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Comments: Attached, please find the Center for Biological Diversity's comments on the Jellico Vegetation Management Project, with two attachments.

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ReedStearns District RangerDaniel Boone National Forest3320 Hwy 27 NorthWhitley City, KY 42653Re: Jellico Vegetation Management Draft EA CommentsDear Mr. Reed,Below, please find the comments of the Center for Biological Diversity regarding the JellicoVegetation Management Draft Environmental Assessment ([ldquo]EA[rdquo]) for the Jellico VegetationManagement Project ([ldquo]Jellico project[rdquo]).The Draft EA Reveals that an EIS Must be PreparedIf any significant environmental impacts could possibly result from a proposed action, anEnvironmental Impact Statement ([ldquo]EIS[rdquo]) must be prepared, and an Environmental Assessment([ldquo]EA[rdquo]) is inadequate:NEPA requires federal agencies to prepare an environmental impact statement("EIS") for "every [hellip] major Federal action[] significantly affecting the quality ofthe human environment." 42 U.S.C. [sect] 4332(2)(C). An environmental assessment("EA") is made for the purpose of determining whether an EIS is required. See 40C.F.R. [sect] 1508.9. "If any 'significant' environmental impacts might result from theproposed agency action then an EIS must be prepared before agency action istaken."Grand Canyon Trust v. F.A.A., 290 F.3d 339, 340 (D.C. Cir. 2002) (citing Sierra Club v.Peterson, 717 F.2d 1409, 1415 (D.C. Cir. 1983)). See also, Idaho Sporting Cong. v. Thomas, 137F.3d 1146, 1149[ndash]50 (9th Cir. 1998) (stating that [ldquo]if substantial questions are raised as to whether a project . . . may cause significant degradation of some human environmental factor,[rdquo] an agencymust prepare an EIS (quoting Greenpeace Action v. Franklin, 14 F.3d 1324, 1332 (9th Cir.1992); LaFlamme v. FERC, 852 F.2d 389, 397 (9th Cir. 1988))).It is laughable that a proposed project with the following attributes could not possibly have asignificant impact on any environmental attribute: 40 years of construction, operation, and maintenance of forest roads, skid roads, and skidtrails on landslide-prone slopes; 40 years of logging, non-commercial tree cutting and other vegetative manipulations; 40 years of herbicide applications potentially including any herbicide in existence; Spanning 9,600 acres, the majority of federal land holdings across an entire mountainrange; Spanning multiple Forest Plans for the Daniel Boone National Forest; In close proximity to (between zero and approximately three miles upstream from) threeunits of occupied designated critical habitat for two federally-endangered aquatic species; In close proximity to populations of a federally-threatened aquatic species; and? In an area used by 5 federally-listed or proposed bat species.Thus, for the above- and below-listed reasons, because the Jellico project is certain to result insignificant environmental impacts ? or, in the alternative, runs a substantial and credible risk ofresulting in significant environmental impacts ? the U.S. Forest Service ([ldquo]USFS[rdquo]) must completean EIS for this project.Scope of Affected Waterbodies a.k.a. [ldquo]Area of Project Influence[rdquo]The draft EA and its supporting materials suffer from systemic internal contradictions, resultingin abundant inaccurate, nonsensical, and patently self-contradictory statements of [ldquo]fact[rdquo] providedthroughout. This problem renders the draft EA (when combined with its supporting documents)so difficult to make sense of that it precludes meaningful public review. USFS must produce anEIS that clearly lays out the facts on the ground and the agency[rsquo]s analysis in a coherent manner,written in plain English. Nat'l Wildlife Fed'n v. Norton, 332 F. Supp. 2d 170, 183-84 (D.D.C.2004).One crucial example of the EA[rsquo]s incoherence is embodied in the agency[rsquo]s description of the[ldquo]area of project influence.[rdquo] This concept is used to analyze potential environmental impacts tovarious resources and species. However, every list of waterbodies within the [ldquo]area of projectinfluence[rdquo] given by USFS contradicts the other lists given by the agency, and none of these listsaccurately reflect the total scope of waterbodies subject to impacts from the Jellico project.To give the agency a head start on compiling an accurate list of waterbodies subject to the Jellicoproject[rsquo]s pollution, we hereby put the agency on notice that the following streams are subject todirect impacts from the project. Streams are listed together when one headwater stream flowsinto another receiving stream subject to pollution impacts. To illustrate our logic, in the firstexample given, Jackson Creek flows into Little Wolf Creek, which flows into Wolf Creek(designated critical habitat unit 12 for the Cumberland darter),

which flows into Clear Fork, which flows into the Cumberland River. All of these waterbodies are within the [ldquo]area of project influence[rdquo] insofar as they are all subject to water pollution impacts from the Jellico project. Jackson Creek/Little Wolf Creek/Wolf Creek (occupied designated critical habitat unit 12 for the Cumberland darter)/Clear Fork/Cumberland River; Indian Creek/Elk Creek (a.k.a. Elk Fork)/Clear Fork; Pigeon Roost Creek/Clear Fork; Bucks Branch/Jellico Creek; Rock Creek (occupied designated critical habitat unit 14 for the Cumberland darter)/Jellico Creek (occupied designated critical habitat unit 13 for the Cumberland darter); Osborne Creek/Marsh Creek (occupied designated critical habitat unit 12 for the Cumberland elktoe); Ryan[rsquo]s Creek/Jellico Creek; Jellico Creek receiving direct pollution impacts from cut units into occupied designated critical habitat unit 13 for the Cumberland darter.

The U.S. Environmental Protection Agency ([ldquo]EPA[rdquo]) has set a Target Distance Limit of 15 stream miles to analyze how far downstream to analyze water pollution impacts from the source of pollution. 40 C.F.R. [sect] 300, App. A. The U.S. Fish and Wildlife Service ([ldquo]Service[rdquo]) has documented an incident where sediment traveled 14 miles downstream, impacting designated critical habitat for the federally-endangered Guyandotte River crayfish. Exh. 1. Further, the Service has assembled an agency guidance document which compiled studies demonstrating that sedimentation and other water pollution travels up to 12 miles downstream to the degree that it transforms entire assemblages of aquatic species. Exh. 2. Via Little Wolf Creek, Wolf Creek, and Clear Fork, the Cumberland River is approximately 12.27 miles downstream from the closest cut unit in the Jellico project. Thus, the Cumberland River itself is a part of the [ldquo]area of project influence[rdquo] and turbidity, sedimentation, and chemical water pollution impacts to this waterbody must be analyzed as a part of USFS[rsquo] NEPA review. No such analysis was provided in the draft EA. Occupied designated critical habitat unit 12 for the Cumberland darter, in Wolf Creek, is approximately 1.5 miles downstream from the nearest cut unit via Little Wolf Creek. 77 Fed. Reg. 63,604 (Oct. 16, 2012). Thus, unit 12 is a part of the [ldquo]area of project influence[rdquo] and turbidity, sedimentation, and chemical water pollution impacts to this species[rsquo] critical habitat and the population of Cumberland darters residing therein must be analyzed as a part of USFS[rsquo] NEPA review. No such analysis was provided in the draft EA. Occupied designated critical habitat unit 14 for the Cumberland darter, in Rock Creek, is as little as zero miles from (adjacent to) cut units in the Jellico project. Id. Likewise, occupied designated critical habitat unit 13 for the Cumberland darter, in Jellico Creek, is as little as zero miles from (adjacent to) cut units in the Jellico project. Id. Thus, units 13 and 14 are a part of the [ldquo]area of project influence[rdquo] and turbidity, sedimentation, and chemical water pollution impacts to this species[rsquo] critical habitat and the population of Cumberland darters residing therein must be analyzed as a part of USFS[rsquo] NEPA review. No such analysis was provided in the draft EA. Occupied designated critical habitat unit 12 for the Cumberland elktoe, in Marsh Creek, is just over three miles downstream from the nearest cut unit via Osborne Creek. 69 Fed. Reg. 53,136 (Aug. 31, 2004). Thus, unit 12 is a part of the [ldquo]area of project influence[rdquo] and turbidity, sedimentation, and chemical water pollution impacts to this species[rsquo] critical habitat and the population of Cumberland elktoe residing therein must be analyzed as a part of USFS[rsquo] NEPA review. No such analysis was provided in the draft EA.

USFS Must Undergo Analysis of Impacts to Listed Species and Critical Habitat Under NEPA and ESA Separately. USFS attempts to defer its NEPA impacts analysis to listed and proposed species and designated critical habitat to the Section 7 ESA consultation and conference process. The Biological Evaluation ([ldquo]BE[rdquo]) claims that information on PETS species and effects determinations will be represented in the Biological Assessment ([ldquo]BA[rdquo]), which will be available in the project file. However, today is the deadline for comments on the draft EA, and no such BA has been provided by USFS in the project file. Thus, USFS has not provided the commenting public with the information required to understand the potential impacts of the Jellico project, and the draft EA cannot comply with NEPA in its current form. USFS must analyze impacts to all ESA-listed species and designated critical habitat within the [ldquo]area of project influence[rdquo] as part of its NEPA analysis process. This will need to be done in an EIS, as discussed above, but such analysis was also required of its EA. 40 C.F.R. [sect] 1501.5(c)(2). The agency[rsquo]s attempt to defer this analysis until ESA Section 7 consultation and conference is unavailing. The primary reason why Section 7 analysis may not serve as a substitute for NEPA analysis of impacts to these species and their designated critical habitat is because the standards of analysis under the ESA and NEPA are entirely different to the point of being in conflict with one another. Courts have held that [ldquo]a project need not jeopardize the continued existence of a threatened or endangered species to have a [lsquo]significant[rsquo] effect[rdquo] for the purposes of NEPA.

Cascadia Wildlands v. U.S. Forest Serv., 937 F.Supp.2d 1271, 1282(D.Or.2013), appeal dismissed (Feb. 27, 2014); Klamath-Siskiyou Wildlands Ctr. v. U.S. Forest Serv., 373 F.Supp.2d 1069, 1080 (E.D.Cal.2004).<sup>13</sup> In EPIC, the Ninth Circuit recognized that species viability is the relevant standard for assessing a project under the Endangered Species Act, but the standard is adverse effect under NEPA. *Envtl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 451 F.3d 1005, 1012 (9th Cir.2006) (“EPIC”); see *Forest Serv. Employees for Env’tl. Ethics v. U.S. Forest Serv.*, 726 F.Supp.2d 1195, 1213 (D.Mont.2010). *Or. Wild v. B.L.M.*, 2015 U.S. Dist. LEXIS 32584 at 28 (D. Or. 2015). As the court explained, the standard under NEPA for species-level impacts review in an EIS is whether the proposed action would have a “significant effect” on a species. The standard under Section 7 of the ESA is whether the proposed action would jeopardize the continued existence of a federally listed species. A “significant effect” on the Cumberland darter, Cumberland elktoe, blackside dace, or any of the federally listed bats in the area could include the degradation or complete eradication of existing habitat ? including designated critical habitat ? in the project area and within the area of project influence. It could also include killing of individuals of these species. It could even include the killing of entire populations of these species. Any of these impacts would constitute “significant effects” for the purposes of NEPA ? necessitating the preparation of an EIS examining all impacts to these species and their habitat ? although they may not threaten any species with the “jeopardy” of extinction per Section 7 of the ESA. *Grand Canyon Trust v. F.A.A.*, 290 F.3d 339, 340 (D.C. Cir. 2002). Destruction or adverse modification of critical habitat is similarly defined under Section 7 of the ESA such that project-level impacts could not possibly meet the standard for geographically broadly distributed species like the listed species in question here. Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species. 50 C.F.R. [sect] 402.02 (emph. added). Because this project only threatens to destroy numerous segments of designated critical habitat for two species that have designated critical habitat elsewhere (and destroy habitat for the blackside dace, which has no designated critical habitat in the project area), the Section 7 analysis is destined to conclude that the project does not meet the standard for “destruction or adverse modification” of critical habitat. However, the total destruction of critical habitat segments 12, 13, and 14 for the Cumberland darter, segment 12 for the Cumberland elktoe, and habitat for the local population of blackside dace is very possible as a result of the direct, indirect, and cumulative turbidity, sedimentation, and chemical pollution impacts of the proposed action. And that is why these impacts to these listed species and their habitat, which are certainly potentially significant, must be analyzed as a part of the NEPA process for this project. *Sierra Club v. Peterson*, 717 F.2d 1409, 1415 (D.C. Cir. 1983); 40 C.F.R. [sect] 1502.1. USFS Must Try Again to Complete a Lawful Analysis of Impacts to Bats Five federally-listed or proposed bat species are known or presumed to inhabit the project area. BE at 78. USFS has innumerable problems with its draft EA. Among them, the EA itself never makes mention of two species listed as endangered under the ESA and presumed to be present in the project area. The Virginia big-eared bat and the gray bat are completely overlooked in the EA. What’s more, the BE presumes that both of these species are present in the project area and subject to forest management impacts. BE at 78; see also, Table 5. Thus, USFS has deprived the commenting public of crucial information required to understand the impacts of the proposed action and Alternative 1, and mandated to be included in its EA. 40 C.F.R. [sect] 1501.5(c)(2); see also, *Forest Guardians v. U.S. Forest Serv.*, 495 F.3d 1162, 1172 (10th Cir. 2007) (“NEPA” requires a reasoned evaluation of the relevant factors). a. Cumulative effects analysis and fragmentation impacts to NLEBs Another systemic problem with the draft EA is that it includes no cumulative effects analysis for bats stemming from the Jellico project whatsoever. Instead, the BE provides a discussion of cumulative effects for the Greenwood Vegetation Management Project. BE at 80. To the extent that this passage might be considered to apply to the Jellico project, it strangely left out an analysis of all of the other sources of habitat fragmentation and deforestation in and around the project area. For example, no analysis was provided for private land logging, mining, drilling pad development, residential development, road building, etc. “Cumulative effect” is defined in the applicable regulations as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. *Theodore Roosevelt Conservation P’ship v. Salazar*, 616 F.3d 497, 512, 392 U.S. App. D.C. 316, 331,

2010 U.S. App. LEXIS 15257, \*30-31, 175 Oil & Gas Rep. 824, 40 ELR 20199 (D.C. Cir.2010)(citing 40 C.F.R. [sect] 1508.7). Bat species presumed to be in the project area, such as the northern long-eared bat ([ldquo]NLEB[rdquo]), rely on intact, unfragmented forest areas for their habitat. Intact, unfragmented forest habitats are vital for a wide range of species, including northern long-eared bats. 87 Fed. Reg. 73,488, 73,496 (Nov. 30, 2022). The Forest Plan FEIS discusses the importance of interior forests and importance of considering the effects of within-forest habitat fragmentation: Within-Forest Habitat Fragmentation Changes in forest composition and/or age-class conditions that interrupt or isolate forest habitat is another form of fragmentation. The arrangement of tree species and age structure affects which plant and animal populations may be found in a forested area. Arrangement of forest habitat types across an area and the degree to which they are connected influences habitat suitability. An area where forest habitat types are small or not connected may limit suitability for some species. The implications of habitat fragmentation within the forest depend on the habitat requirements of individual species. Many species thrive in a diverse mixture of habitats while others need a more uniform habitat over a large area. In addressing within-forest habitat fragmentation, management activities should strive to: [bull] Provide interior forest habitat [bull] Provide habitat continuity/connectivity [bull] Reduce adverse edge effects created by management activities. Forest Plan FEIS 2-13. The Forest Plan FEIS defines interior forest habitat as: [ldquo]High canopy forest conditions suitable to meet the requirements of area sensitive species that are adversely impacted by forest edge, including microclimate change (warmer, windier), increased predation, increased brood parasitism, and increased competition.[rdquo] Forest Plan FEIS 6-16. A recently published thesis from the University of Kentucky examines the effects of logging systems on northern long-eared and other bat species in eastern Kentucky. The thesis, [ldquo]Effects of Shelterwood and Patch Cut harvests on a Post White-Nose Syndrome Bat Community in the Cumberland Plateau in Eastern Kentucky,[rdquo] was submitted and accepted in mid-2020. The two of three sites examined, the Laurel Ridge tract of Robinson Forest and the Beech tract managed by The Forestland Group, are both approximately 30 to 35 miles northeast of the Daniel Boone National Forest, and similarly located in the Rugged Eastern Hills (221 Ha) subsection of the Northern Cumberland Plateau Section of eastern Kentucky (Forest Plan FEIS 1-7). The other site, Kentucky Ridge State Forest, is south of Pine Mountain approximately 20 miles from the Daniel Boone National Forest. The proximity of the research and land type similarities makes this research directly applicable to the project area in the Daniel Boone National Forest. In his study, Arant examined changes in habitat usage by several species of bats following timber harvest in three sites in eastern Kentucky. Notably, in the shelterwood harvests in the study, 50% of the commercial timber volume was harvested (Arendt at 9), while shelterwood harvests in the South Red Bird project (Action 1.A) would remove 80% to 90% of the basal area in given stands (EA at 8). The 330 [rsquo] buffers between shelterwood harvests would be subject to an unspecified amount of commercial thinning (Action 1.C). Patch cuts in Arendt (2020) were approximately 1 hectare (2.5 acres). Arant (2020) found that northern long-eared bats avoided areas following harvest, stating [ldquo]The lack of activity of these bats in harvests, however, suggests they do not actively forage within cuts (Arant at 71; See also Figure 18 at 46; Table 3 at 48; Figure 19 at 58). Arendt hypothesizes that one reason myotis species may be avoiding these harvest areas is due to reduced prey availability:[ldquo]The mean number of lepidopterans collected was lower at shelterwood and patch cut stands than unharvested stands (Table 8). There was no difference between shelterwood and patch cut stands (Table 8).[rdquo] (Arendt at 51). Arant (2020) also reported that [ldquo]Most northern long-eared bats were captured in 2.6 m nets over closed canopy ridge top roads[rdquo] (Arant at 56). Through radiotracking captured bats, he found that [ldquo]All (northern long-eared bat) roosts were within 100 m of a ridge top road, suggesting these bats preferentially chose roosts in the vicinity of forested flight corridors.[rdquo] (Arant at 60). Northern long-eared bats were found, to a lesser extent, to use closed canopy stream corridors. The extent that logging could be beneficial to northern long-eared bats, Arant surmises that it would be the result of road compaction limiting tree growth, and forming travel corridors once the forest canopy becomes tall enough. The preference for northern long-eared bats in using closed-canopy flyway corridors, especially along roads and in ridge top positions, has significant bearing on potential impacts to the species. Roadside logging and thinning in the Jellico project area would impact both ridge top roads and flyways, as well as riparian roads and flyways. It could also destroy a significant portion of roosts and roosting habitat in the project area. See Appendix 5: Roadside thinning for illustrations of the spatial relationship between proposed (and approved) logging sites, roadside thinning, and ridge top flyways. Northern long-eared bats exhibit high fidelity toward roosting areas. According to the final listing

rule for the northern long-eared bat: "Northern long-eared bats change roost trees frequently, but use roost areas repeatedly and to a lesser extent, reuse specific roosts." Once documented, northern long-eared bats are known to continue to use the same roosting areas. 87 Fed. Reg. 73,488. And while northern long-eared bats are highly mobile (outside of the lactation period), and demonstrate some flexibility and plasticity in habitat use, the scale of the timber harvest matters. The Programmatic Biological Opinion for the northern long-eared bat states: During the summer, NLEB habitat loss is primarily due to forest conversion and forest management. Throughout the range of NLEB, forest conversion is expected to increase due to commercial and urban development, energy production and transmission, and natural changes. The 2010 Resources Planning Act Assessment projects forest losses of 16–34 million acres (or 4–8 percent of 2007 forest area) across the conterminous United States, and forest loss is expected to be concentrated in the southern United States, with losses of 9–21 million acres (USFS 2012). Forest conversion causes loss of potential habitat, fragmentation of remaining habitat, and if occupied at the time of the conversion, direct injury or mortality to individuals. Forest management activities, unlike forest conversion, typically result in temporary impacts to the habitat of NLEB, but like forest conversion, may also cause direct injury or mortality to individuals. The net effect of forest management may be positive, neutral, or negative, depending on the type, scale, and timing of various practices. BIOP at 16, emphasis added. The Final Biological Opinion references Silvis et al. 2014, stating: "In model simulations based on the tracking data, removal of more than 20 percent of roosts initiated social network fragmentation, with greater loss causing more fragmentation." BIOP at 37. The final listing rule for the northern long-eared bat states: As stated above, northern long-eared bats have been found in forests that have been managed to varying degrees, and as long as there is sufficient suitable roosting and foraging habitat within their home range and travel corridors between those areas, we would expect northern long-eared bat colonies to continue to occur in managed landscapes. However, in areas with WNS, northern long-eared bats may be less resilient to stressors and maternity colonies are smaller. Given the low inherent reproductive potential of northern long-eared bats (one pup per female per year), death of adult females or pups or both during tree felling could reduce the long-term viability of some of the WNS-impacted colonies if they are also in the relatively small percentage of forest habitat directly affected by forest management. (Final Rule at 1909) The scale of disturbance prescribed in this project, including both large logging blocks and the logging of dozens of miles of flyway corridors that could serve to connect remaining suitable habitat, could substantially and significantly impact northern long-eared bat populations. Given this fact, USFS must produce an EIS for this project. Because the Jellico project would denude or partially denude and fragment 9,600+ acres of presumed NLEB forest habitat (in addition to extensive road building impacts), an analysis of other drivers of forest fragmentation, in conjunction with the Jellico project's impacts, is required in USFS's NEPA cumulative effects analysis. 40 C.F.R. [sect] 1508.25(c); id. [sect] 1508.7.b. NLEBs and Pesticide Exposures In the Daniel Boone National Forest's ([Idquo]DBNF[rdquo]) Species Baseline Information document at 39–40, USFS explains that pesticide exposures can kill and weaken already-vulnerable NLEBs via bioaccumulation over time: Environmental contaminants, in particular insecticides, other pesticides, and inorganic contaminants, such as mercury and lead, may also have detrimental effects on NLEB. Contaminants may bio-accumulate (become concentrated) in the tissues of bats, potentially leading to a myriad of sub-lethal and lethal effects. NLEBs may also be indirectly affected through a reduction in available insect prey. There is currently no evidence that the natural or manmade factors discussed above (hibernacula modification, forest conversion, forest management, wind energy, climate change, contaminants, fire) have separately or cumulatively contributed to significant range-wide population effects on the NLEB prior to the onset of WNS. However, declines due to WNS have significantly reduced the number and size of NLEB populations in some areas of its range. This has reduced these populations to the extent that they may be increasingly vulnerable to other stressors that they may have previously had the ability to withstand. These impacts could potentially be seen on two levels. First, individual NLEBs sickened or struggling with infection by WNS may be less able to survive other stressors. Second, NLEB populations impacted by WNS, with smaller numbers and reduced fitness among individuals, may be less able to recover making them more prone to extirpation. The status and potential for these impacts will vary across the range of the species (USDI-FWS 2016e). Suitable northern long-eared roosting and foraging habitat is widespread and occurs throughout the DBNF. In USFS's cited SERA herbicide risk assessment, this warning is given about incidental spray of wildlife: 4.2.2.1. Direct Spray The unintentional direct spray of wildlife during

broadcast applications of a pesticide is a credible exposure scenario similar to the accidental exposure scenarios for the general public discussed in Section 3.2.3.2. In a scenario involving exposure to direct spray, the amount of pesticide absorbed depends on the application rate, the surface area of the organism, and the rate of absorption. SERA 2011. The SERA Risk Assessment also states at 4.2.2.2.: As discussed in the human health risk assessment (Section 3.2.3.3), the only approach for estimating the potential significance of dermal contact with contaminated vegetation is to assume a relationship between the application rate and dislodgeable foliar residue. Unlike the human health risk assessment, in which estimates of transfer rates are available, there are no transfer rates available for wildlife species. Wildlife species are more likely than humans to spend long periods of time in contact with contaminated vegetation. It is reasonable to assume that for prolonged exposures, equilibrium may be reached between pesticide levels on the skin, rates of dermal absorption, and pesticide levels on contaminated vegetation. Id. Also, the Lick Risk Assessment for herbicides found Hazard Quotients above 1 for mammals such as rats and deer due to various exposure scenarios, demonstrating the exposure risk to wildlife. Because wildlife such as the prey species of NLEBs will be routinely exposed to herbicide residues, the significant bioaccumulation risk to NLEBs must be examined as a part of the EIS for this project. Grand Canyon Trust v. F.A.A., 290 F.3d 339, 340 (D.C. Cir. 2002). Thus, the EA's claim that herbicide spraying's indirect impacts to NLEBs would be [quod]very minimal[quod] is patently and transparently false, and contradicted by its own cited assessment. c. Other bat concerns Chief among our other concerns is the fact that the EA contrasts the no action alternative with the other two alternatives by stating that [quod]Bat species would continue to occupy the area at present baseline levels.[quod] The clearly anticipated harm to the struggling, listed local bat populations as a result of this project is gravely concerning. The tricolored bat receives this nonsensical treatment in the BE: Tricolored bat is currently proposed for federal listing. Effects from the Jellico Vegetation Management Project to tricolored bat would be similar to those expected for Indiana bat and Northern long-eared bat and would not jeopardize the existence of the species. The district will conference with the Service on tricolored bat until the time it is uplisted and receives its own consultation. USFS says this, although no effects analysis has taken place for the Indiana bat or NLEB to date for this project. So how does the agency know that this means the project will not jeopardize the tricolored bat? This is frustratingly, transparently illogical. Clearly the tricolored has a lot to lose via the removal of thousands of acres of tree canopy, as the BE acknowledges by saying [quod]this species is thought to roost primarily in high tree foliage and in hollow trees.[quod] Likewise, the BE acknowledges that the Virginia big-eared bat is a resident of the forest overstory, and that [quod]maintaining stable microhabitat conditions and forested communities around the maternity and hibernation caves is important to maintaining these sites.[quod] Thus, canopy removal isn't the only concern for this species. The loss of any forest cover over caves systems risks ruining hibernacula. The species' prey, including moths, butterflies, flies and beetles, would put the bats at a risk of herbicide bioaccumulation similar to the NLEB's. The gray bat is also at risk due to herbicide bioaccumulation due to their diet of aquatic insects such as beetles, moths, mayflies, stoneflies and caddisflies that could be exposed similarly to NLEB's prey, as the BE explains. Also, as the BE states: Gray bats have been observed in small numbers in caves and in riparian forest areas at several locations on the forest[hellip] They may migrate between caves or sometimes can be considered as residents of a relatively small area. Gray bats feed almost exclusively over water in riparian forest areas. Because the Jellico project involves logging, thinning, and otherwise modifying forest habitat in numerous riparian forest areas, this project threatens significant impacts to the gray bat's habitat and, consequently, to their food sources in the project area. Furthermore, the foreseeable impacts documented in the BE include potentially fatal flushing incidents during management activities, and killing or injuring via the felling of trees with bats in them. Any of these impacts alone, and certainly these impacts in the aggregate, are sufficient to conclude that impacts from the Jellico project will be significant, requiring the production of an EIS. USFS's Aquatic Species Analysis is Fatally Flawed First, the EA acknowledges that designated critical habitat for the Cumberland darter and Cumberland elktoe [dash] along with all other aquatic habitat in the Jellico project's receiving streams [dash] will be impacted by sedimentation from the Jellico project. Other potential impacts to aquatic habitat described in the EA include [quod]impacts to water chemistry or aquatic species abundance.[quod] Any change in the abundance of aquatic species would certainly qualify as a significant effect, requiring the development of an EIS, as would a change in the water chemistry in aquatic habitat. a. Herbicides analysis In spite of the EA's recognition of the risks to aquatic habitat via chemical

pollution and otherwise, the EA goes on to assert: There are no direct impacts expected from herbicide application, because the FS would only use herbicides with risk assessments (see SERA 2011, Lick 2015) at or below application rates considered in those risk assessments. That assertion is in open conflict with the findings of the risk assessments cited in the same statement, which found Hazard Quotients above a value of 1 for numerous types of aquatic and terrestrial and avian wildlife due to regular herbicide spraying, and in the case of accidental spills, both of which were found to be potential risks. (Lick 2015) Among the guilds of animals exposed to excessive risk according to the analysis of USFS's chosen risk assessments are fish, amphibians, aquatic and terrestrial invertebrates, and algae. Id. Thus, herbicides were found to be threatening the aquatic food chain from top to bottom. Id. And USFS must examine all potential risks in its NEPA analysis. With respect to accidents and emergencies, [quoting] an agency must look at both the probabilities of potentially harmful events and the consequences if those events come to pass. [quoting] *New York v. Nuclear Regulatory Commission*, 681 F.3d 471, 482 (D.C. Cir. 2012). CEQ regulations require consideration of [quoting] reasonably foreseeable [quoting] impacts [quoting] which have catastrophic consequences even if their probability of occurrence is low. [quoting] 40 C.F.R. [section] 1508.8; 1502.22. While [quoting] remote and speculative [quoting] effects do not necessarily warrant close review, NEPA requires consideration of a potential impact where it is [quoting] sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision. [quoting] *Sierra Club v. FERC*, 827 F.3d 36, 47 (D.C. Cir. 2016). Numerous courts have held that agencies have violated NEPA by not considering oil spills and other relatively low-likelihood accidents that could have catastrophic impacts. See *Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 871 (9th Cir. 2005). (Corps violated NEPA by approving an oil dock expansion without considering increased risk of oil spills resulting from increased tanker traffic); *Gov't of Province of Manitoba v. Norton*, 398 F.Supp.2d 41, 64 (D.D.C. 2005) (rejecting EA for drinking water pipeline for not considering low risk mishap); *Sierra Club v. Watkins*, 808 F. Supp. 852, 867-68 (D.D.C. 1991) (rejecting EA for failing to consider accidents that are [quoting] possible [quoting] even if [quoting] extremely unlikely). See also, *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Commission*, 449 F.3d 1016, 1024 [dash] 35 (9th Cir. 2006) (remanding to the agency because the agency's analysis failed to consider terrorist acts as a factor in its review of a license application to construct a nuclear spent-fuel storage facility), with *Idaho Sporting Cong. v. Thomas*, 137 F.3d 1146, 1149 [dash] 50 (9th Cir. 1998) (stating that [quoting] if substantial questions are raised as to whether a project . . . may cause significant degradation of some human environmental factor, [quoting] an agency must prepare an EIS (quoting *Greenpeace Action v. Franklin*, 14 F.3d 1324, 1332 (9th Cir. 1992); *La Flamme v. FERC*, 852 F.2d 389, 397 (9th Cir. 1988))). Thus, large accidental herbicide spills must have their impacts analyzed here. USFS's chosen method of spraying herbicides is clearly adding to the imprecision of herbicide application, which is in turn leading to toxic exposures for wildlife and people. The desire for management convenience driving these decisions, at the expense of the land and people. USFS's denial about this problem was on display in the EA when it arbitrarily and capriciously claimed that [quoting] [it] is unlikely that herbicide application would have any impacts [to terrestrial species other than bats and plants] due to the directed nature of application. [quoting] Further, USFS has made a genuine analysis of herbicides impossible by failing to specify which herbicides it will or might use as a part of the Jellico project. Each herbicide has unique effects, and the specific chemicals in use must have their impacts analyzed in an EIS. In order to carry out that analysis, USFS must define which chemicals will be used. Because it did not, the agency ensured that a lawful NEPA analysis would not take place here. We understand that DBNF's favorite herbicides are glyphosate, imazapyr, and triclopyr. Thus, we will detail potential impacts of the two of these herbicides we have information for below. USFS must incorporate this information into its NEPA analysis in an EIS due to the potential for significant impacts from herbicides. USFS must fill in the best and most updated available science for imazapyr as well.

1. Glyphosate A 2015 EPA analysis found multiple environmental harms from glyphosate use. Use of glyphosate in accordance with the label was found to:
  - 1) Result in concentrations that can potentially impact the survival and biomass of aquatic plants, upland plants, and riparian/wetland plants.
  - 2) Result in residues on foliage that can potentially impact the growth of herbivorous birds, reptiles and terrestrial amphibians.
  - 3) Potentially impact the growth and reproduction of terrestrial mammals following ground applications of glyphosate.
- 3 This analysis also indicated that considerable no-spray buffers would be needed to keep off-target plants from being harmed by glyphosate use, more than 1000 feet for certain aerial applications and nearly 400 feet for certain ground applications.
- 4 The states of California and Arkansas both adopted mandatory

no-spray buffers of 500 feet for aerial applications.<sup>5</sup> Ecological incident data also reinforce the finding that the current labelled uses of glyphosate are having devastating effects to plant and animal life outside of the sprayed field.<sup>6</sup> Approximately 600 incidents have been reported and logged on the Ecological Incident Information System.<sup>1</sup> EPA. Preliminary Ecological Risk Assessment for Glyphosate and Its Salts. Sept. 8, 2015 page 2. Available here: <https://www.regulations.gov/document?D=EPA-HQ-OPP-2009-0361-0077.2> Id.3 Id.4 Id. page 92.5 EPA. Drinking Water Assessment for the Registration Review of Glyphosate. June 15, 2017. Pg. 16.6 EPA. Preliminary Ecological Risk Assessment for Glyphosate and Its Salts. Sept. 8, 2015. Pgs 59-62. Available here: <https://www.regulations.gov/document?D=EPA-HQ-OPP-2009-0361-0077.14> (EIS) and Avian Monitoring Information System (AIMS) databases. A separate Incident Data System (IDS) database has identified 269 separate aggregate incident reports. Ecological incidents are also significantly underreported for pesticides so this should be viewed as the absolute bare minimum of ecological incidents that involve glyphosate. A final biological evaluation was released by the EPA on how use of glyphosate may affect all endangered and threatened species in the United States. The agency concluded that glyphosate would "[l]ikely Adversely Affect" 1676 out of 1795 listed species (93%) and adversely modify 759 out of 792 designated critical habitat in the U.S.<sup>7</sup> This includes nearly every single listed species and critical habitat in the United States and all that reside in or near the action area being considered.<sup>8</sup> The EPA has found that glyphosate poses a risk to a federally listed amphibian, the California Red-legged frog, making a Likely to Adversely Affect determination for the species.<sup>9</sup> Some glyphosate formulations and co-formulants have been found to be "[h]ighly toxic" to certain species of fish.<sup>10</sup> Researchers have found negative associations between glyphosate use and monarch population size.<sup>11</sup> Use of glyphosate has been tied to widespread declines of milkweed, which is essential to monarch butterfly survival.<sup>12</sup> The World Health Organization's International Agency for Research on Cancer ("IARC") conducted an exhaustive review of the publicly available scientific literature in 2015 and found that glyphosate is "probably carcinogenic to humans" (Group 2A).<sup>13</sup> IARC carefully weighed evidence in three areas, and found that: 1) There was sufficient evidence to conclude that glyphosate causes cancer in animal studies; 2) There was limited evidence that exposure to glyphosate causes cancer (non-Hodgkin lymphoma) in humans; and 3) There was strong evidence that glyphosate can damage DNA and induce oxidative stress,<sup>14</sup> two well characterized pathways that can lead to cancer.<sup>15</sup> IARC's finding that glyphosate causes cancer in animals prompted California's Office of Environmental Health Hazard Assessment to list glyphosate as a known carcinogen under California's Proposition 65 law.<sup>16</sup> The agency has also finalized a No Significant Risk Level for glyphosate, which estimated the daily exposure level that will result in a 1/100,000 chance of developing cancer, of 1.1 mg/day.<sup>17</sup> EPA has found that the range, pastureland, and rights-of-way uses of glyphosate can expose birds, reptiles and terrestrial amphibians to levels of the herbicide that cause reduced

survival of offspring.<sup>18</sup> The same uses can expose mammals to 37 times the amount of triclopyr known to reduce litter size.<sup>19</sup> All labelled uses of triclopyr were found to expose adult and larval bees to levels estimated to reduce survival and larval emergence.<sup>20</sup> Harm to bee larva was estimated more than 1000 feet from the application site.<sup>21</sup> Terrestrial plants were also estimated to be<sup>13</sup> WHO. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Volume 112: Some Organophosphate Insecticides and Herbicides. Glyphosate. 2017. Available at: <http://monographs.iarc.fr/ENG/Monographs/vol112/mono112.pdf><sup>14</sup> Id.<sup>15</sup> Klaunig, J.E., et al., The role of oxidative stress in chemical carcinogenesis. *Environ Health Perspect*, 1998. 106 Suppl 1: p. 289-95; and Lee, S.J., et al., Distinguishing between genotoxic and non-genotoxic hepatocarcinogens by gene expression profiling and bioinformatic pathway analysis. *Sci Rep*, 2013. 3: p. 2783.<sup>16</sup> OEHHA. The California Environmental Protection Agency's Office of Environmental Health Hazard Assessment. Glyphosate Listed Effective July 7, 2017, as Known to the State of California to Cause Cancer. Available at: <https://oehha.ca.gov/proposition-65/cnr/glyphosate-listed-effective-july-7-2017-known-state-california-cause-cancer>.<sup>17</sup> OEHHA. The California Environmental Protection Agency's Office of Environmental Health Hazard Assessment. Amendment to Section 25705 No Significant Risk Level - Glyphosate April 10, 2018. Available at: <https://oehha.ca.gov/proposition-65/cnr/amendment-section-25705-no-significant-risk-level-glyphosate-april-10-2018>.<sup>18</sup> EPA. Triclopyr (Acid, Choline salt, TEA salt, BEE): Draft Ecological Risk Assessment for Registration Review. Sept. 30, 2029. Pg. 6. Available here: <https://www.regulations.gov/document?D=EPA-HQ-OPP-2014-0576-0026>.<sup>19</sup> Id. at 8.<sup>20</sup> Id. at 9.<sup>21</sup> Id. at 90.<sup>16</sup> exposed to levels of triclopyr that were known to cause harm more than 1000 feet away from the site of application, even for ground applications.<sup>22</sup> Triclopyr butoxyethyl ester (BEE) is classified as [quod]highly toxic[quod] to aquatic organisms. Range, pastureland and meadow uses of BEE can expose fish and aquatic invertebrates to levels of the pesticide known to cause acute harm.<sup>23</sup> The EPA has found that triclopyr poses a risk to a federally listed amphibian, the California Red-legged frog, making a Likely to Adversely Affect determination for the species.<sup>24</sup> The best available science reviewed here must be incorporated into any analyses of herbicide use on the Jellico project. These herbicide risk reviews are not inclusive of all herbicides because the scoping letter does not specify which chemicals are proposed for use. Many others not discussed here have equally as disastrous risks to ecosystems, water, people, and wildlife. We do not endorse the use of any of those herbicides under the current proposal framework subject to these comments. For these reasons and more, we have identified herbicides as an issue for analysis.

**b. Alternatives to Herbicides--Integrated Pest Management** Any subsequent NEPA document should articulate a range of reasonable alternatives. NEPA analysis [quod] shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made.[quod]<sup>25</sup> NEPA requires agencies to [quod] study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.[quod]<sup>26</sup> In fact, the alternatives section is considered the heart of an environmental analysis.<sup>27</sup> At least one alternative should forego the use of herbicides. Prevention is the most cost-effective action that the Forest Service can perform to maintain the health and integrity of the forest. Reliance on herbicide means that the Forest Service has failed their mandate to follow Integrated Pest Management protocols.<sup>28</sup> The Natural Resources Conservation Service (NRCS) defines Integrated Pest Management as [quod] a site-specific combination of pest prevention, pest avoidance, pest monitoring, and pest<sup>22</sup> Id. at 94-95.<sup>23</sup> Id. at 9.<sup>24</sup> EPA. Risks of Triclopyr Use to Federally Threatened California Red-legged Frog (*Rana aurora draytonii*) Pesticide Effects Determination. October 19, 2009. Available here: <https://www3.epa.gov/pesticides/endanger/litstatus/effects/redleg-frog/triclopyr/analysis.pdf>.<sup>25</sup> 40 C.F.R. [sect] 1502.02(g); see id. [sect] 1500.1(c) ([quod] NEPA's purpose is not to generate paperwork[mdash]even excellent paperwork[mdash]but to foster excellent action[quod]).<sup>26</sup> 42 U.S.C. [sect] 4331(2)(E).<sup>27</sup> 40 C.F.R. [sect] 1502.14.<sup>28</sup> U.S. Forest Service, [quod] FSM 2100 - Environmental Management Chapter 2150 - Pesticide Management and Coordination,[quod] 2014. suppression strategies.[quod]<sup>29</sup> IPM was developed as a process for addressing pests of all kinds as a response to the overuse of chemical pesticides and their associated environmental harms.<sup>30</sup> Pesticide overuse threatens environmental health, disrupts food webs, contaminates drinking water, and undermines pesticide effectiveness.<sup>31</sup> IPM has become the standard framework for using pesticide on public lands across the Federal government and the Federal, Insecticide, Fungicide, and Rodenticide Act (FIFRA) states that [quod] [hellip] the [Environmental Protection Agency] Administrator in cooperation with the Secretary

of Agriculture shall develop approaches to the control of pests based on integrated pest management[hellip][rdquo].<sup>32</sup> IPM practice is codified into the laws and regulations of agencies that manage public lands including: the Department of Interior (DOI)<sup>33</sup>, and its Bureau of Land Management (BLM)<sup>34</sup> as well as the United States Department of Agriculture[rsquo]s United States Forest Service (USFS)<sup>35</sup> and the National Parks Service (NPS)<sup>36</sup>. The most important use of IPM on public land is for the management of invasive species as directed by Executive Orders 13112<sup>37</sup> and 13751,<sup>38</sup> which instruct Federal Agencies to prevent the introduction and spread of invasive species. There are approximately 50,000 alien species in 29 NRCS, [ldquo]Integrated Pest Management Code 595[rdquo] (Natural Resource Conservation Service, 2010), <https://efotg.sc.egov.usda.gov/references/public/NY/nyps595.pdf>.<sup>30</sup> Gerrit Cuperus, Richard Berberet, and Phillip Kenkel, [ldquo]The Future of Integrated Pest Management,[rdquo] in E. B. Radcliffe, W. D. Hutchison & R. E. Cancelado [Eds.], *Radcliffe[rsquo]s IPM World Textbook* (St. Paul, MN: University of Minnesota, n.d.), <https://ipmworld.umn.edu>.<sup>31</sup> John Peterson Myers et al., [ldquo]Concerns over Use of Glyphosate-Based Herbicides and Risks Associated with Exposures: A Consensus Statement,[rdquo] *Environmental Health* 15 (February 17, 2016), <https://doi.org/10.1186/s12940-016-0117-0>; Maarten Bijleveld van Lexmond et al., [ldquo]Worldwide Integrated Assessment on Systemic Pesticides,[rdquo] *Environmental Science and Pollution Research* 22, no. 1 (January 1, 2015): 1[ndash]4, <https://doi.org/10.1007/s11356-014-3220-1>; Gregor J. Devine and Michael J. Furlong, [ldquo]Insecticide Use: Contexts and Ecological Consequences,[rdquo] *Agriculture and Human Values* 24, no. 3 (September 1, 2007): 281[ndash]306, <https://doi.org/10.1007/s10460-007-9067-z>.<sup>32</sup> [ldquo]Federal Insecticide, Fungicide, and Rodenticide Act,[rdquo] 7 U.S. Code [sect] 136w[ndash]3 (c) (2012).<sup>33</sup> U.S. Department of the Interior, [ldquo]Department of the Interior Departmental Manual,[rdquo] Chapter 1: Integrated Pest Management Policy, Section 1.5, Part 517, Series 31: Environmental Quality Programs (U.S. Department of the Interior, May 31, 2007).<sup>34</sup> U.S. Bureau of Land Management, [ldquo]BLM Vegetation Treatments Using Herbicide Final Programmatic EIS Record of Decision[rdquo] (U.S. Bureau of Land Management, 2007), 4[ndash]6, <https://eplanning.blm.gov/epl-frontoffice/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=70300&dctmId=0b0003e880de5eb8>.<sup>35</sup> U.S. Forest Service, [ldquo]Forest Service Manual 2100-Environmental Management,[rdquo] Chapter 2150 (U.S. Forest Service, March 19, 2013), page 6. Departmental Regulation 9500-4.<sup>36</sup> U.S. National Park Service, [ldquo]Management Policies 2006[rdquo] (Washington, D.C.: U.S. National Park Service, 2006), 48, [https://www.nps.gov/policy/MP\\_2006.pdf](https://www.nps.gov/policy/MP_2006.pdf).<sup>37</sup> William Clinton J., [ldquo]Executive Order 13112 Invasive Species[rdquo] (Federal Register, February 3, 1999), <https://www.govinfo.gov/content/pkg/FR-1999-02-08/pdf/99-3184.pdf>.<sup>38</sup> Barack Obama, [ldquo]Executive Order 13751 Safeguarding The Nation From the Impacts of Invasive Species[rdquo] (Federal Register, December 8, 2016). the United States that impact the survival of 42% of all threatened and endangered species.<sup>39</sup> Alien species degrade ecosystems by suppressing natural biodiversity, altering food webs, changing nutrient cycling, introducing novel diseases, and can cause significant economic damage. Alien species cause up to \$120 billion a year in environmental damages<sup>40</sup> and the U.S. government spends billions of dollars a year to mitigate and control alien species.<sup>41</sup> IPM is essential to stopping the spread and introduction of alien species on public land, and per the basic tenants of IPM, efforts must focus on the root causes of species spread. We believe that pesticides should only be used as a last resort, and the Forest Service must not rely on reflexive or reactive pesticide use. Already, there are countless examples of federal land management agencies claiming to adhere to the tenets of IPM but in reality, deploying dangerous pesticides as a first line of attack. In the absence of clear direction for herbicide use, the Forest Service unwittingly lays the groundwork to be another example of this tragic phenomenon. IPM is a process that requires planning that is land-use- and pest-specific that uses the minimum level of pest suppression necessary.<sup>42</sup> IPM relies on prevention, avoidance, monitoring, and suppression (PAMS) techniques in order to decrease pest pressure from a combination of biological, cultural, and chemical controls.<sup>43</sup> Successful management requires the preparation and implementation of strategic, long-term plans with defined threshold values for pest control actions that rely on prevention, education, and restoration that enhance the overall health of an ecosystem.<sup>44</sup> Early Detection and Rapid Response (EDRR) is essential to identifying, monitoring, and removing new alien species from an environment.<sup>45</sup> In IPM, chemical control may only be the last line of defense after preventative and avoidance practices have been implemented, and in IPM, even when pesticides are used, the least toxic options are deployed. We oppose widespread

permissions for herbicide use on public land. We challenge the Forest Service to develop meaningful use-criteria for herbicides in order to fulfill its mandate to use integrated pest management principles and protocols to reduce the likelihood of default reliance on herbicides. The analysis should present a strategic, long-term plan with defined thresholds.

39 David Pimentel, Rodolfo Zuniga, and Doug Morrison, [quotation]Update on the Environmental and Economic Costs Associated with Alien-Invasive Species in the United States,[quotation] *Ecological Economics, Integrating Ecology and Economics in Control Bioinvasions*, 52, no. 3 (February 15, 2005): 273–88, <https://doi.org/10.1016/j.ecolecon.2004.10.002>.

40 Pimentel, Zuniga, and Morrison.

41 National Invasive Species Council, [quotation]National Invasive Species Council Crosscut Budget[quotation] (Washington, D.C.: National Invasive Species Council, January 25, 2018), [https://www.doi.gov/sites/doi.gov/files/uploads/crosscut\\_25january2018.pdf](https://www.doi.gov/sites/doi.gov/files/uploads/crosscut_25january2018.pdf).

42 NRCS, [quotation]Integrated Pest Management Code 595.[quotation]

43 NRCS.

44 Joseph M. DiTomaso, [quotation]Invasive Weeds in Rangelands: Species, Impacts, and Management,[quotation] *Weed Science* 48, no. 2 (April 2000): 255–65, [https://doi.org/10.1614/0043-1745\(2000\)048\[0255:IWIRSI\]2.0.CO;2](https://doi.org/10.1614/0043-1745(2000)048[0255:IWIRSI]2.0.CO;2).

45 Lindy Garner, [quotation]Early Detection and Rapid Response to New Invasive Grasses in North Central Wyoming[quotation] (U.S. Fish and Wildlife Service, April 2019), [https://www.doi.gov/sites/doi.gov/files/uploads/wyoming\\_invasive\\_grasses\\_report.pdf](https://www.doi.gov/sites/doi.gov/files/uploads/wyoming_invasive_grasses_report.pdf).

19 and PAMS techniques that would address noxious weeds now and in the future; these must be developed. The DBNF should remain vigilant for the spread of noxious weeds and deal with them as necessary with the least amount of herbicide.

c. Cumberland darter. The USFS [quotation] provided Species Baseline Information document for the DBNF explains that the federally endangered Cumberland darter has a very narrow range and has recently suffered precipitous population declines. The species is obviously on thin ice. The Baseline Information document also specifies that the Cumberland darter requires the following habitat attributes:

1. Shallow pools and gently flowing runs of geomorphically stable, second to fourth order streams with connectivity between spawning, foraging and resting sites to promote gene flow throughout the species [quotation] range.
2. Stable bottom substrates composed of relatively silt-free sand and sand covered bedrock, boulders, large cobble, woody debris, or other cover.
3. An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows as measured during years with average rainfall, and to maintain benthic habitats utilized by the species.
4. Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the Cumberland darter.
5. Prey base of aquatic macroinvertebrates, including midge larvae, mayfly nymphs, caddisfly larvae and microcrustaceans.

Clearly, sedimentation of its benthic habitat would ruin its habitat and kill off its food source, making existing habitat in the project area, including in its designated critical habitat, unsuitable for habitation. USFS has acknowledged that the Jellico project would result in the sedimentation of local streams. Extirpation of this listed species from its critical habitat is a significant impact that requires documentation in an EIS. Likewise, the destruction of the connectivity of its habitat via sedimentation, turbidity, and the destruction of water quality via chemical pollution, temperature spikes due to the removal of the forest canopy, or otherwise would risk extirpation of the species. Any herbicide contamination resulting in the death of benthic invertebrates would also destroy the habitat for this fish.

d. Cumberland elktoe. Likewise, the federally endangered Cumberland elktoe mussel [quotation]s habitat requirements are delineated in the Baseline Information document:

1. Permanent, flowing stream reaches with a flow regime (i.e., the magnitude, frequency, duration, and seasonality of discharge over time) necessary for normal behavior, growth, and survival of all life stages of the five mussels and their host fish;
2. Geomorphically stable stream and river channels and banks (structurally stable stream cross section);
3. Stable substrates, consisting of mud, sand, gravel, and/or cobble/ boulder, with low amounts of fine sediments or attached filamentous algae;
4. Water quality (including temperature, turbidity, oxygen content, and other characteristics) necessary for the normal behavior, growth, and survival of all life stages of the five mussels and their host fish; and
5. Fish hosts with adequate living, foraging, and spawning areas for them.

Thus, any sedimentation and turbidity impacts to the elktoe [quotation]s habitat resulting from the Jellico project, as well as any water temperature fluctuations due to the removal of forest canopy, could kill all individuals of this species in the project area. Likewise, any water quality harms to its host fish would likewise cause significant harm to the local populations of this species. Any chemical pollution from herbicides or other chemicals resulting from the project would also be a potential cause of extirpation for this

species. All of these significant impacts must be assessed in an EIS. e. blackside dace As reported in USFS [rsquo] Species Baseline Information document, the federally-threatened blackside dace has a very narrow range, is known to inhabit the project area, the [ldquo]area of project influence,[rdquo] the Stearns District, and McCreary County. This species inhabits relatively silt-free streams with cool water. Any water temperature fluctuations resulting from the removal of the forest canopy could destroy the local habitat for this species and extirpate the species from its current habitat. Also, any siltation of its habitat from project sedimentation impacts would pose a risk of extirpation for the species as well. All of these significant impacts must be analyzed in an EIS. Terrestrial Species Excluding Bats and Plants This section acknowledges the likelihood that the Jellico project would result in the direct killing of DBNF sensitive species such as green salamanders, clifty covert, Appalachian bellytooth, monarch butterfly, and wrinkled button via crushing by vehicles and falling trees. However, the EA does not reach the conclusion that regularly killing terrestrial wildlife by crushing is a significant impact. It must reach this conclusion, and USFS must produce an EIS documenting those significant impacts to local wildlife populations and habitat. The EA [rsquo]s assertion that [ldquo]it is unlikely that herbicide application would have any impacts due to the directed nature of application[rdquo] is contradicted by the analysis in the risk assessments relied upon by USFS, which indicate that spraying is the method of application, and that numerous guilds of wildlife species will be exposed to incidental herbicide exposure for a wide variety of reasons. USFS [rsquo] suggestion that [ldquo]directed application[rdquo] via spraying will avoid collateral exposure to non-target wildlife species is pure fantasy, completely removed from the operational reality reflected in USFS [rsquo] favored risk assessments. Thus, this claim is arbitrary and capricious in the extreme. The EIS must fully analyze herbicide impacts to these species.<sup>21</sup> Sincerely, Perrin de Jong Southeast Staff Attorney Center for Biological Diversity P.O. Box 6414 Asheville, NC 28816 (828) 252-4646 perrin@biologicaldiversity.org ATTACHMENT SE Exhibit 1: U.S. Fish and Wildlife Service. Email correspondence with Barbara Douglas. August 18, 2017. Exhibit 2: U.S. Fish and Wildlife Service. Table of authorities for Service position on downstream distance of coal mining impacts on downstream aquatic species. Date unknown. (circa 2008). REFERENCES Lick, M. 2015. Risk assessment [ndash] herbicide use. Appendix E. Greenwood Vegetation Management Project Environment Assessment. Daniel Boone National Forest, Stearns Ranger District. Whitely City, KY. Accessed online at: <https://www.fs.usda.gov/project/dbnf/?project=44085> [SERA] Syracuse Environmental Research Associates, Inc. 2011 and updates. Human Health and Ecological Risk Assessments. Prepared for and submitted to USDA Jellico Vegetation Management Project 112 Forest Service, Southern Region, Atlanta, GA. Available at: <https://www.fs.usda.gov/foresthealth/protecting-forest/integrated-pest-management/pesticide-management/pesticide-risk-assessments.shtml>.