



Forest Health Protection Pacific Southwest Region



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To: Sycuan Tribal Council
Subject: Forest Health Survey (SC-12-06)

Summary

On 17 July 2012, Tom W. Coleman, Entomologist with Forest Health Protection, surveyed the Sycuan Reservation for significant threats to forest health. Surveys focused on the oak component in and around the casino and the Sycuan Resort. Surveys primarily focused on detecting the new invasive pest, the goldspotted oak borer (GSOB), *Agrilus auroguttatus*, which is currently killing oaks at elevated levels in San Diego County. Oak mortality associated with GSOB injury was found at several areas across the reservation (Fig. 1). Oak mortality will likely continue in the larger diameter coast live oaks without any additional management. A management plan should be developed for high-value sites on the reservation to assist in managing this new invasive insect. Additional education should be provided to tribal members about this new pest and the threats of moving infested firewood. Low levels of leafy mistletoe were also found infecting coast live oak on the reservation.

Introduction

Forest Health surveys were conducted on the Sycuan Reservation to look for the presence of the goldspotted oak borer and additional current insect and disease issues. The information from this survey can be used to provide support for suppression management options that can enhance forest health.

The goldspotted oak borer is a new invasive insect to San Diego Co. See the attached Field Identification Guide for additional information about this insect. The goldspotted oak borer is causing elevated levels of tree mortality in the southeastern part of the county. The goldspotted oak borer prefers larger diameter coast live oak and California black oak. This insect represents the most significant insect threat to red oak species in southern California.

Forest stand surveys

Five areas were surveyed across the reservation. These sites were chosen because of the recent tree mortality and thinning crowns observed in the areas. Coast live oak ranging in size from 9.1 to 74.2" DBH were examined for evidence of GSOB



Figure 1. Coast live oak killed by the goldspotted oak borer near the pow-wow area.

injury symptoms. Living and dead oaks were inspected for GSOB injury during the survey. The lower boles of oaks were examined for D-shaped exit holes, bark staining, and woodpecker foraging associated with GSOB injury (see GSOB Field ID Guide for more information). Bark was also peeled from dead oaks to verify GSOB larvae galleries on the surface of the sapwood.

Observations

A total of 60 coast live oaks were examined during the survey. Goldspotted oak borer infestation was verified on the reservation. A total of 14 dead coast live oaks surveyed had previous injury from GSOB. The presence of D-shaped exit holes was used to identify infested trees. These dead trees were located adjacent to the pow-wow area, the school, and the casino parking lot. The diameter range of these dead trees spanned 19.1 to 74.2" DBH. Seven more trees showed high-levels of injury from GSOB. These trees were found on the resort by Willow Glen and next to the pow-wow area. Trees with high-levels of injury from GSOB (<30 exit holes on the lower stem) will likely die in the upcoming years. Other parts of the reservation were not visited during this survey, so the infestation may also be present in these areas and leading to tree mortality.

Leafy mistletoe, *Phoradendron villosum*, was found infecting several coast live oaks near the casino, but the leafy mistletoe was only observed at low levels. See the link below for additional information about leafy mistletoe biology and management.



Figure 2. A coast live oak killed by the goldspotted oak borer at the Sycuan Resort.

Discussion

Presence of the goldspotted oak borer represents the most significant insect issue surveyed. This new pest can potentially be a long-term, persistent problem for the reservation and should be managed at high-value sites. Leafy mistletoe infection on coast live oak was the most significant disease issue surveyed, but found at low levels. High-value sites and clumps of oaks should be pruned of leafy mistletoe to improve tree and forest health. Mistletoe infection can also increase the susceptible of trees to secondary insects and disease, leading to tree death.

Management options for the goldspotted oak borer

No action: If no action is taken to prevent or slow GSOB populations, oak mortality will likely continue on the reservation in larger diameter coast live oaks. Oak mortality will occur at elevated levels than what has historically been associated with insects or diseases in these woodlands. Additional oaks will become infested in the future and will likely succumb to beetle herbivory in 5-9 years. If additional stress from drought, wildfire, or other insects and diseases

impact these oaks, an increase in oak mortality levels will likely be observed. Coast live oak >15" DBH are at high risk to GSOB-caused mortality.

Prevention Options: Developing a management plan for the reservation will be essential for assessing the oak resource, identifying high-value sites for management actions, limiting the impact and spread of GSOB populations, monitoring the activity of GSOB populations, and planning restoration efforts. Distributing educational and outreach materials to the tribe are also suggested to inform people of this new problem and management options currently available. The document "Developing a Goldspotted Oak Borer Management Plan" can assist with this process. Prevention options for limiting the goldspotted oak borer are outlined in the document "Best Management Practices for Preventing Tree Mortality from the Goldspotted Oak Borer on Public and Tribal Lands." Research shows that topical insecticides are more effective against GSOB populations than systemic insecticides. Preventive insecticides should be used only on coast live oaks in high-value sites that are uninfested or lightly infested (exit hole density of <10, see GSOB Field ID Guide). Topical insecticide treatments should only be applied to coast live oaks >15" DBH that are at risk from GSOB injury and in designated high-value sites. Topical treatments should be applied to the lower bole and larger branches. Treating the canopy with topical insecticides may not be required to save the tree, and applying the treatments effectively throughout the crown may not be feasible and incur excessive costs. Topical treatments should be re-applied every year until additional data are available. These topical treatments should limit tree mortality in these species. Tree surveys should be conducted at regular intervals to monitor the health of these treated trees, efficacy of the treatments, and health of other trees in the area.

Suppression Options: Cutting infested trees and properly managing the cut wood can eliminate local populations and may slow tree mortality in the area. Trees with severe injury from GSOB populations (crown rating of 3-4 and exit hole rating of 3, see GSOB Field ID Guide) should not be treated with insecticides. These trees contain high densities of GSOB and will likely die in the next few years. Grinding (<3" particle size), double tarping during the summer months (May-October), or debarking recently cut wood can eliminate GSOB populations. Properly dispose of cut wood (grinding, tarping, or debarking) or leave the wood on site for two years before removing it from the reservation so the invasive population is not moved to additional areas. The GSOB Field ID Guide attached also outlines prevention and suppression options and information for detecting this new pest.

Management options for mistletoe

Prevention/Suppression

Pruning leafy mistletoe from the oaks is suggested to prevent the infections from intensifying and spreading to additional trees. Birds can actively spread leafy mistletoe to adjacent trees. Pruning of leafy mistletoe should follow the best management practices listed in the Leafy Mistletoe on Hardwoods in the link provided below.

No management

Mistletoe infection will slowly spread to other host species in the stand or high-value sites and increase in severity on the reservation. Tree mortality may occur solely from mistletoe

infection, but take years to manifest. Enhanced stress from mistletoe infection can increase the susceptibility of trees to other insect and disease issues, which can enhance their rate of mortality.

Conclusion

I advise the reservation to develop a management plan for managing this new invasive pest and focus prevention treatment in high-value sites (immediately surrounding homes, the casino, the resort, or heritage sites). Topical application of insecticides is currently the most effective means for impacting GSOB populations. Severely infested trees should not be treated with insecticides and considered for removal. Leafy mistletoe infection should be pruned to improve forest stand health. Funding can be submitted to Forest Health Protection for suppression work through the Bureau of Indian Affairs.

If there are any questions please contact:

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Additional information referenced in the text:

Goldspotted Oak Borer Field Identification Guide:
http://www.ipm.ucdavis.edu/PDF/MISC/GSOB_field-identification-guide.pdf

California Firewood Task Force:
<http://firewood.ca.gov/>

Leafy Mistletoe on Hardwoods:
<http://www.fs.fed.us/r6/nr/fid/fidls/fidl-147.pdf>