

Goldspotted Oak Borer and Oak Mortality

Quarterly Situation Report

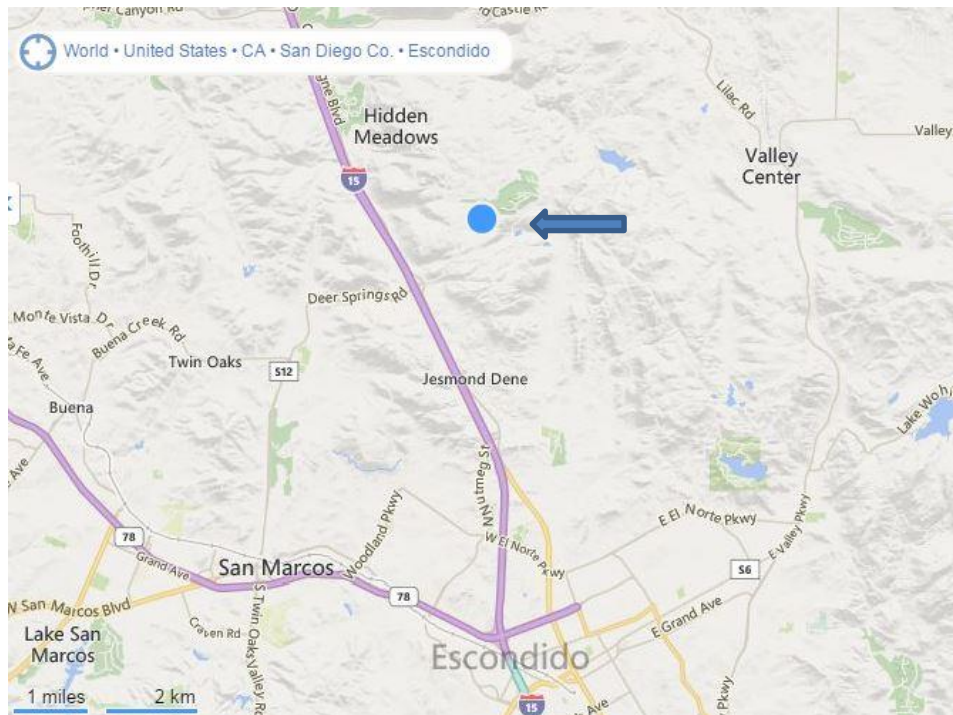
April 1 through June 30, 2015

Riverside County Update

Mountain Communities Fire Safe Council volunteers and agency staff resumed field inspections this quarter following a break taken during the winter months. Only a handful of additional GSOB-infested black oaks were identified in Idyllwild/Pine Cove this quarter; as summer progresses into fall and absentee owners visit their properties and see oaks in bad health, more infestation may become evident. All of the newly discovered trees were in proximity to locations of previously infested trees (that had been removed). The infestation continues to be confined to within the community and not surrounding National Forest or State Park lands. Some private property owners with lightly infested trees (<5 exit holes and trees otherwise in good health) are opting to use a pesticide rather than removing the tree.

San Diego County Update

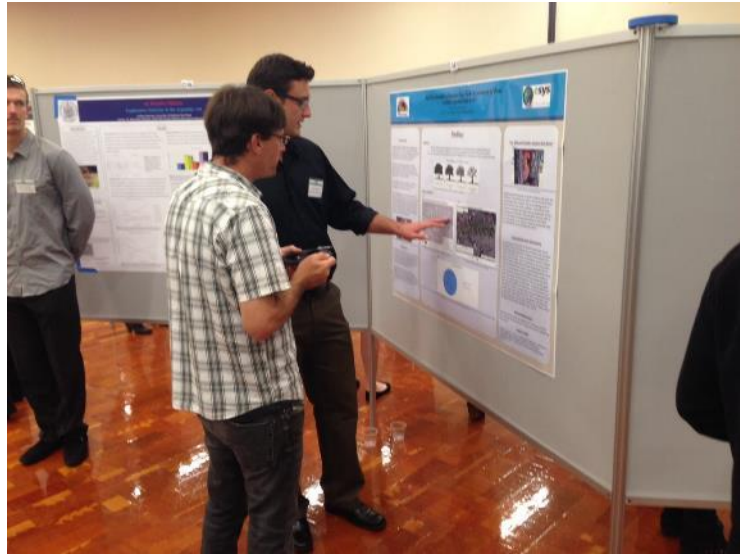
A new GSOB infestation has been identified in a county area just north of the City of Escondido. It was reported by a local resident through the www.gsob.org website and confirmed by San Diego AWM personnel. The City has been contacted to make them aware of the nearby threat. Also of significance, there is a confirmed PSHB/Fusarium occurrence located less than 5 miles from this location.




Citizen reports of suspected GSOB infestation continue to be submitted and are followed up on by UCCE, federal, state, county and city personnel with assistance from qualified EWS volunteers. The Julian and Palomar Mountain communities hosted GSOB education events this quarter. A special thanks to Mike Puzzo (CA State Parks), Jan Gonzales and Dr. Tom Scott for educating these highly concerned citizens.

City of San Diego Park and Recreation Department


City of San Diego Park and Recreation Open Space intern Daniel Schwartz created a GSOB poster summarizing the work he did on the inventory of oaks in Marian Bear Memorial Park for his senior project required by his Environmental Systems undergraduate major at UCSD. The poster was presented at a symposium which occurred on May 28, 2015 at UCSD. A high resolution copy of the poster will be made available on the GSOB Outreach/Education Committee's UCANR Collaborative Tools site.






Oak Tree Health in Marian Bear Park: Assessment of Pest Golden Spotted Oak Borer

Daniel M. Schwartz
City of San Diego, Park and Recreation



Introduction

- Gold-Spotted Oak Borer (GSOB), *Agrilus auraguttatus*, is an invasive pest of oak trees and has become a concern in San Diego County. It is a contributing factor to oak tree mortality, which has strong negative implications for environmental health as well as human safety.
- GSOB is native to southeastern Arizona, although a related species occurs in southern Mexico and northern Guatemala. GSOB was first collected and identified in California in 2004 in San Diego County, but was not linked to extensive oak mortality until 2008.
- As of 2010, GSOB has killed an estimated 21,500 trees covering 1,893 square miles in San Diego County in forests, parks, and residential landscapes.
- The City of San Diego Park and Recreation Department's Open Space Division is involved in the process of assessing the potential impact of GSOB on City-owned land. Marian Bear Park was specifically selected because its large Oak tree population, and the overall spread of the beetle and the extent of the damage were in question. The goal of this project was to assess the spread of the Golden Spotted Oak Borer in Marian Bear Memorial Park.



Tony Adelt: Invasive Spotted Oak Borer. Photo Courtesy of UC Division of Agriculture and Natural Resources

Background


- The Multiple Species Conservation Program (MSCP) serves as a multiple species Habitat Conservation Plan, pursuant to Section 10(a) of the federal Endangered Species Act. Under this plan, habitat monitoring is conducted in order to assess the effectiveness of City actions aimed at preserving native habitat and species.
- The Open Space division of the Park and Recreation Department oversees this program, and is responsible for annual assessment of marked habitat restoration sites as well as multiple projects involving evaluation of species and habitat outside of annually specified areas.

Findings



Methods

- Oak trees located within the Park were recorded as a set of coordinates using a handheld GPS device.
- Each tree was assessed for height in feet, using a laser rangefinder, and crown rating (shown below).
- High density of Poison Oak made it difficult to approach some trees

Crown Ratings (1-4 = living, 5 = dead)

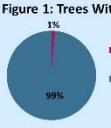


Extent of GSOB

These Maps show the extent of GSOB in the park and the most heavily infested areas.


Figure 1: Trees With Confirmed GSOB



Category	Percentage
Trees With Confirmed GSOB	1%
Trees Without GSOB	99%

Figure 1 shows how small the confirmed GSOB infestation at Marian Bear Park is, as of January 2015. The confirmed trees were observed to have visible exit holes of GSOB. This small percentage is surprising, and continued monitoring of the park should be conducted to see if the beetle spreads.

The Effect of Golden Spotted Oak Borer



A section of oak where the bark has been removed to show GSOB tunneling. Photo Courtesy of UC Division of Agriculture and Natural Resources

GSOB larvae feed beneath the bark of certain oaks near the interface of the phloem and xylem, the nutrient and water conducting tissues of plants. The larvae damage both of these tissues as well as the cambium, a unicellular layer between the phloem and xylem that is responsible for the radial growth of the tree. Trees die after several years of injury inflicted by multiple generations of the beetle. Currently there are no effective tools for protecting trees once infestation occurs (Hishinuma, 2011).

Conclusion and Comments

In conclusion, the spread of GSOB in Marian Bear Park is minimal. This may change quickly, however, and continued monitoring and assessment is needed. Unfortunately, the worst part about the nature of the beetle is that it attacks larger, more majestic oaks. Trees that are not only greater than 25 feet in height but also have thick trunks and are further developed than others; trees that look like the archetype of a picturesque oak that people would sit under to enjoy its shade. A general trend that was observed about trees that match this description is that they usually grow apart from dense areas of oak forest. It was also observed that trees with GSOB confirmed were in close proximity to parking lots. This is in conjunction with knowledge obtained in a previous 2 year study from 2011-2013; large oak trees are at greater risk and are more susceptible to infestation and transportation of wood and materials is the likely cause for spread of the beetle (Haavik et al., 2014).

Acknowledgements

Special thanks to Kimberly Roeland, Dr. Lisa Sauer, and Dr. Jane Teranes who all helped me along the way in completing this project

Works Cited

Haavik, Laurel J., et al. "Goldspotted oak borer effects on tree health and colonization patterns at six newly-established sites." *Agricultural and Forest Entomology* (2014).
Hishinuma, Stacy. *Goldspotted Oak Borer Field Identification Guide*. USDA-Forest Service Agreement, 2011.

GSOB Quarterly report for San Diego County Parks 2nd Quarter

San Diego County Department of Parks and Recreation is proactive in working towards a solution regarding the impact of the Gold Spotted Oak Borer. Along with removal of infested trees, DPR is actively planting new trees to make up for the lost trees. With the assistance of the Department of Agricultural Weights and Measures, DPR is completing an alternative treatment program in many of the units that are infested. DPR is also working with the County's GIS to improve tracking methods.

**Dos Picos,
17953 Dos Picos Park Road
32.998766, -116.941781**

17 new GSOB infested trees detected. 20 trees planted. Dos Picos is working with the CCC, Cal Fire, private contractors and Cub Scouts (Planting trees). Dos Picos is part of the alternative treatment program mentioned.

**El Monte
15805 El Monte Road
32.892602, -116.848137**
No new GSOB infested trees.

**Flinn Springs
14787 Old Hwy. 80
32.84713 -116.86184**

2 new GSOB infested trees detected. 15 Coast Live Oaks have been planted. Flinn is working with the Sheriff's crew and is part of the alternative treatment program mentioned.

**Heise
4945 Heise Park Rd
33.040089, -116.593588**

No new GSOB infested trees. Heise is part of the alternative treatment program mentioned.

**Lake Morena
2550 Lake Morena Drive
32.683034, -116.517852**

53 new trees GSOB infested trees detected. Lake Morena is part of the alternative treatment program mentioned.

**Mountain/Borrego Preserves
Santa Ysabel and Volcan Preserves
33.1197 -116.65233 (SYE)**

No report received.

**Pine Valley
28810 Old Highway 80
32.821732, -116.529308**

8 new trees GSOB infested trees detected. 1 healthy heritage tree. 24 trees planted with volunteers planting 6.

Potrero
24800 Potrero Park Drive
32.615222, -116.607263

No new GSOB infested trees detected. Potrero is part of the alternative treatment program mentioned.

Ramona Preserves
Ramona, Mt Gower, Grasslands, Boulder Oaks and others
33.03679 -116.95124 (Grasslands)

3 new GSOB infested trees detected at the Grasslands, 3 new GSOB trees detected at Boulder Oaks.

Stelzer
11470 Wildcat Canyon Road
32.881437, -116.903095

1 new GSOB infested tree detected. 36 baby oaks are scheduled to be planted in July by several school groups. Stelzer is part of the alternative treatment program mentioned.

Orange County Update

No new infestations have been identified in the county but additional trees were discovered during this quarter which are a part of the Weir Canyon infestation. Inspections were made for GSOB at several canyon community locations as a result of citizen reports, but none of the tree mortality was attributed to GSOB. The Orange County Invasive Tree Pests group is developing a county-wide response plan for GSOB, PSHB and whatever tree-killing invasive pest might come along in the future.

May 5th Orange County public meeting hosted by the Inter-canyon League and Canyon Fire Safe Councils saw a packed house. GSOB, PSHB and firewood were the main topics with talks by Tom Scott, John Kabashima and Kevin Turner. The event was organized by Orange County Fire Authority with support from UCCE and the Cleveland National Forest.



San Bernardino County Update

In cooperation with federal, state and local cooperators, several inspections were made on suspect trees reported in various parts of the county, but none were found to have GSOB. A joint GSOB/PSHB training was held at Chino Hills State Park on May 28th for state park personnel and Early Warning System volunteers from Carbon Canyon/Chino Hills fire safe councils. Thank you to Dr. John Kabashima, Jan Gonzales, Dr. Tom Scott and Kevin Turner for conducting the training.

Goldspotted Oak Borer Education and Outreach Quarter 4 Report – FY 14/15 (April-June 2015) Jan Gonzales UCCE San Diego

- Presented at a joint-UCANR GSOB and Polyphagous Shot Hole Borer training for Chino Hills and Crystal Cove State Park staff and Early Warning System volunteers, Chino Hill State Park, April 28, 2015.
- Collaborated with CoSD AWM and DPR with organizing observation and training sessions during GSOB management activities at Dos Picos County Park, Ramona, May 2015. Assisted with the development of public FAQ's regarding GSOB and insecticide treatments:
<http://www.sandiegocounty.gov/content/sdc/parks/news/oak-tree-protection-and-the-gsob-fags.html>
- Coordinated and hosted 4 meetings with CoSD AWM , UCCE San Diego, UC Riverside and UC ANR IGIS to discuss needs and design an interactive online map application for GSOB distribution, risk and management strategies. This project is on-going.
- Coordinated the development of new, combined GSOB and PSHB panels for the tabletop displays.
- Coordinated GSOB tabletop display use with collaborators for trainings with CoSD AWM (April), Palomar Mountain property owners (May), the Volcan Mountain Foundation, Julian (June) and the fair (June).
- Continued coordination of GSOB Interpreter training package.
- Began collaboration with representative from the Rincon tribe to develop new handout addressing GSOB impacts to Native tribes. We are working to expand collaboration to include input and review from Pala, Viejas and Sycuan and other tribes.
- Began developing handout on 'how to set traps and monitor for GSOB.'
- Began organizing a southern California joint-agency and lead stakeholder workshop on woody biomass.
- Responded to 6 phone calls, online survey reports and/or email public inquiries about GSOB.

- Distributed handout materials:
 - 700 GSOB trifold brochures (400 English, 100 Spanish)
 - 25 UCIPM GSOB Pest Note pamphlet
 - 200 GSOB Forest Insect and Disease Leaflet (USFS IPM)
 - 260 GSOB San Diego pamphlet
 - 1,250 GSOB ID cards (1,050 Professional; 200 General Public)
 - 125 GSOB Community Preparedness brochures
 - 300 *Buy It Where You Burn It* firewood awareness postcards
 - 3 *Buy It Where You Burn It* firewood posters
- Participated in 5 GSOB meetings/conference calls with the GSOB Education and Outreach Committee.
- Coordinated the design update of the GSOB Advisory for firewood vendors.
- Coordinated the printing of 10,000 GSOB ID cards for general public outreach. Cards are a thinner plastic than those previously created for use by those conducting field surveys.
- Collaborated with Cal Fire and UC staff on new GSOB funding.
- Provided information about GSOB for UCCE San Diego exhibit booth at the San Diego County fair.
- Continued developing list of GSOB trained licensed pest control applicators. Plan to work with CoSD AWM to provide the public this information online via the www.GSOB.org website.
- Maintained the www.GSOB.org website.

GSOB Collaborative Tools Calendar

6/27/2015	Volcan Mountain Foundation	Julian Library, Julian, CA
6/10/2015	GSOB display at SD County Fair 2015 (Fair dates: June 10- 19- 24- 26 and 30th)	San Diego Fair, Del Mar CA
5/23/2015	Palomar Property Owners Assc. Board Meeting	Mount Palomar
5/7/2015	Oak Tree Propagation to Potrero Planning Group	Potrero
5/5/2015	Orange County Canyon Residents and Fire Safe Councils GSOB/PSHB	28891 Modjeska Canyon Rd. Silverado, CA 92676-9647
4/28/2015	Chino Hills SP and EWS Volunteer Training	Chino Hills State Park Discovery Center at 4500 Carbon Canyon Road Brea

Please direct any corrections, questions or comments about the quarterly report to Kevin Turner at kevint@ucr.edu . We welcome your future contributions to the report for any activities or information related to GSOB. A reminder will be sent out through Collaborative Tools at the end of the next quarter.