Re: Pond Mountain Project Scoping Comments

February 17, 2023

[redacted]

Keith Kelley
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Dear Ranger Kelley:

On behalf of the Tennessee Chapter of the Sierra Club, Tennessee Heartwood, and Heartwood, I wish to submit the following comments on the Pond Mountain Project of the Cherokee National Forest. Members of the Tennessee Chapter of the Sierra Club and Tennessee Heartwood use the Cherokee National Forest, including the forest that encompasses the Pond Mountain analysis area, for a wide range of uses, including hiking, fishing, hunting, camping, wildlife watching, and other recreation activities. We take an active interest in the management of this forest and offer the following comments in the spirit of good management of our public lands in east Tennessee. We wish to thank the agency for providing us with the map resources to make more site specific and hopefully, more relevant, comments. We offer these comments in the spirit of good stewardship of our public lands and ecological sustainability.

General Considerations

Much of this proposal's purpose is the twin goal of early successional habitat creation and regeneration of hardwood (primarily *Quercus* spp) communities. We should not underestimate the ability of forests to develop a diverse forest structure with time. As we all know, a great deal of this analysis area is recovering second growth between 75-100 years of age. While many forest stands in this age class in our region are in the "stem exclusion" phase, the well-documented transition to a mixed-age, high diversity character comes typically in the next couple of decades, [1] [2]including a variable density of characteristics that are associated in the "early seral" rubric.

[1] [1] Characteristics of Old Growth Mixed Mesophytic Forests". Martin, William H. *Natural Areas Journal.* 1993.Volume 12.

Attendant with this tree structure comes a multitude of symbiotic relationships and ecosystem feedback loops that develop over time as a forest community recovers: dens and snag habitat, mycorrhizal/fungal networks, myriad edge effects, humus layering,[3] and an associated soil microbiome. Permanent and semi-permanent large openings are rare in old growth forests of these regions, associated mainly with cliffs and scree slopes, ridge tops, wetlands, peat bogs, serpentine barrens, avalanche tracks, river margins, pond and lake margins, and coastal shrublands and bluffs (Whitney, 1994; Foster and Motzkin, 2003; Fraver et al., 2009).[4]

High intensity disturbance that removes biomass (logs) and brings impacts to the forest floor (from mechanical equipment) can make this development more difficult. The shaping of natural process over time makes for true "resiliency" – a term that has become woven throughout agency directives. If logging it to occur in this project area, restraint is in order for areas where there is a questionable "ecological cost benefit". Areas with the following criteria bring attendant risks that can outweigh the benefits on ecological, fiscal, and operational grounds: steep slopes, sensitive soils, distancer from a road, areas that already have excellent diversity, areas with a healthy component of declining species (such as hemlock). This should also be considered in light of the already substantial economic inputs to outputs of commercial timbering on federal lands.[5] Indeed, several sites where the most intensive logging is planned (Units 12 and 13) have steep slopes, occasionally exceeding 30% in places.[6]

Stand Composition Diversity

We encourage the agency, regardless of its decision on this project, to view forest management with a broad base of diversity that moves beyond the "upland pine-oak" orientation that has characterized most of the agency's attention, budgeting, planning, and ecological modeling. While some time has passed since the era of mid—to-late 20th century skewing towards only a few species of these two genera, its legacy is still somewhat apparent on the ground and in some aspects of agency planning.

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[2] Lee E. Freilich and Peter B. Reich. Perspectives on development of definitions and values related to old-growth forests. *Environmental Reviews.* September 2003

[3] "The Development of Old Growth Structural Characteristics in Second-Growth Forests of the Cumberland Plateau, Kentucky, U.S.A.". Robert James Scheff. Master's Thesis. Eastern Kentucky University. 2012.

[4] "Forest-clearing to create early-successional habitats: Questionable benefits, significant costs." Michael J. Kellett, Joan E. Maloof, et al. " *Frontiers in Forests and Global Change.* January 9, 2023

[5] ENVIRONMENTALLY HARMFUL SUBSIDIES IN THE U.S. Issue #1: The federal logging program How damaging logging operations on federal public lands costs taxpayers nearly $2 billion each year. Center for Sustainable Economy, May 2019

[6] Map Overlay: Terrain- Slope Map. Esri/ArcGIS layer.:https://elevation.arcgis.com/arcgis/rest/services/WorldElevation/Terrain/ImageServer. Accessed February 1, 2023.

The scoping notice says: *"Favored reserve trees include trees with dens, large and long-lived mast producing trees and long-lived yellow pine. Likely species to leave would include black gum, white oak, red oak, hickory, chestnut oak and shortleaf pine."*

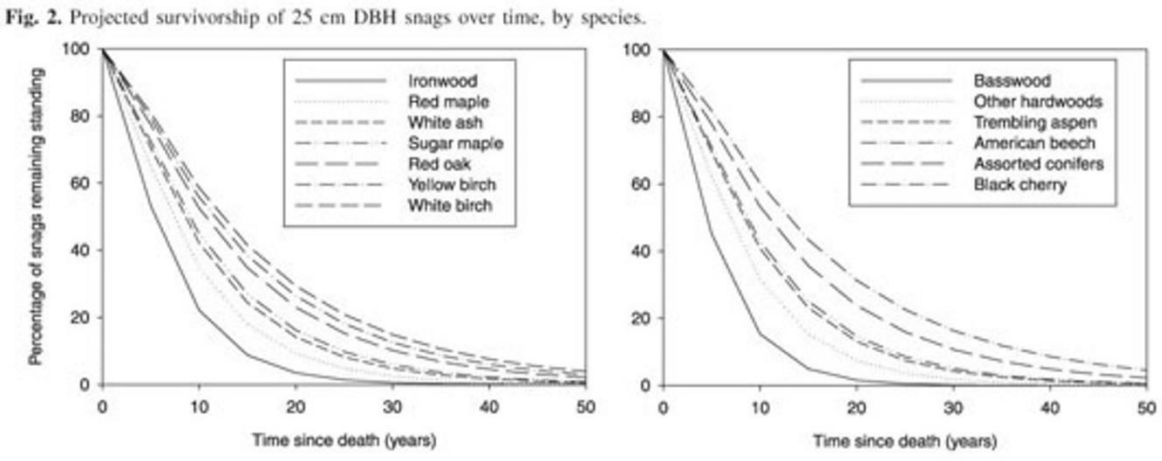
We do not think the agency is intentionally disfavoring other species of trees in the forest community, but we wish to encourage and active recognition and support for maintaining and promoting other members of the forest community that sometimes isn't on the operational radar, including the various members of *Juglandaceae* (the hickories, walnut, butternut) the occasional *Quercus marilandica* and *stellata*, black cherry,(which can be found at most elevations and can reach den tree size), pitch and table mountain pine, basswood (at mid-to-lower slopes) and many more. Some of these species could be at a somewhat lower representation than historically and it is important that they stay in the "mix". If logging is to occur it is important that the administrators and operators not unintentionally reduce that representation.

Old Growth Black Cherry-Hickory Community at Big Frog Mountain

- This 3500 ft elevation community has numerous 36-44 inch diameter cherries and 20-24 inch hickories, in a grassy, open ridge approaching the top.
- Other sites with this type can be found along the Unicoi.
- Also, there is a well-known historic presence in high-elevation Northern Red Oak communities.

Hickory's importance goes beyond its utility as a hard mast producer. Hickories have been shown to concentrate calcium strongly in their lives more than many other species, increasing the bioavailability of this important nutrient in mitigating soil pH. [7][8]

Though often thought of as a low elevation tree that does not achieve notable size, black cherry has been an important component of Southern Appalachian forests not only as a soft mast tree, but as a critical denning tree, due to its long-term snag survivorship.[9] An exemplar site pictured above at Big Frog shows not only impressive size, but surprising resilience to past fires.[10]



[11]

While it is possible to infer too much from historic place naming, it should be at least mentioned that this project area does include a "Walnut Mountain" and "Cherry Flats", possible indicators of these lesser-addressed species. This is underscored by Ashe and Ayres's 1907 report *The Southern Appalachian Forests*, with his entry on the Laurel Fork area (essentially this analysis area): *"The principal species are white pine, 10 per cent; hemlock, 6 per cent; oaks, 40 per cent; chestnut, 20 per cent; poplar, ash, cherry, walnut, birch, linn, buckeye, etc., together, 24 per cent."*[12]

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[7] H.L. Mitchell "Trends in the Nitrogen, Phosphorous, Potassium, and Calcium Content of the Leaves of Some Forest Trees in the Growing Season. H.L. Mitchell Black Roc Forest Papers. Volu.1, No. 6, July 1936.

[8] Chandler, Robert F. "The Amount and Mineral Content of Freshly Fallen Leaf Litter in the Hardwood Forest of Central New York." *Journal of the American Society of Agronomy.* Volume 33, October 1941. No. 10

[9] Vegetation of the Great Smoky Mountains (*Ecological Monographs*, 26: 1–80, 1956), by Robert H. Whittaker

[10] Mounger, personal observations. 2020-2022. Documentation upon request.

[11] Report on snag survivorship, Tellico district.

[12] "The southern Appalachian forests". Professional Paper 37 H.B. Ayres and W.W. Ashe. US Geological Survey, 1907.

It is worth mentioning that the South Zone of the Cherokee has acknowledged diversifying its management goals and modeling to acknowledge these species, with a recent project (https://www.fs.usda.gov/project/?project=58129) that actively maintains and plants hickory, cherry, and post oak- three species that have essentially been off the "management map" in the Cherokee.

Some of the Proposed Silvicultural Treatments

Unit 1

There is a significant mid-story hemlock component in this oak stand that should be acknowledged and left undisturbed.

Unit 3

Due to its proximity to a main road and lesser slope, sylvicultural treatments are likely to have less long-term and unexpected impacts than at many other or the locations in this analysis.

Unit 4

Part of the upper slope of the unit has a significant understory/midstory of hemlock. We highly recommend that if logging is to occur that this area remains undisturbed. While we did not have time to give a check for the presence of hemlock woolly adelgid, the trees in general seemed healthy. (video here: https://www.dropbox.com/s/6e2t1vitzz269um/MVI_5697.MP4?dl=0) There was also some cherry in this stand near the top that should be retained.

Unit 5

Overall, a high oak component for a slightly more mesic area. Evidence of a past fire.

Unit 9

The west side of this unit has some slopes breaking well past 30%. Shelterwood logging is inappropriate for these areas.

Unit 11

Flat Ridge appears to have an relatively low component of poplar or maple along the top and much of the upper slope, with Fraser's magnolia being the only significant "mesic" species. A burn only option would likely satisfy the long-term structural goals of maintaining an upland mixed mesophytic community.

There are a number of trees (often scarlet oak) of 24" up to 38"

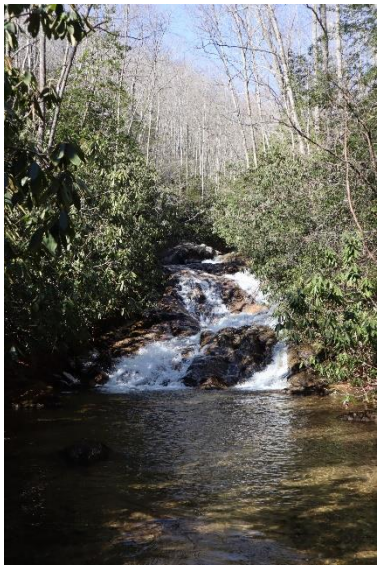
DBH that are still alive but have clear rot that will undoubtedly serve the ecological function of snags and denning trees that would far outweigh their limited commercial timber potential.

These trees should be retained if some logging occurs. Some maturing hickory and cherry appear as the unit moves to the SW and should be retained as well.

Unit 12

Unit 12 is characterized by some slopes that break past 30% in places. This unit includes century-old mixed oak-hickory composition that is successfully developing a healthy structure and will diversify in the coming decades if we let it. This is a diversity of tree composition due to significant slope and aspect changes. For example, there is some pitch pine near the top that should remain. (video:https://www.dropbox.com/s/o30h0p70ciyk2ts/MVI_5746.MP4?dl=0) If there is any table mountain pine in the area, it should be left undisturbed as well.

Unit 13



Like unit 12, there is some significant stand heterogeneity due to significant elevation and aspect shifts. There are also several areas of steep slope with some concave topography that invites significant operational risks. This unit drops down into the recreational Laurel Branch /Frog Level area with Firescald Branch Falls in proximity. We request that the agency rethink its plan to undertake high volume shelterwood logging in this area. The lower portion of this stand is understandably more mesic in the first place. Rhododendron clusters, poplar, and maples, which are targeted with logging and herbicides in this project are a natural component. In general, Units 12 and 13 should be just left alone. The combination of slope risk and potential effects to recreation and scenic values make this a poor candidate for commercial logging.

Monitoring and Mitigation

If logging is to occur, strong mitigation measures should be carefully developed in the EA. There is much to contend with, and not only the potential for erosion and other potential commercial logging risks on many of these sites. The potential for multiple fire and herbicide treatments (discussed more below) makes for design and implementation complexity that needs to have a clear plan with criteria that brings structure for what the scoping notice seems to anticipate: “mesic competition”. This is a well-known issue. As we mention in the next section, what level of mesic seeding/stem proliferation would trigger further fire or herbicidal treatments? What is

considered an acceptable level of these species, as a level of zero would be unrealistic? The history of difficulty in regenerating oaks (not to mention the many other species of trees and forbs that we have previously discussed) from commercial logging disturbance is perhaps the premier management challenge for the Cherokee (and several other forests in the region.). Also, as we have mentioned earlier, what is considered regenerative success beyond a few favored oak species? Are there plans to ensure a balance of representative trees, as well as key shrubs and forbs? We request that the agency take these questions into account.

Herbicides

Of particular concern is the potential use of herbicides on over 2500 acres of this analysis area for silvicultural use in the various stands proposed for shelterwood, group selection, midstory, and crop tree release, a significant figure. From the discussion in the scoping notice:

Prior to harvest, midstory species would be treated with herbicide (Imazapyr and Glyphosate) to reduce post-harvest sprouting of overly competitive species. (Herbicide Use Assumptions for herbicide use data will be included in appendix in the EA) Species targeted for treatment include red maple, white pine and rhododendron between 1 to 7 inches DBH. Treatment would occur one to three years prior to harvest, where applicable. Species not treated include dogwood and hard- and soft-mast producing species.

Post-harvest Site Preparation for Natural Regeneration: Following logging, site preparation would include mechanical slash down (chainsaw) and/or herbicide treatment (Imazapyr and Glyphosate) of residual species between 1 to 7 inches DBH. Major species targeted for treatment include red maple, white pine and rhododendron. Treatment would occur one to two years post-harvest, where applicable. Species not treated include dogwood and hard and soft-mast producing species.

Timber Stand Improvement (TSI) Release Treatment: The need for TSI release would be determined after post-harvest Site Preparation. Where needed, two to four years following harvest, overly-competitive sprouts would be treated using an herbicide (Triclopyr). This would help to control competition from red maple, yellow poplar and other species. Blight resistant American chestnut, red oak and/or other hard and soft mast species would be planted in regenerated areas, if seedlings become available.

We are concerned not only over the sheer acreage potential for herbicidal treatments, but for the possibility of repeat treatments of a 5-year timeframe. This is potentially a lot of herbicides.

Glyphosate has been found to be associated with a variety of negative effects on fauna, including bumblebees[13], rodents[14], fish[15], and numerous other species.

Outside of the purpose of controlling invasive species, the use of herbicides is typically justified as a mimic for what is assumed to be the natural process of fire to prevent the sprouting of mesics like poplar and maples. Considering that much of the analysis area will experience fire (with the statement that repeated burns are an option), one must question the sheer volume of potential inputs that are required to make this project successful i.e., not have the community turn into a maple/poplar zone. This raises some questions:

- Are the inputs worth the benefits?
- Would not restricting the heavier logging treatments to more xeric sites incur less expense than trying to impose a "low mesic tree zone" on sites that are more mesic anyway?
- What cumulative impact potential is there if not only much of the area gets herbicidal treatment, but repeat treatments?
- If it requires this much "mimicking" of what is but one of many natural ecological drivers to shape forest structure to a desired future condition, and to mitigate potential undesired effects from silvicultural disruption, should not there be a more cautious rethinking of the scope and location of some of these treatments?

Furthermore, the proposal calls for mechanical and herbicidal treatments of up to 200 feet on either side of tributaries of Laurel Fork and the Fork itself, a difficult situation of potentially concentrating herbicides next to streams themselves. These things should be carefully considered in the Environmental Analysis (EA).

Indeed, the open-endedness of repeat treatments of fire and herbicides make it necessary that the EA have transparent standards for what triggers additional treatments as part of ongoing evaluation of the project if commercial logging is to happen i.e., what is an acceptable volume of undesired/less desired species in stems and saplings that will no doubt emerge.

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[13] https://biologicaldiversity.org/w/news/press-releases/new-study-undisclosed-inert-ingredients-in-some-popular-roundup-products-found-to-be-highly-toxic-to-bumblebees-2021-04-16/

[14] "Lifelong Exposure to a Low-Dose of the Glyphosate-Based Herbicide RoundUp® Causes Intestinal Damage, Gut Dysbiosis, and Behavioral Changes in Mice.". Castilo et al. *International Journal of Molecular Science.* May 17, 2022. https://pubmed.ncbi.nlm.nih.gov/35628394/

[15] "Glyphosate targets fish monoaminergic systems leading to oxidative stress and anxiety". Faria et al. Environment InternationalVolume 146, January 2021, 106253. https://www.sciencedirect.com/science/article/pii/S016041202032208X

Roads

The Forest Service has for two decades acknowledged the seriousness of a bloated transportation system that it cannot afford to upkeep. Beginning with the original Roads Rule of 2001 and affirmed by later directives, the agency has required forests to significantly reduce roads volumes through analysis at the forest plan and project level, with Travel Analysis Process (TAP) reports acting as a programmatic document.

While we are pleased that there is a proposed closure for 0.3 miles of road 50A. However, several other sections of roads that are unneeded should be considered as well.

Obliteration and revegetation of unnecessary roads are likely to result in a beneficial cumulative impact to overall watershed health. If such roads went through a one-time road obliteration and rewilding, there would be no future need for regrading and other maintenance. Adding roads to the system perpetuates problems beyond that of the life of the project. Keeping unneeded roads does as well. These problems are well-known and have an extensive literature:

- The expense of maintaining these roads is a common budgetary problem for the agency.
- High road volumes tax the time and resources of law enforcement.
- Road blowouts, erosion, stream siltation, and culvert replacement are typical soil and hydrology issues.
- Roads become vectors for invasive and nuisance species.
- Roads contribute to forest fragmentation.

Forest Service directives such as the Roads Rule of 2001 recognize the need to curb runaway road proliferation and to better serve and maintain its core inventory. The agency currently is concerned about the ability to maintain road volumes: "Current funding is inadequate to manage the forest road system. Less than 20 percent of forest roads are fully maintained to planned safety and environmental standards. The backlog of reconstruction on forest roads is estimated to be more than $8.4 billion due to inadequate regular maintenance."[16] This is reaffirmed in *36 CFR 212.5(b)(2):*

Identification of unneeded roads. Responsible officials must review the road system on each National Forest and Grassland and identify the roads on lands under Forest Service jurisdiction that are no longer needed to meet forest resource management objectives and that, therefore, should be decommissioned or considered for other uses, such as for trails. Decommissioning roads involves restoring roads to a more natural state. Activities used to decommission a road include, but are not limited to, the following: reestablishing former drainage patterns, stabilizing slopes, restoring vegetation, blocking the entrance to the road, installing water bars, removing culverts, reestablishing drainage-ways, removing unstable fills, pulling back road shoulders, scattering slash on the roadbed, completely eliminating the roadbed by restoring natural

[16] Forest Service website. http://www.fs.fed.us/eng/road_mgt/overview.shtml. Date accessed: November 30, 2022

contours and slopes, or other methods designed to meet the specific conditions associated with the unneeded road. Forest officials should give priority to decommissioning those unneeded roads that pose the greatest risk to public safety or to environmental degradation.

There are several roads on the inventory that should be strongly considered for decommissioning and revegetating, including, but not limited to: 530112, 530113, and the lower spurs of 531602. They are neither through roads and are in some cases redundant for access to a watershed. Undertaking the active reforms of the transportation system that have been called for by the agency is an important step to relieving ecological and budgetary stress on the forest and forest management. The long-term benefits are evident.

Please consider these comments. We request that a notice be sent of the receipt of these comments. We further request a notice of the release of the Environmental Analysis of this project and any other significant communications or discussions of the Pond Mountain Project.

Sincerely,

Davis Mounger

On behalf of the Tennessee Chapter of the Sierra Club and Tennessee Heartwood