



KENTUCKY HEARTWOOD

Protecting the Beauty and Wellbeing of Kentucky's Native Forests

Tim Reed-District Ranger
USDA Forest Service
3320 Hwy 27 North
Whitley City, KY 42653

RE: Greenwood Vegetation Management Project

August 18, 2014

Dear District Ranger Reed,

Thank you for this opportunity to comment on the Greenwood Vegetation Management Project. The following comments are being submitted on behalf of Kentucky Heartwood, the Kentucky Resources Council, and the Center for Biological Diversity.

1. Background

We would first like to emphasize that the size of this project is shocking and unusual for a national forest such as the Daniel Boone. To our knowledge, Greenwood is the largest logging and complex vegetation management proposal put forth by the Daniel Boone National Forest since the 2003 Ice Storm Recovery Project on the Morehead District. To find a project of similar scale and scope not directly in response to a major weather event, one would have to look back to the timber quota days of the late 1990's, when the Forest Service was vocally rebuked in public opinion polls, the media, and the courts for its unsustainable emphasis on removing federal timber from our national forest.

We note that on April 24, 2014, it was reported in the press (Capital Press, April 24, 2014, "Forest Service vows to expand projects") that U.S. Forest Service Deputy Chief Tony Tooke "vowed that the agency will expand the scope of timber projects on national forests" during a presentation to the American Forest Resource Council, a forest products industry trade group. We would like to know if the notable and unusual size of this project on the Daniel Boone NF resulted from directives or other urging from Forest Service Chief's office, Region 8, or other superseding entity, or if this arose entirely at the forest level.

We also would like point to the peculiar secrecy and about-face that has characterized the development of Greenwood. At the conclusion of the Predecisional Objection meeting for the Freeman Fork Oak Woodland Restoration Project on December 6, 2013, you (District Ranger Reed), in an apparent act of good faith, recommended that we begin early discussions regarding an upcoming project in the Stearns District (Greenwood) to talk about ideas early on in the process. Project Team Leader Mike Lick had made a similar suggestion prior to this meeting that we get out in the field and look at the forest together to discuss forest conditions and ideas for management.

At the February 11, 2014 meeting of the Cumberland River Fire Learning Network, Jim Scheff asked Mr. Lick when a good time might be to get out in the field to look at the proposed Greenwood area. Mr. Lick replied that a decision had been made to withdraw the offer of early discussion, and that no information whatsoever would be provided until scoping. It is worth noting that this occurred at a meeting of the Cumberland River Fire Learning Network, hosted by the Forest Service, where we were discussing management in this very area. It made little sense at the time that a meeting would be called to discuss management of the area in the abstract, and yet the Forest Service stayed silent on actual management plans being developed for the area. During a June 11, 2014 Cumberland River Fire Learning Network meeting and area tour, which included large portions of the Greenwood project area, Mr. Lick had maps

showing management prescriptions of the Greenwood project, but was again unwilling to share any of this information because it had not been finalized by the Supervisor's office.

The Forest Service is, of course, allowed to withhold preliminary project information from the public until scoping. However, in the context of the "collaborative" Cumberland River Fire Learning Network and early offers at discussion, the guarded, even secretive, turn taken by the Forest Service – from overtures toward openness and communication to absolute silence – is peculiar. We wonder if this relates the unusual and controversial size of the Greenwood Project, and would like to know what changed about the project between December 6, 2013 and February 11, 2014, and whether or not this relates to Deputy Chief Tony Tooke's commitment to the forest products industry to "expand the scope of timber projects on national forests."

2. Beaver Creek Integrated Resource Management Strategy (IRMS) Meeting

The scoping document presents a selective and misleading portrayal of the March 28, 2013 Beaver Creek IRMS meeting. Jim Scheff, representing Kentucky Heartwood, participated and discussed as a priority the importance of managing for current and future old-growth across various community types. However, of the twelve "topics of discussion at this meeting" noted in the scoping document, there is no mention of management for old-growth conditions. Quite to the contrary, nearly every priority listed relates to management for early seral habitat and early seral game species.

The scoping document states that:

"Based on inventory, assessment, *public input during the collaborators meeting*, and Forest wide Goals and Objectives in the Forest Plan, management actions specific to moving NFS land in the Greenwood Project Area from existing conditions towards the desired future conditions described in the Forest Plan are being proposed." (Emphasis added)

This statement is selective and misleading. Clearly the Forest Service only considered input already in line with predetermined management actions and outcomes. The Forest Service has opted to pretend and present to the public that management for old-growth communities is not a priority for *any* parties (including Kentucky Heartwood) that participated in the Beaver Creek IRMS meeting. Further, the Forest Service has apparently tossed out consideration or even mention of old-growth (which we will address in more detail below) in the development of management actions in the Greenwood project area. This, along with the secrecy with which the Forest Service has approached the development of the scoping document, makes mockery of good-faith efforts toward communication and collaboration. It is extremely disappointing.

3. Freeman Fork Oak Woodland Restoration

As you are aware, the Forest Service approved the Freeman Fork Oak Woodland Restoration Project in January, 2014. The Freeman Fork project was proposed as a joint research project in cooperation with the University of Tennessee, Knoxville, and overlaps with the Greenwood project area. The scoping document for Freeman Fork states:

"There is a need for a greater understanding of how different land management techniques can be used to most efficiently and accurately restore and maintain oak woodland ecosystems in closed canopy stands. Results of research into the efficiency of different land management techniques in restoring and maintaining oak woodland ecosystems could be used to refine silvicultural techniques... Information obtained from this proposed research would enable the Forest Service to refine its management approach to oak woodland restoration."

Despite acknowledging a "need for greater understanding" in restoring and maintaining oak woodland ecosystems in the Freeman Fork scoping document, the Forest Service has jumped ahead with Greenwood, and proposed a

landscape-scale woodland conversion project to scale up Freeman Fork by an order of magnitude. This is well before any results from the experiment are in – let alone a single tree cut. While the information from Freeman Fork “would enable the Forest Service to refine its management approach,” apparently the decision has been made that no refinement or insights from Freeman Fork are actually needed. Either the experimental premise of Freeman Fork was a ruse to cut trees, or the Forest Service has essentially admitted that it doesn’t know what it’s doing with regards to woodland conversion in Greenwood and is unwilling to wait for the research results to propose landscape-scale commercial logging.

4. Beaver Creek Wilderness

Congress designated the Beaver Creek Wilderness as part of the Eastern Wilderness Act of 1975. The Act states:

“Congress finds and declares that it is in the national interest that these and similar areas in the eastern half of the United States be promptly designated as wilderness within the National Wilderness Preservation System, in order to preserve such areas as an enduring resource of wildness which shall be managed to promote and perpetuate the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration, and primitive recreation for the benefit of all of the American people of present and future generations.”

The Greenwood project proposes more than 1,100 acres of commercial logging and another 719 acres of non-commercial tree felling within ¼ mile of Wilderness boundary. Beaver Creek Wilderness is as little as ¼ to ½ mile in width at most points. If Greenwood is approved as proposed, it will be essentially impossible to visit Beaver Creek Wilderness for years without hearing the drone of chainsaws in the forest. The Three Forks of Beaver Creek Overlook, which is outstanding for both the character of its vista and solitude, will be marred by views of logging down Freeman Fork and the sounds of chainsaws from the ridges. The effect of this project will be to deny Wilderness visitors the very wilderness characteristics for which Beaver Creek was designated. It is appalling that the Forest Service would propose such a thing on this 50th anniversary of the Wilderness Act. It appears that the Forest Service does not understand the character, rarity, or importance of the wilderness experience in Kentucky. The Forest Service should not approve any management action that significantly degrades the wilderness character and experience of the Beaver Creek Wilderness.

5. Woodlands Management and Pine Restoration

We agree that it may be ecologically valuable to manage for some forest in the project area to exhibit woodland characteristics. Cumberland River Fire Learning Network models as well as those put forth by Julian Campbell, however, suggest that woodland and related open forest conditions created by regular, frequent fire intervals would have historically been more prominent to the south of the project area. We suggest that these communities would have been most common in the less dissected region near Pine Knot, where the substantially lower index of topographical roughness would have facilitated fire across the landscape. Most of lands in the project area modeled as woodland in the Cumberland River Fire Learning Network GIS output are along narrow, winding, and isolated ridges, bringing in to question how a prehistorical, anthropogenic fire regime could have brought fire to these sites every 1 to 3 years. The Native Americans who lived and traversed the area didn’t even have horses, much less drip torches, helicopters, and potassium permanganate and glycol filled ping-pong balls. Kentucky Heartwood has asked several times over several years what parameters and modifications were used in the LANDFIRE model used by the Forest Service and The Nature Conservancy, but as of yet no one has been able to answer this fundamental question about the model used to justify so much intensive land management. The only answer we can get is that “Steve Simone” was contracted to check areas in the field and create the models. However, we have never met Mr. Simone, seen a report from Mr. Simone, seen a contract for Mr. Simone, seen what modifiers to LANDFIRE Mr. Simone used, or anything else. If no one from the Forest Service can explain how the models were generated, then the Forest Service has no business using these models.

Lucy Braun describes the uplands in this general area in her seminal work *Deciduous Forests of Eastern North America* (1950) as a mix of oak, oak-hickory, oak-tulip, and oak-pine forests with a generally dry aspect and few shrubs. She states that “some of the promontories are occupied by open pine woods (shortleaf, pitch, and virginia) with a grassy layer of *Andropogon scoparius*, *A. glomeratus*, and *Sorghastrum nutans*.” Her description implies that these open pine woods are an *exception* across the forest, rather than a common forest type broadly distributed across the landscape. Lucy Braun spent extensive time studying this part of the Cumberland Plateau during the very earliest years of fire suppression, and likely before fire suppression had led to substantial changes in forest composition. Had these communities been a major component of the broader landscape she likely would have addressed them.

Still, the site-specific presence of certain plant species in the project area does suggest that fire had an important history and ecological role in the project area. The Forest Service can and should manage for woodland without the use of commercial timber sales and their inherent environmental impacts. These types of communities result and are maintained by the combination of natural canopy disturbance, fire, edaphic constraints, browsing and grazing, and climate¹. Recent research shows that the latter half of the 20th century in Kentucky were more mesic than previous decades, potentially influencing vegetation patterns, and that past centuries were punctuated by periods of severe, prolonged drought associated with significant canopy mortality.² The Forest Service needs to consider the role of climate and its relationship to the continual fluctuations in natural community distributions in the Cumberland Plateau. Regardless of the precise causes of openland physiognomy in the Cumberland Plateau, it is a certainty that chainsaws were never part of the equation in the development of these natural communities.

According to the scoping document under **Existing Conditions for Action 9 – Shortleaf Pine Restoration**, 10,468 acres of the project area lost, at minimum, 30% of their canopy to southern pine beetle (SPB) mortality. The **Five-Year Review of Implementing the Forest Plan (2009)** states:

“**Trend in Forest Cover** - A significant change occurred to the forest during 1999-2001 because of a widespread southern pine beetle (SPB) outbreak. Based on the trends from the stand exams done since then, some of the stands that were overstocked with mixtures of pine and hardwood have been naturally thinned”

And later that:

“Many of the pine stands sampled since then, have a significant component of hardwood of the same age remaining, although stocking has been significantly reduced.”

Robertus and Burns (1997)³, researching an old-growth oak savannah in the Missouri Ozarks, state:

“We have demonstrated that the savanna physiognomy can arise primarily as a fire-mediated treefall gap process.”

We point to the woodland on Curt Pond Ridge that was created from the combined impacts of SPB and fire. The Forest Service needs to consider forest areas that have or are developing woodland characteristics from existing canopy disturbance and fire as helping to meet the need for this community type.

The Forest Service should focus, for the Greenwood project area, on developing a non-commercial alternative that achieves the Purpose and Need for both **Action 2 – Woodland Establishment** and **Action 9 – Shortleaf Pine Restoration** through prescribed fire and limited non-commercial felling of infill established since the SPB outbreak, followed by the planting of Shortleaf and Pitch pines in sites with the most optimal conditions. The Forest Service has demonstrated that more than enough of this type of disturbed forest exists in the project area to meet the need.

¹ Roques, K.G., T.G. O'Connor and A.R. Watkinson. 2001. Dynamics of Shrub Encroachment in an African Savanna: Relative Influences of Fire, Herbivory, Rainfall and Density Dependence. *Journal of Applied Ecology* 38(2):268-280.

² Pederson, N., J.M. Dyer, R.W. McEwan, A.E. Hessel, C.J. Mock, D.A. Orwig, H.E. Rieder, and B.I. Cook. 2014. The legacy of episodic climatic events in shaping temperate, broadleaf forests. *Ecological Monographs*. Preprint.

³ A.J. Rebertus and B.R. Burns. 1997. The Importance of Gap Processes in the Development and Maintenance of Oak Savannas and Dry Forests. *Journal of Ecology* 85(5): 635-645.

6. Prescribed Fire

In addition to creating woodland structural conditions, the Forest Service needs to take a closer look at botanical indicators to better locate fire units. For example, we documented Rattlesnake master (*Eryngium yuccifolium*), a species of conservation concern on the forest, in stand 0802165059003 which is prescribed for pine thinning but not for fire. Just to the north of this location in a stand marked for clearcutting followed by pine planting, we found *Liatris*, big bluestem, and several other “sunny conservatives,” along with *Quercus marilandica* (a fire associated oak). But this stand is also excluded from burning (and proposed for cutting fire-associated oaks). While these stands containing botanical species strongly suggesting the importance of fire will not be burned, thousands of acres of interior and slope forests *are* proposed for burning. We realize that the DBNF only employs one botanist, but it appears that more work needs to be done examining the landscape for these conservative species and better targeting the burn units.

We are greatly concerned about the construction of 64 miles of machine-cleared fire line. As discussed elsewhere in this comment letter, there are 175 miles of roads for a density of more than 3.5 miles of road per square mile of national forest land in the project area. Add to this the untold miles of skidder trails, and you have a forest that will be dozed, scraped, compacted, and fragmented in to an extreme and objectionable extent. Burn units need to be better situation or minimized to lessen the miles of machine-cleared fireline.

The Forest Service also needs to be concerned about fire sensitive species and species that, while potentially benefitting from occasional fire (like *Gaylussacia baccata*, a species of conservation concern), may be seriously harmed by too much fire. The landscape is complicated and our understanding of fire incomplete. The Forest Service should develop an alternative with a more limited amount of burning (we suggest about 50% of that currently proposed), with fire better tailored to locations more centrally located to the broad crest of the ridge system (along US 27) and where good botanical indicators exist.

7. Recreation

As the Forest Service is aware, there is a desire to develop outdoor recreational tourism in McCreary County. While recreational development based around Lake Cumberland (e.g. the new marina at the end of Bauer Road) is already under way, there is a serious deficit of well-maintained, low-impact hiking and other non-motorized trails in the project area. Excluding the small section of the Rock Ridge OHV trail on the southeastern edge of the project area, there are only 16 miles of trails within the 32,149 acres of national forest in the project area. Most of that trail system is within Beaver Creek Wilderness, and does not actually exist on the ground despite being on maps. The remaining 1.4 miles is in the Alpine Recreation Area, and will be impacted by logging. By contrast, there are 67 miles of maintenance level 1 and 2, high-clearance roads in the project area.

The Forest Service needs to consider how hiking and other non-motorized trails can be incorporated into the project area. We recommend that this analysis be tandem to considerations of decommissioning maintenance level 1 and 2 roads in the project area, and an examination of how those existing road grades can be converted and integrated in to a hiking trail system. This would be of particular value in the Beaver Creek WMA, where a ridge trail should be developed and connected to the trail system in Beaver Creek Wilderness to allow for loop-hiking and increased viewshed opportunities. We point to Savage Gulf State Natural Area in Tennessee as an example of a comparable trail system with a very similar topography.

8. Roads

Our analysis of roads in the project area using DBNF GIS data layers indicates that there are 175 miles of roads on national forest system lands in the project area with an average road density of 3.5 miles of roads per square mile of national forest. The Forest Service needs to perform an analysis to determine which roads in the project area are not needed and can be decommissioned.

Forest Plan Goal 12.1, Objective 12.1.A states that the Forest Service should “Conduct unit analysis (such as watershed or landscape) Forestwide on a 10-year cycle” to “address the following needs”:

- e) Reclassify and adjust the existing road system so that expected budgets will be adequate to maintain the system. Identify unneeded roads when reclassifying the existing road system.

The 2003 Forest Scale Roads Analysis states:

On average, the Southern Region of the USDA Forest Service allocated \$566,000 annually to the Daniel Boone National Forest for road maintenance and construction/reconstruction since 1998. Our estimate of the most efficient budget level is \$2,200,000. Current budgets of the Daniel Boone National Forest cannot meet maintenance requirements of the existing road system under the present maintenance level and management objective classification (USDA Forest Service 1995).

The Analysis also states:

Past and present budgets have been inadequate to properly maintain the existing road system, based upon the present maintenance level and management objective classification. Reclassify the existing maintenance level and management objective where appropriate and prioritize roads to be closed, or decommissioned, so the expected budget would be adequate to maintain the system.

Based on the 2009 Five-Year Review and 2010-2011 Evaluation and Monitoring Report (the last report for which data are available on road issues on the forest), the Daniel Boone National Forest repaired or decommissioned only 44.2 miles of roads in the first 7 years of the Plan (and it is not clear how many miles, if any, were decommissioned). Unless a substantial number of roads have been repaired or decommissioned over the last 3 years, the Forest Service has not come close to meeting the Forest Plan 10-year Objective of repairing or decommissioning 150 miles of roads, and should work to reach those goals here. We understand that the Forest Service generally prefers road access to most corners of the national forest to facilitate management. Regardless, the Forest Service needs to consider which roads can be decommissioned or downgraded in the Greenwood project area.

The Forest Service also needs to consider creating roadless areas. Aside from Beaver Creek and Clifty Wilderness Areas, the 2,834 acre Wolfpen Hollow is the only Inventoried Roadless Area on the forest. At just over one-third the size of the Daniel Boone NF, the 280,000 acre Shawnee National Forest has seven Wilderness Areas in addition to several roadless areas. The Forest Service needs to address this deficit in the Daniel Boone NF. In the portion of the Greenwood project area west of US-27, representing the Martin Creek watershed and including Minton Hollow (listed as a Unique Area in the 1988 Cooperative Inventory), the Forest Service could create a nearly 3,000 acre roadless area by closing maintenance level 1 and 2 roads and converting them to trails. This is an area of demonstrated ecological importance and should be preserved.

9. Old-Growth

According to the DBNF GIS database, there are 1,571 acres of forest older than 130 years in the project area. Of that, 710 acres are hemlock forests that will likely be lost over the next 10 to 20 years to hemlock wooly adelgid. Approximately 2,100 acres of hemlock forest in the project area are at risk. A master’s thesis completed by Jim Scheff⁴ showed that 70 to 90 year-old forests in the Daniel Boone National Forest were largely lacking in the structural elements and complexity associated with old-growth forests, but that these elements were present in forests 140 to 160 years of age. These biologically significant elements include large trees, large-diameter snags and coarse woody debris, canopy gaps, and greater horizontal and vertical spatial heterogeneity in canopy distribution. These findings are

⁴ Scheff, Robert (2012). The Development of Old-Growth Structural Characteristics in Second-Growth Forests of the Cumberland Plateau, Kentucky, USA. Master’s Thesis, Eastern Kentucky University.

consistent with other studies, which also show the presence of large-diameter den trees and other elements missing from younger forests as being important to several species in upland forests of the Cumberland Plateau⁵.

The Forest Service needs to take a more proactive approach to identifying and delineating existing primary and secondary old-growth and planning for the development future old-growth reserves. This includes large blocks of functional old-growth, and not just narrow corridors around clifflines and streams. There is also a need to delineate upland old-growth – which should include examples of burned and unburned upland forest. The current approach, which essentially amounts to “what we don’t cut now will eventually become old-growth” is not adequate nor scientifically defensible. We point, for example, to the Little Egypt area that was proposed for logging in the Crooked Creek project in the London District. Despite Forest Service inventories suggesting that there was no primary or secondary old-growth in the project area, we identified large numbers of old-growth trees across the landscape, and several stands that included a mix of substantial numbers of old-growth trees and large second-growth trees and exhibiting functional old-growth characteristics. The Forest Service GIS database is clearly not sufficient for a valid old-growth analysis, nor, apparently, are the timber evaluations that the Forest Service uses, as evidenced at Little Egypt. We are happy, if allowed sufficient time and cooperation, to work with the Forest Service to identify areas with existing or emerging old-growth characteristics. We have applied in the past for a general coring permit to sample forests to this end, but were denied.

10. Wildlife Openings

The management of artificial wildlife openings, if maintained at all, should be through native plantings and fire. Broadcast spraying of herbicides – particularly to plant non-native wildlife crops – is not an acceptable use of public, national forests.

11. Herbicides

The Forest Service should not employ the broadcast spraying of glyphosate solutions in the project area. While the Forest Service often points to EPA and label guidelines, and industry-sponsored research on glyphosate, a growing body of scientific literature has associated glyphosate solutions with a number of environmental and health hazards. Glyphosate is never applied as a singular compound, but in combination with a number of synergistic compounds referred to as “inert ingredients.” Most studies relating to the safety of glyphosate have limited study to glyphosate alone – despite the fact that the “inert ingredients” are included for the very reason that they assist in the biological action of the glyphosate. We point to a report in *Scientific American* (Weed-Whacking Herbicide Proves Deadly to Human Cells, June 23, 2009), which states:

“Until now, most health studies have focused on the safety of glyphosate, rather than the mixture of ingredients found in Roundup. But in the new study, scientists found that Roundup’s inert ingredients amplified the toxic effect on human cells—even at concentrations much more diluted than those used on farms and lawns.”

A 2006 paper in *Environmental Health Perspectives*⁶ states:

“The U.S. EPA (2004) has identified almost 3,000 substances, with widely varying toxicity, that are used as inert ingredients in the United States. For example, paper is used as an inert ingredient, but so are toxic chemicals such as naphthalene and xylene (U.S. EPA 2004). Also, about 50% of all inert ingredients are at least moderately risky (U.S. EPA 2002). Given the toxicity of inert ingredients and their widespread use in

⁵ Haney, J.C. and J. Lydic. 1999. Avifauna and Vegetation Structure in an Old-Growth Oak-Pine Forest of the Cumberland Plateau, Tennessee (USA). *Natural Areas Journal* 19(3):199-210.

⁶ Cox, Caroline and Michael Sorgan. 2006. Unidentified Inert Ingredients in Pesticides: Implications for Human and Environmental Health. *Environmental Health Perspectives* 114(12): 1803-1806.

pesticide products, formulations should be fully assessed when pesticides are registered with the U.S. EPA. This, however, is not currently the case.”

And:

“Pesticide registration should require full assessment of formulations. Evaluations of pesticides under the National Environmental Policy Act, the Endangered Species Act, and similar statutes should include impact assessment of formulations. Environmental monitoring for pesticides should include inert ingredients.”

A recent study by Mesnage et al. (2014)⁷ states:

“Ethoxylated adjuvants found in glyphosate-based herbicides were up to 10,000 times more toxic than the so-called active AP (active principle) glyphosate.”

And:

“In fact, 8 formulations out of 9 were clearly on average several hundred times more toxic than their APs, In fact, 8 formulations out of 9 were clearly on average several hundred times more toxic than their Aps (active principles)”

And further:

“However, Roundup was found in this experiment to be 125 times more toxic than glyphosate. Moreover, despite its reputation, Roundup was by far the most toxic among the herbicides and insecticides tested. This inconsistency between scientific fact and industrial claim may be attributed to huge economic interests, which have been found to falsify health risk assessments and delay health policy decisions.”

Chaufan et al. (2014)⁸ state:

“Our results show that (Glyphosate) formulation had toxic effects while no effects were found with acid glyphosate and AMPA treatments... These results confirm that (Glyphosate) formulations have adjuvants working together with the active ingredient and causing toxic effects that are not seen with acid glyphosate.”

In general, there is a wide body of peer-reviewed and other literature regarding glyphosate and other chemical applications revealing environmental and health impacts far exceeding those recognized by EPA and manufacturers. The Forest Service has a duty to disclose environmental and health effects of the specific chemical formulations, including so-called ‘inert ingredients,’ using the best available science. The Forest Service should not be using these chemicals across 222 acres of wildlife openings, and should minimize use in controlling invasive species where eradication or control are reasonably practicable.

12. Proposed, Endangered, Threatened, and Sensitive (PETS) Species

A large number of PETS species are known to be in the project area, and the Forest Service is obliged to give due diligence to analyzing the effects as well as taking proactive steps to manage for these species. The Forest Service should review its April 1988 *Cooperative Inventory of Endangered, Threatened, Sensitive, and rare Species, Daniel Boone National Forest, Somerset Ranger District*. Species data and recommendations from this report should be considered. While the Forest Service, with the Greenwood project, is focusing on management for species requiring generally open conditions, it seems clear that the Forest Service needs to do more work to better focus and tailor management to specific, identifiable populations and communities. As we mention elsewhere in this comment letter, we documented *Liatris* in a stand slated for clearcutting and pine planting and Rattlesnake master in a stand proposed for commercial

⁷ Mesnage, R., N. Defarge, J.S. de Vendomois, and G. Seralini. 2014. Major Pesticides are More Toxic to Human Cells Than Their Declared Active Principles. *BioMed Research International*. Vol 2014, Article ID 179691.

⁸ Chaufan, G., I. Coalova, M. del Carmen Rios de Molina. 2014. Glyphosate Commercial Formulation Causes Cytotoxicity, Oxidative Effects, and Apoptosis on Human Cells – Differences With its Active Ingredient. *International Journal of Toxicology* 33(1):29-38.

thinning, but neither stand is proposed for prescribed burning – which would likely most benefit these species of conservation concern. General landscape-scale management in the absence of site-specific plant community information is an approach that will have the least benefit to species in need of conservation, with the greatest potential for negative impacts to non-target species and communities.

While it may be appropriate for the Forest Service to use fire and non-commercial techniques to manage for listed and sensitive species requiring generally open conditions, the Forest Service should also take a proactive role in managing for fire-sensitive species and species requiring relatively undisturbed or old-growth type habitats.

We also point out there that the Forest Service has not published trend data for avian and other MIS and species of concern as required by the Forest Plan and NFMA. The Freeman Fork project relied on data from prior to the year 2000. It is not acceptable to rely on such old data for MIS and other trends.

We address some specific species and locations of concern below.

Indiana bat (Myotis sodalis)

The Forest Service needs to reinitiate consultation with the US Fish and Wildlife Service regarding its Biological Opinion for the Indiana bat. The original Biological Opinion was based on pre-WNS (white nose syndrome) population levels and trends.

We point to language in regarding the Northern long-eared bat from The Northern Long-Eared Bat Interim Conference and Planning Guidance for USFWS Regions 2,3,4,5, &6, issued on January 6, 2014:

Although significant NLEB population declines have only been documented due to the spread of WNS, other sources of mortality could further diminish the species' ability to persist as it experiences ongoing dramatic declines. Specifically, declines due to WNS have significantly reduced the number and size of NLEB populations in some areas of its range. This has reduced these populations to the extent that they may be increasingly vulnerable to other stressors that they may have previously had the ability to withstand. These impacts could potentially be seen on two levels. First, individual NLEBs sickened or struggling with infection by WNS may be less able to survive other stressors. Second, NLEB populations impacted by WNS, with smaller numbers and reduced fitness among individuals, may be less able to recover making them more prone to extirpation.

We insist that this same set of considerations should apply to the Indiana bat, excepting for a substantially lower base-population.

Eastern spotted skunk (Spilogale putorius)

Eastern spotted skunk is listed as S2 (imperiled) in Kentucky by NatureServe. While this species is apparently able to use a wide range of habitats, for some reason it is extremely rare and elusive in Kentucky. Impacts from habitat alteration as well as noise and traffic patterns associated with logging need to be considered for their possible effects on this species.

Northern white cedar (Thuja occidentalis)

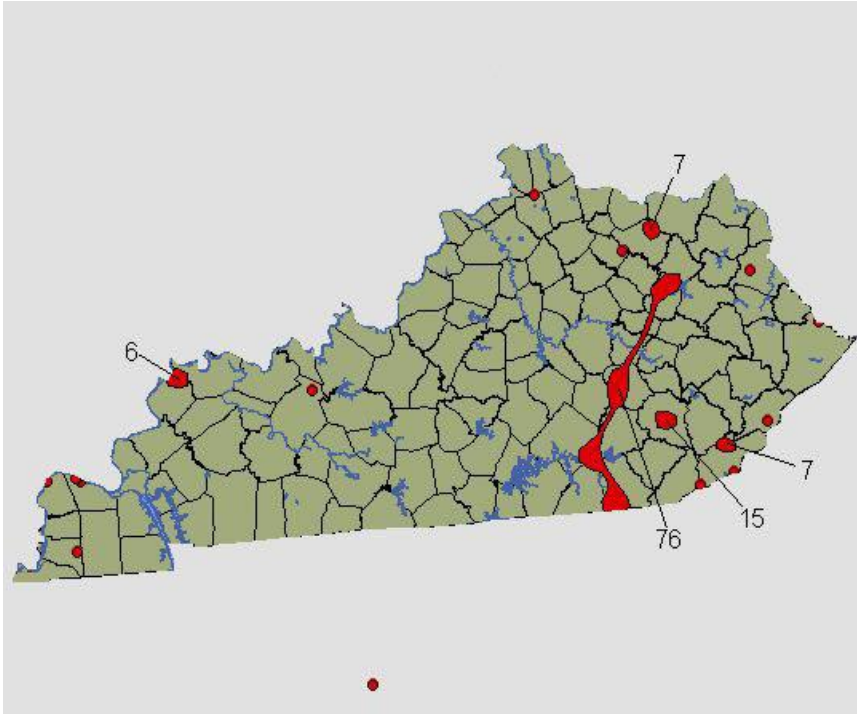
The Greenwood project includes the burning of one of the few known locations of *Thuja occidentalis* in Kentucky. The species is listed as Threatened in Kentucky. The population is on Lick Branch, and is included in the Forest Service's 1988 Cooperative Inventory. This is a fire-sensitive, rare species that the Forest Service cannot ignore. In addition to excluding this stand from burning, the Forest Service may want to consider the implication that the presence of a very rare, fire-sensitive species may suggest that fire was historically infrequent or absent in this proposed burn unit and should make adjustments to the Greenwood proposal accordingly.

Southern cave crayfish (Orconectes australis)

This blind, troglitic crayfish is known to be in the watersheds and sinkhole drainage areas of both Cave Creek and Martin Creek – part of the Sloan’s Valley cave system. Sediment and herbicides in this watershed could affect this species.

Cerulean Warbler (Dendroica cerulea)

The Cerulean warbler is both a species of conservation concern and management indicator species (MIS) on the DBNF. The publication, *An Atlas of Cerulean Warbler Populations; Final Report to USFWS: 1997-2000* includes the following map of Kentucky breeding areas for the Cerulean warbler, showing that the Greenwood project area (the ‘swell’ of red on the Pulaski-McCreary line) is a significant breeding area for the Cerulean warbler.



The most recent data published by the Daniel Boone National Forest for this species covers the period up until the year 2000. Updated, published data are needed. The US Fish and Wildlife Service document, *A Conservation Action Plan for the Cerulean Warbler (Dendroica cerulea)*, states that Cerulean warblers have decreased in population at a steady rate of about -3.0% per year over the last 40 years. Under the section *Loss and degradation of breeding habitat*, the report states:

“Forest loss and forest fragmentation are often closely tied, as areas that have sustained substantial forest loss are the ones where forest fragmentation is likely to be a problem. Forest fragmentation is a threat because of the strong demonstration of increased nest predation and nest parasitism rates on forest songbirds within fragmented landscapes.”

The Greenwood project area represents a vital core of contiguous forest surrounded by developed, fragmented, and converted landscapes not suitable for breeding habitat for the Cerulean warbler. The above section of the Action Plan goes on to say:

“Cerulean Warblers have highly specific preferences for mature forests with complex vegetation structure in the canopy (Jones and Robertson 2001, Jones et al. 2001, Nicholson 2003, Perkins 2006). The amount of mature deciduous forest in eastern North America with these vegetation characteristics is thought to have decreased over the last century. Where these structural forest conditions are lacking, Cerulean Warblers breed in sub-optimal habitats and are likely to experience reduced reproductive success.”

The target habitat type for this species on the Daniel Boone NF (as stated in the Freeman Fork Wildlife Specialist's Report) is

“Upland hardwood or mixed hardwood-yellow pine; >60 BA but 70-90 BA average; >41 yrs. old”

The Report, in analyzing effects on the Cerulean warbler, states:

“Decreasing to 60 basal area from the current condition creates more of the desired target habitat.”

This habitat association is not consistent with the best available science regarding habitat conditions at the local scale, and does not address landscape scale habitat needs. Hartman et al. (2009)⁹ state:

“The conventional finding that Cerulean Warblers use large diameter trees in a multi-layered canopy appears to be important on the Cumberland Plateau... Conservation and management directed toward protecting and establishing large tracts of mature forest, especially on mesic, sheltered sites, is a reasonable approach to protecting Cerulean warbler populations in breeding areas.”

Hamel (2000)¹⁰ states:

“Cerulean warblers are routinely identified with large tracts, tall trees, and mature forest.”

And:

“Habitats are usually described as also including large trees. Even Wilson (1811, p. 119) associated the birds with ‘high branches of the tallest trees.’ Robbins et al. (1992a) provide the only quantification to date of habitats, from two study regions in Tennessee. In both locations, cerulean warblers preferentially used large trees, and areas with large trees, at three scales; the birds were found (1) to perch in trees whose diameters were significantly larger than average trees available to males in their territories, (2) the territories contained trees with significantly larger diameters than average for the stands in which the territories were located, and (3) those stands were dominated by trees with larger diameters than dominants of the average stand in the study region.”

We insist that a target habitat of 60 square feet per acre of basal area in stands at least 41 years old does not represent optimal habitat for managing for the Cerulean warbler. The Forest Service has a duty to monitor and manage for the Cerulean warbler in the Greenwood project area using recent data and the best available science.

Grassy Gap Ridge (various species)

The Cooperative Inventory lists Grassy Gap Ridge above Beaver Creek as a Unique Area singled out for a variety of rare and listed species. No management is proposed for this area. However, prescribed fire may be appropriate following detailed surveys and consideration of effects.

Northern Long-Eared Bat (Myotis septentrionalis)

The Northern long-eared bat has been proposed for emergency listing as an endangered species, with the U.S. Fish and Wildlife Service issuing its Northern Long-Eared Bat Interim Conference and Planning Guidance for USFWS Regions 2,3,4,5, &6 issued on January 6, 2014. The document states:

Impacts to NLEB and/or Summer Habitat

- The permanent or temporary removal of forested habitat from a variety of actions may adversely affect the NLEB by reducing the amount of habitat available for roosting, foraging, or travel. Additionally, bats may also be directly disturbed or killed if such projects are conducted while they are present.

⁹ Hartman, Patricia J., D.S. Maehr, and J.L. Larkin. 2009. Habitat Selection by Cerulean warblers in Eastern Kentucky. The Wilson Journal of Ornithology 121(3): 469-475.

¹⁰ Hamel, Paul R., Cerulean warbler Status Assessment, April 2000. U.S. Fish and Wildlife Service.

- Burning, although potentially necessary to maintain habitat, could disturb or kill bats by smoke inhalation or scorching.
- Although many types of timber management, when properly designed, will not impact (or may improve) NLEB habitat, some types of timber management (e.g. clear-cutting) can reduce the viability of NLEB populations if key areas of a home range are removed.
- Removal of occupied suitable man-made roosting structures.
- Lethal bat removal from occupied homes/structures.

This guidance may suggest the need to curtail clearcutting for pine restoration to maintain canopy cover, and to lessen the impacts from prescribed burning.

13. Economics

The Forest Service needs to provide a thorough economic analysis that answers the following questions:

1. What are the costs associated with the commercial sale of timber?
2. What are the costs associated with crop-tree release or timber stand improvement (legacy costs from previous logging)?
3. What are the costs associated with herbicide use on wildlife openings?
4. What are the costs associated with prescribed burning?
5. What are the costs associated with treating invasive species expanding into newly logged areas?
6. What are the costs associated with logging area rehabilitation (seeding skidder trails and log landings, adding culverts, berms, etc.)
7. What are the costs associated with pine planting?
8. What are the costs associated with maintain roads versus decommissioning roads?

14. Need for Environmental Impact Statement

We insist that the Forest Service develop a full Environmental Impact Statement (EIS) for the Greenwood project. The scale of the project, its effects on designated Wilderness, the large number of Proposed, Endangered, Threatened, and Sensitive (PETS) species, the amount of herbicides proposed for use, and the Forest Service’s acknowledgement that there is a “need for greater understanding” in the restoration and management of oak woodlands together suggest a level of uncertainty and significant impacts beyond typical projects on the DBNF.

15. Cumberland River Fire Learning Network

If the Forest Service is going to rely on models from the Cumberland River Fire Learning Network, then the Forest Service needs to allow for comment and have more transparency in the process. Kentucky Heartwood has asked on multiple occasions for the principle members of the CRFLN to explain what parameters were used in the LANDFIRE simulations, how they were modified, how they were field checked, and how the final models were constructed. No one associated with the Forest Service or The Nature Conservancy has been able to answer these questions. These models should not be used as target community types if no one can explain them. We suggest that the Forest Service offer a detailed explanation of the models in the Greenwood analysis.

16. Citizen's Alternative

We ask that the Forest Service develop an alternative in the EIS or EA that is consistent with the Forest Plan and Purpose and Need for the Greenwood project with the following actions and guidelines:

1. Woodland and Pine Restoration management will be occur without commercial logging by using prescribed fire and limited non-commercial felling of infill (saplings) established since the SPB outbreak, followed by the planting of Shortleaf (*Pinus echinata*) and Pitch (*Pinus rigida*) pines in sites with the most optimal conditions.
2. Prescribed fire acreage will be limited (6,000 to 8,000 acres) and machine-constructed firelines will be substantially reduced from the current proposal (we suggest limiting to 20 or 30 miles).
3. Herbicide use will be limited to spot-treatment of non-native invasive species where non-chemical approaches are not practicable. No herbicides will be broadcast sprayed in wildlife plots.
4. No non-native species will be planted in wildlife openings or elsewhere. Wildlife openings will be converted to native grasses and forbs and maintained with periodic fire.
5. The Forest Service will identify roads in the project area for decommissioning.
6. No activities that impact the wilderness character of Beaver Creek Wilderness will be allowed.
7. Management for old-growth characteristics across multiple community types is emphasized. Forest stands with or nearest to developing structural characteristics associated with old-growth communities will be identified and conserved.
8. Close maintenance level 1 and 2 roads in the Martin Creek watershed, and designated a 3,000 acre roadless, primitive Martin Creek Roadless Area.
9. Look at alternatives for developing another 10 to 20 miles of non-motorized recreation trails, including additions to the Beaver Creek system that would allow for loop-hiking and ridge-top viewsheds.

Sincerely,



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Enclosures:

- Pederson, N., J.M. Dyer, R.W. McEwan, A.E. Hessler, C.J. Mock, D.A. Orwig, H.E. Rieder, and B.I. Cook. 2014. The legacy of episodic climatic events in shaping temperate, broadleaf forests. *Ecological Monographs*. Preprint.
- A.J. Rebertus and B.R. Burns. 1997. The Importance of Gap Processes in the Development and Maintenance of Oak Savannas and Dry Forests. *Journal of Ecology* 85(5): 635-645.
- Scheff, Robert (2012). The Development of Old-Growth Structural Characteristics in Second-Growth Forests of the Cumberland Plateau, Kentucky, USA. Master's Thesis, Eastern Kentucky University.
- Haney, J.C. and J. Lydic. 1999. Avifauna and Vegetation Structure in an Old-Growth Oak-Pine Forest of the Cumberland Plateau, Tennessee (USA). *Natural Areas Journal* 19(3):199-210.
- Cox, Caroline and Michael Sorgan. 2006. Unidentified Inert Ingredients in Pesticides: Implications for Human and Environmental Health. *Environmental Health Perspectives* 114(12): 1803-1806.
- Mesnage, R., N. Defarge, J.S. de Vendomois, and G. Seralini. 2014. Major Pesticides are More Toxic to Human Cells Than Their Declared Active Principles. *BioMed Research International*. Vol 2014, Article ID 179691.
- Hartman, Patricia J., D.S. Maehr, and J.L. Larkin. 2009. Habitat Selection by Cerulean warblers in Eastern Kentucky. *The Wilson Journal of Ornithology* 121(3): 469-475.
- Hamel, Paul R., Cerulean warbler Status Assessment, April 2000. U.S. Fish and Wildlife Service
- U.S. Fish and Wildlife Service issuing its Northern Long-Eared Bat Interim Conference and Planning Guidance for USFWS Regions 2,3,4,5, &6 issued on January 6, 2014
- Roques, K.G., T.G. O'Connor and A.R. Watkinson. 2001. Dynamics of Shrub Encroachment in an African Savanna: Relative Influences of Fire, Herbivory, Rainfall and Density Dependence. *Journal of Applied Ecology* 38(2):268-280.