout its range in the foreseeable future.

Significant Portion of the Range Analysis

Having determined the WVNFS is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we must next consider whether the subspecies is in danger of extinction or is likely to become so in the foreseeable future in any significant portions of its range.

A portion of a species' range is significant if it is part of the current range of the species and if it is important to the conservation of the species because it contributes meaningfully to the representation, resiliency, or redundancy of the species. The contribution must be at a level such that its loss would result in a decrease in the ability to conserve the species.

Applying the definition described above for determining whether a species is endangered or threatened in a significant portion of its range, we first addressed whether any portions of the range of WVNFS warranted further consideration. As discussed in Factor A—Land Use Planning, there is one small geographic area where localized habitat threats still exist due to a future road expansion. However, we concluded that this area did not warrant further consideration because this area is very small (in the context of the range of the WVNFS) and has no substantive effect on the viability of the subspecies, and thus there was no substantial information that this area is a significant portion of the range (see Service prepared document ''*Analysis of significant portion of the range for the West Virginia northern flying squirrel*'' (Service 2007b, pp. 1–6). Therefore, based on discussion of the threats above, we do not foresee the loss or destruction of any portions of the subspecies' range such that our ability to conserve the subspecies would be decreased. Therefore, we find that the WVNFS is not in danger of extinction and is not likely to become endangered in the foreseeable future throughout all or a significant portion of its range.

Effects of the Rule

Promulgation of this final rule will affect the protections afforded the WVNFS under the Act. Taking, interstate commerce, import, and export of WVNFS are no longer prohibited under the Act. Removal of the WVNFS from the List of Endangered and Threatened Wildlife does not supersede any State regulations. Federal agencies are no longer required to consult with us under section 7 of the Act to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the subspecies' continued existence. However, for the approximately 68 percent of the WVNFS habitat on the MNF, and the small area (5 percent) of habitat located within the GWNF, the activities impacting the WNVFS and its habitat must comply with appropriate Forest Service management plans. There is no critical habitat designated for the WVNFS.

Post-Delisting Monitoring Plan

Section 4(g)(1) of the Act requires us, in cooperation with the States, to implement a monitoring program for not less than 5 years for all species that have been recovered and delisted. The purpose of this requirement is to develop a program that detects the failure of any delisted species to sustain itself without the protective measures provided by the Act. If, at any time during the monitoring period, data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing.

To further ensure the long-term conservation of the WVNFS, a post-delisting monitoring (PDM) plan has been developed that lays out a 10-year framework to monitor the status of the subspecies (Service 2007c, pp. 1–27). The Plan focuses primarily on monitoring of (1) Habitat status and trends and (2) implementation of habitat management plans and agreements. Habitat changes will be tracked rangewide by interpretation of remote-sensed imagery obtained at or near the time of delisting (baseline), compared to the end of the PDM period. These data will be verified by a subsample of stand data and on the ground field checks. In addition, land managers will self-report annually on accomplishment of key components of land management plans or agreements for WVNFS, including the acreage of habitat modified (positively or negatively), as well as land management problems and solutions.

The PDM plan also includes actions for monitoring of WVNFS distribution and persistence. The nest box and live trapping survey component will be largely a continuation of ongoing annual presence/absence surveys by the WVDNR, MNF, and other participants, but with an increased emphasis on covering as much of the extant distribution within core habitat areas as possible. This will help determine if WVNFS continue to be present in these areas over multiple generations.

The PDM plan identifies measurable management thresholds and responses for detecting and reacting to significant changes in WVNFS habitat, distribution, and persistence. If declines are detected equaling or exceeding these thresholds, the Service, in combination with other PDM participants, will investigate causes of these declines, including consideration of habitat changes, low natality, deaths or emigration, weather, trap shyness, competition for nest sites, or any other significant evidence. The result of the investigation will be to determine if the WVNFS warrants expanded monitoring, additional research, additional habitat protection, and/or resumption of Federal protection under the Act. At the end of the 10-year monitoring program, the Service will conduct a final review. It is the intent of the Service to work with all of our partners towards maintaining the recovered status of the WVNFS.

The final PDM plan is available on the Service's northeast region Web site, *http://www.fws.gov/northeast/endangered.*

Paperwork Reduction Act

This rule does not contain any new collections of information under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*). An agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

We have determined that Environmental Assessments and Environmental Impact Statements, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited herein is available upon request from the West Virginia Field Office (see **FOR FURTHER INFORMATION CONTACT** above).

Author

The primary author of this final rule is Laura Hill, Endangered Species Biologist and species lead for the WVNFS in our West Virginia Field Office (see **FOR FURTHER INFORMATION CONTACT** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Regulation Promulgation

■ Accordingly, we amend part 17, subchapter B of Chapter I, title 50 of the Code of Federal Regulations as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

■ 2. Amend § 17.11(h) is amended by removing the entry for ''Squirrel, Virginia northern flying'' under ''MAMMALS'' from the List of Endangered and Threatened Wildlife.

Dated: August 15, 2008.

Bryan Arroyo,

Acting Director, U.S. Fish and Wildlife Service.

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