



LOGGED FORESTS BURN MORE SEVERELY: WHAT SCIENCE SHOWS

There is a popular narrative that wildfires today burn more severely than those of the past, because of excessive fuel loads (resulting from, so the story goes, decades' long misguided fire suppression and irrational anti-logging practices). Let's see what the science shows

Bradley et. al. (2016) analyze data for 1500 fires from 1984 to 2014, affecting 23.5 million acres of forestland, and they report the satellite-derived burn-severity data do not support this narrative. They separate the burned land into four classes, ranging from no intervention (i.e., no logging, no fire suppression, the way our National Parks are managed) to managed land that is logged the most. They find the more an area is logged, the more severely it burns; see Figure 1. If the fuel-load narrative were correct, the results would be the opposite; i.e., more heavily logged land would be more firesafe, not worse.

Similarly, Thompson et. al. (2007) report that logged landscapes experience higher-severity fires. They study data from an area that burned twice, once in 1987 and again in 2002; in between, some land was logged. They compare the burn severity of the 2002 fire in logged and unlogged areas; the logged areas had a burn-severity index 31% to 34% higher than the unlogged land; see Figure 2. If the fuel-load narrative were correct, the opposite would be true. What is going on here?

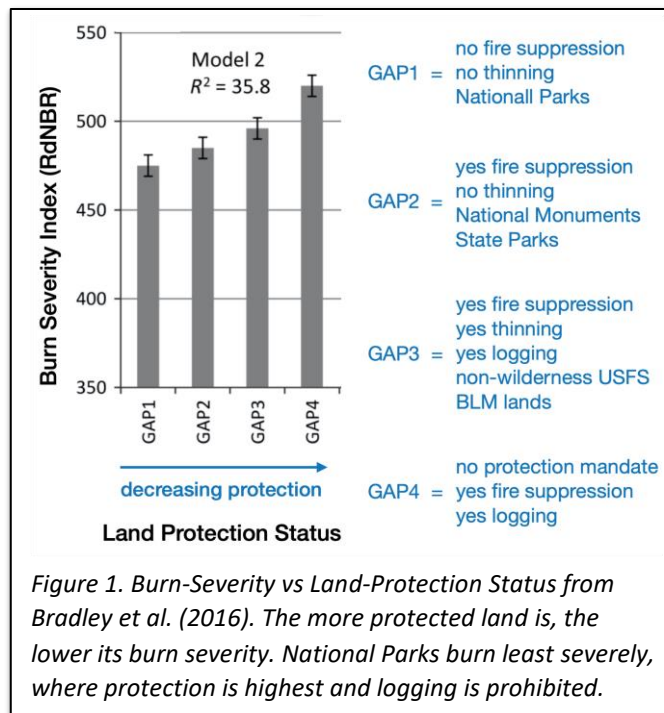


Figure 1. Burn-Severity vs Land-Protection Status from Bradley et al. (2016). The more protected land is, the lower its burn severity. National Parks burn least severely, where protection is highest and logging is prohibited.

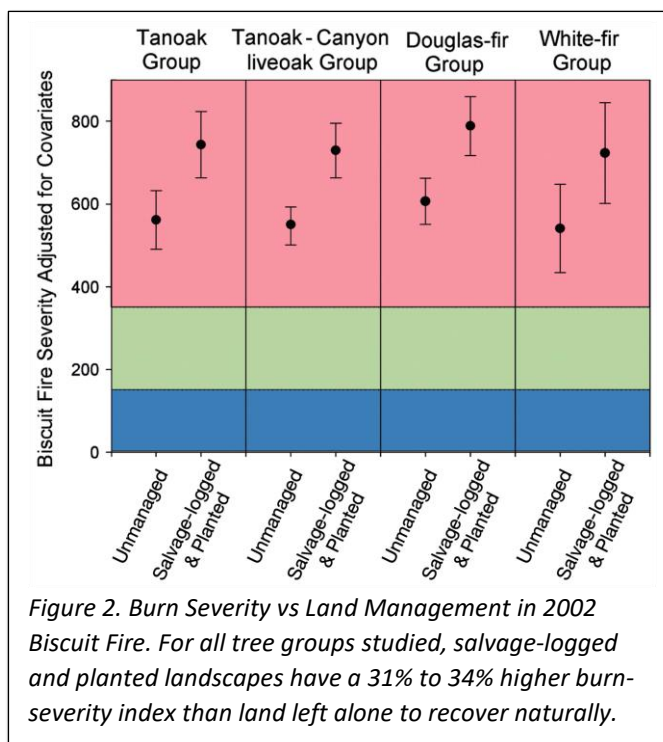


Figure 2. Burn Severity vs Land Management in 2002 Biscuit Fire. For all tree groups studied, salvage-logged and planted landscapes have a 31% to 34% higher burn-severity index than land left alone to recover naturally.

A possible explanation is that logging increases access to oxygen for wildfires by opening up the tree canopy. This is a hypothesis that should be tested, along with other negative effects due to logging, like large-tree loss, soil desiccation and disruption, and more. Regardless, the data show that logging is correlated with forests prone to higher-severity wildfires. This is inconsistent with the fuel-load narrative and the stated purpose of post-fire salvage-logging "vegetation treatments."

Yet, the fuel-load narrative is gaining popularity today, even though, as we've demonstrated, it was disputed 13 years ago by Thompson et. al. (2007), and then again in a more comprehensive study four years ago by Bradley et. al. (2016).

Why then does it persist? Good question. We will address that next. Stay tuned.

1. Bradley C.M., C.T. Hanson, D.A. DellaSala (2016), *Ecosphere*, 7(10):e01492/ecs2.1492
2. Thompson, J.R., T.A. Spies, and L.M. Gano (2007), *Proc. Nat'l Academy of Sciences*, 104(25)