Using fire to restore pine/hardwood ecosystems severely impacted by southern pine beetle (*Dendroctonus frontalis*) in the southern Appalachians

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Purpose of Research

Challenge for land managers is how to return fire to these degraded ecosystems after decades of fire exclusion and the more recent SPB mortality enhanced fuel loads.

Treatments: 1) cutting + prescribed fire; 2) prescribed fire only; and 3) no treatment (reference)

Objectives: (1) to quantify fuel load reduction methods, and (2) to evaluate the effects of further restoration treatments including planting shortleaf (*Pinus echinata*) pine and seeding native bluestem grasses on ecosystem structure and function .

The study area is located in eastern Tennessee (35° 5' N latitude, 84° 35' W longitude). Elevations range from 290 to 600 meters. All sites were delineated around patches of high pine mortality due to the SPB outbreak (Fig 1). The Ocoee River and Lake are heavily used recreational areas on the Cherokee National Forest, TN. Fires were ignited by the Ocoee Ranger District (FMO and crew) and smoke management was monitored and addressed by the National Forest.

Site preparation burns were implemented on six sites in March 2006. Ignition was a hand-lit backing fire along ridges, then a head fire was hand-lit from the lower slopes.

This prescription resulted in high intensity, short duration fires and moderate severity burns.
The fires consumed nearly all fine fuels (litter and small wood [1-100 hr]) and 23-31% of the larger fuels (1000 hr).

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