

Emerging Wood Pests in San Diego County: How land managers can detect and respond to pests

Nick Basinski, San Diego County Department of Agriculture, Weights & Measures

SAN DIEGO ASLA STEWARDSHIP COMMITTEE SUSTAINABLE STRATEGIES– Plant Selection for SD's Changing Ecosystems

WORKSHOP August 4TH, 2017

Invasive Shothole Borer Beetle and Fungi



Adult female: 1.8-2.5 mm long



Adult male: 1.5 mm long



Fusarium euwallaceae



Graphium sp.



Acremonium sp.

UCRIVERSIDE Polyphagous shot hole borer / Fusarium Dieback distribution map (December 2014)



0 5 10 20 30 40

Data source: Eskalen lab, Dept. of Plant Pathology and Microbiology, University of California, Riverside. www.eskalenlab.ucr.edu

Shothole Borer Infestation in Tijuana River Valley, November 2015







Signs and Symptoms



(a) Round entry/exit hole ~0.85 mm in diameter (b) staining beneath bark(c) bark staining (d) gumming (e) frass (f) sugary exudate

Photos | a, c: Monica Dimson/UCCE Orange County; b, d: Akif Eskalen/UC Riverside

Infested Sycamore tree in UCI



24" 60cm

ISHB Reproductive Hosts

- 1. <u>Box elder (Acer negundo)*</u>
- 2. <u>Big leaf maple (Acer macrophyllum)*</u>
- 3. <u>Evergreen maple (Acer paxii)</u>
- 4. <u>Trident maple (Acer buergerianum)</u>
- 5. Japanese maple (Acer palmatum)
- 6. <u>Castor bean (Ricinus communis)</u>
- 7. <u>California sycamore (Platanus racemosa)*</u>
- 8. <u>Mexican sycamore (Platanus mexicana)</u>
- 9. <u>Red willow (Salix laevigata)*</u>
- 10. <u>Avocado</u> (Persea americana)
- **11.** <u>Mimosa/Silk tree (Albizia julibrissin)</u>
- 12. English oak (Quercus robur)
- 13. Coast live oak (Quercus agrifolia)*
- 14. London plane (Platanus x acerifolia)
- **15.** <u>Fremont cottonwood (Populus fremontii)</u>*
- **16.** <u>Black cottonwood (Populus trichocarpa)*</u>
- 17. White alder (Alnus rhombifolia)*
- 18. <u>Titoki</u> (Alectryon excelsus)
- **19.** Engelmann oak (Quercus engelmannii)*
- 20. Cork oak (Quercus suber)
- 21. Valley oak (Quercus lobata)*
- 22. <u>Coral tree (Erythrina corallodendron)</u>

- 23. <u>Blue palo verde (Cercidium floridum)*</u>
- 24. Palo verde (Parkinsonia aculeata)
- 25. Moreton Bay chestnut (Castanospermum australe)
- 26. Brea (Cercidium sonorae)
- 27. <u>Mesquite</u> (Prosopis articulata)*
- 28. <u>Weeping willow</u> (Salix babylonica)
- 29. <u>Chinese holly (Ilex cornuta)</u>
- 30. Camellia (Camellia semiserrata)
- 31. Acacia (Acacia spp.)
- 32. <u>American sweetgum (Liquidambar styraciflua)</u>
- 33. <u>Red flowering gum (Eucalyptus ficifolia)</u>
- 34. Japanese wisteria (Wisteria floribunda)
- 35. <u>Goodding's black willow (Salix gooddingii)</u>*
- 36. Tree of heaven (Alianthus altissima)
- **37.** <u>Kurrajong</u> (Brachychiton populneus)
- **38.** <u>Black mission fig</u> (Ficus carica)
- 39. Japanese beech (Fagus crenata)
- 40. <u>Shiny xylosma (Xylosma congestum)</u>
- 41. Mimosa/Silk tree (Albizia julibrissin
- 42. Draft coral tree (Erythrina humeana
- **43.** <u>Black poplar (Populus nigra)*</u>
- 44. <u>Black Willow (Salix nigra)*</u>
- 45. And the list keeps growing

Cultural Control and Sanitation

- Tree removal
- Treatment of slash and debris
- Chipping or grinding
- Solarization and composting
- Firewood movement





Goldspotted Oak Borer (GSOB) (Agrilus auroguttatus)



 \bigcirc



Photos | Tom Coleman, PhD/USDA Forest Service-Forest Health Protection

GSOB hosts in California



(a) Coast live oak, *Quercus agrifolia* (b) California black oak, *Q. kelloggii*(c) Canyon live oak, *Q. chrysolepsis* (d) Englemann oak, *Q. engelmanni*

Photos | Tom Coleman, PhD/USDA Forest Service-Forest Health Protection





GSOB injury across several size classes

<u><10" DBH</u>

30% injured by GSOB 6% dead with GSOB injury

<u>10-20" DBH</u> 61% injured by GSOB 8% dead with GSOB injury

20-30" DBH 77% injured by GSOB 26% dead with GSOB injury

>30" DBH 85% injured by GSOB 40% dead with GSOB injury

DBH=tree diameter at breast height

Symptoms/Evidence of Attack







GSOB exit holes



Exit Hole

Integrated pest management (IPM)









Managing GSOB-infested wood









Infested wood treatment and utilization The danger posed by infested wood:



This amount of bark produced...



...168 beetles

South American Palm Weevil



www.dontmovefirewood.org

AYUDA A BETENER LA DISEMINACIÓN DE INSECTOS INVASIVOS Y ENFERMEDADES INVASIVAS

El Escarabajo barrenador del Roble con Manchitas Doradas (0508) es un insecto invasivo. Se introdujo al condado de San Diego por la leha no nativa. Ha matado miles de robles. Ha afectado parques, bosques y àreas residenciales. GSOB podria matar millones de robles en California. Infórmese para que pueda ayudar a las agencias locales, estatales y federales a prevenir que esta peste se propague. Aprenda acerca de GSOB en la página de Internet www.gsob.org.

COMO USTED FREDE AYUBAR

 Deja la leña en cosa - no mueva madera a los parques ni los campamentos
Compre la leña en áreas locales.
Solo lleve la cantidad de leña queva a necesitar.









COMPRE LA LEÑA Donde se va a usar

cdía

firewood.ca.gov

Tree Pest Websites

http://ucanr.edu/sites/gsobinfo/ http://ucanr.edu/sites/pshb/ http://cisr.ucr.edu/palmarum.html

Distribution maps and report forms can be accessed from these pages

