KENTUCKY HEARTWOOD

Protecting the Beauty and Wellbeing of Kentucky's Native Forests

USDA Forest Service
Sidney R. Yates Federal Building
201 14th St SW
Washington, DC 20227

RE: Request for information on federal old growth and mature forests (Executive Order 14072)

August 30, 2022

To Whom it May Concern,

The following comments are being submitted on behalf of Kentucky Heartwood, a public lands advocacy organization based in Berea, Kentucky. Kentucky Heartwood was founded in 1992 and seeks to protect and restore the integrity, stability, and beauty of Kentucky's native forests and biotic communities through research, education, advocacy, and community engagement. These comments are authored by Jim Scheff, who obtained his M.S. in Biology with an emphasis in Applied Ecology from Eastern Kentucky University in 2012. His graduate research was focused on evaluating the development of old-growth characteristics in secondary forests in the Daniel Boone National Forest.

These comments focus on issues pertaining to inventories of mature and old-growth forests, emphasizing characteristics of forests in the Daniel Boone National Forest of eastern Kentucky. We look forward to submitting comments relating to conservation and management of mature and old-growth forests at a future date.

We regret that these comments are necessarily brief and may be in need of further editing and details. Unironically, we have needed to spend most of our time during this comment period addressing the thousands of acres of logging of mature and old-growth forests in the Daniel Boone National Forest approved under the South Red Bird Wildlife Enhancement Project. Most of the logging in the South Red Bird project will be even-aged regeneration harvests. Notably, while the Forest Service refers to these cuts as "shelterwood harvests," the actual basal area targets (10 to 20 ft^2/ac) are half of a typical shelterwood in our region and thus more appropriately considered as "clearcut with reserves."

To date, in the South Red Bird project area, Kentucky Heartwood has inventoried more than 400 acres of old-growth forests with trees well over 200 years old where Daniel Boone National Forest resource staff have steadfastly argued that no old-growth forests exist. Agency staff have refused to give any demonstrable consideration to the data we have submitted. At least 160 acres of these old-growth forests are approved for logging.

Mature Forests

Considerations and inventories for "mature" forests are generally much simpler than for old-growth forests. Some have suggested an age threshold of 80 years for mature forests in southeastern U.S. forests (Forest Service Region 8). We largely agree. Accepting variance for site and community type, forests of around 70 to 90 years of age in this region have typically transitioned from the "stem exclusion" stage of stand development, driven by density-dependent competition, to the "understory reinitiation" or "demographic transition" stage. Basal areas tend to approach maximum values, though diameter distributions and canopy heights remain relatively uniform and lack the structural complexity more typical of old-growth.

An inventory of these stands using the Forest Service's FSVeg database should be a fairly straightforward and reasonably accurate method for quantifying and locating forests exceeding this age threshold.

Old-Growth Forests

Old-growth forests are much more complex and difficult to inventory and assess. The complexity and variety of old-growth communities in the Daniel Boone National Forest leads to significant problems for setting simplistic standards of determining old-growth status. Tree heights and diameters, past a certain age of maturity, reflect more about site type than they do stand age or old-growth status. Structural complexity is a better indicator, but difficult to quantify or operationalize at scale. For example, basal area and canopy height may be similar for a 110 year-old and a 250 year-old stand of the same community type, but these forests may differ substantially in diameter distribution, canopy structure (i.e., gaps, layering), presence of den trees and down wood debris, etc. The consideration of "stand age" is also complex, given that most old-growth forests in the east are characterized by a multi-age condition that may present variously at different scales. Old-growth structure is derived from the interaction of tree growth and small- to medium-scale disturbance events, leading to within-stand pulses of regeneration that are necessarily patchy and heterogeneous.

The Forest Service's June 1997 Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region (R8 Old-Growth Guidance) remains a reasonably good and streamlined approach for considering old-growth characteristics of the various southeastern forest types. While the Guidance needs updating and some revision, it does a good job at setting various structural and age thresholds for when a forest ought to be considered "old-growth." The minimum age criteria comport with this author's findings of when secondary forests begin to exhibit old-growth structural characteristics, and therefore encompass both secondary and primary old-growth forests.[1]

Utilizing the minimum age thresholds in the R8 Old-Growth Guidance *could* be useful and allow the Forest Service to inventory for old-growth based on stand age queries from the FSVeg database *if* those age data were reliable. However, stand age assessments in the FSVeg database for the Daniel Boone National Forest are extremely problematic for forests over 100 years old. We have found significant errors made by the Forest Service in assessing old-growth and mature

[1] The Development of Old-Growth Structural Characteristics in Second-Growth Forests of the Cumberland Plateau, Kentucky, USA. Robert James Scheff (2012), Master's thesis, Eastern Kentucky University

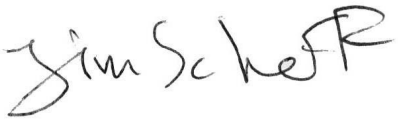
forests resulting in erroneous age classifications well below the age thresholds in the R8 Old-Growth Guidance and Daniel Boone National Forest LRMP. We have found many examples where old-growth forests dominated by canopy trees over 200 years-old (confirmed with qualified dendrochronological sampling) have been determined by the Forest Service to be much younger – as young as 65 years. At the same time, staff on the Daniel Boone National Forest have been unwilling to accept or consider data we've submitted that contradicts their determinations – determinations often made by coring a single tree in a stand.

These errors stem from a suite of issues, including poorly executed field procedures, insufficient data collection, an astounding ignorance of representative old-growth communities, and anti-old-growth bias on the part of Forest Service staff, among other issues.

Due to time constraints, we are including as Appendix A a detailed discussion of these issues as they pertain to the aforementioned South Red Bird Wildlife Enhancement Project. The language is taken from a supplemental information letter submitted by Kentucky Heartwood to Redbird District Ranger Robert Claybrook on February 21, 2022. The full letter will also be included as an attachment to this submission.

Again, we wish that we had more time to provide a detailed discussion of specific old-growth communities, quantitative assessment approaches, and submissions of our own data. An inventory system that relies on bad data or erroneous assumptions about complex old-growth communities could just as easily result in harm as it does tools for conservation. However, at this time, trying to stop the Forest Service from cutting mature and old-growth forests is our priority as an organization. We hope that the forthcoming inventory process will provide useful information. But if that information is not used to better conserve mature and old-growth forests then this process will just result in a tremendous waste of time and resources.

Sincerely,



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Appendix A

2. Errors in stand ages and old-growth evaluations

It appears that the Forest Service made significant errors in determining forest stand ages in multiple locations. This has resulted in substantive errors, particularly as relates to determinations of potential old-growth (POG) status. Kentucky Heartwood has since verified existing primary old-growth forests which have inappropriately been approved for logging under the South Red Bird decision as a result of the Forest Service's errors. Additional old-growth and potential old-growth may have been effectively "hidden" from the record through recording incorrect stand ages in the FSVeg database and relying on those flawed data for purposes of analysis and management decisions. These errors may have long-term negative consequences by obscuring old-growth forests and effectively removing them from consideration for future conservation and scientific purposes. The variety and breadth of errors that we have found suggests that these errors in the South Red Bird analysis are systemic. A detailed and thorough evaluation of stands across the project area, using appropriate sampling effort and avoiding anti-old-growth bias, needs to be undertaken. Knowledge of these pervasive miscalculations represents substantial new information which is highly relevant to the environmental impacts of the South Red Bird project. It is clear from these miscalculations that impacts to old-growth forests were not before the attention of the responsible official. The Forest Service could not have adequately considered such impacts in the initial analysis, and thus NEPA requires the agency to analyze these data anew in a supplemental EA.

2.A. Forest Plan old-growth direction

Identifying old-growth forests is an important part of the Forest Plan. Identification, assessment, and documentation of old-growth sites is important for a variety of conservation, scientific, and cultural purposes.

Under Forestwide Goals and Objectives, the Forest Plan states:

> **Goal 1.4 Develop a network of old-growth areas of various sizes to support the distribution, linkages, and representation of old-growth forest community types on the Forest.**
>
> **Objective 1.4.A**. Within each management area, avoid regeneration of stands that are in 10-year age classes containing less than one percent of all forest land.
>
> **Objective 1.4.B**. Maintain at least eight percent of each old-growth type (USDA Forest Service 1997) in patches at least 300 acres in size. Acreage can be contributed by any or all Prescription Areas that are recognized as *future* old-growth and by the 1.I Designated Old-Growth Prescription Area.

> **Objective 1.4.C.** Continue the assessment of old-growth criteria in stands identified (USDA Forest Service 1997) as *possible* old-growth.

Footnote 4 to Goal 1.4 states:

> These areas can be found in 1.I Designated Old-Growth or other Prescription Areas recognized as *future* old-growth. Managers also have the option to include individual stands that are managed as old-growth, regardless of the Prescription Area in which they are found. (Forest Plan 2-7)

The Forest Plan further states, under the Setting description for Prescription Area 1.I. Designated Old-Growth:

> Examination of Future Old-Growth on the forest determined that the dry-mesic oak and mixed mesophytic hardwood (including American beech) were under-represented, with less than 8 percent by old-growth type (Forestwide Objective 1.4.B). (Forest Plan 3-26)

Assessing stands for old-growth conditions during the development of vegetation management projects, using appropriate methodology, is an integral part of the Forest Plan. Old-growth is severely limited and under-represented in the Daniel Boone National Forest and South Red Bird project area. The assessments performed in preparation of the South Red Bird analysis, and which provided the data used to develop the proposed action, were inherently biased against locating and conserving old-growth. In the environmental analysis, accurate information about old-growth forest was not at the attention of the responsible official for purposes of NEPA because it was obscured by biased and inaccurate methodology. The impacts of the proposed action on old-growth forests must be analyzed in a supplemental EA so that it can inform the decisionmaker and so that feedback can be elicited from an informed public.

2.B. South Red Bird analysis

In our review of the South Red Bird project record, comparing the publicly available NEPA documents and the nearly 20,000 pages of documents acquired through FOIA, we found multiple, significant errors in the methodology and determinations used to ascribe stand ages and perform the first filter for assessing the presence of possible old-growth (POG).

The Vegetation Report states:

> Forest Plan Objective 1.4.C. encourages the assessment of areas to determine their status as Old Growth. Possible Old Growth (POG) criteria are presented in Table 3-25 of the Environmental Impact Statement for the Forest Plan (USDA 2004b). Data were analyzed to determine if any of the areas proposed for treatment currently meet the criteria for

> POG. **Data analysis indicates that there are no stands in the project area not within the proposed RNA that satisfy the conditions for classification as POG**. (Vegetation Report at 6, emphasis added)

The Affected Environment document expands on this, stating:

> Several stands in the South Red Bird IRMA were examined for old-growth characteristics. Old growth defined in 1997 R8 report, in accordance with the *Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region: Report of the Region 8 Old-Growth Team, June 1997* (USDA 1997). This guidance states that old-growth status must meet five characteristics: 1) community type, 2) age, 3) past disturbance, 4) basal area, and 5) diameter at breast height (dbh). While some of the stands we examined met some of these criteria, no stand in the IRMA met all five characteristics.
>
> An in-depth old-growth analysis was conducted for the SRB project. Based on that analysis, the Proposed Action does not designate any new stands of old-growth because 1) there is already 1,800 acres of Designated Old-Growth in the North Red Bird IRMA, which is part of the Red Bird River Watershed; 2) there are thousands of acres in the IRMA that will receive no action and allowed to continue to age; and 3) 160 acres of the Right Fork of Elisha Creek Proposed Research Natural Area has been set aside in the Forest Plan to be managed as old-growth. (Affected Environment at 20)

These statements are contradicted both by the project record and by our findings on the ground. It also must be pointed out that the Designated Old-Growth (DOG) area in the North Red Bird IRMA does not include any verified, existing old-growth forest. Based on DBNF stand information data, approximately 260 acres (14.4%) of the DOG meets the minimum age threshold for potential old-growth (POG). The area is designated such that management will allow the area to move *toward* an old-growth condition, where logging "may occur on an unscheduled basis to attain Desired Future Conditions." (Forest Plan 3-26). Furthermore, the South Red Bird decision approved variable density roadside thinning (commercial logging) *in* the aforementioned Designated Old-Growth area along Big Double Rd/FR 1501. This is a fact that was not explicitly disclosed or discussed in the Final EA or elsewhere in the record.[4] Additionally, of the 160 acres of the Right Fork of Elisha Creek pRNA, 20 acres (13%) were harvested in 1989, and another 71 acres (44%) are less than 100 years old according to the FSVeg database. That the Forest Service's *future* old-growth is not, in fact, *existing* old-growth only underscores the importance of gathering accurate information about where and how much existing old growth is in the project area. Had the Forest Service taken this obligation seriously,

[4] The fact the Forest Service approved logging in the Designated Old-Growth area, outside of the project area and IRMA boundary, was indicated solely in a project area map, and not disclosed in the project narrative. Logging was also approved outside of the project area/IRMA boundary along FR 1533. These prescriptions were not included in maps provided during scoping or the "collaborative" phase of project development.

it would not now be faced with the duty to reconsider its decision in light of new information it should have already considered and disclosed.

In an email from Andrea Felton to District Ranger Bobby Claybrook dated January 5, 2018 (seven weeks before the scoping letter was published), Ms. Felton lists 8 stands meeting the minimum age criteria for old-growth in the Forest Plan, stating:

- Jared was going to check out the stands near the Proposed Elisha Creek RNA—we had discussed allowing some to age into old-growth, but some are already Rx'ed for timber sales. Were you thinking you would like to designate an area for Old-growth IN and Adjacent TO the RNA? We need some clarification as to what to do there. Stands listed in Goals Matrix:
    - 2701-13
    - 2203-32
    - 2901-11
    - 2801-15
    - 3001-09
    - 3001-19
    - 3004-25
    - 3602-18

Given the importance of old-growth in the Forest Plan, and the fact that old-growth management in South Red Bird was raised early and often by Kentucky Heartwood during the "collaborative," pre-NEPA phase of the project, it is dismaying to see that some stands may have been preemptively excluded from consideration for old-growth management because they were "already Rx'ed for timber sales" before scoping even occurred. As we demonstrate later in this letter, we have delineated and verified an area of existing old-growth adjacent to the pRNA, including stand 3001-09 listed above.

In a January 9, 2018 email to members of the project team, Gavin Wilson provided brief narrative descriptions of the above-listed potential old-growth (POG) stands. Each of these stands had been inventoried by the Forest Service prior to this phase of the analysis and were found to have met the minimum age criteria for old-growth. Mr. Wilson states in his email:

> "So, that's the stands considered for POG. There are three that are contiguous to the RNA. If you're thinking about incorporating them into the RNA, I'm thinking that's a congressional designation? Have to get a bit farther into the nuts n bolts on that one. Nothing says you can't POG it and forget it. Right now we have 1800ac of designated Old Growth, all in North Red Bird."

Silviculturist Jared Calvert responded to Mr. Wilson's email, stating:

> "Good work Gavin. See attached map showing the POG stands. I can bring that map to the meeting on the 19th and we can make a decision then on whether to propose designation of any of these stands."

None of the aforementioned stands, nor any others, were proposed for old-growth designation in the South Red Bird project. We have reviewed nearly 20,000 pages of NEPA and FOIA documents related to this project and found no instances where the Forest Service considered whether the above-listed stands (or any others) met the disturbance, basal area, or large tree criteria (criteria 3,4, and 5) in the Forest Plan and R8 Guidance. How the Forest Service went from a list of 8 potential old-growth sites meeting the first two old-growth criteria to a determination that "there are no stands in the project area not within the proposed RNA that satisfy the conditions for classification as POG" appears wholly arbitrary and without justification. More importantly, they show that data regarding old-growth status, which is highly relevant to the decision of how to manage particular stands in order to meet forest plan goals, was not properly before the responsible official when the decision was made. In other words, the deciding official based their decision on incomplete and inaccurate presentations of non-public information. It appears as though the Forest Service has failed to apply the criteria for old-growth forests to these 8 sites despite stating that they have. And the record suggests that the agency has not considered these sites' old-growth character in any meaningful way. Now that information about the 8 POG sites has been provided to the Forest Service, the agency has an obligation to give it a hard-look in a supplemental EA.

It is clear that the Forest Service failed to gather information necessary to evaluate and properly manage potential old-growth. We have found through an extensive review of common stand exam (CSE) reports acquired through FOIA that the Forest Service failed to properly evaluate stands for age classes and old-growth characteristics in the field. The result of these errors is that some old-growth forests, including high quality primary old-growth, have been mischaracterized as young forests and in some cases approved for logging. The statement in the Vegetation Report that "There would be no direct or indirect impacts to old-growth" (Vegetation Report at 28) is factually and demonstrably untrue. The reason for that arbitrary and capricious conclusion is the failure to consider the information we provide in this letter. As we demonstrate below, old-growth forests in the project area will be directly impacted by timber harvest and road building. The responsible official was misinformed in approving this project, and the public was misled.

Other statements in the record suggest that staff who were responsible for gathering information about the project were biased against conserving old growth, prejudicing the Forest Service from identifying old-growth in the project area. For example, in a June 11, 2019 email from Gavin Wilson to Andrea Felton and other project team members, Mr. Wilson states:

> "Of course, we need to look at two things going forward – This little gem of analysis says that we will run out of CTR[5] stands very soon, and many of our stands that are senescent and in need of regeneration will soon be approaching our "old growth standards", at least from an age perspective."

The above statement is illustrative of an outdated and scientifically incorrect belief that old-growth forests are inherently senescent (in the process of dying) or "overmature" and need to be

[5] CTR stands for "crop tree release."

cut (regenerated) for forest health purposes. In the document "South Red Bird Habitat Enhancement Project, Methods Used to Develop the Proposed Action,"[6] Silviculturist Jared Calvert states that "We used GIS and FSVeg data to identify stands and areas that were likely to need treatment, most often based on age classes."

Targeting older stands and investing staff time to create harvest prescriptions for them was prejudicial to the project. To be clear, the belief that forests are likely senescent simply because of their age is false and has been widely disproven in the ecological literature, but remains too prevalent among forest managers. A growing body of scientific literature demonstrates that old-growth forests continue to sequester large amounts of carbon and accrue biomass, with tree growth actually *increasing* with age in many cases.

McEwan et al. (2014)[7] assessed disturbance and fire intervals using tree ring data from Lilley Cornett Woods and found that the oldest trees continued to increase in growth rate after more than two centuries.

> There was some indication that ring widths increased consistently over the life span of the trees sampled here (grey line, Fig. 1b). Individual series exhibited long-term growth patterns characterized by suppression and growth pulses. For example, the oldest tree in the FHC was a *Quercus montana* (tomp panel, Fig. 2) that exhibited ca. 100 yrs of suppression followed by a growth release that resulted in a step change increase in growth rate. The overall pattern, as evidenced by the individual series (Fig. 2) and the mean for all samples (Fig. 1b), suggests that maximum growth rates for these trees were being achieved near the end of the chronology, after the trees were ca. 200 years old.

[6] South Red Bird Habitat Enhancement Project, Methods Used to Develop the Proposed Action, 8/30/2019, Acquired as part of the January 25, 2021 FOIA response

[7] Ryan W. McEwan, Neil Pederson, Adrienne Cooper, Josh Taylor, Robert Watts, and Amy Hruska. Fire and gap dynamics over 300 years in an old-growth temperate forest. Applied Vegetation Science 17 (2014) 312-322.

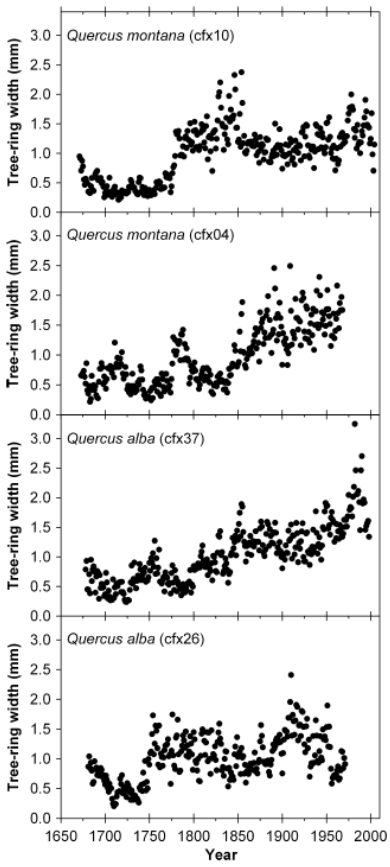

Fig. 2. Long-term growth patterns of the four oldest trees sampled as part of a fire history collection made in an old-growth temperate deciduous forest, central Appalachian Mountains, USA.

Figure 12. Old-growth chestnut oak ring widths from Lilley Cornett Woods (McEwan et al. 2014)

Lilley Cornett Woods Appalachian Ecological Research Station is an extensively studied old-growth forest in Letcher County, Kentucky owned and managed by Eastern Kentucky University. The forest is less than 20 miles from the South Red Bird project area and consists of forest and land types substantially similar to those found in the project area. Kentucky Heartwood discussed Lilley Cornett Woods in detail in our South Red Bird scoping comments. The data from Lilley Cornett Woods, and other recent investigations of old-growth in North America and globally, have upended outdated assumptions leading to the belief that mature and old-growth forests are inherently unhealthy, senescent, or "overmature." Unfortunately, this evolving understanding of old-growth and forest ecology has yet to filter down through the forestry and silvicultural disciplines.

Unfortunately, Kentucky Heartwood was able to comment on this issue only in the abstract because the project record did not include the information needed to characterize specific stands as old-growth and to inform a responsible decision about whether to harvest or protect them. It is apparent that staff misunderstanding of old-growth—the mistaken belief that older forests should be targeted for harvest—resulted in a process that did not carefully gather and disclose the data

that could have otherwise supported analysis and informed decision regarding old-growth in the project area.

2.C. Stand exam errors

Not only are the omitted data about the condition of older stands "new information," it was not part of the public record. Thus, the public was not able to sufficiently comment on this, nor was it presented before the responsible official. .

In the document "South Red Bird Habitat Enhancement Project, Methods Used to Develop the Proposed Action,"[8] Silviculturist Jared Calvert states:

> Following the data sort, we conducted walk-through examinations of the stands within the project area to ensure that existing data were accurate and to examine treatment units/data in accordance with Forest Plan and Region 8 Old Growth Guidance. Silvicultural examinations were conducted according to Forest Service Handbook 2409.17- Silvicultural Practices Handbook.

FSM 2470 and FSH 2409.17 provide direction on sampling intensity for stand exams and describe how the design and intensity of sampling need to be sufficient in order to ensure that the proper "support information needed" is available to "diagnose treatment needs." As we describe in detail below, the Forest Service failed to properly follow the direction in FSH 2409.17, and further failed to follow the Region 8 Old-Growth Guidance, by collecting insufficient and inaccurate information with respect to tree and stand ages in the South Red Bird project area.

FSM 2478.1 – Silvicultural Examinations states:

> The examination includes the metrics needed for the diagnosis and silvicultural prescription… The examination design and intensity are based on support information needed to ensure that proper treatment can be prescribed to meet management objectives.

FSH 2409.17 – Silvicultural Practices Handbook states:

> 8.1 - Silvicultural Examinations
>
> 1. Protocol for Silvicultural Examinations. Silvicultural examinations provide the basis for information needed to diagnose treatment needs, prepare detailed prescriptions, implement treatments, and monitor treatment effects. **The kinds and amounts of data gathered and their reliability depend on the resources to be managed, the intensity of management to be applied, and the scale at which the data will be used. Enough information should be obtained at the appropriate scale and resolution to**

[8] South Red Bird Habitat Enhancement Project, Methods Used to Develop the Proposed Action, 8/30/2019, Acquired as part of the January 25, 2021 FOIA response

> **adequately describe the site and current condition of the area to be analyzed** (for example, stand, watershed, landtype association, or national forest). (Emphasis added)

FSH 2409.17 further states:

> 8. Number of Sample Points and Intervals. The number of points and intervals are determined prior to field examination to keep conscious bias to a minimum. Chapter 2 of the Common Stand Exam User's Guide provides detailed information for sample design. A general rule is:
>
> a. If the stand is homogeneous, plan one plot per 10 acres, a minimum of three plots per stand
>
> b. If the stand is not homogeneous, plan one plot per 5 acres, a minimum of 5 plots per stand.
>
> These are minimum guides and the number of points can be increased depending on the information needed for the decisions to be made.

The Forest Service failed to apply a suitable sampling intensity, and further used flawed methods, to assess stand ages for determining "need for treatment"[9] and assessing old-growth status. These sampling and assessment errors then led to the Forest Service failing to identify old-growth forests by assuming much younger ages, or otherwise disqualifying forests from potential old-growth (POG) designation based on flawed assessments.

Kentucky Heartwood reviewed common stand exam (CSE) reports acquired through FOIA for 66 stands in the project area. Most of the stands were sampled with 5 plots, meeting the minimum plot number for homogenous stands. However, as we describe below (2.D. Specific old-growth sites), several sites are clearly heterogenous in composition and should have been evaluated with a greater sampling density. With respect to age data for the 66 stands, the Forest Service cored a grossly insufficient number of trees to determine stand ages, much less identify the "oldest age class" per the R8 Old-Growth Guidance. Our review of the Forest Service's CSE reports for the project area found that 3 trees were cored in 11 stands, 2 trees were cored in 29 stands, a single tree was cored in 20 stands, and no trees were cored in 4 stands. This sampling intensity is inadequate for ascribing reasonably accurate ages to stands of trees, much less identifying the multiple age classes typical of old-growth forest conditions.

The tree age sampling methodology was also fundamentally biased against identifying old trees or the "oldest age class" as required by the R8 Old-Growth Guidance. Specifically, most or all of the trees with a recorded age in the CSE outputs are denoted as "Site Trees," with either an "S"

[9] South Red Bird Habitat Enhancement Project, Methods Used to Develop the Proposed Action, 8/30/2019, Acquired as part of the January 25, 2021 FOIA response

or "F" code.[10] Site trees are primarily sampled for the purposes of evaluating site index, and not stand age. According to the FSVeg Common Stand Exam User Guide, field examiners are explicitly directed to avoid old-growth trees in their selection of site trees.

> 3. Similar age class, preferably middle-aged, avoiding old growth and young age classes; Typically > 50 years and < 120 (User Guide 4-88, also R8FG-49) [11,12]

Similarly, FSH 2409.26d – Silvicultural Examination and Prescription Handbook Chapter 30, 7(e)[13,14] states the following regarding the selection of site trees:

> e. Close to 50 years of age if suitable tree is available. Trees younger than 30 or older than 70 tend to give inaccurate readings. If the stand is younger than 30 or older than 70 and an acceptable site tree (between 30 and 70) is available, the tree used to determine site will not be a true indicator of stand age. In this situation stand age will need to be established from other trees in the stand.

The CSE User Guide also states that site trees should exhibit "No pronounced period of radial growth suppression," which is a well-documented and normal characteristic of many old-growth trees (See, for example, McEwan et al 2014 and Pederson 2010).[15,16] By employing a methodology that explicitly seeks to avoid trees >120 years of age and trees which exhibit characteristics typical of old-growth trees, the Forest Service has failed to follow the Forest Plan and R8 Old-Growth Guidance by selectively avoiding "the oldest age class" in stand age assessments. The User Guide also states that a Growth Sample Tree (GST), as opposed to a Site Tree, is to be "used to age the stand" (User Guide 4-90).

Even if site trees were appropriate for determining stand ages (which, in a non-even-aged stand they are not), the Forest Service failed to core enough trees to make a reasonably informed age determination for most sites. The User Guide states that the person collecting data should "Select at least one site tree from the sample trees tallied for each sample plot when the sample trees meet site tree criteria." (User Guide 4-88) As we describe above, the Forest Service selected site trees from less than half of sample plots.

Regardless of the methodology used for sampling and dating individual trees, there are few congruities between the tree and stand ages provided in the CSE reports. Thus far we have found no clear methodology across Forest Service documents and guides regarding how stand age is

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[10] See The Region 8 CSE Field Guide (R8FG-49):
[11] FSVeg Common Stand Exam User Guide, Chapter 4: Collecting and Recording Data, ver. 2.12.6, March 2015
[12] Common Stand Exam Region 8 Field Guide
[13] FSH 2409.26d – Silvicultural Examination and Prescription Handbook, R8 Amendment 2409.26d-93-1
[14] While FSH 2409.26d was superseded by FSH 2409.17, it bears noting that the R8 Old-Growth Guidance explicitly refers to the methods in FSH 2409.26d as the basis for old-growth field inventories, excepting that "the age of the stands should be determined based on the oldest age class as opposed to the 'representative stand age.'"
[15] Ryan W. McEwan, Neil Pederson, Adrienne Cooper, Josh Taylor, Robert Watts, and Amy Hruska. Fire and gap dynamics over 300 years in an old-growth temperate forest. Applied Vegetation Science 17 (2014) 312-322.
[16] Neil Pederson. External Characteristics of Old Trees in the Eastern Deciduous Forest. Natural Areas Journal, 30(4), 2010

supposed to be calculated from tree ages. But the data from South Red Bird suggest an inconsistency and arbitrariness that should not be the basis for management prescriptions and old-growth determinations. The following figure presents tree ages and stand ages (adjusted to 2021) based on the CSE outputs for selected stands.[17]

Compartment	Stand	Tree ages (2021)	Recorded stand age (CSE)
2802	25	118, 87	86
2804	11	57	121, 69
2903	16	101, 65, 114	81
2904	28	171, 97, 59	108
2904	6	140, 70	121, 113
3001	12	63	121, 111
3001	16	83, 78	121, 118
3004	2	89, 68	121, 129
3005	5	46	121, 97
3402	22	110, 72	64
3403	6	102, 119	71
3701	27	84, 66, 129	71
3703	5	39, 84	30, 63

Table 1. Tree ages versus stand ages from selected CSE datasheets in the SRB project record

The available data for some stands also suggest the presence of multiple age classes at the stand level. Old-growth forests are often typified by the presence of multiple age classes within the stand, with the "old-growth" stage of stand development being recharacterized as the "old multi-age" stage to better describe the structural and age characteristics of older forests, especially in eastern North America[18]. The R8 Old-Growth Guidance specifically addresses this by directing examiners to look at the oldest age classes in the stand. However, it appears from the South Red Bird data that the Forest Service is attempting to force multi-age forests into an even-aged model.

[17] Tree and stand ages were adjusted for age in the year 2021, and multiple stand ages are included where datasheets provided multiple or inconsistent year-of-origin data. The stands included in this figure do not represent the only stands exhibiting incongruities between tree and stand ages in the CSE data outputs.

[18] See Frelich, L.E. 2002. Forest Dynamics and Disturbance Regimes: Studies from Temperate Evergreen-Deciduous Forests. Cambridge University Press, Cambridge.

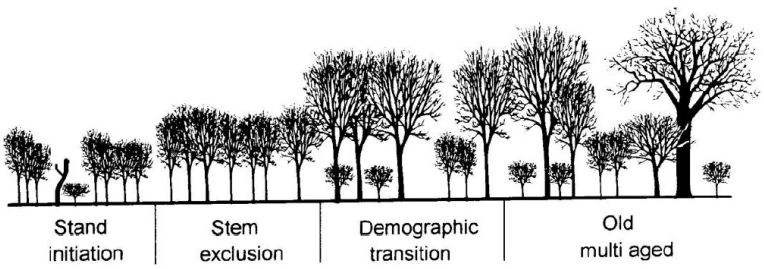

Figure 13. Stand development model from Frelich (2002)

The Region 8 Old-Growth Guidance states that:

> The field inventory for old growth will mostly follow the protocol used during Forest Service Silvicultural Examinations (USDA FS 2409.26d). The exception is that the age of the stands should be determined based on the oldest age class as opposed to the "representative stand age." The information collected or verified by Forest Service natural resource professionals will be used to make project-level decisions concerning old growth, to implement the forest plan, and to monitor and report forest-wide old-growth (R8 Guidance at 23).

Old-growth forests are, by definition, heterogenous. Identifying old-growth trees and older age classes in a multi-age forest requires a sampling intensity much greater than that employed by the Forest Service in the South Red Bird project.

The NEPA documentation for this project contained only staff assertions about stand ages. Neither the actual forest ages nor the methodological errors that made staff assertions unreliable were before the attention of the responsible official or available to the public.

2.D. Specific old-growth sites

As indicated above, the information about staff bias and methodological errors is new, and it is important to consider now because it resulted in errors regarding specific stands. We provided detailed information about one such stand (Little Flat Creek, Stand ID 2701-24) in our comments on the Draft EA. This was a heterogeneous stand with multiple age classes, but its previous stand age (137 years, originating in 1884) was replaced based on the sampling of one or more younger trees within the stand, resulting in a reported stand age of 70 years (65 years as of 2017).[19]

[19] By email on February 26, 2019, Ranger Claybrook explained that "In May of 2017 a stand exam was conducted for Compartment 2701, Stand 24. A black oak, representative of the stand was chosen to be cored, and the age was approximately 65 years old. The Region 8 Old Growth Guidance requires the stand to be a minimum of 130 years

As we wrote in our Draft EA comments:

> To begin with, coring one tree is not the correct protocol for assessing old-growth per the methodology described in the Region 8 Guidance or the Forest Plan, into which the Guidance is incorporated. A visual inspection of the stand made it clear that the Forest Service's revision of the age data for the stand was completely incorrect. Therefore, Kentucky Heartwood performed an extensive structural and age analysis of the forest. We first measure and mapped nearly 500 trees, determining that the stand had an overall density of 11 trees per acre at least 20" dbh. The Region 8 criteria for this forest type, Dry-Mesic Oak Forest require that there to be at least 6 to 10 trees 20" dbh or greater. This criterion was certainly met. The criteria also include a minimum basal area of 40 ft2/acre, which is easily met. As for age, the Forest Service's determination that the stand was 65 years old was clearly preposterous. Therefore, we core sampled 16 trees from 8 species distributed across the stand. Fourteen of the 16 trees ranged from 150 to roughly 370 years old.
>
> The final criterion for determining old-growth status is an assessment of human disturbance. The R8 Guidance states that "For a stand to be considered as existing old growth, no obvious evidence of past human disturbance which conflicts with the old-growth characteristics of the area should be present."120 It's important to note that the Guidance does not disqualify stands with "any" human disturbance. During our assessment, we found several uncut American chestnut remnants as well as some cut chestnut stumps near the top of the ridge. Chestnut blight killed American chestnuts in southeastern Kentucky mostly in the mid-1930's, though extending into the 1940's in some locations. Most of the tree core samples that we gathered show an increase in growth rate (a "release" event) around 1946, suggesting that some type of disturbance took place at that time. Given the lack of logging roads or other infrastructure, we suspect that chestnut decline was followed by limited salvage harvesting of dead American chestnuts along with the possible selective removal of a small number of other trees at that time. The timing also appears to correspond to the Forest Service's 65 year-old black oak. We suspect that a pulse of young trees followed the 1946 event, and that the Forest Service undercounted their core sample (typical of field counting instead of proper core preparation and examination with a microscope).
>
> Based on our surveys, the Little Flat Creek stand clearly meets the operational thresholds for old-growth designation under the Forest Plan and R8 Guidance. The stand exhibits classic old-growth characteristics for Appalachian forests, including a multi-aged structure dominated by very old trees, large down woody debris and snags, and a history of moderate- to low-severity disturbance events. The Forest Plan recognizes that the Dry-Mesic Oak old-growth forest type is underrepresented. It is vitally important that this stand be properly categorized in the DBNF inventories for what it is – and not as 65 year-old "future old-growth." While relatively small, the Forest Service should reallocate this

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old to qualify as existing old growth for Dry-mesic oak Forest Communities. While the stands layer reports a year of origin of 1884, this age was previously reported in error and will soon be updated within the Forest Sampled Vegetation (FSVeg) Spatial Database."

> stand as Designated Old-Growth under the Forest Plan to ensure conservation of its unique value.
>
> It is frankly distressing that the Forest Service could so radically misconstrue the status of an existing multi-aged, old-growth forest – particularly after its potential status has been raised by an entity with expertise on the issue. We question what other stands may exist that have been similarly mischaracterized. We would like to offer training to District and Forest staff in how to consider and assess old-growth forests.

The Forest Service did not correct its error or update the analysis to disclose the age of the stand. However, Kentucky Heartwood did not have the opportunity to press the matter further, because the stand was dropped for other reasons (landslide risk associated with the Fireclay coal seam). Although we had no reason to suspect it at the time, the errors associated with this stand were indicative of a broader failure to properly inventory and characterize stand ages. That broader failure is clear in hindsight, and with the benefit of the new information presented here. Had the Forest Service insisted on cutting this stand, the widespread methodological errors and biases might have come before the attention of the responsible official. As it was, the errors remained hidden. The information we have gathered more recently, however, must now be accounted for and the entire decision must be reconsidered in light of the corrected information.

Mosely Fork, Stand ID 2904-28

This stand is in the Big Middle Fork of Elisha Creek watershed but labeled "Mosely Fork" in the Forest Service's CSE outputs for the anticipated timber sale name. The stand was approved for logging in the South Red Bird decision and was not considered or evaluated for old-growth based on the available project record. The DBNF GIS database states that the stand is 39.59 acres, with a stand age of 113 years. However, as described below, we have delineated a 20 acre stand of primary old-growth within those 39.59 acres, with canopy trees over 250 years old.

The Forest Service conducted a stand exam for this stand in 2015. Four plots were assessed, using the minimum sampling intensity for a homogonous stand, despite the heterogeneity evidenced by the differing old-growth and second-growth sections. Tree cores were taken from three trees denoted as site trees in the CSE reports. The core-sampled trees were a tulip poplar (LITU), aged 53 years with a DBH of 17.1", a black oak (QUVE) aged 91 years with a DBH of 16.6", and a chestnut oak (QUPR2), aged 165 years with a DBH of 15.7". The Forest Service determined that the "year of origin" for the stand was 1913 (102 years in 2015). It appears (though we are not certain) that the Forest Service averaged the ages of the three sampled trees, which would result in an age of 103 years. However, we have found no basis for using this method of averaging tree ages to provide a stand age.

Those limited data clearly indicated a multi-age forest with an oldest age class exceeding the minimum age for potential old-growth under the Forest Plan (130 years for Dry-Mesic Oak Forest, Old-Growth Forest Community Type 21). However, rather than further investigate the

stand's age and old-growth characteristics based on the oldest age class, the stand age was arbitrarily lowered through some unclear methodology. The underlying data were not included in the NEPA documentation for the benefit of the decisionmaker and the public; only the inaccurate reported age was available.

During summer 2021, we assisted Dr. Justin Maxwell of Indiana University (Permit # 006338) coring trees in this stand for the purposes of his dendroclimatological research. We located the chestnut oak that the Forest Service aged at 165 years using the plot coordinates, measurements, and species data provided in the CSE reports. The tree was sampled, and the core prepared using standard dendrochronological methods, including sanding to 1200 grit and examination under a microscope. While the pith (tree center) was not directly reached, the tree core sample included 301 growth rings. Adjusting for sample year, this means that the tree is at least 130 years older than what the Forest Service determined and reported. This new information casts an even darker shadow on the quality of the Forest Service's investigation.

The FSVeg Common Stand Exam User Guide[20] provides accuracy requirements for aging trees as part of stand exam protocols (CSE User Guide 4-117):

> Accuracy Standards:
>
> - Based on actual tree ring count at breast height for trees ≥ 3.0" DBH, otherwise based on total age recorded
> - ± 10% for trees less than 299 years of age
> - ± 15% for trees greater than 299 years of age

The Forest Service failed spectacularly to meet the accuracy standards in the Common Stand Exam User Guide. Based on the FSVeg User Guide, the Forest Service should have been within approximately 30 years of the tree's actual age (>301 years) but was instead off by approximately 57%.

A total of 20 trees were sampled in Stand 2904-28 in Dr. Maxwell's investigation. Of the 11 trees where core samples reached, or appeared near, the pith, tree ages ranged from >238 years to >329 years. The remainder of the trees had varying amounts of heart-rot, but visible ring widths, along with tree growth patterns, suggested that the hollow trees were in the same age range as those providing more complete core samples. Six of the 11 hollow trees, despite missing many rings, still had visible rings exceeding the 130-year minimum age for Dry-Mesic Old-Growth in the Forest Plan and R8 Old-Growth Guidance.

Little Flat Creek Stand 2701-0001

While we have not collected any age data in this stand, we offer new qualitative information that the Forest Service failed to document or otherwise bring before the attention of the responsible

[20] FSVeg Common Stand Exam User Guide, Chapter 4: Collecting and Recording Data, ver. 2.12.6 March 2015, United States Department of Agriculture, US Forest Service, Natural Resource Manager (NRM)

official and the public. Based on a variety of external characteristics (see Pederson 2020), many trees in this stand appear to be old-growth. As contrasted with portions of the stand which appear to be mature second-growth, these older trees appear to be more prevalent in the southern portion of the stand, and include tulip poplar, various hickories, and black birch. Among these trees is a red hickory (*Carya ovalis*) that far exceeds the measurements of the current state and national champions for the species (See section 4. National champion Red hickory (*Carya ovalis*) below). According to the CSE reports, this stand was sampled with 5 plots despite its apparent age heterogeneity. Two site trees were cored, with reported ages of 67 and 79 years (in 2017), with a year of origin of 1900 or 1904 attributed to the stand. This section of forest needs more investigation. The trees are currently marked for a regeneration harvest and could result in regeneration of forest meeting old-growth criteria.

Elisha Creek/Mosely Fork, Stands 3001-09, 3001-12, 3001-10, & 3001-08

We have delineated a significant 164-acre old-growth stand extending from the ridge dividing Mosely Fork and the Right Fork of Elisha Creek into the valley of the Right Fork of Elisha Creek. This area includes a 16-acre overlap with 3001-08, which is considered part of the Right Fork of Elisha Creek pRNA by the DBNF. Most of this old-growth area overlaps with Stand 3001-09, which the Forest Service characterizes as 136 years old (year of origin 1885 in the DBNF GIS database). This stand was included in the internal list of potential old-growth (POG) sites in the South Red Bird IRMA discussed previously in this letter, and is likely the stand being referred to in the statement "Nothing says you can't POG it and forget it." However, approximately 26 acres of this verified old-growth area overlaps with approved logging units in Stands 3001-12 and 3001-10. Those latter stands are mostly mature second growth (below an old road grade), with old-growth primarily above the road grade. Despite the heterogeneity within the stand units, both stands were examined by the Forest Service in 2015 using the minimum sampling intensity for homogenous stands (5 plots each). Tree core sampling was limited to a single site tree per stand. The tree sampled in 3001-12 was recorded by the Forest Service as 57 years old in 2015 (63 years in 2021), with a stand age listed as either 111 or 121 years (in 2021). The tree sampled in stand 3001-10 was recorded as 74 years old by the Forest Service in 2015 (80 years in 2021) with a stand age listed as either 98 or 121 years. These data points are clearly incongruous.

Twenty-nine trees, primarily white oak, chestnut oak, and tulip poplar were sampled across the 164-acre area with Dr. Maxwell over three days of sampling in summer and fall of 2021. While many of the trees sampled were hollow (which is common in old-growth trees), the data show that the oldest age trees representing the dominant canopy and age classes are typically >250 years in age. Included in the sampling was a shortleaf pine (*Pinus echinata*) which dated to 1681 making it the oldest documented shortleaf pine in the world.[21] The number and distribution of very old trees establish this as an exceptional old-growth site. It is the second-largest known old-growth forest in the Daniel Boone National Forest – only slightly smaller than Rock Creek

[21] *See:* Virginia Tech Eastern Oldlist at https://dendro.cnre.vt.edu/olds/detail.cfm?genus=Pinus&species=echinata

Research Natural Area in Laurel County, and the fourth-largest known old-growth forest in the state of Kentucky.

Several species of lichens of conservation concern were documented in the site during a survey by the Kentucky Office of Nature Preserves. The lichen species of interest that were documented include *Fuscopannaria leucosticte* (S1), *Lobaria pulmonaria* (S3), *Lobaria quercizans* (more recently named *Ricasolia quercizans*) (S4), and *Sticta* sp.[22] *Fuscopannaria leucosticte*, in particular, appears to grow only on bark of old-growth chestnut oaks, including some within the approved harvest areas.

It has also been brought to our attention by the Kentucky Office of Nature Preserves that Mosely Fork contains what may be the most important population of the Pine Mountain tigersnail (*Anguispira rugoderma*) in the state and globally. This species' range is restricted to Clay, Harlan, Leslie, and Bell Counties in Kentucky, and is considered "Imperiled" at the global and state levels (G2, S2) according to NatureServe, with 16 mapped occurrences.[23] According to NatureServe "This Kentucky endemic is mostly associated with old growth, but it also occurs in pure stands of second growth tulip poplar. On the north side of Pine Mountain, it is found around large rotting log (Dourson 2010)."[24]

The Pine Mountain tiger snail is included in the current list of Regional Forester's Sensitive Species and included in Table 5. of the South Redbird Wildlife Enhancement Project Wildlife Resources Report. The Wildlife Report states that "baseline information for (Pine Mountain tigersnail) may be found in 'Species Baselines for the Daniel Boone National Forest' (Taylor 2019)." (Wildlife Report at 28). However, we have been unable to locate the Species Baselines document in the project record, either through the online NEPA portal or a review of the project records acquired through FOIA.

The discussion for direct and indirect effects to the Pine Mountain tigersnail is bundled with possible effects to several other species. The report states:

> The terrestrial snail species dependent on moist leaf litter would experience loss of habitat and altered or destroyed microclimates with the removal of forest canopy. Commercial and non-commercial timber harvest would leave downed woody debris allowing those microclimates to re-establish long term thereby benefitting these individuals. (Wildlife Report at 32)

The direct impacts to this specific occurrence of the snail are not disclosed, and the relative importance of the population is not disclosed either. Additionally, there are no citations or evidence to support the determination that this species would essentially recover due to the

[22] These species will soon be listed by the Kentucky Office of Nature Preserves. State Ranking numbers (i.e., S1, S2, etc.) are in the process of being updated.
[23] https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.107192/Anguispira_rugoderma (Accessed August 22, 2021)
[24] *Id*.

presence of small diameter logging slash post-harvest. The NEPA documentation discloses only generic impacts to potential habitat, and does not contain the quality of information needed to inform responsible decisionmaking.

The veracity of the effects determination, and appropriateness of the proposed action, shifts substantially upon the site-specific information that Mosely Fork provides habitat for one of the most important populations of this highly-restricted species.

Forest Plan Goal 1.1 states:

> Protect and/or enhance current and potential habitat for Proposed, Endangered, Threatened (PET) species, or Sensitive (S) species and Conservation species. (Forest Plan 2-5)

The entire Mosely Fork watershed is approximately 276 acres. Thirty acres of the watershed are young poletimber, logged in 1989. The South Red Bird decision approves shelterwood regeneration harvests on an additional 83 acres in the watershed in stands 3001-12 and 3001-10, including at least 26 acres of verified old-growth. These harvest areas (past and approved) represent the entire the northwest facing side of the valley, and a total of 41% of the valley. This could result in a much more substantial, negative impact on the Pine Mountain tigersnail – locally and globally – than what was presented in the Wildlife Report. It is our understanding that the Kentucky Office of Nature Preserves plans to survey for more rare species, including the Pine Mountain tigersnail, in the Mosely Fork area under contract with the Daniel Boone National Forest. However, these surveys, like most across the project area, are being conducted only *after* the project decision was already made. We again remind the agency that considering new information behind closed doors after a decision is made cannot make up for defects in prior NEPA analysis, which must inform the decisionmaker *and the public* about what is at stake. See FSH 1909.15, Sec. 18.1.

3. Right Fork of Elisha Creek proposed Research Natural Area

The Affected Environment report[25] states that:

> The Right Fork of Elisha Creek Proposed Research Natural Area (pRNA) consists of 160 acres of second-growth forest in the South Red Bird IRMA and much of it falls within riparian and /or cove habitats. (Affected Environment at 20)

From emails and documents acquired through FOIA, it appears that the Forest Service considered adding units or buffers to the pRNA. However, these additions did not occur and no rationale was provided. The information militating in favor of such additions, of course, were not

[25] Affected Environment of the South Red Bird Wildlife Habitat Enhancement Project, 2019

included in the NEPA documentation, and as a result the decisionmaker was unable to take a hard look at the addition and explain the relevant information and decision to the public. We bring this information to the agency's attention now so that it may be properly considered in a supplemental EA.

As previously described in this letter, in an email from Andrea Felton to District Ranger Bobby Claybrook dated January 5, 2018, Ms. Felton states:

> Jared was going to check out the stands near the Proposed Elisha Creek RNA- we had discussed allowing some to age into old-growth, but some are already Rx'ed for timber sales. Were you thinking you would like to designate an area for Old-growth IN and Adjacent TO the RNA? We need some clarification as to what to do there."

And in a January 9, 2018 email, Gavin Wilson wrote to project team members:

> "So, that's the stands considered for POG. There are three that are contiguous to the RNA. If you're thinking about incorporating them into the RNA, I'm thinking that's a congressional designation? Have to get a bit farther into the nuts n bolts on that one. Nothing says you can't POG it and forget it. Right now we have 1800ac of designated Old Growth, all in North Red Bird."

It should be noted that RNA designation is not a congressional designation, and the 1800 acres of "designated old-growth" in North Redbird is not, in fact, currently in old-growth condition.

Since the issuance of the final decision on the South Red Bird project we have learned that the U.S. Forest Service Southern Research Station considers the Right Fork of Elisha Creek pRNA to be 315 acres, and not the 160 acres described by the Daniel Boone National Forest.[26] The boundary used by the Southern Research Station more closely resembles the boundary drawn for the Elisha Creek Research Natural Area found in the 1993 Cooperative Inventory of Endangered, Threatened, Sensitive and Rare Species for the Redbird Ranger District, which describes the "significant area" as being 440 acres.[27] The boundary currently being used by the DBNF excludes the 70 acres of old-growth described in the 1993 Cooperative Inventory and all but 16 acres of the 164 acres of old-growth delineated by Kentucky Heartwood and described in this letter. The Southern Research Station's boundary is not disclosed or considered in the NEPA documentation and there is no indication anywhere that the discrepancy was brought to the attention of the responsible official.

Through our FOIA request, we found an undated map in the project record titled "POG/FOG Options" which illustrated stands surrounding and near the 160-acre pRNA boundary, including

[26] https://www.srs.fs.usda.gov/rna/estrnas/elishacreek.php (Accessed August 22, 2021)
[27] Cooperative Inventory of Endangered, Threatened, Sensitive and Rare Species, Daniel Boone National Forest, Redbird Ranger District. March 1993. Cooperators: United States Forest Service, The Nature Conservancy, Kentucky State Nature Preserves Commission, Kentucky Department of Fish and Wildlife Resources.

stands 3001-09 and 3001-19. The latter stand was ascribed on the map with a year of origin of 1885, meaning that it should meet the minimum age criteria for potential old-growth (POG). We have not examined this stand directly. However, as previously discussed in this letter, the Forest Service determined – and with no evident rationale – that "Data analysis indicates that there are no stands in the project area not within the proposed RNA that satisfy the conditions for classification as POG" (Vegetation Report at 6).

None of this makes sense. It seems clear that the original delineation for the Right Fork of Elisha Creek pRNA was based, in large part, on the old-growth areas that have since been excluded from the area by the Daniel Boone National Forest. And when the Forest Service did look at these old-growth areas for addition to the pRNA in the context of the South Red Bird analysis, they were apparently dismissed as not meeting R8 old-growth standards – and without any reason provided – despite the fact that they clearly do meet the criteria. "POG it and forget it" seems to have been whittled down to just "forget it" by DBNF staff. This failure to analyze relevant and significant environmental information related to the South Red Bird project cannot satisfy the Forest Service's obligations under NEPA. Instead, it appears as though the agency failed to consider the information at all and hid it from the public. Now that it is reintroduced to the agency in full, the Forest Service has an obligation to evaluate the information in accordance with NEPA in a supplemental EA.

Given the historical boundary, the newly verified old-growth in stands 3001-09, 3001-10, and 3001-12, and the potential old-growth in 3001-19, the Forest Service *at minimum* should reconcile the pRNA boundary so that it includes these areas. However, given the significance of the old-growth in stand 2409-28 and the globally significant Pine Mountain tigersnail population in Mosely Fork, we strongly recommend that the Forest Service designate a larger, more inclusive boundary for the pRNA to encompass this larger macrosite for conservation and research purposes. Had all the foregoing information been before the responsible official, we certainly hope that this option would have been seriously considered. And we believe that the public would have strongly supported such an expansion. Consideration of this information must happen before the Forest Service proceeds any further in this area.

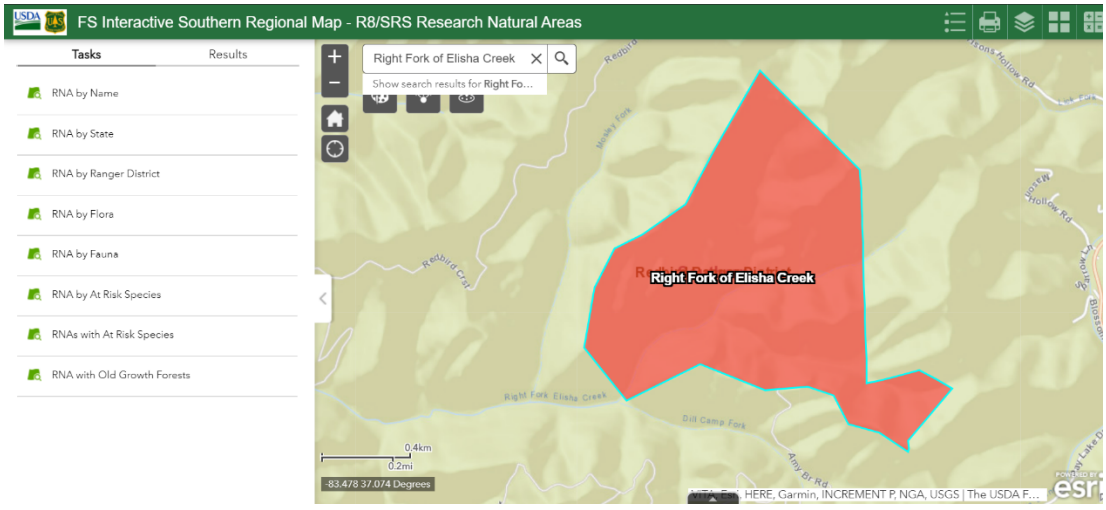

Figure 14. Right Fork of Elisha Creek pRNA map from the USFS Southern Research Station

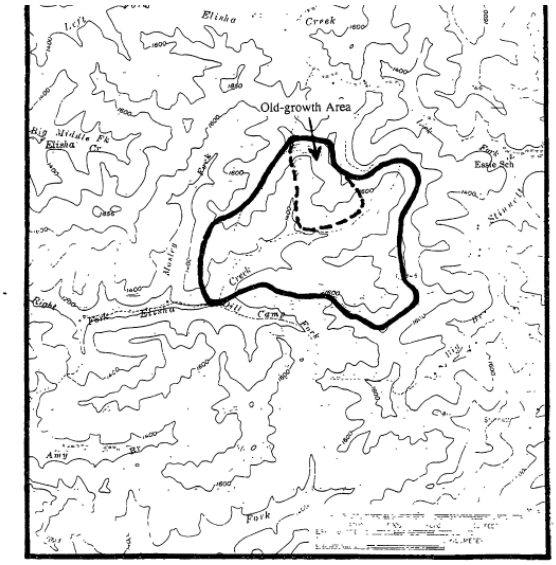

Figure 9. Map of the Elisha Creek Old-growth Area showing significant area.

Figure 15. Map of Elisha Creek pRNA from the 1993 Cooperative Inventory

4. National champion Red hickory (*Carya ovalis*)

Kentucky Heartwood ecologist Jim Scheff documented the new national champion red hickory (*Carya ovalis*) in a harvest unit in the Little Flat Creek watershed. The tree is located in stand 2701-0001 at 37.0748589, -83.6079919. The tree was measured on May 31, 2021 and the nomination form was submitted to the Kentucky Division of Forestry on June 3, 2021. While a certificate is still forthcoming, Jim Scheff communicated with KDF Chief Forester Nick Valentine, Pineville Branch, about the tree. Based on Mr. Scheff's description of species identification and measurement methods, Mr. Valentine stated that he would accept the data. The nomination form has also been submitted to American Forests, which manages the National Champion Tree list. This forthcoming classification represents significant new information which should be considered by the Forest Service in an environmental analysis.

American Forests states:

> In 1940, American Forests launched a campaign to locate the largest living specimens of American trees. The National Register of Champion Trees started out as a competition, a national hunt to discover the largest specimens of American tree species. Today, it is part of our National Champion Trees program. Every year people search for America's largest trees, bringing awareness to their beauty and ecosystem services, and fostering a desire to protect and preserve them for future generations. National Champion Trees can be

> discovered in rural and urban landscapes, scattered throughout forests and fields, along roadways and in backyards.[28]

The Kentucky Division of Forestry states:

> In 1940, the American Forests organization began a search of the largest specimen of each species of American trees. This list, now called the National Registry of Big Trees, contains the names of more than 870 species. Kentucky has eleven national champions or co-champions.
>
> The Division of Forestry began compiling a list of state champion trees in 1968. The first list contained 51 species. Only trees referenced in the book Trees & Shrubs of Kentucky by Mary E. Wharton & Roger W. Barbour are considered for the Kentucky Champion Tree Program. The list is continually changing as new species are added and former champions are replaced either because they die or a larger specimen is nominated.
>
> Kentucky has several trees on the National Registry of Big Trees.

This outstanding hickory measures 160.5 feet tall, 15.5 feet in circumference (CBH), and has an average crown spread of 70.5 feet. In total, the tree receives 364.1 points under the champion tree point system, making it one of the largest trees in Kentucky. By comparison, the current Kentucky State Champion red hickory (located and measured by Jim Scheff in 2019 in Beaver Creek Wilderness) has a total point score of 281.7 (144' tall, 121.5" CBH, 64.75' average crown spread). The current National Champion (in Virginia) listed on the American Forests website receives only 278 points.

We acknowledge that a tree's presence in a stand slated for harvest does not mean that it will be felled. As the Decision Notice and Finding of No Significant Impact for the South Red Bird project states:

> "I am fully confident these measures will minimize adverse effects for the following reasons…. d) my staff is highly trained and have the flexibility to mark and avoid any sensitive resources found in the field from impacts of the treatment planned for that area." (DN and FONSI at 2)

While this champion tree itself is not marked for harvest,[29] nearly every tree around it is marked for harvest and the haul road is flagged through its root zone. The damage from harvesting the

[28] https://www.americanforests.org/get-involved/americas-biggest-trees/

[29] Forestwide Standard DB-WLF-6 states that "In regeneration or thinning project areas, retain all shagbark, shellbark, and red hickories that are (equal to or greater than 6 inch dbh), unless the removal of these trees is specifically designed to improve habitat for PETS or Conservation species." The tree also has an old fire wound and is likely too large for most logging or milling equipment.