**AN OPERATIONAL ACCOUNTING OF CARBON IN ABOVEGROUND BIOMASS FOR YOSEMITE AND SEQUOIA AND KINGS CANYON NATIONAL PARKS (6E)**

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Because of the warm and dry Mediterranean climate, fire and ecosystem primary productivity are intimately connected in the Sierra Nevada, particularly in the forested ecosystems that have some of the highest carbon loadings in the world. Yosemite and Sequoia/Kings Canyon National Parks in particular have pursued a strategy to maintain fire as a process on their respective landscapes, but have not had the ability to understand the effect of those strategies upon carbon stocks. As a prelude for examining the effect of various fire management strategies on carbon stocks, we have synthesized a carbon map from over 2000 plots quantifying aboveground biomass in YOSE and SEKI trees, with an accounting of uncertainty from the tree, plot, and landscape scale, for both. Because of this high resolution and precise accounting for uncertainties, this map will provide managers with the best available information on how specific actions or ecological disturbances might affect carbon stocks that reside in trees for a given area, and how that impact relates to the total amount of carbon in each respective park. It also provides a basis for assessing the bias that the many larger scale efforts to quantify tree carbon might have when compared to our more accurate, plot based estimates. Further, this map and the plots that underpin it provide a starting point for looking at the future effect of climate change and related disturbance, especially fire on park carbon stocks when compared to annual emissions. Toward that end, we have scripted the entire process of building these landscape level carbon maps from the plot data so that new plot data (or modeled plot data from climate scenario analyses) can be added at any point to update or game out the effect of changes to the landscape vegetation on carbon stocks. Finally, this map allows managers to overlay spatial layers that quantify fire risk to understand vulnerability of the vegetation types (and the carbon they contain) to fire. For example, Yosemite has nearly 5 Tg more C from its higher elevation (and likely more fire-resistant) red fire zone than SEKI, largely because of the extent of high elevation plateau in YOSE where red fir grows in abundance. This difference in red fire largely accounts for the higher amount of carbon in YOSE (34 Tg) compared to SEKI (26 Tg). Both parks have roughly equal amounts of White Fir - Sugar Pine Forest (~5 Tg each), which is more vulnerable to fire at lower elevation.

Key words: Carbon Sequestration, Fire Ecology, Forest Ecology, Biomass, Greenhouse Gases