

The summer of 2018 was the first field season in a 2-year project designed to answer the question: how does fire severity affect understory diversity and tree regeneration in subalpine forests of the Sierra Nevada? This study is the first to consider the effects of fire on biodiversity in our iconic subalpine forests and comes at a time when subalpine forests in the Sierra Nevada are experiencing climate-driven changes at an unprecedented scale. Densifying forest stands combined with a trend in increasing size and upper elevation of fire in the Sierra Nevada may contribute to larger and more severe fire events in subalpine forests in the near future.

We sampled 5 fires in 2018 across a range of 2-16 years post-fire and in three different National Parks or Forests. We found that post-fire species richness (or total number of species) increased with fire severity and was greatest in stands that experienced >75% tree mortality by basal area. This is interesting as fires were historically infrequent in subalpine systems and the increase in species cannot be attributed to plants that evolved to fill a post-fire niche. More data and further analyses are needed to understand how members of the high severity plant community differ from lower severity and unburned plant communities. Regenerating tree seedlings had a much different response to fire. When compared to unburned forest, they were found in greater densities after low to moderate severity fire (25-50% tree mortality by basal area) and lower densities after high severity fire (>90% tree mortality by basal area). In the case of tree seedlings, the mechanism for the pattern is more apparent and we can conclude that while conifer seedlings may benefit from the increased light and resources caused by reduced canopy cover after moderate severity burning, they are damaged by severe fire.



Bridget using the basal area gauge to assess stand density in a burned foxtail pine forest in Sequoia National Park.





A great vantage on the Willow Fire (2007) in foxtail pine forest, Sequoia National Park.



Emily considering an *Elymus* in the Palisade Fire (2002), Palisade Creek, Kings Canyon National Park.





Bridget measuring a pine seedling in the Big Five Fire (2014), Sequoia National Park.