



White Pine Monitoring: 2013 Results and Summary

Importance

Whitebark and foxtail pine are five-needle white pines that occupy high-elevation Sierra Nevada treeline and subalpine habitats, environments often too harsh for other tree species to thrive. Because these pines often occur in pure to nearly-pure stands, they can have a large influence on key ecosystem processes and community dynamics, such as regulating snowmelt and stream flow and providing habitat and food resources for birds and mammals. These pine species are currently threatened by the combined effects of *Cronartium ribicola*, a non-native fungus that causes the disease white pine blister rust, outbreaks of the endemic mountain pine beetle, and climate warming. Severe declines in whitebark pine are occurring nearly range-wide, and the species is warranted for listing as a federally endangered species. Whitebark and foxtail pine reach their southernmost distribution in the Sierra Nevada range where health conditions are currently the best for both species.



Whitebark pine on Windy Ridge, Kings Canyon National Park. Photo: NPS Forest Crew.

Monitoring

For the second season of sampling for this project, a four-person field crew visited 30 potential monitoring sites in 2013 and completed installation of 20 long-term monitoring plots (six whitebark plots in Yosemite National Park and five whitebark and nine foxtail plots in Sequoia & Kings Canyon National Parks). They collected data on tree species composition, forest structure, and rates of tree birth, death, and growth. They also recorded factors affecting tree health and reproduction including incidence and severity of white



Two forest crew members hike toward krummholz whitebark pine stand in Kings Canyon National Park. Photo: Tressa Gibbard.

pine blister rust infection, mountain pine beetle infestation, dwarf mistletoe infection, canopy kill, and female cone production. These data are used to determine annual status and long-term trends in forest condition.

Field sampling detected no dwarf mistletoe or white pine blister rust infection at any sites. Low incidence of mountain pine bark beetle occurred in all three parks. These results are consistent with the first season (2011) data and other limited data on whitebark and foxtail pine collected in the parks. For more information, see the [2013 annual report](#).

Management Applications

Information gathered from this white pine monitoring project will provide a more comprehensive understanding of the populations within Sierra Nevada Network parks as well as providing for comparisons across broader geographic areas. It will also allow early detection of important changes in populations that may require management intervention. This information will be particularly powerful if incorporated into an adaptive management framework, where it can be used to formulate sound, science-based management decisions at the park- or regional-level.

More Information

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