

May 23, 2022

Via Federal eRulemaking Portal

Public Comments Processing
Attn: FWS-R3-ES-2021-0140
U.S. Fish and Wildlife Service
MS: PRB/3W
5275 Leesburg Pike
Falls Church, VA 22041-3803

Re: Proposed Endangered Status for the Northern Long-Eared Bat

The Southern Environmental Law Center submits the following comments on behalf of a broad coalition of 24 conservation groups working in the South, in support of the U.S. Fish and Wildlife Service's ("FWS" or "Service") proposal to reclassify the northern long-eared bat from threatened to endangered under the Endangered Species Act. [Proposed] Endangered Status for Northern Long-Eared Bat, 87 Fed. Reg. 16442 (Mar. 23, 2022) (to be codified at 50 C.F.R. §§ 17.11(h) and 17.40(o)).

The northern long-eared bat has long warranted protection as an endangered, rather than merely threatened, species. In the short time since the species was listed as threatened, its population numbers have continued to decline precipitously, including in the southernmost portions of its range. As highlighted in our below comments, southern populations of northern long-eared bats face increasing pressures from habitat destruction and climate change, which will further compound recovery efforts in our region. At the same time, there are promising signs that some populations in warmer climates, such as the Southern United States, may be better able to withstand white nose syndrome, underscoring the importance of protecting populations in our region. Our groups urge the Service to expeditiously issue a final rule reclassifying the northern long-eared bat as endangered and work to recover the species throughout its range, including in the South.

I. THE BIOLOGY AND STATUS OF THE NORTHERN LONG-EARED BAT

Historically, the northern long-eared bat ("NLEB") has been a wide-ranging species occupying thirty-seven states and eight Canadian provinces.¹ The large geographic scope of acceptable habitat for the species demonstrates that healthy populations of northern long-eared bat can survive in a variety of different climates, ranging from temperate Southern states such as Alabama, Georgia, and South Carolina to the colder Yukon territory in northwest Canada.

Throughout their range, northern long-eared bats generally follow the same annual life cycle. As discussed in detail in the FWS Species Status Assessment Report for the northern long-eared ("SSA"), this includes a period of winter hibernation, spring and fall migration, and summer roosting. SSA at 16–19. Northern long-eared bats' habitat needs vary throughout the

¹ U.S. Fish and Wildlife Service, *Special Status Assessment Report for the Northern long-eared bat (Myotis septentrionalis)* 15 (Mar. 22, 2022) ("SSA").

year, as populations typically occupy hibernacula such as caves in the winter before travelling to summer roosting locations in forested areas.

Unlike many species of bats, northern long-eared bats are a forest interior species which use closed, intact forest stands not only to select roosting sites but also to undertake foraging activities. Common characteristics of roosting and foraging habitat include forests with large diameter roost trees,² available snags and live trees,³ and proximate interior forest habitat with a high canopy.⁴ The species forages for insect prey which are generally most abundant in closed forest stands or around streams under canopy closure.⁵

Forest fragmentation can lead to northern long-eared bat habitat loss due to the loss of roost trees and snags as well as eradication of suitable habitat for foraging. It can also lead to the bats avoiding formerly suitable habitat entirely. Northern long-eared bats have been known to display a low tolerance for open areas, preferring thinned areas or gaps of less than four hectares.⁶ Loss of suitable habitat conditions, even as low as the loss of 17 percent of roosts, or area avoidance can lead to colony fragmentation, which in turn causes greater individual energy expenditure due to longer flight times between foraging habitats and reduced thermoregulation from smaller colony sizes. SSA at 154. This can further lead to reduced pregnancy success, pup survival, and adult survival. *Id.* at 153–54.

For summer roosting, northern long-eared bats appear to select locations based on available cavities and bark crevices within trees and snags, stand and tree structure, and forest successional patterns. SSA at 17. Although northern long-eared bats do not appear to favor only certain tree species, previous studies have shown the bats—particularly reproductive females—to prefer deciduous to coniferous trees.⁷ Northern long-eared bats occupy both live trees and snags, favoring those with flaking or soughing bark, crevices, or holes.⁸ Mid-decay snags have been found to be especially important habitat for the bat, with at least one study finding 100 percent of populations occupying snag trees during at least one point of the maternity roost season.⁹ During summer roosting, northern long-eared bats will switch roost sites frequently, and studies have indicated that the minimum summer roost areas for female northern long-eared bats range from 13 to 65 acres. SSA at 18, 22.

² Sheldon Owen et al., *Home-Range Size and Habitat Used by the Northern Myotis (Myotis septentrionalis)*, 150 *Am. Midland Naturalist* 352–59 (Oct. 2003).

³ M.D. Yates et al., *Effect of Forest Structure and Fragmentation on Site Occupancy of Bat Species in Missouri Ozark Forests*, 70 *J. of Wildlife Mgmt.* 1238–48 (Nov. 2006).

⁴ Lynn Henderson et al., *Movements and Resource Selection of the Northern Long-Eared Myotis (Myotis septentrionalis) in a Forest-Agriculture Landscape*, 89 *J. of Mammalogy* 952–63 (Aug. 2008).

⁵ Henderson *supra* note 4.

⁶ Divoll et al., *Endangered Myotis Bats Forage in Regeneration Openings in a Managed Forest*, 503 *Forest Ecology and Mgmt* 1, 1–8 (2022).

⁷ Hugh Broders et al., *Interspecific and Intersexual Variation in Roost-Site Selection of Northern Long-Eared and Little Brown Bats in the Greater Fundy National Park Ecosystem*, 68 *J. of Wildlife Mgmt.* 602–610 (July 1, 2004).

⁸ T. Carter et al., *Roost Tree Use by Maternity Colonies of Indiana Bats and Northern Long-Eared Bats in Southern Illinois*, 2019 *Forest Ecology and Mgmt.* 259–68 (Nov. 2005); Michael Lacki et al., *Day Roost Characteristics of Northern Bats in Mixed Mesophytic Forest*, 65 *J. of Wildlife Mgmt.* 482–88 (July 2001).

⁹ Michael Lacki et al., *Meta-analysis of Summer Roosting Characteristics of Two Species of Myotis Bats*, 162 *American Midland Naturalist* 318–26 (2009).

During the winter, northern long-eared bats typically occupy hibernacula such as caves and abandoned mines which are distinguished by constant cool temperatures, high humidity, and a lack of strong air flow. SSA at 16. This period of hibernation can last from November through March, although northern long-eared bats typically undergo shorter hibernation periods in the southeastern portion of their range. SSA at 26. Studies have also found some northern long-eared bats to be active year-round or for the majority of the winter in coastal North Carolina. SSA at 17. Northern long-eared bats in the Coastal Plain of southeastern states have also been found to overwinter in forested areas.¹⁰ This could indicate that the southern region of the bat's traditional range could be important for species survival in the face of ongoing threats like White-Nose Syndrome ("WNS") which is thought to spread through colonies as a result of swarming and mating activities at hibernacula.¹¹

As explained in FWS's instant proposed rule, "the primary factor influencing [the northern long-eared bat's] viability is [WNS], a disease of bats caused by a fungal pathogen" known as *Pseudogymnoascus destructans* ("Pd"). 87 Fed. Reg. at 16446. The FWS' proposed reclassification details the devastating toll of WNS in the short time since the disease's discovery:

Since its discovery in New York in 2006, *Pd* has been confirmed (or presumed) in 37 States and 7 Canadian provinces. There is no known mitigation or treatment strategy to slow the spread of *Pd* or to treat WNS in bats. WNS has caused estimated [northern long-eared bat] population declines of 97-100 percent across 79 percent of the species' range.

Id.

Northern long-eared bats infected with WNS can change their behaviors, including by increasing their arousal periods during hibernation, roosting closer to hibernacula entrances, or leaving hibernacula altogether, where the bats must then contend with varying degrees of winter conditions and scarce prey. *Id.*, SSA at 33. These actions also deplete critical fat reserves in animals and can lead to mortality or reduce reproductive success. SSA at 33. WNS has also led to decreased colony size in northern long-eared bat populations, reducing the benefits available from large-group communal behaviors such as collective juvenile care and social thermoregulation.¹² Further, northern long-eared bats exhibit several traits which impede their ability to respond to rapid changes such as the threat posed by WNS including "high site fidelity (winter and summer), specialized winter habitat requirements and summer roost microclimate needs, and low reproductive output." SSA at 68.

Although WNS affects multiple species of bats, its impact on northern long-eared bats has been particularly severe—and is expected to continue to obliterate populations across the species' range.¹³ FWS projects that range-wide abundance of the northern long-eared bat will

¹⁰ Daniel Taylor et al., *Forest Management and Bats*, White-Nose Syndrome Response Team, 18 (2020), https://www.srs.fs.usda.gov/pubs/misc/2020_perry_001.pdf, Attachment 1.

¹¹ SSA at 34; Taylor *supra* note 10 at 15.

¹² Kalen et al., *Northern Long-eared Bats in the Central Appalachians Following White-nose Syndrome: Failed Maternity Colonies?*, 9 J. of the Se. Ass'n of Fish and Wildlife Agencies 159, 159 – 160 (2022).

¹³ Taylor *supra* note 10 at 18.

decline by 95 percent by 2030. SSA at 54. Current population trends indicate that the species is at risk of extinction throughout its entire range by 2050, SSA at 69, and FWS acknowledges that complete extirpation is a “plausible outcome” under current conditions. 87 Fed. Reg. at 16449.

II. ENDANGERED SPECIES ACT LISTING HISTORY OF THE NORTHERN LONG-EARED BAT

The ESA directs the Fish and Wildlife Service to determine whether a species is endangered or threatened under the Act according to any of five listed 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; or
- (E) other natural or manmade factors affecting its continued existence.

16 U.S.C. § 1533(a)(1). In making listing determinations under the ESA, the Service must make the decision “solely on the basis of the best scientific and commercial data available to [the Service] after conducting a review of the status of the species.” *Id.* § 1533(b)(1)(A). The ESA defines an endangered species as one “which is in danger of extinction throughout all or a significant portion of its range,” and a threatened species as one “which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” 16 U.S.C. § 1532 (6), (20).

FWS first proposed to recognize the northern long-eared bat as endangered in recognition of the extreme threat of WNS nearly a decade ago. In October 2013, in response to a 2010 petition from the Center for Biological Diversity, the FWS proposed to list the northern long-eared bat as an endangered species, finding that the bat “is presently in danger of extinction throughout its entire range based on the severity and immediacy of threats currently affecting the species.” 78 Fed. Reg. 61,046, 61,076 (2 Oct. 2013). FWS explained that the northern long-eared bat’s “overall range has been significantly impacted because a large portion of populations in the eastern part of the range have been extirpated due to WNS.” 78 Fed. Reg. at 61,076. FWS also stated that the rate of spread of the disease has been “rapid” and that it expected “similar rates of decline” once WNS spread to other parts of the bat’s range. 78 Fed. Reg. at 61,064.

After extending the public comment period on the proposed listing several times,¹⁴ in January 2015 FWS signaled an abrupt change in direction by proposing to establish a species-specific rule under section 4(d) of the Act in the event FWS were to determine that the northern long-eared bat warranted listing as a threatened and not an endangered species. *See* 80 Fed. Reg. 2371 (Jan. 16, 2015). Indeed, in April 2015, FWS issued a final rule listing the bat as a threatened species. *See* 80 Fed. Reg. 17,974 (Apr. 2, 2015). At the same time, FWS issued the proposed 4(d) rule as an interim rule, *see id.*, and in January 2016, FWS issued the final 4(d) rule, *see* 81 Fed. Reg. 1900 (Jan. 14, 2016).

Conservation groups challenged FWS’s decision to list the northern long-eared bat as a threatened, rather than an endangered, species arguing that the various rationales that FWS relied

¹⁴ *See Center for Biological Diversity v. Everson*, 435 F. Supp. 3d 69, 87 n.5 (D.D.C. 2020).

upon for its listing determination were contradicted by the best available scientific data. *See Ctr. for Biological Diversity v. Everson*, 435 F. Supp.3d 69 (D.D.C. 2020). Specifically, Conservation groups questioned FWS’s assertion that an endangered listing was unjustified because “in the area not yet affected by WNS (about 40 percent of the species’ total geographic range), the species ha[d] not yet suffered declines and appear[ed] stable.” 435 F. Supp. 3d at 80 (quoting 80 Fed. Reg. at 18,021). But northern long-eared bat density had always been low in this portion of its range. *Id.* (internal citation and quotations omitted). As a result, conservation groups argued “the ‘40 percent of total geographic range’” as a metric for a purported “stable”—and therefore not endangered—population was not based on the best available scientific data. *Id.* (internal citation and quotations omitted). The court agreed, noting FWS’s own evidence that WNS “‘is responsible for unprecedented mortality,’ resulting in population declines of the [northern long-eared bat] of 96% to 99%, and that there are ‘no known examples of [northern long-eared bat] that have survived a WNS infection.’” *Id.* at 81 (internal citations omitted).

In addition, the court found that, although FWS had acknowledged that other factors were “likely” to have a cumulative effect on the northern long-eared bat when considered in combination with the severe impacts on the population from WNS, FWS completely disregarded these concerns in its listing determination. *See id.* at 81-82. Instead, FWS “relied solely on WNS, and failed to take into consideration . . . the cumulative effect of the other factors that FWS itself analyzed,” thus rendering FWS’s listing determination arbitrary and capricious. *Id.* at 82-83.

The court remanded the matter to FWS to make a new listing determination consistent with the court’s opinion. We understand that, pursuant to the court’s order on remedy in the case, FWS proposes to make a final decision in November 2022¹⁵—nearly 13 years after the Center for Biological Diversity petitioned FWS to list the northern long-eared bat under the Act.

III. THREATS TO THE NORTHERN LONG-EARED BAT IN THE SOUTH

As recognized by the Service’s current proposal, the best available science demonstrates the northern long-eared bat is in danger of extinction throughout all of its range. 87 Fed. Reg. at 16,449. The Service’s SSA and proposed rule identify WNS, wind energy, habitat loss, and climate change as the leading threats to the species. The proposed rule and SSA focus primarily on the first two threats, noting that relative to predicting the spread of WNS and expanded wind energy operations, habitat loss, and climate change, impacts to the species are difficult to forecast. The SSA’s quantitative modeling of the dire future of northern long-eared bats did not account for habitat loss or climate change impacts—meaning that the SSA’s already depressing estimates of future declines and likely extinction actually underestimate the severity of declines and the proximity of extinction.

We focus the following comments on the risks to northern long-eared bats from habitat loss and climate change in the South as factors compounding the species’ extinction risk and ability to recover from the leading threat of WNS. *See* 16 U.S.C. § 1533(A)(1); 50 C.F.R. § 424.11(c). Habitat loss is a serious threat to Southern ecosystems, including the unfragmented forest habitat that northern long-eared bats depend upon. A variety of forest-clearing activities in our region—such as highway and bridge projects, energy infrastructure, and other activities—

¹⁵ *See* FWS Press Release: “Service proposes to reclassify northern long-eared bat as endangered” (22 March 2022), available at <https://www.fws.gov/press-release/2022-03/proposal-reclassify-northern-long-eared-bat-endangered>.

have already and will continue to harm the northern long-eared bat's habitat. Nonetheless, habitat degradation and loss is easier to manage than the spread of WNS and is essential to ensure the bats have suitable habitat options in the future once the threat of WNS is hopefully mitigated.

Below, we first highlight how poor forest management practices and energy infrastructure projects in the South pose particular threats to northern long-eared bats through habitat degradation and destruction, then turn to the likely climate change impacts to Southern ecosystems and the consequences for the bat, before emphasizing the importance of Southern populations to recovery efforts.

A. Forest Management

As discussed in detail above, northern long-eared bats require complex habitat conditions within intact forests. In our region, the most reliable stretches of older, intact forest for northern long-eared bats to use are federally owned. Yet without proper management measures, these public lands fail to provide northern long-eared bat populations the habitat havens needed to counterbalance the impacts of deforestation on private lands.

The recently revised Nantahala-Pisgah Forest Plan (“the Forest Plan”) is one such example of a recent failure to protect northern long-eared bat habitat on federal lands from the impacts of projects like logging. Over at least the next 15 years, the Forest Plan will govern the Nantahala and Pisgah National Forests (“the Forests”), which together represent around a million acres of federally owned forest in Western North Carolina within the northern long-eared bat's historic range. Both the vast acreage of the Forests and the long life of the Forest Plan could have made the revision an especially important opportunity for fostering northern long-eared bat population growth and recovery. Indeed, the U.S. Forest Service has acknowledged that “several known occupied hibernacula” occur on the Forests “and summer maternity habitat is widespread . . . therefore, maintaining and restoring habitat . . . where it overlaps the Forests is critical to the species' persistence into the future.”¹⁶ Instead, the Forest Plan represents a pattern of missteps likely to aid in the species' decline.

For example, the Forest Plan includes a standard to ensure that logging projects on the Forests retain snags greater than or equal to 3 inches in diameter and exfoliating bark.¹⁷ But this standard only applies near a known presence of federally listed bats,¹⁸ and the Forest Plan does not require the agency or its contractors to conduct seasonally-informed surveys to determine *where* in the Forests northern long-eared bats can be found unless a host of flexible, project-level conditions are met.¹⁹ In other words, these protections predominantly apply in the rare

¹⁶ U.S. Forest Service, Biological Assessment for the Nantahala and Pisgah National Forests Revised Forest Plan, 52 (Jan. 18, 2022).

¹⁷ Nantahala and Pisgah National Forests Land Management Plan, U.S. FOREST SERVICE (Jan. 2022), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd987300.pdf at 67.

¹⁸ *Id.*

¹⁹ *Id.* at 80. For example, surveys are not required if the Forest Service determines that “[i]nformation on number and location of individuals or habitat conditions would not allow better assessment of effects to the population or improve design or mitigations more than assuming presence and analyzing expected effects.” *Id.*

circumstances where northern long-eared bats make themselves known to the Forest Service before logging takes place.

This approach of inferring the absence of northern long-eared bats by not conducting surveys for their presence fails to sufficiently protect the species—but is a pervasive theme in project after project across national forests in the South. For instance, the Buck Project is an approximately 800-acre timber sale set to take place in the Nantahala National Forest which could have adverse impacts on northern long-eared bats. Northern long-eared bats are known to occur within the Buck Project area, and at least one hibernacula has been confirmed in the area.²⁰ When designing the project, however, “[n]o surveys were completed for northern long-eared bat.”²¹ Yet the Forest Service assumed effects to the species would be negligible based on protections in the Forest Plan, the then-in-place 4(d) rule, and the fact that “stands are expected to regenerate”—i.e., trees grow back.²² But plan standards triggered by northern long-eared bat presence cannot protect bats if presence or absence is not confirmed before acting.

The Forest Plan standards that the Forest Service points to as protective of northern long-eared bats are also insufficient. The Forest Plan’s Final Environmental Impact Statement acknowledges that northern long-eared bats “tend to avoid larger openings . . . greater than . . . 20 acres.”²³ Yet to “mitigate the potential for openings that would be avoided by federally listed bats,” the agency points to a standard that allows openings up to “40 acres in hardwood-dominated forest types and 80 acres in pine-dominated forest types.”²⁴ Such a standard that limits openings to 40 and 80 acres, depending on ecosystem type, cannot mitigate harm to northern long-eared bats that begin to avoid openings at areas a fraction of that size.

The Forest Plan also falls short by not taking species recovery into account. To be sure, the Plan includes a standard requiring coordination with FWS to ensure protections are consistent with recovery plans, but that requirement rings hollow for species like the northern long-eared bat which lack a recovery plan.²⁵ At best, the Forest Plan pushes recovery considerations to individual project analyses, but this fails to account for the overall effect of plan implementation on the species.²⁶ The approach leaves the Forest Service claiming—as it did in the Buck project—that the effects of individual projects on northern long-eared bats are “negligible”²⁷ without considering the overall contribution of Forest Service actions to the decline of northern long-eared bats and their habitat.

²⁰ Buck Project Draft EA at 122.

²¹ *Id.*

²² *Id.* at 122 and 128.

²³ Final Environmental Impact Statement for the Nantahala and Pisgah National Forests Land Management Plan, U.S. FOREST SERVICE (Jan. 2022), [Nantahala and Pisgah National Forests Final Environmental Impact Statement \(usda.gov\)](#) at 3-270.

²⁴ *Id.* at 93.

²⁵ Plan at 82.

²⁶ In comments on the Forest Plan DEIS, members of the public explained that the Plan failed “to demonstrate how it contributes to the recovery of federally listed threatened and endangered species.” FEIS, Ap’x A at 43. The agency’s response was that the “Endangered Species Act requires project-level consultation on federally listed species.” *Id.*

²⁷ Buck Project, Final EA at 136.

Overall, northern long-eared bat habitat needs are not being adequately addressed by the current management of public forests in the South. Indeed, as the Forest Service itself recognizes, implementation of the Forest Plan “is likely to adversely affect [northern long-eared bat].”²⁸ Federally owned forests represent some of the least fragmented habitat for northern long-eared bats in the South, and poor management practices on such lands further impair the ability of the species to withstand extinction and recover.

B. Energy Infrastructure

Fossil fuel transmission projects, like natural gas pipelines, pose many of the same threats to northern long-eared bats as those associated with forest management activities. One key difference is that clearing for transmissions projects results in permanent loss of habitat, while the potential exists—at least in theory—for future bat populations to return to areas of forest that are disturbed but not maintained in a permanently cleared condition.²⁹

Continued, permanent habitat destruction is a blow to northern long-eared bats that the declining species cannot sustain. This is especially true where WNS has already decimated northern long-eared bat populations. As FWS has previously recognized in the context of a natural gas pipeline project, preventing destruction of occupied habitat in areas “where [bat] colonies remain after WNS has been present on the landscape for over 10 years” is particularly important “for the remaining survivors of WNS.”³⁰ As WNS continues to spread further into the northern long-eared bat’s range, maintaining habitat that supports populations which have been resistant to the disease becomes increasingly crucial for species persistence.

Recent pipeline projects in the South have already threatened thousands of acres of northern long-eared bat habitat. The now-abandoned Atlantic Coast Pipeline (“ACP”) prescribed the temporary or permanent removal of 4,448 acres of suitable habitat for the Indiana bat, which FWS has acknowledged has similar habitat needs to the northern long-eared bat.³¹ The Fish and Wildlife Service appears to have foregone the same analysis for northern long-eared bats by relying primarily on the then-active 4(d) rule. Similarly, construction of the Mountain Valley Pipeline (“MVP”) has resulted in the clearing of over 3,000 acres of bat habitat.³²

While the ACP and MVP individually affected thousands of acres, smaller projects can also lead to cumulatively significant effects which substantially impede northern long-eared bat persistence and recovery. As fossil fuel transmission projects continue to be proposed in northern long-eared bat habitat, these projects will continue to pose risks to the species.

²⁸ U.S. Forest Service, Biological Assessment for the Nantahala and Pisgah National Forests Revised Forest Plan, 58 (Jan. 18, 2022).

²⁹ See Fish and Wildlife Service, Mountain Valley Pipeline Biological Opinion, 134 (2020), <https://www.abralliance.org/wp-content/uploads/2020/09/MVP-BiOp-from-FWS-9-4-20.pdf> (“NLEBs will avoid the permanently cleared areas and start exploring undisturbed areas for future roost sites.”).

³⁰ *Id.* at 58 (discussing Indiana bats specifically).

³¹ Fish and Wildlife Service, Atlantic Coast Pipeline Biological Opinion, 33 (2018)

³² MVP Biological Opinion at 12, Table 3. The Table does not break out acres “associated with NLEB because they are accounted for within one or more [Indiana bat] habitat category.”

C. Climate Change

To further complicate these issues, there is increasing concern about impacts of climate change on bat species, including the northern long-eared bat. Climate change is predicted to significantly transform habitats throughout the bat's range in the near future, introducing additional threats to the already imperiled species. The Intergovernmental Panel on Climate Change reports that human activities are estimated to have caused approximately 1.0°C (1.8°F) of global warming above pre-industrial levels, and global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if temperatures continue to increase at the current rate.³³ Approximately 5 percent of global terrestrial land area may be expected to completely change ecosystem types at this level of warming.³⁴

Climate change will affect the South in myriad ways, including: higher temperatures, extreme precipitation, increased drought, more frequent and intense wildfires, rising sea levels, increased flooding, higher invasive species prevalence, and increased storm severity. As a result, the South will likely see large species range shifts in the coming decades, and the pre-existing issues of development and urban sprawl in the region will almost certainly hamper the ability of species to move in response to these threats.³⁵

These changes may affect the northern long-eared bat at critical stages of its life cycle by increasing mortality from extreme temperature and weather patterns; changing its hibernation patterns; introducing new and increased disease; destroying bat roosts from sea level rise; and decreasing prey abundance.³⁶ While some beneficial impacts from climate change—such as warmer temperatures leading to shorter hibernation periods and in turn decreased disease exposure—are possible, overall impacts are expected to be negative.

Other *Myotis* species are already suffering from climate change and may represent a preview of what is to come for the northern long-eared bat. For example, the little brown bat has already experienced reduced survival and reproduction due to drought conditions.³⁷ Conversely, other species of bats have suffered decreased foraging success during extreme precipitation events, which reduce insect availability and impede echolocation.³⁸ Heavier rain events have also been correlated with higher energy costs³⁹ and reduced reproduction⁴⁰ in bats. Although the entire range of the northern long-eared bat stands to be affected by climate change threats, some

³³ Intergovernmental Panel on Climate Change, 2018: *Summary for Policymakers*, in SPECIAL REPORT: GLOBAL WARMING OF 1.5°C (Valérie Masson-Delmotte et al. eds., 2018), <https://www.ipcc.ch/sr15/chapter/spm/>.

³⁴ *Id.* at 10.

³⁵ Lee Hannah, *Climate change, connectivity, and conservation success*, CONSERVATION BIOLOGY (Dec. 2011).

³⁶ See, e.g., Hayley A. Sherwin et al., *The impact and implications of climate change for bats*, MAMMAL REVIEW (2012); Gareth Jones et al., *Carpe noctem: The importance of bats as bioindicators*, ENDANGERED SPECIES RSCH. (July 9, 2009).

³⁷ Rick A. Adams, *Bat reproduction declines when conditions mimic climate change projections for western North America*, ECOLOGY (Aug. 2010); Winnifred F. Frick et al., *Influence of climate and reproductive timing on demography of little brown myotis *Myotis lucifugus**, J. ANIMAL ECOLOGY (Dec. 11, 2009).

³⁸ Inga Geipel et al., *Noise as an informational cue for decision-making: the sound of rain delays bat emergence*, J. EXPERIMENTAL BIOLOGY (Feb. 1, 2019).

³⁹ See, e.g., Christian C. Voigt et al., *Rain increases the energy cost of bat flight*, BIOLOGY LETTERS (May 4, 2011).

⁴⁰ See, e.g., D.W. Burles et al., *Influence of weather on two insectivorous bats in a temperate Pacific Northwest rainforest*, CAN. J. ZOOLOGY (Jan. 29, 2009).

populations may be more vulnerable, depending on population resilience and climate variability. Listing the species as endangered will help improve its chances to adapt in the face of these threats.

D. Importance of Southern Populations to Recovery

Protecting Southern populations of the northern long-eared bat against habitat degradation and a changing climate may also be important to the species' persistence and recovery against WNS. Some recent research suggests that WNS may have less severe, or delayed, impacts on northern long-eared bats in warmer, Southern areas where the bats may be active year-round instead of hibernating in traditional hibernacula during winter seasons.⁴¹ Observations from coastal forests in South Carolina in recent years indicate the existence of a previously unrecognized coastal population of northern long-eared bats, with captures documented in the Francis Marion National Forest as well as the nearby Santee Coastal Reserve Wilderness Management Area.⁴² As of 2019, WNS remained undetected in these relatively isolated populations.⁴³

Similarly, a synthesis of surveys and new field work from coastal North Carolina demonstrated the presence of northern long-eared bats in nineteen counties in the state's coastal plain—up from four counties with records of northern long-eared bat presence when the species was first listed as threatened in 2015.⁴⁴ Many of these bats were active during the winter, and none of the documented northern long-eared bats exhibited signs of WNS. The author concluded that “[s]ince this coastal population is not dependent upon hibernation in caves or mines and exhibits only relatively short torpor durations, it is likely not susceptible to WNS-induced mortality,” and that “coastal North Carolina and South Carolina could ultimately serve as a refugium for the species.”⁴⁵ However, Southern habitat cannot be a refuge against WNS for northern long-eared bat populations if those intact forests, and their complex conditions, are not adequately protected.

IV. CONCLUSION

We support the Service's overdue proposal to uplist the northern long-eared bat to endangered status under the ESA and provide the species needed protection. As the Service finalizes this proposal and looks ahead to recovery efforts, the Service should consider the specific impacts to the bat in southern ecosystems as well as the unique benefits of protecting colonies in the southern portions of the species' range. We look forward to working with you to conserve and recover the northern long-eared bat here in the South.

⁴¹ SSA at 136; e.g. Grider JF, Larsen AL, Homyack JA, Kalcounis-Rueppell MC (2016) Winter Activity of Coastal Plain Populations of Bat Species Affected by White-Nose Syndrome and Wind Energy Facilities. PLoS ONE 11(11): e0166512. doi:10.1371/journal.pone.0166512; Attachment 2.

⁴² Jennifer Kindel, S.C. Dep't of Natural Res, Northern Long-Eared Bat Project: At Santee Coastal Reserve and Wildlife Management Area and The Nature Conservancy Washo Reserve (2018 – 2019 General Report), Attachment 3.

⁴³ Kindel, *supra* note 42 at 13.

⁴⁴ Jordan GW. 2020. Status of an anomalous population of northern long-eared bats in coastal North Carolina. *Journal of Fish and Wildlife Management* 11(2):665, 670-71; e1944-687X. <https://doi.org/10.3996/JFWM-20-018>.

⁴⁵ Jordan, *supra* note 44 at 673.

Sincerely,



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On behalf of:

Allegheny-Blue Ridge Alliance
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Executive Director

Animal Welfare Institute
Johanna Hamburger
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Audubon Society of Northern Virginia
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Center for Biological Diversity
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Cherokee Forest Voices
Catherine Murray
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The Clinch Coalition
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Highlanders for Responsible Development
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