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**Submitted to USDA as part of
“Roadless Rule” comments: 12/17/19**

University of Alaska Board of Regents
c/o Gloria O'Neill, Chair
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Re: Forestry Research on Carbon Sequestration--Old Growth vs. Second Growth

Dear University of Alaska Board of Regents:

I am providing to the regents selected forestry sciences information relating to carbon sequestration in managed forests vs. old growth forests. The regents are trustees of large, complex land holdings and after listening to the regent's own forest management counsel, and then seeking my own clarification, I'm compelled to share my findings with you. I cannot state whether or not UA is able to earn revenue from carbon trading. It is a very complex subject area that requires direct, on the ground research, as was accurately explained by Alaska Chief Forester, Chris Maisch on May 9th in Haines. However, I am suggesting that the regents consider getting an outside, professional opinion on the question of UA “banking” carbon credits.

The May 9th presentation in Haines dealt with the UA proposed, 13,000 acre timber sale. UA's Kristine Klein and Patrick Kelly were joined by Forester Maisch and another individual representing the land holdings of the Alaska Mental Health Trust. Mr. Maisch handled many of the audience questions including those dealing with the issue of potential passive income from selling “carbon credits.” He was generally dismissive of the potential for UA to earn money from carbon credits and this opinion may be entirely true. He also clearly implied that through clearcutting and reforestation a young, growing, second-growth forest can sequester more carbon than would conserving an “old growth” forest—a contention that I've found to be unsupported by the research.

After a few evenings studying the question of carbon sequestration in young vs. old growth forests, and communicating with active scientists at the University of Washington and Oregon State University, I've learned that leaving the original forest means MORE total carbon sequestration—not less—as was implied by Forester Maisch. This complex question was unraveled 35 years ago:

“Weather forests are managed for maximum sustained yield of biomass or to maximize financial returns, they will rarely contain, averaged over their useful lives, more than about one-third of the carbon they could store if allowed to grow to maximum biomass. Economic factors may reduce the fraction to a fifth or less (Cooper, 1983).

The number of years anticipated to return a forest's carbon accumulation (biomass) to the original (old growth) level depends on forest type, geographic location and other factors. Research from Southern Australia suggests that the duration is 250 years (Keith et al., 2014). For the coniferous forests of Western Washington and Oregon, estimates are 200 years. Over the much shorter, rotation time of a managed

forest, even when the sequestration of carbon in wood products (buildings, pulp, landfills) is added in, managed forests were found to contribute a “net flux of carbon dioxide to the atmosphere” (Harmon et al, 1990).

The example of European forests is of interest. Analysis of Europe’s historic forest cover showed that roughly 250 years ago there was about 10% less forest in Europe than today. Of Europe’s forested areas today, 85% are under management (being periodically harvested). But Europe’s widespread management of forests has not resulted in greater carbon dioxide removal from the atmosphere. Forest “management” in Europe has meant less carbon being sequestered by forests, not more (Alkama, R., Cescatti, A., 2016). In commenting to me about the above cited research, dealing with Europe’s forests, Oregon State University Forestry Professor Emeritus, Mark Harmon noted that: *“the policy makers followed the forester’s advice. The problem is that it reduced the carbon stored in Europe’s forests. So we know it does not generally work.”*

During his response to questions in Haines on May 9th, Forester Maisch expressed his admiration for newly, engineered fiber products being put to use in Asia’s fast growing Pacific rim. He gushed that “wood-frame apartments 15-stories high” are now possible. These comments were offered to clarifying the meaning of “carbon sequestration” whereby—following clear-cutting and reforestation: A) the vigorous young forest sequesters carbon dioxide from the atmosphere while; B) the old-growth (product) carbon pool—removed during clear-cutting—is safely sequestered in tall wood-frame buildings.

Unfortunately for our atmosphere, for a range of complex reasons, adding together the combined carbon pools does not lead to greater overall carbon sequestration. Among the most important reasons are the duration of forest rotation, waste and expected life-time of the fiber (carbon) product pool which is extremely variable. Keith, et al (2014) found that 66% of the wood products produced with fiber from the managed forest study-area had a life expectancy of less than three years (think pulp, paper, landfills and Starbucks) and just 4% of the total harvested wood was marketed as sawn timber. Among the findings discussed in Keith, et al. (2014) were: *“the proportion of carbon stored in products for longer than the (forest) rotation length is very small.”*

It’s a fascinating subject! I’ll end where Professor Harmon began in his email reply to my inquiry on this question: “It has been repeatedly shown that the conversion of older forests to younger plantation forests has not resulted in an increase in carbon stores in the forest. And even if one includes the stores in products this is not true” (Mark Harmon, Ph.D, pers. comm.).

Our time on earth is profoundly different than when the University land grant system was established. The UA regents hold positions of great power and my sincere hope is that the regents will apply a contemporary, global, science-based context to your forest lands management. Natural forest land ecosystems are increasingly rare. They provide vital services and the full accounting of these services, in the normal sense, is impossible. To monetize these services, today, is to the detriment of the living planet tomorrow. The regents are being guided by professional foresters who have preferences, past experiences and—perhaps—prejudice for certain methods of forest treatment. I encourage you to look for current, research-driven, outside professional counsel.

Sincerely,



Burl Sheldon

Bibliography:

Alkama, R. and Cescatti, A. 2016. *Biophysical climate impacts of recent changes in global forest cover*. Science. Vol 351, Issue 6273.

Cooper, C. F., 1983 *Carbon storage in managed forests*. Canadian Journal of Forest Research. Vol. 13: pg.155-166.

Harmon, M.E., Ferrell, W.K, Franklin J.F. *Effects on carbon storage of conversion of old-growth forests to young forests*. Science. Feb. 9, 1990 pg 699-702.

Keith, H., et al. 2014. *Managing temperate forests for carbon storage: impacts of logging versus forest protection on carbon stocks*. Ecosphere. Vol. 5(6), Article 75.

Personal Communication:

Mark Harmon, Professor Emeritus, Oregon State University, Department of Forest Systems and Society.
Email: June 7, 2018.