

October 26, 2007

U.S. Climate Change Science Program  
Suite 250  
1717 Pennsylvania Avenue, NW  
Washington, DC 20006

RE: Draft Synthesis and Assessment Product 4.3

Dear Sir/Madam:

We appreciate the opportunity to comment on the US Climate Change Science Program's draft SAP 4.3. Please accept these comments on behalf of the Society of American Foresters representing professional foresters from the academic, government, private, and not-for-profit sectors.

We would like to confine our observations to Chapter 3 Land Resources, particularly the contents as it relates to forests. Generally, we are pleased with the attention paid in the report to the important role that forests play in the climate change dialogue. That said, we would offer the following general comments:

- We would have liked to have seen increased coverage of the variability in and importance of soil carbon in relation to likely changes in temperature. How does the soil carbon vary among vegetative types and what are the likely effects of climate-induced changes of forests and shrub distribution on stability or release of soil carbon?
- As related to the hydrologic cycles, we would suggest including a discussion of the role of forests and canopy density levels on the quality and quantity of water. To what extent is the interception of snow and rain, and discharge of water into streams and erosion of soils likely to be affected by climate-induced changes in the biome boundaries, changes from forests to shrubs, or introduction of invasive species?
- Wildfire has surprisingly little coverage. Given the likelihood that both frequency and intensity of wildfires will increase under climate change, this section should be expanded to cover the enormous effects of forest condition (stand density and ladder fuels), and, in particular, the amounts of carbon and greenhouse gases emitted.

- Although the enormous insect depredations in lodgepole pine in British Columbia and pinyon pine in the Southwest are apparently driven by temperature—particularly high winter temperatures—the review does not acknowledge that build up of insect populations is commonly initiated in forests that are over-dense and have low vigor—conditions that were probably not as prevalent in our forests in the past.
- Although the report has much merit, it does not include humans and human activities as parts of ecosystems and the way they function. It is critical that the effects of climate change on forest dynamics are sorted out from those effects that are clearly human-induced. For example, although it is true that wildfire incidence is correlated with change in temperature, the National Interagency Fire Center shows that over 80 percent of all wildfire ignitions are human-caused. Also, the marked changes in age class distribution, species composition, density of forests, and presence of ladder fuels all contribute to why wildfires are more frequent and intense than in decades prior. In summary, although this section of the report focuses on the effects on land resources, it does not adequately address the extent to which current and future changes in forest dynamics is also influenced by past human management resulting in changed forest composition and structure.

We would offer the following specific remarks:

Page 7, lines 26-31. “...more uniform forest age structure, which is a legacy of logging...” We would question the accuracy of this statement. Logging over the past century has decreased uniform forest age structure across landscapes by breaking-up age classes, through the application of even-aged regeneration harvest on relatively small unit areas of even-aged forests.

Pages 15-16. Changes in Precipitation. Although the negative impacts of drought are mentioned, there is no literature review offered of the studies that have looked at thinning as a means of increasing tree water reserves and tree growth rates. Most notably two studies: Donner, B. and S. Running. 1986. Water stress response after thinning *Pinus contorta* stands in Montana. *Forest Science* 32(3):614-625, and more recently: Sala, A. G. Peters, L. McIntyre, and M. Harrington. 2005. Physiological responses of ponderosa pine in western Montana to thinning, prescribed fire and burning season. *Tree Physiology* 25(3):339-348. Both studies demonstrate a significant improvement in tree water availability following thinning.

Pages 19-21. Fire frequency and severity. There is no mention of the impacts of thinning and fuels treatment on reducing the severe effects of wildfires. Page 19, line 19: “older trees may be more resistant [to drought]” is potentially a highly misleading statement as it is based on one study of physiological responses to season by different age classes of one tree species. That study did not measure overall tree age class survival and at most speculated about drought tolerances of different age classes.

Pages 21-24. Insect outbreaks. There is no mention of the multitude of research work that has documented the positive impacts of silvicultural treatments on forest insect outbreaks.

Pages 32-34. Key findings and conclusions. The report appears to ignore the positive impacts that active forest management may have on improving the resilience of forests to predicted increases in drought, wildfires, and insect outbreaks. The basic conclusion that more money needs to be spent on monitoring ignores both existing data reflecting measured increases in wildfire, drought, and insect-related mortality, and fails to address the active management strategies needed to address those same threats. It is incongruous to suggest more funding for monitoring of tree mortality while not likewise recognizing the need to simultaneously fund active management strategies to address tree mortality. For example, forest areas that have developed into contiguous expanses of similar age class and species should be managed to restore the diversity representative of historic disturbance patterns. Similarly, forested areas that are predicted to experience reduced precipitation, the associated drought stress and wildfire risks, and secondary pest and pathogen outbreak should have management practices implemented designed to decrease vegetative water demands, decrease forest fuel loading, and decrease potential fire severity. Finally, where severe tree mortality is being observed, management practices can be implemented to increase the regeneration of tree species that are suitable to the changing environmental conditions.

Page 32, lines 39-40. Tree growth and forest productivity are likely to increase slightly on average.” This is a potentially misleading statement. It would more accurately read “tree growth may increase slightly in areas that are predicted to receive more moisture and decrease significantly in areas predicted to receive less moisture.”

Once again, thank you for accepting these comments, and we appreciate the opportunity to have input on the climate change and forest management dialogue.

Respectfully,

A handwritten signature in black ink that reads "John P. McMahon". The signature is written in a cursive, flowing style.

John P. McMahon  
President