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Tree Removal is Unnecessary Prior to Prescribed Fire or Managed Wildfire, Even in the Densest and Most Long-Unburned Forests, and Fire Alone is Far Less Expensive

The Forest Service now acknowledges that “it is known that tree removal is not required before prescribed fire can be used” (USFS 2023a), and admits that thinning plus burning costs six times more per acre than burning alone (USFS 2023b).

As North et al. (2015) noted, “...fire is usually more efficient, cost-effective, and ecologically beneficial than mechanical treatments.” Because no thinning is necessary prior to burning, lower-intensity prescribed natural fires, controlled burns, and Native American cultural burning can be applied in a very cost-effective way within areas where low-intensity surface fire is in deficit (Baker et al. 2023). The table below concisely summarizes some of the many studies indicating that fire alone can be applied, during natural fire season, in Western U.S. conifer forests without prior tree removal, including in the very densest and most long-unburned forests. Land managers simply conduct or allow burning during mild to moderate fire weather.

Study	Type of Fire	Brief Summary of Significance
Keifer (1998)	Controlled burn	Successful lower-intensity prescribed fire in a forest with 498 trees per acre and 64 tons per acre of surface fuel
Stephens and Finney (2002)	Controlled burn	Successful lower-intensity prescribed fire in a forest with 93 tons per acre of surface fuel (downed woody material plus duff and litter) and 286 trees per acre
McClure et al. (2024)	Managed wildfire and controlled burn	Documenting successful use of managed wildfires and controlled burns over 35 years in forests of the Southwestern U.S., with overwhelmingly low-intensity fire effects
Knapp and Keeley (2006)	Controlled burn	Effective lower-intensity prescribed fire, during both early and late fire season, in a dense forest with 301 square feet per acre of basal area that had not burned for 123 years

Knapp et al. (2005)	Controlled burn	Effective lower-intensity prescribed fire, during early and late fire season, in a dense forest with over 80 tons per acre of surface fuel, which had not burned in over 120 years
York et al. (2022)	Controlled burn	Successful lower-intensity spring and fall prescribed fire in 13-14 year-old mixed-conifer plantations with 170 trees per acre
Stephens et al. (2021)	Managed wildfire	Successful mostly lower-intensity managed wildfire over several decades, in unmanaged mixed-conifer forests of Yosemite National Park
Zachmann et al. (2018)	Controlled burn	Successful lower-intensity prescribed fire in a 20-year analysis in dense mixed-conifer forests of the Lake Tahoe Basin, with 204 trees per acre and 257 square feet of basal area per acre
van Mantgem et al. (2013)	Controlled burn	Successful lower-intensity prescribed fire in seven national parks, monuments, and recreation areas in different forest types, including ponderosa pine, across the Western U.S.
van Mantgem et al. (2011)	Controlled burn	Successful lower-intensity prescribed fire in September and October in a dense forest that had not burned since circa 1870, and had 81 tons per acre of surface fuel, and 170 trees per acre
Collins and Stephens (2010)	Managed wildfire	Successful application of mostly lower-intensity managed wildfire, over 30 years in mixed-conifer forests of Yosemite National Park
Webster and Halpern (2010)	Controlled burns and managed wildfires	Successful application of lower-intensity controlled burns and managed wildfires over two decades in unmanaged mixed-conifer forests of Sequoia and Kings Canyon National Parks
Kobziar et al. (2009)	Controlled burn	Effective application of lower-intensity prescribed fire in the last week of June within a 32-year old ponderosa pine and Jeffrey pine plantation, with 149 trees per acre
Collins et al. (2007)	Managed wildfire	Mixed-intensity managed wildfires successfully restored natural habitat heterogeneity in Yosemite mixed-conifer forests
Fulé et al. (2004)	Controlled burn	Successful application of mixed-intensity prescribed fire, during fire season, in September, in dry forests of Grand Canyon National Park that had 134 trees per acre and had not burned since 1879
Kilgore and Sando (1975)	Controlled burn	Successful lower-intensity prescribed fire in late fire season in a forest with 83 tons per acre of surface fuel

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