January 29, 2009

Dear Members of the Forest Project Protocol 3.0 Workgroup:

We are writing to comment on the Draft Forest Project Protocol, Version 3.0. We would like to commend you for including forests on public lands. Given the land area in California that is held publically, these forests offer considerable climate mitigation potential. While this draft version is much improved over the current Forest Project Protocol, we have some recommendations for further improvement. Below we have referenced particular areas of the draft protocol and provided specific comments.

6.2.1.2 Public Lands Improved Forest Management Baseline states that "the baseline qualitative characterization shall reflect common forest management practice for the agency and agency project area." Common forest management practice for a majority of federal lands (e.g. those not in the wildland-urban interface) is continued fire suppression activities. From 2002-2006, with active fire suppression efforts, emissions from wildfire in the US were equivalent to 4-6 percent of anthropogenic emissions (Wiedinmyer and Neff 2007). Several of the forest types in the Sierra Nevada (e.g. mixed-conifer, ponderosa pine, Jeffrey pine) have high fuel loads from decades of fire suppression, producing large emissions if burned by wildfire (Hurteau et al. 2008, Hurteau and North 2009). Including wildfire emissions in the protocol would allow forest managers to reduce fuels and the risk of high-severity fire, which translates into an avoided emissions benefit (Hurteau and North 2009). While mechanical thinning does immediately reduce the live-tree carbon stock in a forest (Finkral and Evans 2008, North et al. in press), recent research has shown that over a relatively short period of time the understory community recovers, and the remaining trees sequester more carbon, bringing the carbon stock much closer to unthinned forest stocks (Campbell et al. 2008). Additionally, this reduction in carbon stocks makes the forest more resistant to high-severity fire (Finkral and Evans 2008, Hurteau and North 2009, North et al. in press). If treatments are strategically placed, only 25-30% of the landscape needs to be treated to reduce fire severity and spread, protecting high forest biomass locations and their carbon stocks (Brown 2008). The potential risk of loss due to high-severity fire can be quantified using publicly available data (Hurteau et al. 2009). The risk of loss due to fire can then be incorporated into planning to determine the carbon benefit and market value of fuels reduction treatments.

6.3.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources: states that "fires, disease, and pests are examples of agents that reduce forest carbon stocks and are often beyond the control of humans." While we agree that these carbon stock reduction events are often beyond the control of humans, fire severity can be altered through management activities. To count carbon stock reductions resulting from high severity wildfire as beyond human control for all forest types in the state of California is a misrepresentation.

7.2.2 Use of the Buffer to Compensate for Reversals: states that "a project may terminate if a reversal reduces the project activity's live standing forest carbon stocks below the standing live stocks established for the baseline." Allowing a project to terminate because of a reversal runs counter to the purpose of capitalizing on the climate mitigation potential of forested systems. Projects that experience a reversal due to disturbance should not be allowed to terminate.

Instead, these projects should be required to participate in reforestation thus allowing the project to restore the buffer pool for remaining reductions not covered by the initial buffer CRTs.

7.2.3 Other Insurance Options for Reversals: has the potential to provide an efficient mechanism for dealing with risk of CRT loss. However, trading money for a reserve of CRTs will only provide climate mitigation benefit if the insurer is required to replace the lost CRTs.

C.4 Natural Disturbance Risk: states that "removal and off-site storage can lessen the total amount of obligated ton reductions reversed over time." This is a broad generalization. The benefits of post-fire salvage logging are likely to vary by site. Additionally, there is evidence that post-fire salvage logging can be an impediment to regeneration, has the potential to increase fire risk, and slows ecosystem recovery (Lindenmayer et al. 2004, Donato et al. 2006, Thompson et al. 2007).

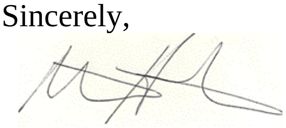
C.4.1 Natural Disturbance Risk I – Wildfire: states that "a well designed and implemented disturbance recovery plan can rapidly help to mitigate the continued reversal of obligated reductions and restore carbon losses through management activities that sustain and reclaim the growth potential of the forest." We agree with this statement. However, a well-designed management plan to reduce the risk of loss from high-severity fire would be more beneficial than a well-designed recovery plan in forests that were historically maintained by frequent, low severity fire. In light of the projected increase of fires in California resulting from changing climatic conditions (Westerling and Bryant 2008, Miller et al. in press), managing forest structure to reduce the risk of high severity fire in these forest types would reduce the risk of sequestered carbon being emitted to the atmosphere in the first place. Additionally, just because a disturbed site transitions from a source to a sink as a result of reforestation does not mean that the carbon stock reduction resulting from the wildfire will be recovered in the near-term. Typically, regenerating the pre-disturbance stock will take approximately the same amount of time that the disturbed forest grew prior to the disturbance event (Schulze et al. 2000).

In addition to these comments on specific language in the draft protocol, we would like to offer some other comments for consideration. It is our recommendation that language be included in the protocol to recognize the avoided emissions benefit of fuels reduction treatments in forest types that were historically maintained by frequent, low-severity fire. Mechanical fuels reduction treatments are not appropriate for all forest types in California. However if applied in forest types in which fire suppression activities have altered the fire return interval, our research has shown that wildfire emission can be reduced and that following the disturbance event there are more live trees remaining on the site (Hurteau et al. 2008, Hurteau and North 2009). Fuel reduction treatments might not be imposed on areas that will burn in the subsequent year or even the subsequent decade, since predicting the location of future wildfires is difficult. Still, in fire-prone areas where fire suppression has been the standard practice, the probability of a fire event occurring over the required "permanence" period (e.g. 100 years) can be quite high. For this reason, considering the carbon benefit of avoided emissions due to fuels reduction makes sense. Furthermore, fuels treatments can help current forests develop toward a historic stand structure. Recent studies suggest this structure, dominated by large, fire-resistant pines, sequestered substantially more carbon in stable pools than modern forests (Fellows and Goulden 2008, North et al. in press). Recognizing the carbon value of fuels reduction treatments could provide a much needed revenue stream to pay for these treatments on public lands that are left largely unfunded by the Healthy Forest Restoration Act of 2003. Additionally, any small-diameter trees removed in fuels reduction projects that are nonmerchantable can be used to produce bio-energy, replacing fossil-based fuel sources (Canadell and Raupach 2008).

Another potential opportunity for dealing with risk is changing who is responsible for carbon loss. Currently, the risk of carbon loss is internalized (i.e. held by the forest project owner). Requiring project owners to internalize that risk places a great deal of emphasis on the accuracy of the financial risk assessment in Table C.1. If the risk were placed with the purchaser of the CRTs, FR1 and FR2 would be less of a hindrance to project investment. Large organizations may be willing to invest in projects that have a longer payback period under current carbon market prices as a hedge against future increases in the market value of carbon. Assigning risk to the CRT purchaser would also address FR4-6. This would reduce the barrier to small land-owner and conservation group involvement in project development.

In our opinion, incorporating these recommendations would improve the Draft Forest Project Protocol, Version 3.0. Thank you for the opportunity to comment on the Draft Forest Project Protocol, Version 3.0.

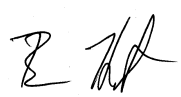
Sincerely,



Matthew Hurteau
Postdoctoral Research Associate
Northern Arizona University
NICCR, Western Region
PO Box 6077
Flagstaff, AZ 86011

George Koch
Professor
Northern Arizona University
Department of Biological Sciences
Flagstaff, AZ 86011

Malcolm North
Research Scientist
Sierra Nevada Research
Center
1731 Research Park Dr.



Bruce Hungate
Professor
Northern Arizona University
Department of Biological Sciences
Flagstaff, AZ 86011

References:

Brown, R. 2008. The implications of climate change for conservation, restoration and management of national forest lands. University of Oregon. 32p.

Campbell, J., Alberti, G., Martin, J., Law, B.E. 2008. Carbon dynamics of a ponderosa pine plantation following a thinning treatment in the northern Sierra Nevada. Forest Ecology and Management 257:453-463.

Canadell, J.G., Raupach, M.R. 2008. Managing forests for climate change mitigation. Science 320:1456-1457.

Donato, D.C., Fontaine, J.B., Campbell, J.L., Robinson, W.D., Kauffman, J.B., Law, B.E. 2006. Post-wildfire logging hinders regeneration and increases fire risk. Science 311:352.

Fellows, A.W. and M.L. Golden. 2008. Has fire suppression increased the amount of carbon stored in western forests? Geophysical Research Letters 35:L12404, doi:10.1029/2008GL033965.

Finkral, A.J, Evans, A.M. 2008. The effects of a thinning treatment on carbon stocks in a northern Arizona ponderosa pine forest. Forest Ecology and Management 255:2743-2750.

Hurteau, M.D., Koch, G.W., Hungate, B.W. 2008. Carbon protection and fire risk reduction: toward a full accounting of forest carbon offsets. Frontiers in Ecology and the Environment 6:493-498.

Hurteau, M., North, M. 2009. Fuel treatment effects on tree-based forest carbon storage and emissions under modeled wildfire scenarios. Frontiers in Ecology and the Environment 7, doi:10.1890/080049.

Hurteau, M.D., Hungate, B.A., Koch, G.W. 2009. Accounting for risk in valuing forest carbon offsets. Carbon Balance and Management 4,1.

Lindenmayer, D.B., Foster, D.R., Franklin, J.F., Hunter, M.L., Noss, R.F., Schmiegelow, F.A., Perry, D. 2004. Salvage Harvesting Policies After Natural Disturbance. Science 303: 1303.

Miller, J.D., Safford, H.D. , Crimmins, M., Thode, A.E. In press. Quantitative evidence for increasing forest fire severity in the Sierra Nevada and Southern Cascade Mountains, California and Nevada, USA. Ecosystems, doi:10.1007/s10021-008-9201-9.

North, M., Hurteau, M., Innes, J. *In press*. Fire suppression and fuels treatment effects on mixed-conifer carbon stocks and emissions. Ecological Applications.

Schulze, E-D., Wirth, C., Heimann, M. 2000. Managing forests after Kyoto. Science 289:2058-2059.

Thompson, J.R., Spies, T.A. and L.M. Ganio. 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. Proceedings of the National Academy of Science 104: 10743–10748.

Westerling, A.L., Bryant, B.P. 2008. Climate change and wildfire in California. Climatic Change 87 (Suppl 1):S231-S249.

Wiedinmyer, C., Neff, J.C. 2007. Estimates of CO_2 from fires in the United States: implications for carbon management. Carbon Balance and Management 2:10.