

Region 5 Forest Health Protection: Protecting campground trees from bark beetles



Overly dense forest conditions at a USFS Campground.

stand replacing wildfire and bark beetle outbreaks, putting many recreation areas at risk to high levels of tree mortality. Many campgrounds have already lost high numbers of trees. This reduces the amount of shade for campsites as well as a reduction in wildlife habitat and overall aesthetic value. Dead and dying trees can also pose a huge risk to humans and infrastructure if they fail before being removed.

To protect trees from bark beetles in the short-term, Forest Health Protection entomologists have a couple of options. One is the use of bark beetle pheromones, or more specifically, anti-aggregation pheromones or repellents. Small amounts of these compounds can be applied to the trunks of trees to repel attacking beetles. Their effectiveness varies by bark beetle and tree species, and they can become entirely ineffective when bark beetle populations reach outbreak levels. For certain bark beetle and tree species, or when bark beetle populations explode, there is only one tried and true tree protection method, spraying trunks of individual trees with insecticides.

Spraying trees with insecticides is often the last resort to protect high-value trees in recreation areas. Most products registered for use in California provide one to two years of protection,

Forest Health Protection entomologists are often asked how to protect trees in campgrounds. Long-term strategies like thinning trees to a lower stand density and protecting trees from human-caused damage are the preferred options but implementation can be difficult and often delayed. As nice as a thick forest canopy is in a campground in providing shade, it is not sustainable in many forested areas of California. The past two decades have seen multiple periods of unprecedented drought,



Bark beetle repellent being applied to campground trees, Tahoe National Forest.

buying recreation managers time to implement more long-term strategies. Insecticides penetrate the bark and provide a lethal barrier to any beetle that tries bore into the tree. Spray projects require compliance with State laws and regulations and certification of insecticide applicators. This helps to ensure that applications are done safely with minimal impacts to humans and the environment.

In 2024, Forest Health Protection implemented one campground pheromone application on the Modoc National Forest and three campground spray projects, one each on the Angeles, Tahoe and Modoc National Forests. These efforts were made possible through great cooperation and coordination between National Forest and FHP staffs. Beyond the normal NEPA compliance which includes a human health and ecological risk assessment, there were county permits to obtain,



Forest Health Protection entomologists, Danny Cluck and Beth Kyre, in full personal protective equipment at Crystal Lake Campground, Angeles National Forest.

pesticide safety trainings to conduct, public outreach and notification of campground closures and high-pressure spray equipment preparation before treatments could begin. The spray days begin early with each applicator and handler putting on all required personal protective gear followed by the careful mixing of insecticides in the spray tank. All picnic tables, fire rings, food boxes and water spigots are covered in plastic sheeting to prevent spray drift from contaminating surfaces used by campers. Applicators then spray the trunk of each pre-selected tree to a height of approximately 45-50 feet. Pine species are targeted for treatment due to the aggressive nature of the bark beetles that attack them. Trees selected for treatment are often the largest, have a particular character, or are providing shade to picnic tables and campfire rings. Campgrounds remain closed for at least 24 hours after insecticide application to allow spray sufficient time to dry. This further minimizes potential exposure to the public.

For more information about bark beetles and to find your FHP entomologist please visit the R5 Forest Health Protection website at <https://www.fs.usda.gov/main/r5/forest-grasslandhealth>



Spraying a lodgepole pine at Medicine Lake, Modoc National Forest.