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Comments: May 11, 2022

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RE: Mr. and Mrs. Peter and Elaine Faletra's joint comments on the Tarleton Integrated Resource Project (IRP), submitted via certified U.S. mail and electronically via https://cara.fs2c.usda.gov/Public//CommentInput?Project=56394

Attention District Ranger Brown:

These comments are submitted on behalf of Dr. Peter Faletra (lead objector/commentor) and Mrs. Elaine Faletra, who reside full-time in Warren NH 03279, on the U.S. Forest Service's ("Forest Service" or "Service") April 2022 revised Draft Environmental Assessment ("DEA") for the Tarleton Integrated Resource Project #56394 (the "Project" or "Tarleton IRP") located in the White Mountain National Forest in the Pemigewasset Ranger District.

Peter and Elaine Faletra submit these comments via certified U.S. mail and electronically. The certified mail copy includes a flash drive containing electronic copies of all of the exhibits cited below in these comments. Those exhibits (citations referred to in the comments) are too large to submit along with the electronic version of these comments. A list of those exhibits/references is included at the end of this comment.

These pdf's are listed by author's last name first as they are also listed in the text of this comment for your convenience. If you have trouble accessing any of the documents, please let me know. Please refer ONLY to these 16 .pdf files. Hyperlinks to the articles are not incorporated because many of them are subscription based.

We strongly support selection and implementation of the "No Action" alternative in the White Mountain National Forest (WMNF) Pemigewasset Ranger District's revised Environmental Assessment. We suggest you pursue a Forest Plan Amendment to re-classify the Lake Tarleton/Wauchipauka Pond/Webster Slide complex as a 'Scenic Area.'

As detailed below, in order to comply with the National Environmental Policy Act ("NEPA"), the National Forest Management Act ("NFMA"), and the Endangered Species Act ("ESA"), an Environmental Impact Statement ("EIS") is required for the proposed project. The Forest Service (FS) erred when it initially completed only a draft Environmental Assessment ("EA") for the Project in July of 2021 ("2021 DEA") and again in April of 2022 ("2022 DEA"), along with each EA's Finding of No Significant Impact ("FONSI"). The environmental harms of the Project are significant, or at the very least uncertain, because of the unique nature of the land involved, the intensity of potential impacts, the lack of scientific evidence to support many of their claims, the recent proposal by the U.S. Fish and Wildlife Service ("USFWS") to classify the Northern Long-eared Bat as endangered under the ESA, and the 2022 DEA's failure to adequately analyze Project impacts in sufficient detail, among other things. To comply with its statutory and regulatory obligations, the Forest Service must complete an EIS for the Project, or at the

very least complete supplemental NEPA analysis, including necessary public outreach and another public comment period, to correct the deficiencies identified in these comments below. Peter and Elaine Faletra emphasize the need for the Forest Service to carefully review and address these issues because despite the Service having had the benefit of obtaining numerous comments from the public during the prior scoping and 2021 DEA comment periods, comments raising a number of public concerns have so far gone unacknowledged and unaddressed.

The Tarleton IRP is a major federal action that is likely to significantly affect the human environment and harm New Hampshire's treasured Lake Tarleton area within the White Mountain National Forest, an area that, as described in detail below, the public fought to protect from harmful projects such as this. NEPA requires that before undertaking such a project, the Forest Service must gather sufficient information to make an informed decision, and provides for public involvement in this decision-making process. Nevertheless, the Forest Service's 2022 DEA failed to provide adequate analysis of the impacts of the Project, and sometimes, as pointed out in our comments below especially regarding the Deficiencies 2, 3 and 4, failed to provide any analysis at all for certain impacted resources. This failure not only violated NEPA's requirement that agencies take a "hard look" at environmental impacts, but also made it impossible for the public to fully and meaningfully participate in the public review process because the document was not written in plain language so that decision makers and the public could readily understand potential impacts.

The Forest Service is required to prepare an EIS for the Project because, in light of the deficient 2022 DEA, the environmental impacts of the Project are at the very least uncertain, demanding an EIS. The Service's deficient analysis aside, it is clear that the project will result in significant impacts, thus triggering the need to evaluate these impacts in an EIS. In the 2022 DEA the Forest Service failed to establish a baseline for numerous resources, explain impacts to those resources, establish consistency with relevant standards, values, and desired future conditions, and explain how it will avoid impacts to project area resources. Without these required analyses, the Forest Service cannot conclude that the impacts of the Project are certainly not significant. The Forest Service has thus failed to explain how the facts found in the record justify its conclusion that no significant impacts will result from the Project.

The FS made minimal changes that amount to largely ignoring comments raised in the proposed Lake Tarleton Project and its analysis in the 2022 DEA in response to certain issues identified in 2020 comments and 2020/2021 objections from the public. In particular, this comment addresses 4 major deficiencies in the 2022 DEA: 1) the disregard of enjoyment by the public of the lake and its surrounding forest, 2) the lack of scientific evidence that the Forest Service's efforts will improve the biodiversity of the treatment areas or the non-treated areas, 3) the environmental damage posed by the logging especially in the watershed of Lake Tarleton; the Forest Service's not using the most recent science and its bias of pro-timber industry practices to assess possible environmental impacts from its "treatments", and 4) the lack of a thorough review and plan for minimizing damage to cultural/historical remains of the homesteads and graveyards.

We were surprised that the 2022 DEA largely ignored the wishes of the public and made changes that are minimal at best and do not come close to a middle ground for ensuring that the public continues to enjoy Lake Tarleton and its adjacent forest. The proposed action in the Reissued 2022 DEA still suffers from major flaws and is based in large part on outdated science and ignores the reasons for which the area was saved from development about two decades ago. We contend the Forest Service should not re-issue its Environmental Assessment for this project at all, given the extensive concerns raised in previous comments and public objections. This 2022 DEA appears to include very limited substantive changes to improve the 2020 draft decision. They merely add verbiage in an effort to bolster the Forest Service's prior decision and assumptions that are not only largely based on outdated science, but also do not fully address environmental issues in clarity, depth, or with sufficient scientific records to support their general statement that the proposed project would have "no substantial environmental impact" and will not need an environmental impact assessment and a subsequent EIA report.

The Lake Tarleton Project authorizes various actions such as clearcutting, patch cutting, herbicide applications, and hand treatments on up to 880 acres largely on the east side of Lake Tarleton that constitutes the lake's main watershed. The Forest Service states the Lake Tarleton Project is needed to restore wildlife habitat with insufficient science evidence to support their position. Authorization and implementation of individual treatments, including the actual locations and site-specific details about impacts, would be guided by an adaptive implementation and monitoring framework, but those decisions will receive no future site-specific NEPA analysis.

In this comment, although the Forest Service (FS) has made many decisions based largely on economics and much less so on widely accepted recent scientific studies, I will restrict my comments on the following issues that the Forest Service should address:

Deficiency 1) The disregard of enjoyment by the public of the lake and its surrounding forest:

*Why has the forest service ignored the wish of the people who often use the trail around the watershed side of Lake Tarleton (LT) to not log within a reasonable distance (at least 300 feet) so that hikers and campers can enjoy an undisturbed forest? The trail and camping areas are often within the 100-foot buffer from the shoreline proposed by the 2022 DEA. The proposed logging will drastically degrade the pastoral beauty, boreal feel shaded by evergreens along the shoreline, and the major reason that hikers enjoy the lake's immediate forested areas.

Deficiency 2) Lack of scientific evidence that the Forest Service's efforts will improve the biodiversity of the treatment areas or the non-treated areas:

*What specific science supports the Forest Service position that their "treatments" will improve biodiversity and support wildlife better than if the forest was left undisturbed. This seems grossly at odds with the extant bulk of peer reviewed scientific studies (Karp et. al in 2012; Lutz et. al. 2018).

*"Forests managed for timber have an important role to play in conserving global biodiversity." as stated by Chaudhary, A., Burivalova, Z., Koh, L. et al. Impact of Forest Management on Species Richness: Global Meta-Analysis and Economic Trade-Offs. Sci Rep 6, 23954 (2016). https://doi.org/10.1038/srep23954. As they further state, "We evaluated the most common timber production systems worldwide in terms of their impact on local species richness by conducting a categorical meta-analysis. We reviewed 287 published studies containing 1008 comparisons of species richness in managed and unmanaged forests and derived management, taxon and continent specific effect sizes. We show that in terms of local species richness loss, forest management types can be ranked, from best to worse, as follows: selection and retention systems, reduced impact logging, conventional selective logging, clear-cutting, agroforestry, timber plantations, fuelwood plantations. Next, we calculated the economic profitability in terms of the net present value of timber harvesting from 10 hypothetical wood-producing Forest Management Units (FMU) from around the globe. The ranking of management types is altered when the species loss per unit profit generated from the FMU is considered. This is due to differences in yield, timber species prices, rotation cycle length and production costs. We thus conclude that it would be erroneous to dismiss or prioritize timber production regimes, based solely on their ranking of alpha diversity impacts. Clear-cut (temperate and boreal). Clear-cutting is historically the most common example of even-aged silviculture practice in temperate and boreal biomes. It is technically easy to execute, as the entire stand over-story is removed in one harvest. Clear-cutting has been criticized for simplifying forest structure and reducing biological diversity, leading to homogeneous forests (but see Greenberg et al. for exceptions, where clear-cutting is found to mimic high intensity natural disturbance regimes). Many countries are now abandoning this practice. The reduction of clear-cut areas is also a part of regulations and standards under many forest certification schemes. We only consider clear-cutting of natural managed forests, rather than of plantations, and without any additional interventions. Selection systems (temperate and boreal). Selection system is a silvicultural program aimed to maintain uneven-aged stands and is applied as an alternative to clear-cutting. It is designed to remove

individual mature trees (single-tree selection), groups of mature trees (group-selection), or a combination of the two to create small openings scattered throughout the stand. This results in heterogeneous stand structures, which are assumed to be less damaging to forest biodiversity than traditional clear-cuts. Selection systems place unique emphasis on maintaining species and structural diversity and regard such non-commodity values as a necessary foundation to achieve sustainable provision of timber and other ecosystem services. We compiled 1008 species richness comparisons of managed and unmanaged forests from a total of 287 studies, and used these in an unweighted meta-analysis (see Supplementary spreadsheet online for raw data). The over- all effect size showed that forest management leads to a 29% reduction in species richness (95% CI = 26 to 32%; Supplementary Table S1)." This last sentence is revealing and at direct odds with the biodiversity arguments of the FS.

*As Durall et. al. reported in a 2006 report in the Canadian Journal of Botany (Canadian Journal of Botany, 31 July 2006, 'Effects of Clearcut Logging and Tree Species Composition on the Diversity and Community Composition of Epigeous Fruit Bodies Formed by Ectomycorrhizal Fungi' https://doi.org/10.1139/b06-045, "Our results indicate that clearcutting has a profound effect on abundance and composition of ectomycorrhizal fungi. Again, the current and developing recent science is contradictory to what the FS says when they suggest their logging will have no significant effects on the forest environment. This is further contradicted by Zhang et. al. 2016 who showed significant changes in soil bacteria following clearcutting.

*Regarding a common FS opinion that argues for the need for early successional forests to provide biodiversity, as stated above, there is little science behind the notion that the FS "treatments" provide early successional habitats that mimic the natural occurrence and greater biodiversity supported by natural events that create early successional forests. If the FS has sound and widely-accepted current scientific evidence to the contrary, we request they provide that evidence with the detailed data to support the need in the local region of LT. The FS should be able to provide, with extensive non-industry funded unbiased scientific peer-reviewed investigations, clear evidence that early successional forests are needed on the scale they are annually being generated in the WMNF. The FS should be honest and admit that it is putting the timber industry's demand for raw logs ahead of environmental issues and sound modern ecological science.

*The FS states that, "The existing Lake Tarleton permanent wildlife opening would continue to be managed as a single 30-acre opening instead of three openings totaling 49 acres. In addition, the two-acre apple orchard proposed as a permanent wildlife opening would remain forested and the existing apple trees would eventually die as the canopy closes above them." We have visited the named apple orchard and found that over 70% of the apple trees are either diseased or dying, and unlikely to produce many apples. The canopy has not been maintained for over 100 years and has not yet closed in while most of the trees are past their productive ages. Has the forest service assessed the fruit productivity of the orchard and how many wildlife it may support? If so, how many bushels might it produce per year, and how many and what type of wildlife would it support? The forest service states that, "In all, there would be 21 fewer acres of permanent wildlife openings in the project area if no action was taken." This is confusing since the word permanent has little meaning to the life-time of a forest. What portion of the White Mountain National forest would naturally be wildlife openings? This is at odds with the basic nature of a New England forest. How is this balanced with the extensive wildlife openings on private lands including those that immediately border the proposed project area, including the power line corridor? We computed the area that the powerline that abuts the 2022 DEA area and with an
average width of at least 320 feet, the powerline offers about 180 acres of early successional forest.

As stated by Karp et. al in 2012, (Ecology Letters, (2012) doi: 10.1111/j.1461-0248.2012.01815.x Intensive agriculture erodes b- at large scales Daniel S. Karp,* Andrew J. Rominger, Jim Zook, Jai Ranganathan, Paul R. Ehrlich and Gretchen C. Daily), "Why does human disruption of ecosystems often result in a "apparent" species diversity increase? Altered turnover rates explain why the effect of intensification on b-diversity increased with spatial scale. It is not intuitive, however, why bird communities in high-intensity agriculture should ever have higher b-diversity than bird communities in forest or low-intensity agriculture. One explanation is that because

overall bird biomass declines in high-intensity agriculture (Kruskal-Wallis: v2= 7.89; d. f. = 2.41; P = 0.019; Fig. S5a), fewer species can occupy any given location. We hypothesized that if many species have the potential to occupy high-intensity agriculture, but the number of species occupying any given site is constrained, then sites may exhibit more differences in their species compositions as a sampling effect. In other words, a sampling effect may arise as a product of randomly drawing only a few species from a larger species pool that has the ability to occupy high-intensity agriculture. Furthermore, on average, 50% of the live tree biomass carbon in all types of forests globally is stored in the largest 1% of trees, but the value for the United States is lower, ?30% in the largest 1% of trees due to widespread historical logging of large trees (Lutz, J. A., Furniss, T. J., Johnson, D. J., Davies, S. J., Allen, D., Alonso, A., et al. (2018). Global importance of large-diameter trees. Glob. Ecol. Biogeogr. 27, 849-864. doi: 10.1111/geb.12747)."

This publication and its conclusion clearly show a fundamental weakness in the FS's arguments for providing early successional forests as part of their forest plan. The publication points to a common issue in science when collecting and analyzing data (Brown et. al., March 12, 2018, 115 (11) 2563-2570, 'Issues with Data and Analyses: Errors, Underlying Themes, and Potential Solutions' https://doi.org/10.1073/pnas.1708279115) and suggests that the FS has fallen into a common error in data analysis. That the position of the FS is not in agreement with current science is also supported by Ives et. al. 2017.

Deficiency 3) The environmental damage posed by the logging especially in the watershed of Lake Tarleton; the Forest Service's not using the most recent science and its bias of pro-timber industry practices to assess possible environmental impacts from its "treatments".

Has the Forest Service done a 3-dimensional assessment of the riparian areas, especially those in the water shed that feeds the large fen above Lake Tarleton that summarily feeds Eastman brook and hence LT? Since riparian ecology study was essentially established in 1982 by Swanson et. al. (Swanson, Frederick & Gregory, Stanley & Sedell, J & Campbell, A. (1982). Chapter 9: Land-Water Interactions: The Riparian Zone. Analysis of Coniferous Forest Ecosystems in The Western United States), how are their forest plans updated to meet this incipient branch of ecological science, and to what extent can they show they are thoroughly aware of this science and its implications for their "treatments" of the Lake Tarleton watershed? In my search of the Forest Service website, I saw no clarity on how the Forest Service would execute a science-based 3-D assessment of the riparian areas, or clearly delineate what the extent, in location and size, those areas will be. Has the Forest Service thoroughly assessed the impact their "treatments" in the Lake Tarleton watershed will have of the possibility of cyanobacteria species spilling into the fen and then into Eastman Brook. They make no mention of recent findings of a worldwide study of oligotrophic lakes support of nitrogen-fixing cyanobacteria. Specifically, what assessment has the FS done to evaluate the risk Dolichospermum lemmermannii (previously planktonic Anabaena) and similar nitrogen fixing species that are expanding because of global climate change? What assessment has the FS done on the risks of increased temperature in clear cut areas in the LT watershed since it is well-established that, "temperature plays an important role also in the onset of Nostocales akinetes germination in spring and in their growth in summer when they form huge blooms during stratified conditions and calm weather" [Article Source: Lake Level Fluctuations Boost Toxic Cyanobacterial "Oligotrophic Blooms" Callieri C, Bertoni R, Contesini M, Bertoni F (2014) Lake Level Fluctuations Boost Toxic Cyanobacterial "Oligotrophic Blooms". PLOS ONE 9(10): e109526. https://doi.org/10.1371/journal.pone.0109526). Has the FS assessed the risk of a cyanobacterial bloom in LT that has been recently substantiated as an increased risk because of global climate change and proposed clear cutting in the LT watershed: See: Rein, Kaitlin L. et. al. Cyanobacterial Blooms in Oligotrophic Lakes: Shifting the High-Nutrient Paradigm, Freshwater Biology, Wiley 2021. See also: Carey, Cayelan C. et. al. Aquatic Ecololgy (2012) 46:395-409, Occurrence and toxicity of the Cyanobacterium Gloeotrichia echinulata in Low-nutrient Lakes in the Northeastern United States.

*Has the Forest Service consulted with the NH Division of Environmental Services to find if they have evidence that logging near lakes increases the risk for cyanobacterial blooms, especially in light of the recent findings of nitrogen fixing cyanobacteria? Has the FS consulted directly with NH DES for a risk analysis of cyanobacterial

blooms at Lake Tarleton?

*Since the Forest Service mentioned they are considering global climate change factors, how will they incorporate the above findings as well as the recent findings that large trees that often make up about 1% of a forest store a large amount of carbon and are a far better carbon sink than young forests?

*We would like the uncontroversial scientific evidence for the 2022 DEA section that seems to be a statement of unreserved certainty in the "Consequences of No Action" as stated by the Forest Service in the 2022 DEA that has little basis in science (and they give none). The Forest Service further states that "Should the project not be implemented, natural successional processes would continue in the Lake Tarleton HMU. All forested stands would continue to mature and crowded stands would continue to grow at slow rates. In the absence of a substantial disturbance, understory shade would delay, suppress, and restrict regeneration to shade tolerant species. The FS also states, "Mortality of white ash, aspen, and paper birch would continue as trees age and seed sources would be eventually lost. Beech, sugar maple, hemlock, and red spruce would progressively dominate the overstory though some would prematurely succumb to disease and die. White ash, white pine, black cherry, and red oak may have an opportunity to germinate, establish, and potentially release in small groups as overstory trees age or fall from small scale disturbance. Gaps created by fallen trees would quickly close as adjacent overstory trees take advantage of available light and growing space making establishment unlikely and infrequent. Young regenerating stands would not establish and over time the landscape would trend toward a homogeneous even-aged structure and species mix."

This above 2022 DEA excerpt seems to be a rambling statement arguing that natural progression of forests requires human intervention to prevent the forest from becoming…a maturing forest. The FS provides no scientific evidence to support this self-serving belief that human intervention is required. If they have clear rigorous scientific evidence, they should provide it. If they are stating that such a progression is almost entirely in the interest of a more profitable forest for the timber industry, they should admit such and not attempt to cloak their argument in the interest of a healthier forest with improved biodiversity. The evidence to the contrary is becoming more evident as the issues of climate change have put a spotlight on the damaging effects of current forestry practices (see below in the article: Popkin, G, "Forest Fight", Science, December 2021, 1184-1189).

The FS further states, "Young forest habitat and upland openings would be created only through natural means, such as windthrow and beaver activity. There would be less young forest habitat overall which would favor wildlife species preferring older forests, likely reducing overall wildlife species diversity in the project area over the long-term." Is the FS arguing that cutting the forest creates an older forest? The current forestry practices of both selective and clear cutting efficiently extirpate the largest most profitable trees for their timber, leaving a forest that has little resemblance of a mature forest. The FS seems to be arguing for old growth forests… if less young forest habitat favors wildlife preferring older forests of the need for old growth by some species…makes a good argument that by leaving no chance for old growth is more of an environmental need than that of young forest areas, which we point out in a later comment are neither as preferable as natural opening nor as necessary as the FS supposes since there are so many in adjoining private lands. We would like the FS to provide an explanation of how their current forest plan would provide mature forest for wildlife that is not based on old forestry beliefs. The Forest Service also interjects the controversial belief of early successional forest supporting biodiversity suggesting it is better than natural early succession events such as windthrow. We address why this is scientifically unfounded below.

In a recent November 2020 publication by Mildrexler et. al, "Large-diameter trees store disproportionally massive amounts of carbon and are a major driver of carbon cycle dynamics in forests worldwide. In the temperate forests of the western United States, proposed changes to Forest Plans would significantly weaken protections for a large portion of trees greater than 53 cm (21 inches) in diameter (herein referred to as "large-diameter trees") across 11.5 million acres (?4.7 million ha) of National Forest lands". This study is among the first to report how carbon storage in large trees and forest ecosystems would be affected by a proposed policy. (Original Research

published: 05 November 2020 doi: 10.3389/ffgc.2020.594274. Large Trees Dominate Carbon Storage in Forests East of the Cascade Crest in the United States Pacific Northwest. David J. Mildrexler1*, Logan T. Berner2, Beverly E. Law3, Richard A. Birdsey4 and William R. Moomaw4,5)

As substantiated by Simard, S. et. al. (NATURE, vol. 388, 7 August 1997, Net Transfer of Carbon Between Ectomycorrhizal Tree Species in the Field) much of what the forest service is using as an argument to improve the forest is outdated environmental science. Addressing their willful ignorance of the importance of mature forests regarding "large trees" is an example. The Forest Service's proposal and argument in intervening to provide better non-shade conditions for some species of trees to thrive is not in agreement with what we know of how large trees can transfer nutrients to smaller trees through fungal communities in the soil (Simard). It is also at odds with how healthy forests mature and support the complex food web and balance in a natural undisturbed forest ecosystem. The FS seems to be arguing that human intervention in a forest is necessary for a healthy forest. There is NO credible scientific evidence to support this anthropic perspective where human intervention in a forest is required for a healthy forest. The preponderance of evidence is quite to the contrary.

To support this point, the December 3, 2021 front cover of Science, one of the most prestigious scientific journals in the world was titled, Forest Death. The featured article (Popkin, G, Forest Fight, 02, December 2021, 1184-1189) presented a dire picture of the forest die-off that is occurring in Germany because climate change in conjunction with forestry practices that are based on outdated forestry practices that are in turn based on outdated science. As Peter Wohlleben, an internationally respected forester and author stated when referring to modern forest management practices that were introduced to the world first in Germany, "it's always better to let nature do the job". In a shift away from over-management of forests, the article points out that in places where trees were destroyed by natural events such as fires, not clearcutting the area and leaving it to naturally regenerate allows for far greater diversity. As West German ecologist Gunter Karste stated in the same article, "as opposed to clearing an area of the forest struck by drought and insects from climate change, what regrows is far more diverse with dead trees providing habitats for owls, bats and other species that roost in dead trees". As Karst stated, research suggests that "when you don't leave the dead trees you lose 40% of the biology". This is also a sound science-based argument against the self-serving argument propounded by the FS in many logging operations proposed in the USA on the need for early successional forests. As for the early successional forest providing habitats, what amount of early successional forests in acres are being created on an annual basis from logging operations in the White Mountain National Forest and what scientific evidence is the FS using to show this is or is not sufficient? Can the FS provide data that integrates private logging practices and power cuts to their acreage goal of early successional habitat in the WMNF?

*As stated in a 2018 scientific article by Lutz et. al. regarding the new evidence for the importance of large trees, "Because large-diameter trees constitute roughly half of the mature forest biomass worldwide, their dynamics and sensitivities to environmental change represent potentially large controls on global forest carbon cycling. We recommend managing forests for conservation of existing large-diameter trees or those that can soon reach large diameters as a simple way to conserve and potentially enhance ecosystem services. We found that the largest 1% of trees constitute 50% of the biomass (and hence, carbon), supporting our hypothesis of their significance, at least in primary forests or older secondary forests. The conservation of large-diameter trees in tropical and temperate forests is therefore imperative to maintain full ecosystem function, as the time necessary for individual trees to develop large sizes could preclude restoration of full ecosystem function for centuries following the loss of the oldest and largest trees (Lindenmayer et al., 2012). That the largest individuals belong to relatively few common species in the temperate zone means that the loss of large-diameter trees could alter forest function - if species that can attain large diameters disappear, forests will feature greatly reduced structural heterogeneity (e.g., Needham et al., 2016), biomass, and carbon storage. In the tropical zones, the larger absolute numbers of species reaching large diameters may buffer those forests against structural changes." Policies to conserve the tree species whose individuals can develop into large, old trees (Lindenmayer et al., 2014) could promote retention of aboveground biomass globally as well as maintenance of other ecosystem functions. Global importance of large-diameter trees James A. Lutz, Tucker J. Furniss, Daniel J. Johnson, Stuart J. Davies, David

Allen, Alfonso Alonso, Kristina J. Anderson-Teixeira, Ana Andrade, Jennifer Baltzer, Kendall M. L. Becker … See all authors First published: 08 May 2018 https://doi.org/10.1111/geb.12747Citations: 176 Main conclusions

*The forest service states that, "Without management action, no improvements to the shoreline or aquatic habitat at Lake Katherine would occur. The lack of a forested buffer along the shoreline would continue to result in increased water temperatures and sedimentation and a lack of recruitment of wood material into the lake. The current conditions would continue to provide poor water quality overall as well as reduced cover for fish and invertebrates, and limited roosting and basking sites for birds, reptiles, and amphibians." What analyses have been done that support this conclusion that, "The current conditions would continue to provide poor water quality overall."? What is poor water quality overall? Has the NH DES reported poor water quality, or are they concerned that the "current conditions" warrant action or more monitoring? Are the dissolved solids unacceptable? Is the oxygen content low? Is there evidence of cyanobacteria? Is the pH unusually low for a lake of this area? Are the nitrogen or phosphorus levels high? What scientific measures have been done that might link any "poor water quality" measures to the need for a forested buffer and what scientific evidence supports their proposed actions as effective remedies?

*The FS states that the current conditions would continue to provide poor water quality overall and continues on to raise concerns about public access and safety, "The unauthorized use of the shoreline at Lake Katherine for launching boats on public lands would likely continue to be an enforcement challenge. Visitor use experience would remain unchanged, and the site would continue to present public safety and resource damage issues (e.g., water quality) due to soil instability and runoff into Lake Katherine." A substantial issue that the FS plans insufficiently addresses is the lack of funding for a lake host and a washing station at the upgraded access that the Forest Service proposes that poses a greater risk to the lake by the increased risk of introduction of invasive species with the concomitant increase in access to the lake from their proposed "improvements". By addressing one putative risk they could likely create a worse risk.

*As stated in a 2012 publication by Gustafsson et. al. titled, "Retention Forestry to Maintain Multifunctional Forests: A World Perspective" (L Gustafsson, et. al. 2012, academic.oup.com) "The majority of the world's forests are used for multiple purposes, which often include the potentially conflicting goals of timber production and biodiversity conservation. A scientifically validated management approach that can reduce such conflicts is retention forestry, an approach modeled on natural processes, which emerged in the last 25 years as an alternative to clearcutting. A portion of the original stand is left unlogged to maintain the continuity of structural and compositional diversity."

oWe propose that the forest service consider this retention forest approach to the lake Tarleton area and recategorize the area in the spirit for what it was intended in 2000, as a "Scenic Area". This would be the first west of Interstate Highway 93.

Deficiency 4) The lack of a thorough review and plan for minimizing damage to cultural/historical remains of the homesteads and graveyards:

*The FS does not appear to have done a thorough search and review of the historical and cultural remains of the many homesteads including grave sites in the 2022 DEA. There is strong consensus by the townspeople of Warren that a Main Graveyard, in addition to the small family Lund graveyard, containing about 75 graves potentially lies near the areas scheduled to fogging. The FS makes no mention in their 2022 DEA.

References:

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*Chaudhary, A., Burivalova, Z., Koh, L. et al. Impact of Forest Management on Species Richness: Global Meta-Analysis and Economic Trade-Offs. Sci Rep 6, 23954 (2016)
*Lutz, J. A., Furniss, T. J., Johnson, D. J., Davies, S. J., Allen, D., Alonso, A., et al. (2018). Global importance of large-diameter trees. Glob. Ecol. Biogeogr. 27, 849-864. doi: 10.1111/geb.12747
Karp, et.al., Ecology Letters, (2012) doi: 10.1111/j.1461-0248.2012.01815.x Intensive agriculture erodes b- at large scales Daniel S. Karp, Andrew J. Rominger, Jim Zook,Jai Ranganathan, Paul R. Ehrlich and Gretchen C. Daily
*[BOOK] Conserving forest biodiversity: a comprehensive multiscaled approach
DB Lindenmayer, JF Franklin - 2002 - books.google.com
*Alfonso Alonso http://orcid.org/0000-0001-6860-8432
Kristina J. Anderson-Teixeira http://orcid.org/0000-0001-8461-9713
*Kendall M. L. Becker http://orcid.org/0000-0002-7083-7012
Simard, David A. Perry†, Melanie D. Jones‡, David D. Myrold§, Daniel M. Durall‡ & Randy Molina. NATURE | VOL 388 | 7 AUGUST 1997 Net transfer of carbon between ectomycorrhizal tree species in the field
*Suzanne W Simard and Daniel M Durall; Canadian Journal of Botany * August 2004 * https://doi.org/10.1139/b04-116
*Daniel M. Durall, Sharmin Gamiet, Suzanne W. Simard, Lenka Kudrna, and Stacey M. Sakakibara Vol. 84 * No. 6 * pp. 966 - 980; Effects of clearcut logging and tree species composition on the diversity and community composition of epigeous fruit bodies formed by ectomycorrhizal fungi
*Brendan Mackey, Dominick A. DellaSala, Cyril Kormos, David Lindenmayer, Noelle Kumpel, Barbara Zimmerman, Sonia Hugh, Virginia Young, Sean Foley, Kriton Arsenis, James E.M. Watson Policy Options for the World's Primary Forests in Multilateral Environmental Agreements
*Gustafsson, L. et al. Retention Forestry to Maintain Multifunctional Forests: A World Perspective. BioScience 62, 633-645 (2012).
Xiao Zhang1, Shirong Liu1,, Xiangzhen Li2, Jingxin Wang3, Qiong Ding4, Hui Wang1, Chao Tian5, Minjie Yao2, Jiaxing An6 and Yongtao Huang1, Changes of soil prokaryotic communities after clear-cutting in a karst forest: evidences for cutting-based disturbance promoting deterministic processes FEMS Microbiology Ecology, 92, 2016, fiw026