Data Submitted (UTC 11): 9/16/2019 4:00:00 AM
First name: Steven
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Organization:
Title:
Comments: Dear Ranger Yonce,

Please accept these comments on the proposed North Shenandoah project and the draft EA.

So-called open-canopy forest is absolutely not needed for "understory vegetation diversity" (EA-5). See "Ecological communities of the GWJNFs" by Fleming and Couling 2001 (incorporated by reference, Technical Report 01-14 already submitted to GWNF managers by the VDNH). In fact, of the 418 400m2 plots on the GWNF for which I counted the numbers of ground-floor vegetation taxa (woody and herbaceous plants) during the months of June-August, the top 10% of the plots had a means of 36.8 taxa and canopy openness of 15.8 (measured with a convex densitometer). The lowest 10% had a means of 7.2 taxa and canopy openness of 15.1. The overall means for the 418 plots were 20.9 taxa (range of 1-46) and 17.1 openness (range of 4.7-81.1). Also see chapter excerpts from Krichbaum 2018 Dissertation (attached).

It is obvious that understory vegetation diversity results from far more than just the amount of canopy openness at a site.

Opening up the canopy to the extent proposed (see EA chap. 2) may or may not result in greater "understory vegetation diversity", depending on current species composition, seed dispersal, pollinators, browsers, aspect, slope inclination, edaphic conditions (e.g., nutrient availability, soil acidity, moisture), presence of invasives, future climate and disturbance regimes, and more.

There is a difference between "grassy, shrubby, and herbaceous understories". But the agency lumps them together when discussing the conditions on the Forest and the purported results of proposed actions. Some species may benefit much more from one than the others. Wood Turtles, due to their foraging preferences, would benefit far more from herbaceous plants than shrubby ones. But the increased canopy openness could easily not accomplish this. Your photograph on pg. 10 of the 2017 proposal document (Fig. 4) is a perfect example of resultant non-grassy ground floor conditions from a so-called "open canopy condition".

There is a great deal of uncertainty with regard to the effects of the proposed actions (logging, cutting, burning), uncertainty that is glossed over.

Burning Wood Turtle sites/habitat also may foreseeably result in significant damage or degradation or death to Turtle habitat, populations, and/or individuals. I discussed this at length, for instance, in my appeal of the 2007 GWNF Lee RD burn project. Project records, decisions, comments and administrative appeals for the 2007 & 2009 Lee RD burn projects and the Paddy Timber Sale incorporated by reference. The USFS has had this information, concerns, and issues in front of it for years. The information, concerns, and issues I articulated then are the same and/or relevant now again for this proposal.

I am sorry I cannot submit my entire dissertation, but it is embargoed until I finish papers for submission to journals. In addition, it contains sensitive information that would be available to the public as part of the record for this public agency proposal. I would be happy to discuss it with you at any time.

The Wood Turtle is a "Sensitive" species and "Endangered" under the CITES framework. The project-specific Design Elements created for this project, in addition to Forest- wide Standards, DO NOT address the potential direct mortality to Turtles, nor do they prevent the destruction or degradation of Turtle foraging habitat. As I suggested/recommended years ago during the Plan revision process, the streams and associated upland areas

occupied by Wood Turtles should be SBAs with prescriptions and Plan standards that protect them from direct activities. Of course, that did not happen. So now here is yet another project that would foreseeably/potentially result in direct, indirect, cumulative impacts to the Turtles and neither the Plan standards being applied nor the project-specific "design elements" prevent these harmful impacts.

The populations of Wood Turtles that the agency is proposing to impact and harm with this project are the southern-most populations of the species entire GLOBAL range (there might be some in WV a little farther to the south). There is no evidence that this significant factor was fully and fairly considered. Because of climatic and various human population pressures inflicted on this poor vulnerable creature, viability is an obvious issue. The last thing they need is more potential harm and stress unnecessarily imposed upon them. Proposed are cutting and road building at Shoemaker River and at Slate Lick Branch and Buck Lick Run and elsewhere, even permanent road building at Shoemaker River.

The agency recognized that Slate Lick Run road (FDR 230) is problematic: "Roads with Issues in Riparian Areas . . . Slate Lick Run Road (FDR 523) in the Slate Lick Fields area runs along Slate Lick Branch. Slate Lick Branch is a native trout stream above Slate Lick Reservoir. Wood Turtle habitat is along the branch. There is a need to mitigate water quality impacts from recreation in the fields." (2017 proposal document) But now this draft EA reveals that the agency is not going to meaningfully address the problems associated with this road and fix them. I recommended road closure and alternate road construction. No mention in the EA about dealing with the problems associated with this road (such as access to Wood Turtles or running them over). The agency does intend to run a tractor across the adjacent fields and apply biocides.

The cumulative impacts of this project and innumerable others on this Forest and elsewhere (such as Molly's Hill TS), along with other actions and conditions, can potentially cause a loss of species viability on the Forest or cause a trend towards federal listing under the Endangered Species Act.

This action could easily lead to removal of reproductive adult Turtles from the population, thus causing permanent impairment of the productivity of Wood Turtles at this site and/or significant harm to their sustained yield. The cumulative effects could easily be significant. The decision violates or threatens to violate NFMA and MUSYA.

It would have been easy to formulate alternatives that addressed important and significant public issues, such as Wood Turtles, Virginia Mountain Treasures, road building, and the extreme disbalance in the distribution of age-class forest acres (there are generally very little or zero acres represented in the 161-170, 171-180, 181-190, 191-200, 201-210, 211-220, 221-230, 231-240, 241-250, 251-260, 261-270, 271-280, 281-290, 291-300, 301-310, 311-320, 321-330, 331-340, 341-350, 351-360, 361-370, 371-380, 381-390, 391-400 years-old age classes). I incorporate by reference all my 2017 proposal comments here; it is difficult to find a single solitary scoping comment that is adequately addressed in the draft EA.

The need for alternatives that meaningfully address public issues was illegally swept under the rug (DEA-28, 57-58). Instead, there are no alternatives (aside from "no action"), just one "alternative". An alternative(s) that did not include road building was not developed in full. An alternative(s) that did not include logging in Virginia Mountain Treasures was not developed in full (and the single action alternative even proposes logging in the sole recommended Wilderness Area). An alternative(s) that did not include cutting of older forest that will soon be old growth was not developed in full (recutting of current esh or mid-successional forest was not fully and fairly considered). An alternative(s) that did limited burning to actual fire-dependent communities was not developed in full.

And, of great significance, is the fact that an alternative(s) that did not include road building and cutting within 300 meters of occupied Wood Turtle streams was not developed in full. This ca. 300m core habitat zone is well known in the published WT literature. With regard to my own studies on the GWNF near this project area

involving radio-tracked Wood Turtles, 95% of the ca. 680 occurrence points were within 295m of the permanent streams; some Turtles ventured as far away as ca. 700 meters. Such an alternative would be easy to map, consider, and designate. My research indicates that the best thing you can do for Wood Turtles here is to let the forest in their core habitat develop through natural processes and disturbances into its natural old growth state with varying amounts of canopy closure/gaps, all ages of trees, and heterogeneous structural and compositional complexity.

I urge you to adopt this alternative in your final decision, so as to avoid harm to Wood Turtles and other problems.

Wood Turtles have somewhat small home ranges (again, well recognized in the literature), the Turtles I studied/tracked had summer activity areas (their time of greatest terrestrial activity) that averaged ca. 2.25ha [plusmn] 0.38 (MCPs). A single cutting unit could destroy or significantly degrade the area used by multiple Wood Turtles. Limited very short-term beneficial impacts (perhaps a few years of increased blackberries) and long-term harmful impacts are probable.

In addition, logging at a cutting site could kill or significantly injure Wood Turtles, such as by machinery running them over or trees felled on them. They could be burned alive. They are active terrestrially on the GWNF from March-November (SK personal observation). They are predictably active in areas within 300 meters of streams. But this project only has "design elements" for a 300 feet zone, and only from May 1 to October 15, and only for mechanical logging activities (DEA-53-54). This is insufficient and unreasonable. The Wood Turtle is a listed "Threatenened" species in Virginia and implementation of this project as currently proposed would potentially foreseeably result in take. This is not necessary and could be avoided by not manipulating, developing, altering their core habitat.

I have spent 15 years submitting information to the FS about Wood Turtles. I have spent 15 years of research and study on Wood Turtles (including a PhD Dissertation from a Tier 1 research university) ON THIS VERY NATIONAL FOREST. And yet you refused to consult with me on this significant issue, a person who has spent more time focused on Wood Turtles on the GWNF than anyone else of whom I am aware. Seems odd, as well as arbitrary and capricious and unreasonable.

I incorporate by reference ALL the material involving Wood Turtles I have submitted to the USFS (my own writings as well as other material such as published literature), on paper, electronically, and on CDs.

My research (as well as other's) dealing with Wood Turtles on the GWNF makes clear that intensive logging results in habitat that the Turtles prefer not to use for many decades (after the first very short-term flush of Blackberries). My radio-tracking data (as well as that of Akre and Ernst 2006) shows they avoid recent logging esh sites.

Neither is it clear that burning the forest will be good for them; see my comments of the 2009 Lee RD Burn Project (incorporated by reference and attached).

Here's what I wrote in response to scoping for this N. Shenandoah proposal:

"Burning of WT habitat should be avoided. According to the map you propose to burn WT sites at Slate Lick. I incorporate by reference my November 2009 appeal of the Lee RD burn project and all the associated material I submitted with it. All the argument, research, and evidence pertaining to the Lee RD burn are relevant here with regard to Wood Turtles as well as Cow Knob and Shenandoah Mountain Salamanders.

If the FS wants to protect Wood Turtles in the project area a good start would be improving the Slate Lick fields by diverting vehicles and camping from the area and restoring some of the area to mesic riparian forest.

In addition to not burning their habitat, the FS should refrain from logging mature and old-age forest in the terrestrial areas around streams that they typically use (i.e., the zone within ca. 300m of the streams). Instead of the wholesale thinning proposed for this zone at parts of the Slate Lick working area (Shoemaker River), my research indicates that small canopy gaps ad benefit the Turtles; by small I mean openings of around 6 mature trees and the associated mid-story per acre. These should be placed where there is already an herbaceous understory so as to avoid the condition illustrated at Fig. 4 of the DS. Ground disturbing activities need to occur when the Turtles are aquatic (November-March).

The Shoemaker River WTs are in a bad way: a well-used paved road is closeby, as are residential and agricultural development and the subsidized predators that go with all this. This population has the greatest proportion of missing limbs of any of the WT sites I have found on the GWNF. I have not visited this area a great deal, but I have seen road killed WTs.

This Slate Lick area population needs all the help we can give them."

The agency apparently will not bring itself to leave endangered Wood Turtles alone, even though the harm can be avoided, but it can instead focus attention and resources on Short Leaf Pine, a species so common that people are encouraged to cut them to the ground and kill them (such as through taxpayer subsidized below-cost timber sales). In fact, the FS intends now to even increase this attention: 158 acres when the project was scoped has now increased to 500 acres. In my scoping comments I communicated my puzzlement over the focusing of funds and energy and forest on this species, now I understand: Short leaf pine "restoration" must be maintained with more make-work projects, i.e., burning. Burn places over and over and over while you slaughter untold numbers of vertebrates and invertebrates who are unfortunate enough to have to "share" this planet with people who don't give a damn about them.

Implementation of this proposal in its current incarnation violates or threatens to violate the NFMA, MUSYA, NEPA, and APA.

The agency's continuing to not fully and fairly deal with the significant issue of impacts to Wood Turtles from this project, as has happened thus far, leaves no recourse but litigation.

The "desire" for extremely sparse canopy conditions in older forests here is not supported by the information in the standard scientific references - Eastern Old Growth: Prospects for Rediscovery and Recovery, edited by Mary Byrd Davis 1996 Island Press, and Ecology and Recovery of Eastern Old-Growth Forests, edited Andrew Barton and William Keeton 2018 Island Press (incorporated by reference) or by examination of remnant old growth in the Central Appalachians. This is not actual restoration of natural conditions.

Nor is the proposed expansive burning regime congruent with the information found in Fire History of the Appalachian Region: A Review and Synthesis by Charles Lafon et al. 2017 USFS GTR SRS-219 (incorporated by reference).

I still cannot understand the "ecological departure" rationale. Where do these numbers and percentages come from and how derived? This remains unintelligible gibberish and is utterly inadequate for reasoned decision-making and meaningful public participation.

I remain concerned about and opposed to significant impacts to Cow Knob Salamanders and Shenandoah Mountain Salamanders. This project could foreseeably harm both.

I remain concerned about and opposed to significant impacts to Virginia Mountain Treasures. Implementation of this project would significantly harm them.

Due to the magnitude of the proposed actions and their attendant effects, and the lack of consideration of alternatives, significant impacts may occur to the Forest and its biota and I would be harmed: an EIS needs to be prepared.

Air pollutants/contaminants/effects of concern include acidification (acidic deposition), nitrogen and sulfur deposition and saturation, changes in nutrient dynamics (e.g., elevated/mobilized aluminum and increased leaching of base cation minerals), heavy metal toxicity, pesticide toxicity, and visual impairment. For instance, at the ecosystem level, deposition/saturation/acid precipitation has been linked to calcium depletion in the Central Appalachians (Adams, M. B. 1999). The GWNF planners must adequately address these issues and concerns and provide for long-term sustainability and productivity and sustained yield. The FS planners must fully and fairly address the direct, indirect, and cumulative impacts of acidic precipitation and deposition upon many taxa, such as trees, herbs, lichens, snails, birds, reptiles, and amphibians. For example, acid deposition that causes a decline of soil calcium on poor soils (soils with poor buffering capacity are found throughout the GWNF) could reduce snail populations (Hotopp, K.P. 2002).

Areas of the Forest (such as James River and Lee RDs) are within or adjacent to ozone (and fine particulate?) "non-attainment areas" (see map in USDA FS 2007 GWNF Draft Comprehensive Evaluation Report at pg. 106). The adjacent Shenandoah National Park is a Class 1 Air area. The EPA's Regional Haze Rule and Air Quality Policy on Wildland and Prescribed Fire are in effect here on the Forest. Forest management activities are also subject to the General Conformity regulations of the Clean Air Act. Activities must not impede a state's progress toward attainment of National Ambient Air Quality Standards. The Forest must make a conformity determination prior to implementing projects affecting air quality within areas designated as nonattainment or maintenance. - DCER-107 [Unless otherwise noted, in this submission the numerals appearing after dashes following quotes or paragraphs signify pages in the 2007 GWNF DCER.]

However, the agency apparently moves ahead with burn projects on the Forest without making conformity determinations; see, e.g., the project file and DM for the 2007 Lee RD burn project, and now this. Such decisions are not compliant with federal law, regulation, policy, guidelines, and/or standards.

Of concern is that the Forest Service burning program proposed here for the GWNF is an enforced artificial regime that can harm natural forest diversity, conditions, and elements.

It is not clear that the site-specific flora and fauna populations and natural communities found in all the expansive areas proposed for burning are in need of artificial fires. It is not clear what are the damaging effects of past artificial fires occurring on these sites. And it is certainly not clear precisely what scientific data and analyses are being used to substantiate the proposed burning at project sites. Are other management methods to "control succession" or alter vegetation more appropriate?

The Forest Service has greatly increased the acreage of "prescribed burning" (intentional fires) on the GWNF. For the nine years 1986-1994, 5,309 acres were burned on the GWNF, an average of 590 acres/year. For the ten years 1995-2004, 39,552 acres were prescribed burned on the Forest, an average of 3,955 acres/year. For the five years 2000-2004, 23,920 acres were burned, an average of 4,784 acres/year. In the two years 2003 and 2004, 14,291 acres were prescribed burned, an average of 7,145 acres/year.

"The emphasis should be to return the Forest to its natural biodiversity . . ." - 104

This is a laudable goal. However, the FS makes clear in the DCER that the desire is to inflict and perpetuate an artificial fire regime upon the Forest. The rationale for this is opaque, questionable, and contains a great many unknowns, all in addition to the potential harms and damage that the DCER does not address. The need to spend tax-dollars on extending and even exacerbating an unnatural historic fire regime is not apparent.

The FS appears irrationally, improperly, or unreasonably intent on using unnatural conditions (i.e., an anthropogenic or culturally augmented regime) as the "baseline" upon which to base goals, objectives, and/or desired conditions.

"Wildland Fire Use is one means to restore and maintain that biodiversity." - 104

This is a positive step. However, WFU needs to be applied in areas of the Forest outside of Wilderness Areas. If this is the case, this is a positive step (see DLRMP at pg. 45).

"By increasing the Forest's prescribed fire objective, the Forest can begin to move towards a Condition Class 2 and eventually condition class 1 where we are within the natural historic range of vegetation and fuel composition as the result of more frequent and lower severity fires. An increase objective on using prescribed fire, particularly in those areas where the current ecosystem condition has departed markedly (Fire Regime Condition Class III) from historic reference conditions (FRCC I) and where Wildland Urban Interface (WUI) meets National Forest managed lands." - 104-105

Again, the problem is the FS' use of a "natural historic range of vegetation and fuel composition" and "historic reference conditions" that are an artificial baseline that resulted from intense and widespread human alteration of forest conditions ("1730s to 1900s" - DCER).

The Plan guidelines are contradictory and, if followed, would needlessly incur harmful impacts. Streams should not be used as fire barriers as then riparian areas and other conditions (i.e., wetland ecotone areas) that perhaps should not be subjected to fire would be burned. These guidelines also indicate the current common occurrence of burning mesic areas on the Forest instead of Yellow-Pine communities.

"For purposes of this analysis, the amount and distribution of the Yellow-Pine community is most likely to be influenced by . . . absence of fire . . ." (DCER-43)

"More than 85% of the Y-P stands on the GWNF are over 80 years old." - 43 - "no more than 3% has burned over the past 15 years" - 43

If Yellow Pine communities are of concern, then why aren't prescribed burns restricted to or concentrated in these sites?Instead, the FS is burning riparian areas and vast tracts of mesic or dry-mesic hardwoods.

Yet the FS asserts "not enough prescribed fire is occurring Forestwide" - 43

In actuality, the problem is that the burning is NOT "targeted at restoring the yellow pine community". The FS must do this instead of burning moister deciduous habitat used by biota such as woodland salamanders and Wood Turtles.

Prescribed fires are currently NOT confined or limited to fire dependent ecosystems on the GWNF. The FS commonly sets fires in mesic hardwood sites. The FS has not been following/implementing their purported priority.

The treatment meted out to the Cow Knob Salamander serves as an example to be avoided. According to the 1994 CKS "Conservation Assessment - Management Measures": "The Cow Knob salamander must be actively protected against taking and killing by humans, except for specified scientific purposes. . . . fires occur predominantly on drier sites where the Cow Knob salamander is absent. Therefore, controlled burns on dry sites supporting rare plants and unique natural communities appear to be compatible with salamander conservation."

However, the 2007/2009 proposed burns on the Lee RD, the 2010 proposed burns on the North River RD, and now this project were/are not confined to drier sites with rare plants. Mesic sites, including drainages, north slopes, and riparian areas, and sites with ground cover used by salamanders are proposed for burning (see maps). The 2010 NRRD burns are even proposed within the Shenandoah Crest SIA, so CKSalamanders may obviously be present; this "extraordinary circumstance" was ignored by the RD planners (see DM). The decisions (DMs for "categorical exclusions") were not consistent with the 1994 Conservation Assessment for the CKS (see Mitchell, J. 1994).

In addition, at present sites with salamanders and other sensitive taxa may be routinely subjected to intense ground disturbance by fabrication of fire control lines with dozers. Such construction may directly kill salamanders, destroy habitat, create additional habitat fragmentation, increase forest edge, facilitate invasive species, and provide for illegal motorized access and attendant harms (e.g., poaching).

This is no way to treat rare and vulnerable creatures.

Many of the concerns and issues expressed elsewhere in this paper for logging apply as well to burning of habitat (e.g., microclimate alteration). Just as with logging, prescribed burning operations may significantly harm biota and/or ecosystems directly, indirectly, and/or cumulatively. As does intensive logging, burning alters the microclimate of the forest floor and alters microhabitat conditions (localized structural and compositional attributes). It serves to simplify niche complexity by removing woody and leafy material from the forest floor. Cover and food used by species such as the Wood Turtle can be destroyed, diminished, or altered.

And of course wildlife themselves may be incinerated. For example, at sites previously burned on the GWNF Wood Turtles and Box Turtles have been encountered which had rekeratinized shell mutilations suggestive of long-term recovery from burns caused by fire (S. Krichbaum, pers. obs.; Akre and Ernst 2006 observed similar damage). Of concern are the impacts to the viability of local populations of these species and other slow/small/vulnerable fauna as a result of intentional burns.

A chief rationale for much of the current and proposed burning is to reduce so-called "hazardous fuels". Much of what is commonly referred to as "fuels", forest ecologists know as woody debris. This material is the dead wood and trees that are essential for and characterize healthy forests. "Fuel" also includes the forest floor litter and humus.All this material is also commonly known as "food', "cover", or "habitat" for a wide variety of organisms including vascular and nonvascular plants, invertebrates, vertebrates, bacteria, protists, and fungi (McMinn, J.W. and D.A. Crossley 1996). It is an integral part of the compositional, structural, and functional diversity of healthy forests. Fires consume woody debris (Van Lear, D.H. 1996). Litter amounts can also be significantly lower in burned plots (Waldrop, T.A. et al. 2007, Greenberg, C.H. and T.A. Waldrop 2008, and Elliot, K.J. et al. 2004).

Diminishment, removal, or absence of woody debris, litter, and humus has a dramatic impact on organisms that depend on them for food and shelter, as well as their predators (see McMinn, J.W., and D.A. Crossley 1996). In addition, woody debris contributes to soil fertility and increases moisture retention capacity throughout decomposition. Moisture retaining logs also serve as fire breaks as well as shelter for wildlife should a fire occur.

Burning can make sites hotter, drier and more open and exposed (to sun, wind, and predators). The decay process generally tends to mesify microsites, while fire tends to xerify microsites (Van Lear, D.H. 1996). Burns dry out the very conditions upon which the Forest Service has claimed that species such as Wood Turtles depend. Soil moisture is an important abiotic factor affecting the local diversity of soil fauna, such as snails (Martin, K. and M. Sommer 2004).

The incineration of forest material (viz., woody debris, litter, humus) not only directly destroys many small creatures, but also significantly alters the site quality for a great many other species, such as Wood Turtles and

salamanders. For instance, fire can have a negative impact on important components of habitat, such as leaf litter, thus degrading mesic micro-habitats (Ford, W.M. et al. 1999).

Invertebrates that live in the forest floor litter, topsoil, and "fuels", such as snails, slugs, millipedes, worms, and arthropods, are a significant component of forest diversity (see, e.g., McMinn, J.W. and D.A. Crossley 1996). Snail assemblages and densities are positively correlated with litter composition and depth (Martin and Sommer 2004). Litter-related habitat characteristics also influence the composition of other soil faunal groups in forests, such as earthworms and carabid beetles (id.). "[P]lots in which salamanders were captured, harbored significantly higher numbers of snails than plots in which salamanders were not captured." (Harper, C.A. and D.C. Guynn 1999)

The concern is about significant impacts resulting from the burns to the viability and distribution of species/populations/communities with limited mobility (see, e.g., Santos, X. et al. 2009 regarding negative effects to mollusks). Past experience with burns on the National Forest indicates that a managerial criterion of success for a burn is when a substantial proportion of the duff and leaf litter are incinerated. How long does it take litter/duff/soil populations to recuperate, reinvade, reestablish, and/or recover after they are suppressed by fire? Does burning on short time periods (e.g., 5 years or 15 years or 25 years or more) allow them enough time to recover? Are their populations being chronically suppressed due to an accumulation of impacts over time?

Prescribed fires on the Forest are often implemented through ignitions around the perimeter of the burn area. And on top of these multiple ignitions, the interiors of burn sites are also ignited. See, e.g., 2007 Lee RD burn project DM-10: "Boundaries of the area may be ignited with drip-torches followed by strips through the interior to complete burning out the area." Small and/or slow moving animals have negligible chances to escape when thus surrounded, and even large and/or swift movers can become confused and trapped by a wall of flames that is seemingly in every direction.

Perimeter and/or interior burns kill wildlife of public interest. The ethical underpinnings for intentionally incinerating sentient beings for any reason are certainly questionable. But it is particularly heinous when the incineration is done in such a manner that could not be worse if calculated or that could be avoided or that is unnecessary or that is done simply to achieve some floristic composition that somebody deems desirable.

This is a significant issue, as well as an issue of controversy. Yet the agency planners failed to address it in the slightest. What is the agency's rationale for concentrating on some variable floristic composition pre- and post-burn, but showing no apparent concern or consideration for the killing of numerous animals during the fire? This is an ethical issue with on-the-ground ramifications. It is also an issue involving important values held by the public. This concern with controversial and uncertain aspects must be fully and fairly evaluated. See Strohmaier, D.J. 2000.

Burning can promote the spread of invasive plant species (Glasgow, L.S. and G.R. Matlack 2007b). On the GWNF in Virginia, sites that have been burned repeatedly are overrun with invasives (pers. obs. Krichbaum, S. 2007; see, e.g., areas adjacent to the Shenandoah River on the Lee RD).

From 2009 Lee RD proposed burn comments:

"Wood Turtle

Places that are proposed for burning may harbor Wood Turtles (Glyptemys insculpta). They could easily be killed or harmed by incineration.

Have thorough surveys for this species been performed at the project sites? This is a necessity prior to decision making.

Much has been brought much to the FS's attention about the plight of this species. Mitigation measures to avoid "take" must be implemented. See the material attached on the CDs previously sent by US Postal Service mail in 2007. This information regarding the Wood Turtle is germane to this proposal and is incorporated by reference into this comment. I incorporate by reference all the materials I previously sent to the Forest Service during comment and appeal periods when this burn project was originally proposed in 2007. I also incorporate by reference all the materials previously sent to the FS with Wild Virginia comments and appeals for the Paddy, Sandy, and Maybe timber sales and the proposed Paddy SIA - B. The agency is already in possession of all these documents and photos and there is no good reason to waste paper and energy submitting them again.

Wood Turtles cannot run or fly away from harm. Populations of this species are extremely sensitive to the human-caused loss of any individuals. As populations of this species are small in number and very localized, site-specific management actions that directly result in mortality, or that disturb habitat causing indirect mortality or impeding interactions of reproductive individuals, or that deteriorate habitat quality can significantly impact the viability and/or distribution of the Turtles on this Forest.

I am concerned about the proposals to burn the riparian flats at the South Fork Shenandoah River; the Turtle may reside here.

It is not clear that burning improves habitat for this species; in fact, it is more apparent that it is just the opposite. They live close to the ground, so are not browsers like Deer, and prefer relatively more mesic conditions. Burning can destroy or reduce the herbaceous plants, fungi (mushrooms), and invertebrates (e.g., slugs) they feed upon. Burning can destroy dead material (litter, humus, CWD) important for supplying and maintaining floral/faunal food items. Burning can make conditions more xeric. Burning can destroy dead material (litter, humus, CWD) and living plants the Turtles rely on for cover from predators. Human-subsidized predators (e.g., raccoons, skunks, opossums) are one of the most serious problems Wood Turtles have to deal with. Because of their habits and habitats, benefits and harms to the Turtles may be similar to those for woodland salamanders. Implementation of burning has the potential to directly and/or indirectly harm the Turtles and/or their habitat. I see few if any benefits from such an action; at the least there is significant uncertainty as to the effects of burning to Turtles and their habitat.

Cumulative impacts to the Turtle's viability on the Forest are a particular concern as this is not the only place the Forest Service is (or proposing to) degrading or destroying or fragmenting suitable habitat, and perhaps directly killing Turtles; other examples are the recent Maybe, Sours Supin, Slate, Sandy, Great Little, Paddy, and Laurel Road timber sales.

Cumulative impacts are also accruing from the recent proposals to burn at Turner Run (Turner Run area), Slate Lick Branch and Buck Lick Run (Slate Lick Ridge and Slate Lick Fields areas), and Hogpen Run (Hogpen area) on the Dry River RD and the Waterfall Mtn. (with Duncan Hollow) and Falls Ridge (with Laurel Run) burns on the Lee RD.

Cumulative impacts from the roads on the Forest and their associated traffic are also a concern.

The cumulative impacts to Wood Turtles (from FS activities as well as other actions/affects) must be fully and fairly considered, analysed, and disclosed for this project.

The chronic suppression or diminishment of habitat conditions or Turtle food/prey is of significant concern given the foreseeable actions of the project areas being "periodically reburned" on a short rotation "or an ongoing basis".

The Forest Service has simply not been implementing reasonable and prudent measures to protect Wood Turtles

on the GWNF. Implementation of this project may significantly harm the Turtle's viability on the planning area (directly, indirectly, and/or cumulatively).

When (date/time of year) was that fire? Was it when the Turtles were terrestrially active? If so, how many Turtles were injured by it? How serious were the injuries? How many lost their lives due to the fire? How many living Turtles inhabited the area before the fire? How many living Turtles inhabited the area afterwards? One month later?

I am concerned about the significant uncertainty involving basic demographic and monitoring information on the Wood Turtle populations on the Forest and at this specific site. Relevant population and monitoring data are lacking or absent. There is also significant controversy as to the impacts and desirability of intentionally burning Wood Turtle habitat and populations.

Wood Turtles are significant components of the Forest's diversity and communities (NFMA). Does the Forest Service have the most basic baseline population/demographic/distribution information about the Turtles here? Does the Forest Service have the most basic monitoring information about the Turtles here? Particularly before and after the last "prescribed burn"?

"[W]ood turtles may still be inadvertently killed" (scoping letter at pg. 9). This may significantly affect population viability and/or distribution on the Forest.

At least the FS should not burn within 300 meters of Shenandoah River. This will serve to protect the core of the Turtles' habitat and provide a buffer for this core.

If this is not done, then due to the potential for significant impacts to a "very rare and imperiled" species an EIS should be prepared.

The use of Shenandoah River as a "control line" (see scoping letter map) is a particularly pernicious proposal. Riparian habitat is particularly important for a host of creatures, including Wood Turtles. Setting fire to this area will make conditions hotter and drier. Cover material will be burned up. Conditions will be significantly degraded for a great many organisms of fauna and flora.

What monitoring has been done before the previous prescribed burn here and afterwards to document affects to Wood Turtles, salamanders, other reptiles and amphibians, invertebrates, and herbaceous flora? How did past burning alter and degrade habitat for Wood Turtles?

Streamside buffers need to be expansive, so as to not only protect the core riparian habitat but also to buffer this habitat. See above discussion on Wood Turtles as well as Crawford, J.A. and R.D. Semlitsch. 2007. Estimation of core terrestrial habitat for stream-breeding salamanders and delineation of riparian buffers for protection of biodiversity. Conservation Biology 21(1): 152-158; and Semlitsch, R.D. et al. 2007. Salamander abundance along road edges and within abandoned logging roads in Appalachian forests. Conservation Biology 21(1): 159-167.

Research studies do not indicate that burning is good for Wood Turtles in this area; there are studies and my own observations that indicate just the opposite. Prescribed burning may directly and/or indirectly cause them substantial harm. They seem to prefer more mesic conditions and lots of CWD, similar as with woodland salamanders. Burning could easily degrade or destroy conditions beneficial to the Turtles here. They should be managed similar to salamanders and Brook Trout. Burning of their habitat is not considered beneficial to salamanders. The fabrication of browse and forage (such as benefiting Deer) is not what the Turtles need here.

In my 2007 Appeal I wrote:

"Wood Turtles (Glyptemys insculpta) are perhaps the most valuable legally traded native species of turtle in the country (see Reed & Gibbons and Ernst 2001, attached). Their monetary value, in addition to their desirability as pets, makes them very vulnerable to collection. The agency, through promulgation of the public decision document (DM) containing explicit reference to Wood Turtles, has broadcast the location of a species highly vulnerable to illegal collection. The agency states: "Currently the greatest threats to wood turtles are habitat destruction and overcollecting." (DM-9)

"This reprehensible action is an abuse of discretion (APA) and a clear abuse of the "public trust". It would not take much for an unscrupulous actor to read between the lines and figure out the precise location where the Turtles reside. There was no reference to the Turtle in the scoping letter. Subsequent to scoping and prior to the decision the agency could very easily have withdrawn the area in question from the proposal. They did not and instead the sensitive location information was released to the public. This is not the first time such behavior has occurred on this Forest; for instance, see the Paddy timber sale EA. In addition, a member of the public at the Woodstock public meeting organized by the Forest Service in March 2007 stated he called the Lee Rd office to ask about a temporary road closure and was told by them it was due to the Turtle. The attendant cumulative affects of these harmful disclosures are not addressed by the agency.

"This action could easily lead to removal of reproductive adult Turtles from the population, thus causing permanent impairment of the productivity of Wood Turtles at this site and/or significant harm to their sustained yield. The cumulative effects could easily be significant. The decision violates or threatens to violate NFMA and MUSYA."

Now again you have broadcast location information to the public (scoping letter page 9).

Why do you persist in doing this?"

Thank you for your consideration. Please do not hesitate to contact me.

Sincerely,

Steven Krichbaum