

What's With All the Dead Trees?

Mountain pine beetle outbreak on the Inyo National Forest 2005-2013.



Widespread mortality occurring in subalpine forests (mainly whitebark pine) of the Inyo National Forest is primarily associated with native mountain pine beetle (*Dendroctonus ponderosae*, MPB). The outbreak is estimated to have started in 2005 and still appears to be active. In recent years, annual aerial surveys have documented less overall tree mortality, indicating the infestation may be abating in some locations. However, new pockets of mortality continue to emerge in

areas with no previous infestations nearby. Areas such as White Wing Mountain, June Mountain, Rock Creek-Hilton Lakes, and Gibbs Lake have been severely infested – some sites even losing up to 95% of overstory cover. Groups of up to 50 trees were found to be completely infested and dead. June Mountain appears the hardest hit, with beetle populations still moving east towards Highway 395.

Drought is a major factor which most likely contributed to the population explosion of mountain pine beetle. As trees become water stressed, their vigor and defense mechanisms weaken, making them more vulnerable to attack by bark beetles or other damaging agents. Prolonged drought and unusually high temperatures exacerbate already stressed conditions for tree survival. As bark beetle populations build, the sheer number of them can eventually overwhelm even healthy green trees. Very cold temperatures experienced locally this winter may have affected overwintering beetles, but is not likely to have resulted in mass die-offs.

This beetle is a native bark beetle which has several other selected hosts, such as western white, lodgepole, foxtail, and limber pines. Locations in the Eastern Sierra with these species have also been affected in this outbreak, from Lee Vining to as far south as Cottonwood Pass. White pine blister rust (*Cronartium ribicola*) is a non-native pathogen which has ravaged five-needle pine forests in the Rocky Mountains, and has been found in California, but not yet in the Eastern Sierra.

The Inyo National Forest has planned several restoration treatments on June Mountain to mitigate damage, reduce safety hazards, and restore ecological conditions. Staffs from the Regional Forest Service Ecology group, Forest Health Protection, and Inyo National Forest are working cooperatively on monitoring and surveys to understand the ecological effects of this outbreak, and developing strategies to restore and conserve the unique forests of the Eastern Sierra.