



Green Waste as a Pathway for Tree Pests

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Some definitions

Unprocessed Green Waste: Green Waste that has not undergone any mechanical procedure to lessen the pest risk. When a quarantine is active, it is considered regulated material and it must remain in the quarantine area



Photo: Kevin Turner - CalFire



Image: <https://www.broomfield.org/1031/Tree-Branch-Recycling-Program>

Processed Green Waste: has undergone some mechanical procedure to lessen or eliminate the pest risk.



Mulch:

- Chipped, ground or shredded
- Not completely processed
- If there's a quarantine: Its movement is regulated and must remain within the quarantine area.



Compost:

- Completely processed
- No longer poses a pest risk
- Unregulated and may move outside of a quarantine area



Quarantines prohibit movement of regulated material unless specific conditions are met

- Can be any geographic area
- Usually counties but can be down to city streets and blocks

Compliance agreements:

- Binding agreement between regulatory agency and handler of regulated materials
- Affirms that handler will process or transport materials only under certain conditions

Who needs a compliance agreement?

Any entity in the chain-of-custody that handles materials from an active quarantine zone

- Green waste haulers
- Transfer stations
- Chip and grind sites
- Composting sites
- Landfills
- etc.





TRANSPORTERS

- Fully enclosed vehicle or properly covered.
- Only move green waste to an approved receiver
- Direct route / use of highways
- Trailer cleaning
- Spill notification



CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE
Ramon Reyes, Secretary



United States Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine

COMPLIANCE AGREEMENT for the use with Master Permit QC 1289/1290/1291/1292/1337

EXHIBIT: GW10 GREEN WASTE – TRANSPORTER/HAULER

Provisions for the Intrastate Movement of
PROCESSED AND UNPROCESSED GREEN WASTE
Originating within the State Interior Quarantine Area for (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Asian Citrus Psyllid (CCR 3435)* | <input type="checkbox"/> European Grapevine Moth (CCR 3437) |
| <input type="checkbox"/> Huanglongbing (CCR 3439) | <input type="checkbox"/> Light Brown Apple Moth (CCR 3434) |
| <input type="checkbox"/> Oak Mortality Disease Control/ <i>Phytophthora ramorum</i> (CCR 3700) | |

*Compliance Agreement not required when green waste remains within the quarantine area.


A. Green Waste Definitions and Regulatory Movement Requirements


'Green Waste' is unprocessed or processed vegetative material which contains any of the following or a mixture thereof: stems, leaves, culls, discarded fruits and vegetables, grass clippings, weeds, yard trimmings, wood/vine/processing/harvesting waste, hulls, bark, branches, logs and stumps, home garden/field/vineyard/grove/orchard residues, duff, mulch, compost, and other miscellaneous plant materials

COMPOSTING

- Transporter/Hauler verification
- Green Waste should be tarped, processed ASAP, and added to active compost within 72 hs.
- Temperature requirements - Guidelines for runoff management
- Compliance with the CA Code of Regulations (pathogen reduction)
- Unprocessed green waste and mulch can only leave the facility if allowed by County.
- Allow a trapping program for the targeted pests



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Karen Ross, Secretary

 **United States Department of Agriculture**
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EXHIBIT: GW4
GREEN WASTE RECEIVER – COMPOSTING

Provisions for the Intrastate Movement of
PROCESSED AND UNPROCESSED GREEN WASTE
Originating within the State Interior Quarantine for (check all that apply):

☐ **TO BE USED FOR PROCESSED GREEN WASTE ONLY**

<input type="checkbox"/> Asian Citrus Psyllid (CCR 3435)	<input type="checkbox"/> European Grapevine Moth (CCR 3437)
<input type="checkbox"/> Huanglongbing (CCR 3439)	<input type="checkbox"/> Light Brown Apple Moth (CCR 3434)
<input type="checkbox"/> Oak Mortality Disease Control/ <i>Phytophthora ramorum</i> (CCR 3700)	

Two non-quarantined pests in Southern California



Gold Spotted Oak Borer (GSOB)



Invasive Shot-Hole Borers (ISHB)

Gold Spotted Oak Borer



- Native to Arizona
- First detected in CA in 2004
- Attacks and kills large-diameter oaks
- Drought-stressed oaks are more susceptible

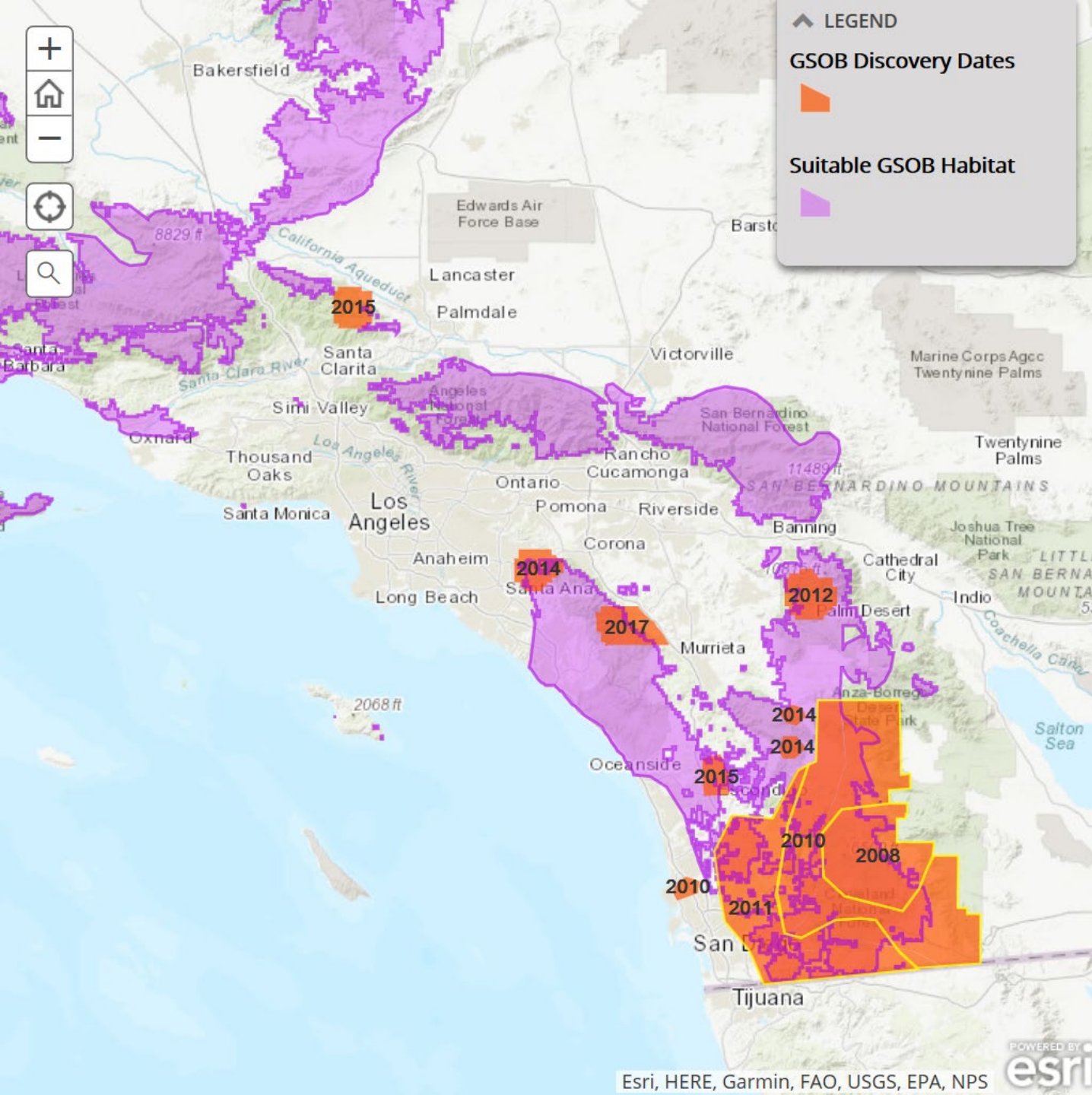




Movement of infested
firewood facilitated dispersal
in southern CA

Photos provided by CalFire





Movement of infested firewood facilitated dispersal in southern CA

Photos provided by CalFire



Handling infested wood



Grinding
<3 inches



Tarp



Screen



Debarking



Invasive Shot-Hole Borers

- Native to SE Asia
- Attack many species of tree
- Vector of Fusarium Dieback
- Two species of beetle:





Invasive Shot-Hole Borers

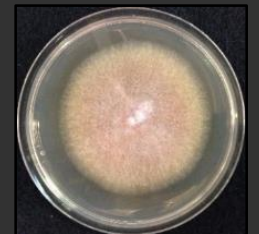
- Native to SE Asia
- Attack many species of tree
- Vector of Fusarium Dieback
- Two species of beetle:

Polyphagous
Shot-Hole Borer
(PSHB)



Fusarium euwallaceae

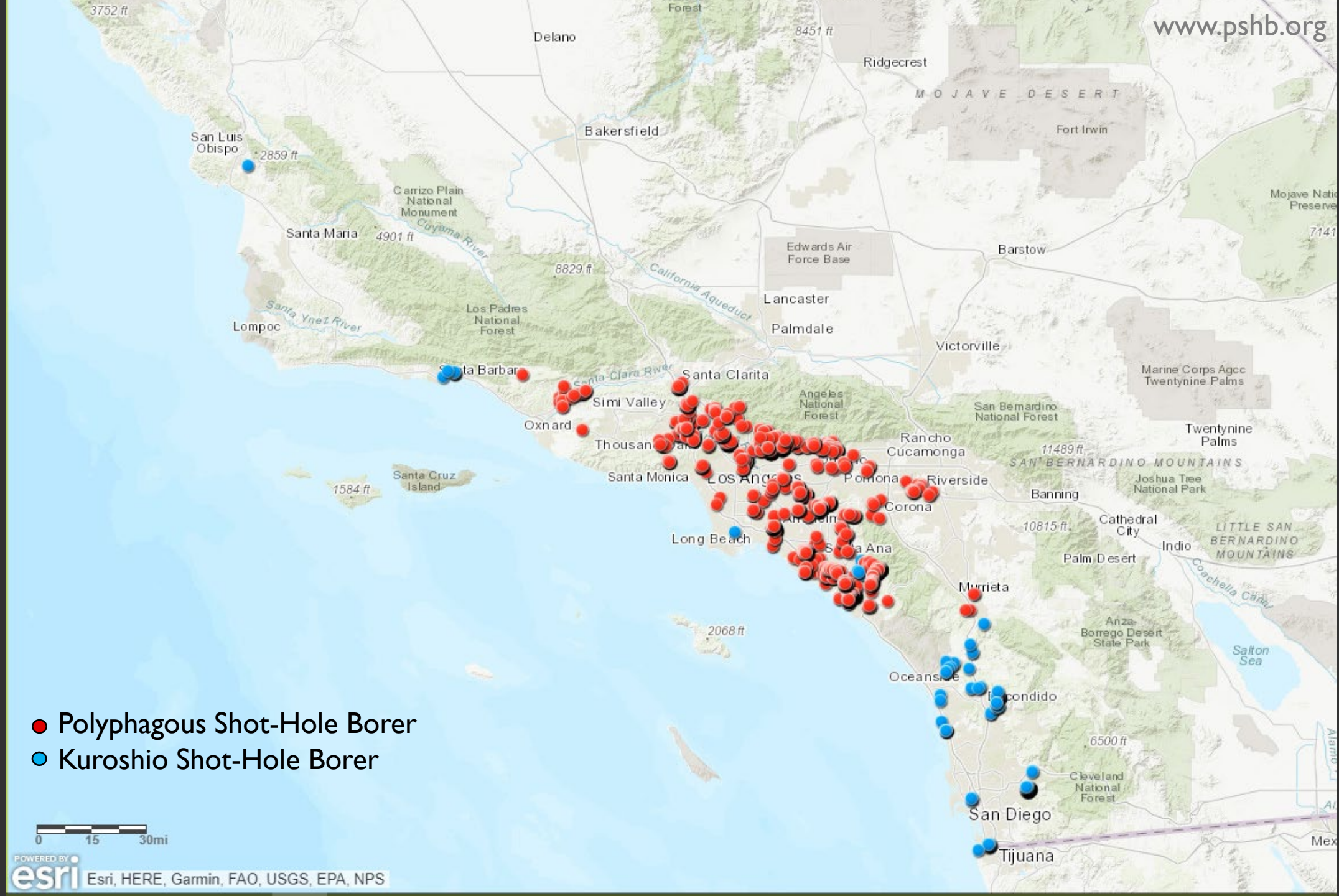
Kuroshio
Shot-Hole Borer
(KSHB)



Fusarium kuroshium

- Polyphagous Shot-Hole Borer
- Kuroshio Shot-Hole Borer

0 15 30mi





Chipping <1 inch

- +
- Solarizing
 - Composting
 - Alternative Daily Coverage
 - Biopower plant



Logs: solarized or kiln-dried

The case of Orphan pests



Mike Lewis, Center for Invasive Species Research, Bugwood.org

Gold Spotted Oak Borer

- ❑ APHIS NPAG classified: No Action – Non Reportable
- ❑ CDFA → B-rated pests
- ❑ County Ag Commissioners ill-equipped to regulate w/o State & Federal Funding



Photo by G. Arakelian

Invasive Shot-Hole Borers

In the absence of regulatory authority, outreach and education became the focus to reach out to agriculture, and public and private tree owners.



- Outreach events
- Letters to green waste processing facilities
- Workshops for tree workers
- Buy it where you burn it
- Etc.

www.PSHB.org

University of California, Agriculture and Natural Resources

Invasive Shot Hole Borers

Home Pest Overview Distribution Map Diagnosis & Management UC Resources & ISHB Handouts Contacts & Research Partners In the News

What are the Polyphagous and Kuroshio Shot Hole Borers?

NEW to PSHB.org!

ISHB Detection & Management Assessment

Before reporting infestations, take this

www.GSOB.org

University of California Cooperative Extension

Goldspotted Oak Borer

Home About GSOB Diagnosis & Management Recovery What You Can Do News & Events Resources Contacts

What is the Goldspotted Oak Borer?

Goldspotted Oak Borer (GSOB) *Agrilus auroguttatus* is an invasive pest contributing to the on-going oak tree mortality occurring on federal, state, private, and local Native American lands in many areas of San Diego County. Isolated areas of infestation have been confirmed in Riverside, Orange and Los Angeles Counties in Southern California. Widespread oak mortality can have severe implications to the environment and human safety. Due to the current and potential impacts to California

Quicklinks

Report
[Report suspected GSOB](#)

Newly Updated!
[Forest Insect & Disease Leaflet 183](#)



Acknowledgments

Kevin Turner – CalFire

John Kabashima – UCCE Orange Co.

Firewood Task Force

OC Parks

Cal Fire

Forest Service

UC Riverside

UC Irvine

UC ANR

Thank you

