August 29, 2014

Public Comments Processing,
Attn: FWS–R5–ES–2011–0024
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042–PDM
Arlington, VA 22203

RE: Final Determination on the Proposed Endangered Status for the Northern Long-Eared Bat, 78 Fed. Reg. 61046 (October 2, 2013)

To whom it may concern:

The Allegheny, New York, and New England units of the Society of American Foresters (SAF) thank the US Fish and Wildlife Service (USFWS) for the opportunity to offer comments on the proposed listing of the northern long-eared bat (NLEB) as Endangered under the Endangered Species Act (ESA). Our organizations, as local units of SAF, represent over 2,300 professional foresters across the states of West Virginia, Maryland, Delaware, Pennsylvania, New Jersey, New York, Connecticut, Massachusetts, Vermont, New Hampshire, Rhode Island, and Maine. Our foresters work for a wide variety of employers, including industry; state forestry and wildlife agencies; federal, state, and county park systems; urban and community forestry; research and academia; nonprofit conservation organizations including land trusts and wildlife-focused organizations; and consulting foresters, who work with large forest landowners, farmers, corporations, hunting clubs, and nonindustrial private forest landowners. Our members choose SAF as their professional society because they care deeply about the perpetuation of a healthy forest ecosystem in the Northeast and Mid-Atlantic states.

SAF has a history of valuing biological diversity, and promoting good stewardship that considers such biodiversity in the context of ecosystem management[1]. (For ease of reading, footnotes have been placed at the end of this letter.) As foresters, we understand the complex nature of forest ecosystems and know that bats—including the NLEB—are important regulators of insect populations in and around forests. By consuming large numbers of insects, bats help to control certain insects that would otherwise damage trees, crops, wildlife, and spread disease amongst humans.

Our members are concerned about the devastating effects of White Nose Syndrome (WNS) on the NLEB and other bat species. As the proposed rule states, it is not lack of habitat or the alteration of habitat that has resulted in the observed population decline that has brought about the proposed listing of the NLEB. The observed population decline appears to be caused solely by WNS.

The sources cited within the proposed rule—which USFWS has deemed to be the best available science—indicate sustainable forest management is not a threat to this species[2]. Further, we find no logical or scientific evidence that sustainable forest management—which we define as the application of

appropriate silivcultural techniques and best management practices (BMP)—is an additional stress on this species at this time[3].

The proposed rule includes sustainable forest management in Factor A, alongside activities that convert forest to non-forested land uses, such as residential development, coal mining, oil and gas development, and highway construction. Because modern silvicultural methods are designed to mimic natural disturbances, sustainable forest management should not be included with the above-mentioned conversion activities. Further, sustainable forest management practices rarely, if ever, result in fragmentation[2,3]. Land use change results in fragmentation. Regeneration harvests result in young forest which, of course, develops into mature forest. Those young forests serve a large diversity of wildlife in the form of foraging and other habitats including any number of forest-interior species, such as forest interior bird species. We view sustainable forest management as creating habitat heterogeneity (Franklin et al 2002).

Research results support the view that sustainable forest management should be thought of as a positive management practice for restoring or enhancing habitat suitability or quality for many species[4]. Additionally, forestry has been practiced for many decades in the Northeast and Mid-Atlantic, during which time NLEB populations remained healthy and abundant. This long history suggests that forestry has demonstrated itself as no threat to NLEB.

Our remaining comments will focus on how sustainable forest management is practiced, particularly in the Northeast and Mid-Atlantic and how sustainable forest management and wildlife management can—and do—intersect collaboratively. Sustainable forest management can be an effective conservation and recovery tool, and SAF members are ready and willing to work with USFWS to accomplish these goals.

Although it is easy to review old, mostly pre-1950 writings on forestry and conclude that the sole purpose of forestry is for the production of timber and fiber and the improvement of site productivity, it is crucial to note that modern sustainable forest management is focused on the meeting of the goals and objectives of the forest landowner over the long-term. Although very rural places in the Northeast and the Mid-Atlantic contain some high-intensity managed forests (including northern Maine, the Adirondacks, the Allegheny Plateau, and parts of West Virginia), the Northeast and Mid-Atlantic have been rapidly urbanizing since the end of the Second World War. Today, most of the forests within our states are managed primarily for objectives other than timber and fiber—such as wildlife resources, recreation, etc.—and that timber and fiber is a byproduct of those activities, rather than vice versa. We also note the very high participation in third-party certification programs for forest sustainability (Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI)) by those high-intensity managed forests in our states.

Sustainable forest management is the logical middle ground between cut-and-run exploitation of the forest, and the elimination of human use and disturbance. Viewed through this lens, we believe that the rich scientific information gathered by USFWS in support of the proposed rule demonstrates that sustainable forest management can—and does—benefit NLEB and myriad other forest-dependent species by creating temporary patches of young forest within a larger forest matrix, reducing canopy closure in overstocked and densely stocked forest stands, creating complex forest structure in both the stand- and landscape-level, and through the creation of snags. We write with conviction that sustainable forest management improves NLEB habitat, and our members wish to work in any way to assist USFWS understand modern forestry and habitat management.

Sustainable forest management:

- Benefits a wide variety of wildlife, economic, ecological, and societal values;
- Maintains a broad spectrum of age classes across landscapes to benefit a wide variety of forest flora and fauna, including those dependent on interior forest characteristics;
- Serves to improve forest health by maintaining reasonable stocking levels similar to historical levels, and by reducing the amount and type of forest fire fuel loading;
- Mimics natural disturbances and helps to maintain and regulate ecosystem function; and
- Restores degraded ecosystems.

Many of these values may be impacted by well-intentioned but overly restrictive management schemes[5]. Examples could include:

- Delay in implementing habitat management practices to encourage other imperiled wildlife reliant on young forests, such as the golden-winged warbler and the New England cottontail;
- Delay in implementing forest restoration or improvement practices for imperiled flora threatened by overstocked or exceedingly shady forest stand conditions, such as small-whorled pogonia;
- Delay in removing hazard trees from urban and community forests, particularly where such hazard trees involve a clear and present danger to human life;
- Disruption or elimination of summer harvest schedules, which could have widespread and catastrophic consequences to the 128,000 people employed in some aspect of the forestry and forest products community in our states; and
- Disruption or delay in the proper stewardship of small, nonindustrial private forest lands within our states, of which in some states annual activity is mandated under rural or agricultural preferential property tax abatement programs.

Our members care about the future of the NLEB, and we offer our assistance in any technical review of the forest ecosystem science associated with the rule, interim guidance, or any habitat conservation planning. If listing is warranted, USFWS should strongly consider a threatened designation[6], which would provide ample protections while also allowing activities that minimally affect the NLEB—like sustainable forest management—to continue.

We appreciate your time and consideration and look forward to your response.

Yours in Conservation,

Michael Kusko, Chair	Mariann Johnston, Chair	James Harding, Chair
Allegheny SAF	New York SAF	New England SAF

Mission Statement

The Society of American Foresters (SAF) is the national scientific and educational organization representing the forestry profession in the United States. Founded in 1900 by Gifford Pinchot, it is the largest professional society for foresters in the world. The mission of the Society of American Foresters is to advance the science, education, technology, and practice of forestry; to enhance the competency of its members; to establish professional excellence; and, to use the knowledge, skills, and conservation ethic of the profession to ensure the continued health and use of forest ecosystems and the present and future availability of forest resources to benefit society. SAF is a nonprofit organization meeting the requirements of 501(c)3. SAF members include natural resource professionals in public and private settings, researchers, CEOs, administrators, educators, and students.

FOOTNOTES

[1] See attached position statement on Biological Diversity in Forested Ecosystems, also available at: http://www.eforester.org/fp/Biological_Diversity_in_Forest_Ecosystems.pdf

See also attached position statement on Protecting Endangered Species Habitat on Private Land, also available at
http://www.eforester.org/fp/Protecting_Endangered_Species_Habitat_on_Private_Land.pdf

[2] Several justifications within the proposal suggest that varying degrees of canopy closure, disturbance history, or purported lack of snags associated with sustainable forest management would harm NLEB habitat. In order to draw the stated conclusion, the sources in the proposal were examined and compared with the assertions attributed to them.

On page 61055, second column, the proposal notes that a study (Carter and Feldhamer 2005) conducted in southern Illinois observed roosting bats in areas with greater canopy cover than what was found in random plots. It should be noted in the proposal that the study was conducted in an area "greatly impacted by past flooding" and therefore of limited utility for range-wide recommendations. In studying an area with "extensive tree mortality," the remarkable part of the study is not that NLEB preferred summer roosts in areas with 61.3% +/- 6.5% canopy closure (which is remarkably in-line with other studies described elsewhere in the proposal), but rather that the canopy closure in the random plots was so very low (44.0% +/- 5.3%).

On page 61057, third column, the proposal discusses "data indicating that mature forests are an important habitat type for foraging [NLEB]." However, the paper cited (Caceres and Pybus 1997) on page 2 only makes one mention of studies indicating the importance of mature forests to foraging NLEB but does not provide any citations. The assertion appears to rest on data collected from the Interior (Western) Hemlock Forest Zone of British Columbia, as page 10 of that paper cites unpublished data by the same author. This forest cover type, also known as the western red cedar-western hemlock and the western hemlock-Sitka spruce cover types, overlaps less than 1% of the range of NLEB. That overlap only exists in Canada.

On page 61060, second column, following a discussion of studies of NLEB in managed forests, the proposal states "However, the northern long-eared bat has shown a preference for contiguous tracts of forest cover for foraging." However, the citations given make no such claim for preference for *contiguous* tracts. Owen et al (2003) states "Because of the large amount of intact forest available (>60%) across the study area, the majority (>50%) of the foraging area for [NLEB] was found in the intact forest type." Thus, this study actually found that intact forest (as compared to various harvested conditions) was used less than would be expected by chance. Yates and Muzika (2006) study occupancy, not foraging. These researchers found that no forest condition variables were able to sufficiently explain presence-absence at local (i.e., patch) scales. Further, the researchers found that at the landscape (i.e., regional) scale, while a patch shape complexity index was positively associated with occupancy, occupancy also increased with greater interspersion of patch types. It was noted that the positive association with greater interspersion of patch types did not support a clear preference for intact forest interior. These findings do not support intact homogenous "core" or "intact" forest as a clear factor in occupancy as indicated by the Proposed Listing.

Regardless, the sentence implies that sustainable forest management activities result in fragmentation, or conversion from a forest cover type. Although it is possible to construct scenarios where poor planning or execution could result in fragmentation, SAF represents professional foresters who operate at the high standards needed to differentiate sustainable forest management from activities that are less than sustainable or that could result in fragmentation.

Later in the same paragraph, the Proposed Listing states "if roost networks are disturbed through timber harvesting, there may be more dispersal and fewer shared roost trees, which may lead to less communications between bats in addition to less disease transmission (Johnson et al. 2012, p. 230)." Knowledge of how modification of habitat or potential habitat may affect bats in the context of WNS is not well-documented, and a much greater understanding of the spatiotemporal dynamics of the species in relation to habitat conditions is needed.

In the same paragraph, the Proposed Listing states that "[i]n the Appalachians, Ford et al. (2006, p. 20) assessed that northern long-eared bats may be a suitable management indicator species for assessing mature forest ecosystem integrity, since they found male bats using roosts in mature forest stands of mostly second growth or regenerated forests." However, that study was based on one experimental forest in West Virginia containing a population of twelve bats, where the authors looked specifically at one tree species as a substrate. Further, the study was not an assessment of the use of NLEB as an indicator species. The statement cited by USFWS was a suggestion placed within the discussion, not a central conclusion of the study itself. Regardless, the concern here is that the statement is contained in a paragraph that, in general, suggests that sustainable forestry practices negatively affect NLEB, contiguous forests, and ecosystem quality. No such finding is made in Ford et al (2006).

On page 61060, third column, the proposal mentions "forestry practices and resulting fragmentation." Sustainable forest management practices rarely, if ever, result in fragmentation in the Northeast and Mid-Atlantic (see above). As an example, certain forest interior birds prefer to nest at least 300' from the nearest edge. However, these species often prefer canopy breaks resulting in patches of early successional habitat within or adjacent to forest for cover and foraging during the post-fledging period (Vitz and Rodewald 2006) as well as during migration. The definition of habitat fragmentation by Faaborg et al. (1995) is the process of converting a large, contiguous patch of a similar vegetation type into smaller patches of different vegetation types in a way that only scattered remnants of the original vegetation type remains. A large corn field, housing development, and even a 300' utility right-of-way maintained every 2-3 years will fragment a forest and reduce the abundance and nesting success of many forest-dependent wildlife species. However, it is not fragmentation when creating a disturbance in small patches of forest to promote regeneration of young forest of the same forest cover type or a historic forest cover type, or intermediate thinning. Sustainable forest management activities can be compatible with forest interior wildlife species, and management guidelines have been published such as Wood et al (2013).

Immediately following that sentence, the proposal begins discussing stand attributes, an extremely odd juxtaposition of discussions of scale. We suggest a closer examination of Perry and Thill (2007), as 56% of male bat roosts occurred in harvested/partially harvested/thinned stands. It should be noted that the 67% "unharvested sites" was only obtained when counting narrow buffers within harvested areas as "unharvested."

Furthermore, the assertion that timber harvests have negative effects on female bats requires additional scientific support since Broders and Forbes (2004) does not list impacts of harvests on female bats as a primary research objective in the 2004 study.

Later in the paragraph, Henderson et al (2008) discusses fragmentation effects, but – in keeping with the meaning of the word – does not consider young forest as fragmenting the remainder of the forest matrix as part of the methodology.

The paragraph concludes by stating NLEB "…shows a varied degree of sensitivity to timber harvesting practices…" Based on the review of the original sources provided by the proposal, the conclusion reached by the proposal in that paragraph is not supported by the sources. While a hypothetical situation could be constructed whereby intense and large-scale timber harvesting without consideration for bat or other wildlife communities could reduce NLEB populations, such harvesting would certainly exceed parameters for sustainability that exist for sustainable forest management. To

reiterate, indiscriminate tree harvesting could impact NLEB, but sustainable forest management does not.

Lastly, on page 61061, the proposal claims that NLEB relies on suitable *interior* [emphasis added] forest habitat for maternal colonies and for foraging, purportedly based on Johnson (2010) and Hein (2012). This characterization directly contradicts most, if not all, of the habitat studies cited in the proposal. Thus, it is important to note that Johnson (2010) is a report that presents no new research on NLEB or any other wildlife species, and that Hein (2012) is an unpublished report that, again, provides no new research. While such synthesis of existing scientific information does serve a purpose, we have investigated the sources cited within Hein (2012) and make the following observations regarding that paper's citations. In regards to fragmentation being a primary threat to biodiversity, we note that Franklin et al (2012) does not consider sustainable forest management as a fragmenting action, but as creating habitat heterogeneity. Regarding direct impacts to bat populations and roosting and foraging habitats, we note that Fenton (2003) is a review article, and Safi and Kerth (2004) is a comparative analysis of temperate zone bats, particularly in terms of specialization and risk of extinction. As NLEB shows certain generalist traits, we ask that USFWS review the original citation for applicability. Lane et al (2006) addresses bats in Singapore with little application to the situation at hand, and Henderson et al (2008) studied an already-fragmented forest-agricultural landscape with extensive forestry operations on Prince Edward Island and still found significant numbers of NLEB. Further, we find no reference in Hein (2012) in regards to NLEB being reliant on suitable interior forest. In addition, we have reviewed Johnson (2010) and found no reference to NLEB as being reliant on suitable interior forest.

[3] Most of the forest of the mid-Atlantic and Northeast is not intensively managed. Of the intensively managed forest, over 20 million acres are certified through SFI or FSC. Of the smaller landholdings, many of which are less intensively managed, 2.25 million acres are certified through American Tree Farm System (ATFS). All of these properties are required to give consideration to rare, threatened, and endangered species as part of the forest management planning process and during the implementation of their plan. While many state-owned forests are certified through SFI or FSC, many are not. However, these would be subject to laws governing state-listed rare, threatened, and endangered species, as well as Section 7 or consultations or Section 10 of the ESA.

We note that studies cited by the proposal were conducted in industrial forestland in the Mid-Atlantic. We further note that even in such an area of active management, that availability and utilization of maternity roosting habitat is not a limiting factor for NLEB (Menzel et al 2002, Owen et al 2002, and Owen et al 2003). It is assumed that the study areas were harvested at all times of the year, not just winter.

The only citation within the Proposal that we were able to find that directly accused sustainable forest management as being an additional stress to NLEB was contained within Hein (2012). As Hein (2012) presents itself as a synthesis of scientific information and presents no new research, we reviewed the citations provided within Hein (2012). In regards to loss or alteration of forest habitat placing additional stress on female bats, we note that the sole citation was a study regarding the effects of radio transmitters (Kurta and Murray 2002). In regards to reproductive success and bat exclusion from a maternity roost we note that Brigham and Fenton (1986) studied big brown bats, which are more closely associated with suburban landscapes than forested ecosystems. Lastly, the assertion that loss of a single maternity roost leading to fragmentation of a colony is based on a study (Sparks et al 2003) that looked as natural processes, being the natural loss of a roosting tree through actions by woodpeckers or raccoons. Since NLEB has evolved with such natural loss such as woodpeckers and raccoons, and the inherent instability of using decayed roost trees in danger of collapse, it is logical that the species would be able to withstand the loss of individual roost trees so long as other suitable roost trees are located within the maternal range.

Given this information, and information provided within footnote 4, the SAF Units commenting on this proposal assert that sustainable forest management is not an additional stress to NLEB.

[4] It does bear noting that, at present, there is no single source compiling the known habitat needs of NLEB in a format that would be readily understood by land managers seeking to properly consider NLEB needs during planning. The following is selected information regarding common silvicultural activities in our region and their role in the summer habitat (female roosting, male/non-reproductive female roosting, and foraging) of NLEB, according to the sources contained in the proposal.

Competing understory vegetation control, often in the form of exotic invasive plant control, is important to sustainable forest management as certain types of understory can prevent or hinder growth of young age classes of trees, or otherwise degrade ecosystem quality. Over time, exclusion of young age classes can damage vertical forest structure and can lead to a gradual change in the forest type affecting wildlife populations (Rodewald and Abrams 2002). In addition, the number and types of insects that are found on the leaves of exotic invasive plants as often significantly different than what would be on native plants (Brown 1990). Both of these conditions would be negative for NLEB foraging habitat, given gleaning habits (Caceres and Barclay 2000).

Intermediate thinning is an important tool to guide the development of forest stands. By cutting or girdling certain trees foresters seek to increase diameter growth of remaining trees, thus hastening or improving conditions for NLEB roosting habitat generally. Light thinning, including crop tree management, appear to be perfectly compatible with male/non-reproductive female roosting habitat. More intense thinning, including aggressive thinning from below, appears to favor female roosting (Menzel et al 2002, Lacki and Schwierjohann 2001, Owen et al 2002). Such activities would include leaving 2 snag trees (trees with exfoliating bark or hollow trees) of DBH greater than 10 inches per acre (Menzel et al 2002). Depending on the increase in sunlight conditions through the canopy resulting from the thinning, foraging habitat would also improve over time.

Individual tree selection harvests similarly would benefit female roosting and foraging habitat, within certain logical limits (Menzel et al 2002, Lacki and Schwierjohann 2001, Owen et al 2002).

Group selection harvests, being cuts commonly 1 acre and less (though up to 2 ½ acres) as part of uneven-aged management, appear to have little to no measurable effect on NLEB habitat (Owen et al 2003). Natural disturbances within forests often create temporary openings far larger than these, and given the likely evolution of NLEB with such natural disturbances the bat likely has characteristics that allow it to co-exist with such disturbances (Perry 2012).

Given that the establishment of regeneration is a prerequisite of sustainable forest management, even-aged regeneration harvests (shelterwood, seed-tree, and clearcut) have a temporary effect on NLEB habitat. Clearly, the studies cited in the proposal show a lack of use of forests aged 0 to 10 years. Given the opportunistic nature of NLEB roosting habits and roost switching frequency, it is reasonable to assume that the relatively small even-aged regeneration harvests that are commonly employed in sustainable forest management operations throughout most of the Mid-Atlantic and Northeast would have minimal impacts on NLEB occupancy. At present, third-party certification systems (SFI, FSC, and ATFS) have a 40-acre limit on even-aged regeneration harvests, unless a landowner can show that larger disturbances are part of the natural history of the area. This 40-acre limit has, in essence, become the effective maximum harvest size in the Mid-Atlantic and Northeast. Given the 150 to 345 acre home ranges discussed within the proposal, and given the opportunistic nature of NLEB roosting habits, such harvest areas are reasonable so long as adequate habitat remains within the forest patch. In addition, by retaining or creating durable snags and protecting advance regeneration during such harvests, the period of non-use by NLEB of resulting young forest could be reduced.

Further, we note that in Foster and Kurta (1999), only one banded bat used the same roost tree in successive years, while only three roosts were used by different bats in successive years. This appears to cast some doubt on claims of high roost tree fidelity for NLEB.

[5] While it is appreciated that USFWS has included a question regarding summer timber harvests in its FAQ's in regards to the 6-month extension, the comments received by USFWS in regards to summer harvests are valid, and should be viewed through the lens of agency-wide regulatory predictability. We further note the incongruity between sustainable forest management practices whereby prescribed burning during the growing season is not considered a threat, while summer harvests are looked at differently.

[6] As stated in the ESA, endangered species is defined as "in danger of extinction throughout all or a significant portion of its range" and threatened species is defined as "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." It is noted that the majority of the damage to NLEB has been in the Mid-Atlantic and Northeast, where NLEB historically was most common.

However, it is noted several times in the proposal that NLEB often hibernates in a non-clustering manner, deep within cracks and fissures, and that NLEB is far less common in southern and western populations. Thus, it seems premature to assume that WNS will result in similar decline in the south and west. In fact, the proposal notes one study suggesting a density-dependent decline (Langwig et al 2012a).

Further, the primary study quoted as predicting total collapse (Frick et al 2010) appears to be based on not more than 3 years of post-WNS data, and in many cases only 1 year of post-WNS data. While the magnitude of the decline in certain hibernacula is not being debated, the validity of a model based on so few data points should be. While it is appreciated that WNS has only affected North American bats for 8 years, and research did not begin in earnest until about 5 years ago, best available science must in theory be good science.

Lastly, as was stated multiple times throughout the proposal, NLEB occupies a hibernating position that does not give an entirely clear picture of the true population level. Thus, it is prudent to accomplish further summer population counts in the Mid-Atlantic and Northeast before making a finding that NLEB is likely to go extinct in this region.

By listing NLEB as threatened, USFWS would be allowing itself regulatory flexibility to work with landowners and even upgrade the status of this species to endangered should models forecasting WNS spread and mortality prove true.

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