

Data Submitted (UTC 11): 12/12/2019 9:00:00 AM

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DEPARTMENT OF AGRICULTURE Forest Service

36 CFR Part 294

RIN 0596-AD37

Special Areas; Roadless Area Conservation; National Forest System Lands in Alaska

AGENCY: Forest Service, USDA.

ACTION: Notice of proposed rulemaking;

request for comment.

SUMMARY: The United States Department of Agriculture (USDA) is proposing to exempt the Tongass National Forest from the 2001 Roadless Area Conservation Rule, which prohibits tree harvest and road construction/reconstruction within inventoried roadless areas with certain limited exceptions. In addition, the proposed rule would provide an administrative procedure for correcting and modifying inventoried roadless area boundaries on the Chugach National Forest. The USDA invites written comments on the proposed rule and the draft environmental impact statement (DEIS). The proposed rule would not directly authorize any ground-disturbing activities. Substantive comments received during the comment period will be considered in developing the final rule and final environmental impact statement (FEIS). The final rule will be published in the Federal Register.

DATES: Comments must be received in writing by December 16, 2019.

I hold a bachelor's degree in Atmospheric and Oceanic Science from University of California, Los Angeles, and I'm currently pursuing an Environmental Engineering master's degree at Stanford University. My education and three years of research experience have trained me in reviewing data and scientific literature, which enable me to critically assess the technical merits of this proposed rule, especially those concerning climate change and carbon management, as discussed in the Draft Environmental Impact Statement (DEIS). In addition, the Environmental Policy Analysis class I took makes me aware of the (lack of) policy merit of the proposed rule, which is sometimes manifested in the framing of questions and/or evaluation criteria.

After reviewing the DEIS, I come to the conclusion that Alternative 1 aligns with the agency's goals the most, instead of the proposed Alternative 6, especially in terms of conserving the roadless area characteristics and supporting local and regional socioeconomic well-being of Southeast Alaska. I will explain my conclusion in this

comment by focusing specifically on the agency's conclusions regarding the climate impact of the preferred alternative. I will also caution the agency with additional literature results and propose the potential use of expert elicitation in projecting the timber market.

At a first glance, only about 2% out of the 9.2 million current designated roadless areas will be exempted in the new proposed rule, which doesn't seem like a concerning ratio. But I'd like to remind the agency that the currently inventoried area is not completely made up of forest-- water body, wetlands, shoreline, and other topography that do not contain trees in the first place also account for the 9.2 million acreage. Subtracting those area will provide a clearer picture of the current vegetation coverage, which is reasonably less than 9.2 million. As the denominator decreases, the ratio will increase. In other words, more than 2% of the current inventoried forest land will be impacted. The language of "2%" is misleading and should be clarified. More importantly, the agency ought to determine the actual ratio of proposed exempt area to the current inventoried area actually covered by trees and assess the consequences of different alternatives based on that.

Another conclusion that seems less valid is the one that states, Alternative 6 "would not result in major sources of GHG emissions relative to local, national and global emissions". While I appreciate that the agency acknowledges the importance of the forest in mitigating climate change and attempts to quantify the impacts, the conclusion is neither insightful nor convincing, because the reference GHG emission, that of local, national and global level, are poorly chosen. The argument against the use of national or global emission as reference point is straightforward. The Tongass way of lives, which has been and continuously to be practiced by Alaska Natives, is characterized by its remoteness and independency. The focus on the spiritual and cultural aspects consequently leads to limited carbon footprint of the area. On the contrary, on the national level, the average carbon footprint is much higher due to the desire for the quality of life, which largely depends on energy. Thus, in comparison, the change of GHG emission decrease due to the decrease in forest coverage will always seem insignificant when compared to the national (or global) level. The comparison with the local GHG emissions also seems not appropriate because the local GHG emission does not seem to include the emission caused by the exported timber, which leads to underestimation of the true value. I would urge the agency to carefully choose the baseline when assessing the GHG emission effect of different alternatives. Personally, it seems the most reasonable to compare the change in GHG emission to the no-action alternative. Better yet, the change in decrease in carbon sequestration should be evaluated, instead of the emission, the reason of which will be explained in the following discussion.

The major difference between Alternative 6 and Alternative 1 is that the ratio of the old growth suitable for harvest will increase significantly (by 72%), which, according to the DEIS, will have minimal adverse impact in carbon management because the volume of harvest timber remains the same. In doing so, the agency essentially assumes that the young growth timber has the same carbon-sequestration capability as do the old growth (at least 100-year-old trees). These following studies based on my literature search argue otherwise. Harmon et al. (1990) concludes that the conversion of old-growth forests to young plantations reduces on-site carbon storage considerably-- even when the wooden-buildings are included as a carbon sink-- and does not approach old-growth storage capacity for at least 200 years. A more recent study conducted by Carey et al. (2001) concludes that old forests are underestimated as global carbon sinks by 4.3 - 7.6%, because previous study simply scaled up the effect of individual trees or even-aged stands and mistakenly deemed the old forests as carbon-neutral. The old growth not only uptakes more carbon itself, it also conditions the soil respiration process via its well-established rooting system and leads to less carbon outflux in comparison to the young growth (Irvine and Law, 2002). For the sake of science, I will point out that a linear increase in carbon sequestration is not always observed with the increase in the age of the tree. Chen et al. (2004), for one, finds out that the mean net daily accumulation in the 20-yr, 40-yr, and 450-yr trees are  $-0.30 \text{ g C m}^{-2} \text{ d}^{-1}$ ,  $-2.76 \text{ g C m}^{-2} \text{ d}^{-1}$ , and  $-0.38 \text{ g C m}^{-2} \text{ d}^{-1}$ , respectively, where the 40-yr tree is capable of absorbing 9 times more carbon than the 20-yr tree can, but the 450-yr tree is not considerably more capable than the 20-yr tree.

These various results should, at least, remind the agency of the heterogeneity in the young growth and the old growth, and motivate further, more in-depth investigation in the carbon inventory of the proposed alternatives. After all, the recovery of a clear-cut old growth tree takes decades and even a century, and in the quickly exacerbating climate crisis, public agencies ought to try their best to avoid any potential loss of carbon sink.

I am under the impression that the biggest benefits of adopting Alternative 6 is the economic gain in the timber industry as loggers have more access to the more profitable old growth wood and bigger flexibility in meeting the market demands. I would argue that the overall economic gain is not as promising as the agency believes. Alaska's economy is more dependent on recreation and tourism, e.g., wildlife viewing and hunting, than on forest products. "Residents and visitors to Southeast Alaska spent \$363 million [hellip] in 2011", which supported around 1,700 direct jobs and "a combined total of \$107 million in labor income" (ECONorthwest 2014). The further fragmentation of the forest, shall the proposed alternative be passed, will lead to the change in vegetation structure, species composition, predation rates, and subsequently, a decline in native species diversity-- the "edge effects" as termed by Murcia et al. (1995). The direct decrease in the quality of "remoteness" and "disturbance", as well as the more subtle impact, the long-term decrease in biodiversity, will ultimately affect tourism industry. Meanwhile, on the other hand, the agency is well aware of the volatile nature of the timber market, implying that the gain in timber industry will vary and be hard to predict. The tradeoff between an inconsistent, short-term increase in one industry and a predictable, long-term decrease in a more prominent industry does not seem wise.

In order to better gauge the economic impact of different alternatives, the agency especially needs to gain more insights into the timber market. This is where expert elicitation could contribute to because it is particularly useful when the subject matter is complicated and can't be captured by physical/ mathematical/ economic models, as is the case of the timber market. Hence, the intuition and judgement of forest product engineers and researchers are valuable and should be integrated in the evaluation process.

Last but not least, I want to share the following information I encountered in my research. Reported by the Essential News for Energy and Environmental Professionals, (<https://www.eenews.net/stories/1061191089>), Catherine Mater, a forest product engineer from Oregon recently completed an inventory of 43 areas within the Tongass Forest and found that "there's enough young growth coming online[hellip] annually for decades [hellip] [which is] more than double the total timber volume the service reported cut there in fiscal 2018", and that all of them were within 800 feet of Forest Service roads and away from steep slopes and other environmentally sensitive areas. If this is the case (the agency should verify this information independently), then the timber industry can still make a profit by strategically switching to young-growth-based forest products and preserving the old growth.

In summary, I support keeping the current Roadless Rule protections intact for the Tongass National Forest. While the exemption from the 2001 Roadless Area Conservation Rule can lead to short-term growth and stability in the timber industry, Alternative 6 is likely to generate effects that eventually contradict the agency's objectives. The fragmentation of the largest intact old-growth forest will have long-term, adverse, and sometimes unpredictable, effects, which is bound to hinder its ability to support a healthy economy and to act as a significant carbon sink.

References:

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- \* Chen, J., Paw U, K., Ustin, S. et al. Net Ecosystem Exchanges of Carbon, Water, and Energy in Young and Old-growth Douglas-Fir Forests. *Ecosystems* 7, 534-544 (2004) doi:10.1007/s10021-004-0143-6
- \* Harmon, M. E., Ferrell, W. K., & Franklin, J. F. (1990, February 9). Effects on Carbon Storage of Conversion of Old-Growth Forests to Young Forests. Retrieved from <https://science.sciencemag.org/content/247/4943/699/tab-pdf>.
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