

A GSOB/Oak TALK

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Topics of This Presentation

- ✓ **Some information about oaks (the genus *Quercus*)**
- ✓ **Things that can affect/impact the health and wellbeing of oaks**
- ✓ **Oak species affected by GSOB & sizes of oaks affected**
- ✓ **Healthy versus unhealthy oaks**
- ✓ **How did GSOB get here?**
- ✓ **Currently known infestation locations in LA Co.**
- ✓ **Oak tree health assessment – some tips**
- ✓ **GSOB infestation verification – look for signs**
- ✓ **Mitigation options**

Some Information about Oaks

- Worldwide – 600 to 800 oak species according to different plant taxonomists
- Mexico has the most oak species (170) follows by China
- About 20 different oak species and several hybrid oaks occur in California
- LA County (not including Santa Catalina Islands) – *Quercus agrifolia*, *Q. berberidifolia*, *Q. chrysolepis*, *Q. engelmannii*, *Q. kelloggii*, *Q. lobata*, *Q. palmeri*, *Q. wislizeni*, and a few other oaks
- Food source for many types of living organisms including fungi, birds, animals, including people
- Keystone species in some eco-systems in the County
- Erosion control, carbon sequestration, ambient temperature regulation and other benefits.

Coast live oaks













Canyon live oak





Things that can affect/impact the health and wellbeing of oaks

- **Abiotic factors – lack of water, lack of plant nutrients, etc.**
- **Biotic factors – tree pathogens (fungi, bacteria, viruses, etc.), insects, including GSOB, people, etc.**



Reported Oak Species Associated with Goldspotted Oak Borer (*Agrilus auroguttatus*) AKA: GSOB

In southern California Counties


- ▶ Coast live oak (*Quercus agrifolia*)
- ▶ CA black oak (*Q. kelloggii*), Wrightwood, S.B. Co.
- ▶ Canyon live oak (*Q. chrysolepis*)
- ▶ Engelmann oak (*Q. engelmannii*), San Diego Co.

In southeastern Arizona & southwestern New Mexico

- ▶ Emory oak (*Quercus emoryi*), red oak
- ▶ Silverleaf oak (*Q. hypoleucoides*), white oak?

Does GSOB prefer oaks in a particular age class?





Does GSOB only attack sick and unhealthy oaks?

- ▶ **It seems to attack coast live oaks that are alive and able to support its larvae development.**
- ▶ **Oaks that are healthy and with more energy reserve could be more resistant to GSOB.**
- ▶ **Oaks in different age classes have been found to be infested.**



**How did GSOB
get here?**

Human assisted dispersal!

MOVING FIREWOOD CAN SPREAD TREE-KILLING PESTS

**BUY IT WHERE
YOU BURN IT.**



FIREWOOD.CA.GOV

**DONTMOVE
FIREWOOD.org**



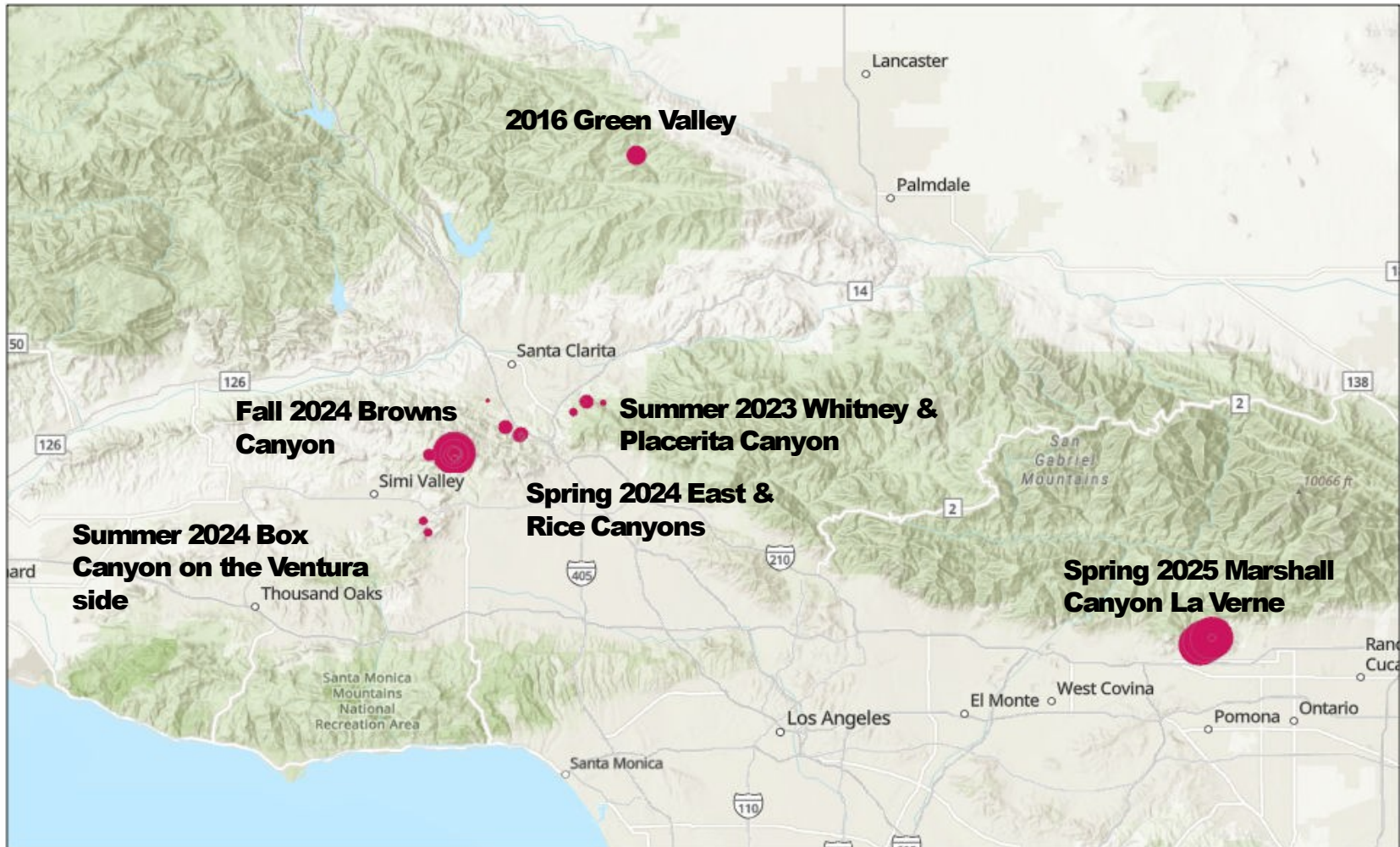
A GSOB adult resting on a
poinson oak leaf



Taking flight

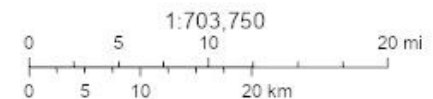


GSOB Survey by IPMU/Forestry Division/LACoFD



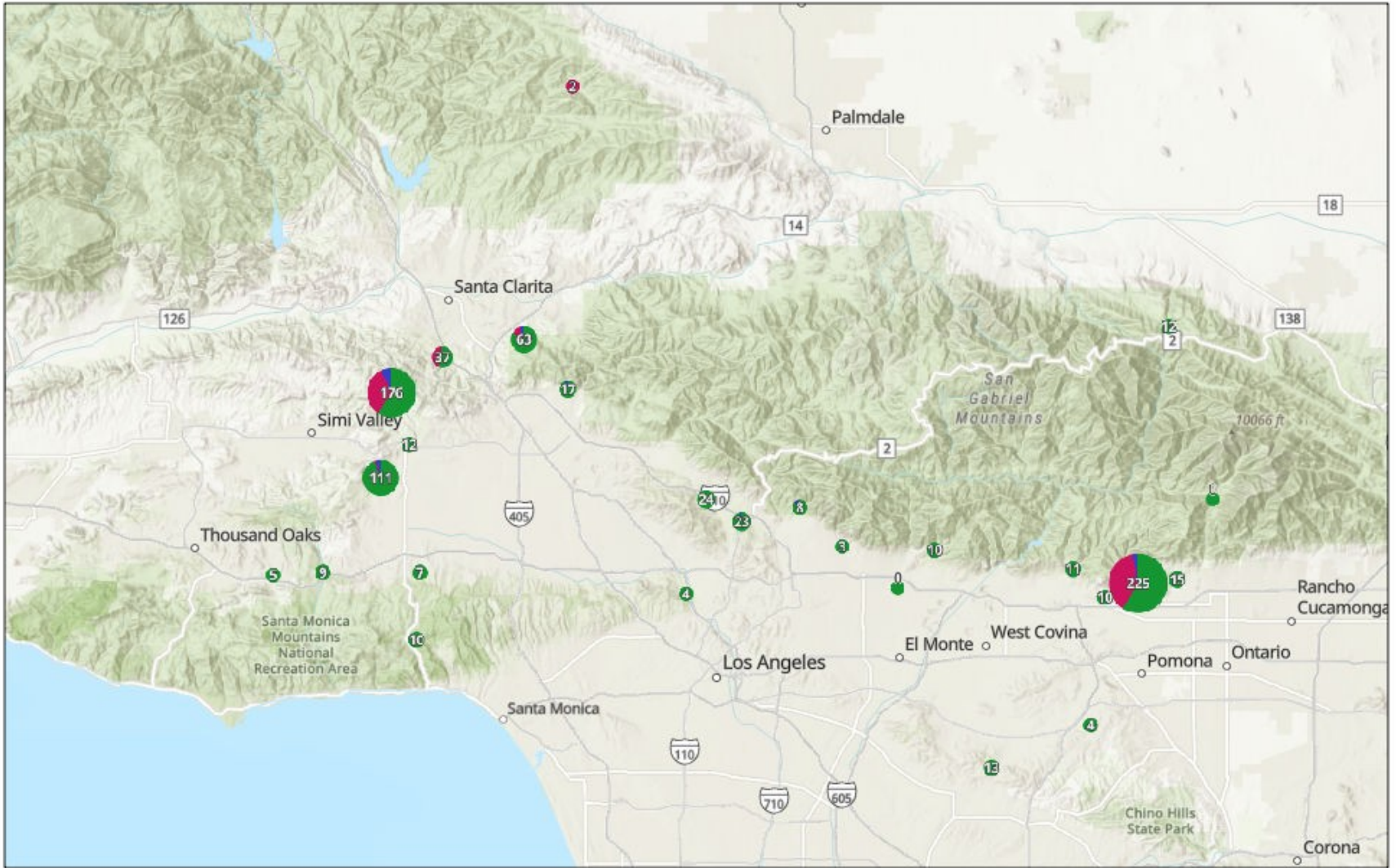
1/14/2026

 **Known GSOB Infestations within LA County**



Esri, CGIAR, USGS, County of Los Angeles, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, MET/NASA, USGS, Bureau of Land

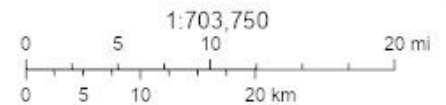
LA County GSOB Survey by IPMU/Forestry/LACoFD



1/15/2026

- Found
- Not
- Questionable

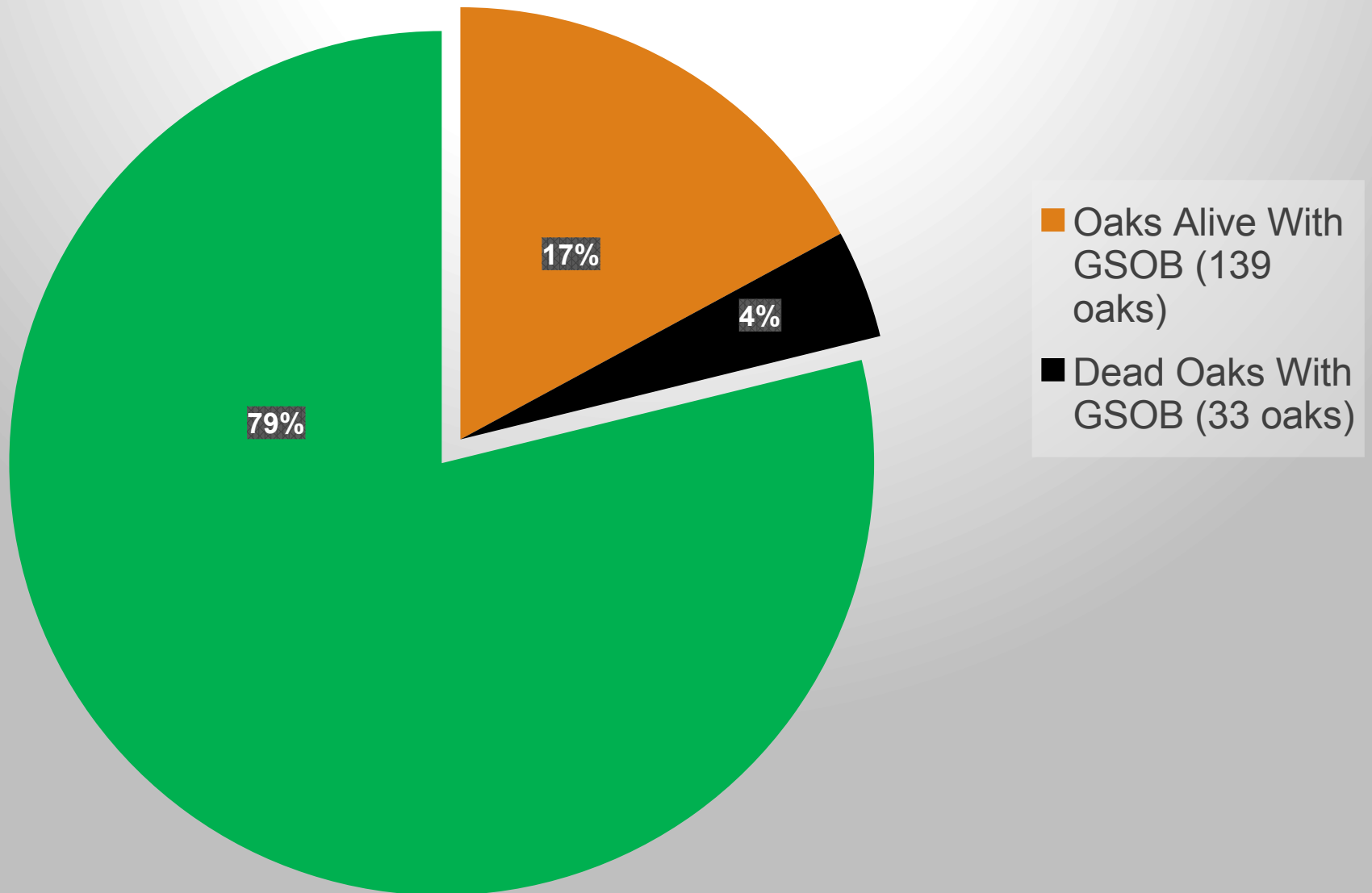
813 oaks surveyed mostly coast live oaks.



Esri, CGIAR, USGS, County of Los Angeles, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METINASA, USGS, Bureau of Land

GSOB Survey Findings as of January 15, 2026

A total of 813 oaks surveyed, mostly coast live oaks



Marshall Canyon in La Verne

2020



2023



Marshall Canyon in La Verne

2020



2023



Symptoms – sparse canopy, chlorotic foliage, etc



Healthy oak
canopy

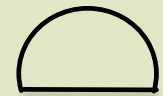


Tree growth is affected by biotic and abiotic factors.

Staining/bleeding on trunk, not always caused by GSOB



Typical GSOB D-shaped emergence hole



Look for D-shaped emergence holes on smooth bark



Western sycamore borer emergence holes (oval)



How to spot sign of hair pin larvae



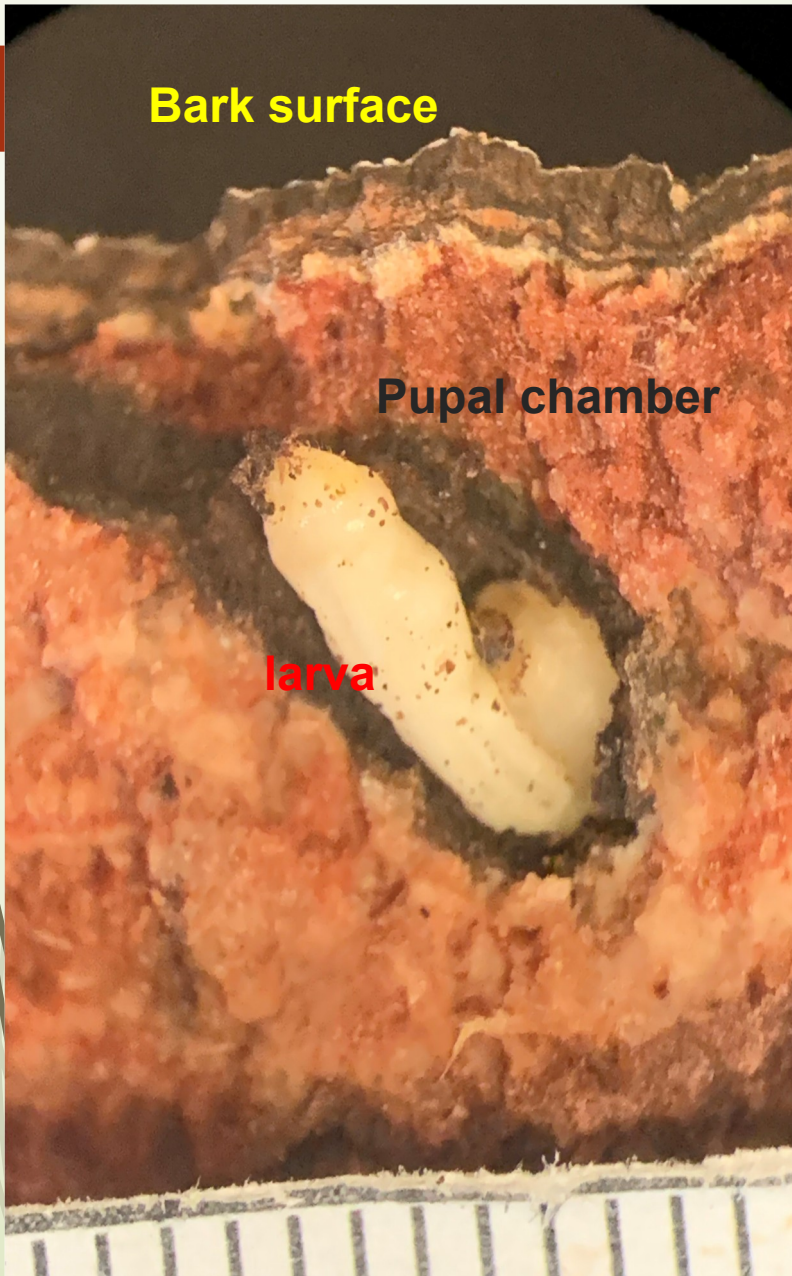
GSOB larval behavior



Bark surface

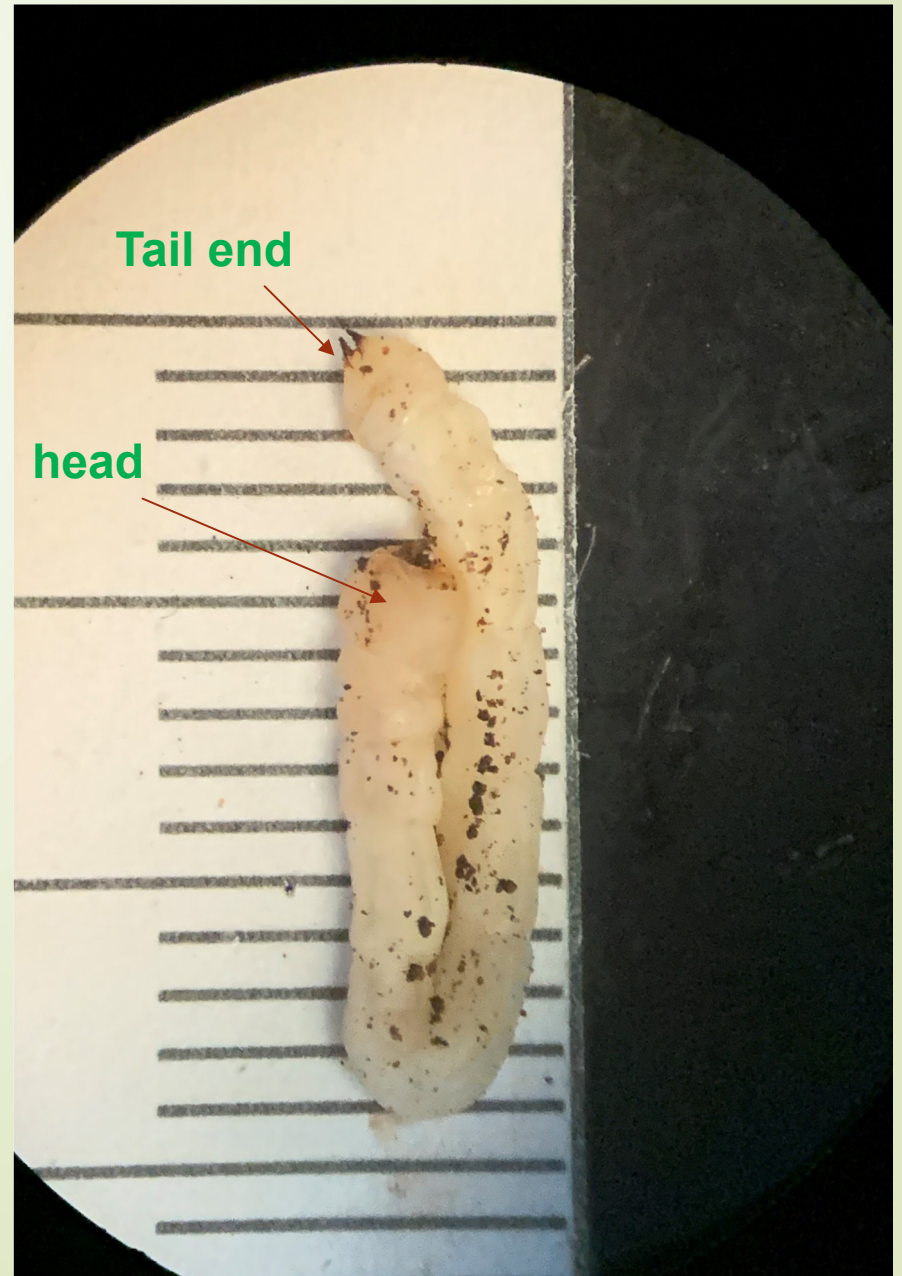
Pupal chamber

larva

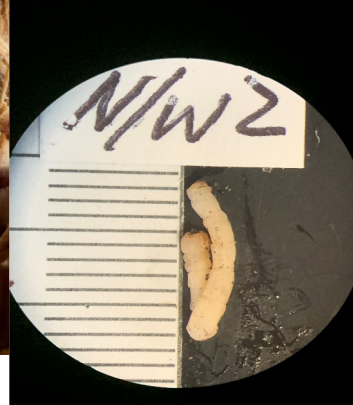


Tail end

head



GSOB larvae are cambium feeders.



GSOB larvae found on the same oak and on the same day



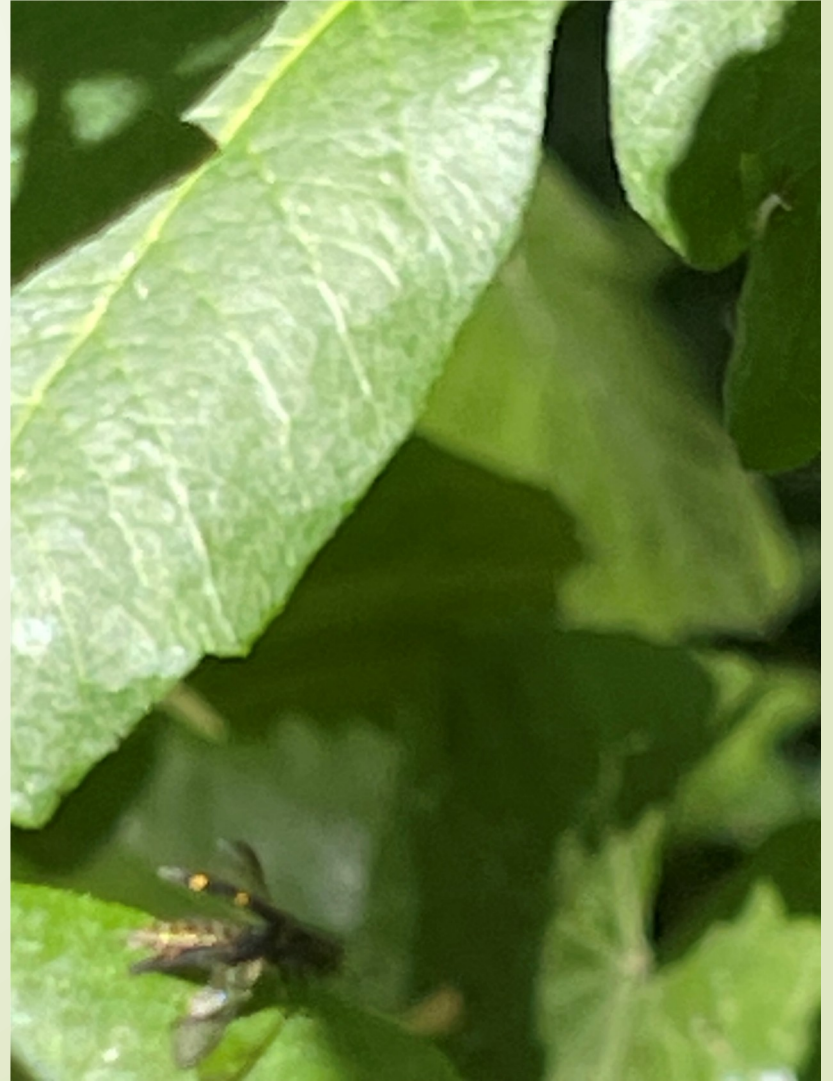
Signs for GSOB verification



Trapping adults using sticky traps



**GSOB
adults**





GSOB Mitigation & Management



Whole tree removal (recently died or dying) debarking & chipping – some pupae in the outer bark might survive and emerge.

Restricting movement of infested chipped materials or cut logs

Systemic insecticide injection using TREE-age (Emamectin Benzoate) or Imicide (Imidacloprid) – kill larvae that feed in the cambium and outer sapwood area; pupae may not be affected.

Trunk spray (persistent insecticides including carbaryl) – can kill adults, eggs and newly hatched larvae that are boring into the outer bark; horticultural soap and oil to kill eggs

Debarking (mechanical)



Insecticides (chemical)

GROUP 1A INSECTICIDE

Drexel®

Carbaryl 4L

Insecticide

Intended For Agricultural or Commercial Use.

ACTIVE INGREDIENT:

Carbaryl 42.6%

OTHER INGREDIENTS: 57.4%

TOTAL: 100.0%

This product contains 4 pounds of Carbaryl per gallon.

KEEP OUT OF REACH OF CHILDREN

CAUTION

See **FIRST AID** Below

SHAKE WELL BEFORE USING

[OPTIONAL: RECIRCULATE CONTENTS BEFORE USE]

ATTENTION: This product contains a chemical known to the State of California to cause cancer and reproductive harm in laboratory animals.

EPA Reg. No. 19713-49

Net Content:

EPA Est. No. 19713-GA-2

2.5 Gals. (9.46 L)

FIRST AID

IF SWALLOWED:

- Immediately call a poison control center or doctor for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything by mouth to an unconscious or convulsing person.

IF ON SKIN OR CLOTHING:

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15 to 20 minutes.
- Call a poison control center or doctor for treatment advice.

IF INHALED:

- Move person to fresh air.

PRECAUTIONARY STATEMENTS (Cont.)

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are made of any waterproof material.

Handlers applying with open cab airblast equipment at application rates equal to or greater than 5 quarts of this product (5 lbs. a.i.) must wear: Coveralls over long-sleeved shirt and long pants, chemical-resistant gloves made of barrier laminate, butyl rubber \geq 14 mils, nitrile rubber \geq 14 mils, neoprene rubber \geq 14 mils, natural rubber \geq 14 mils, polyethylene, polyvinyl chloride \geq 14 mils or viton \geq 14 mils, chemical-resistant footwear plus socks, chemical-resistant headgear and a NIOSH approved particulate respirator with any N, R or P filter, NIOSH approval number prefix TC-84A or a NIOSH approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C.

All other mixers, loaders, applicators and handlers must wear: Long-sleeved shirt and long pants, shoes plus socks, chemical-resistant gloves and a chemical-resistant apron when mixing, loading or cleaning up spills or equipment. In addition, mixers and loaders supporting aerial or chemigation applications must wear a NIOSH approved dust/mist filtering respirator with a NIOSH approved particulate respirator with any N, R or P filter, NIOSH approval number prefix TC-84A; or a NIOSH approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C.

See **"ENGINEERING CONTROLS"** for additional requirements and exceptions.

Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

RESTRICTED USE PESTICIDE

DUE TO ACUTE TOXICITY TO HUMANS. FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

TREE-äge® R10

Injected insecticide for two-year control of listed insect and mite pests in deciduous, broadleaf evergreen, coniferous, and palm trees.

ACTIVE INGREDIENT:

Emamectin Benzoate¹.....9.7%

OTHER INGREDIENTS:.....90.3%

TOTAL:.....100.0%

¹CAS No. 155569-91-8 Contains 0.791 lbs emamectin per gallon.

KEEP OUT OF REACH OF CHILDREN WARNING / AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

EPA Reg. No. 74578-12 EPA Est. No. 39578-TX-1

Net Contents: See individual containers

Manufactured for Arborjet, Inc. 99 Blueberry Hill Road, Woburn, MA 01801

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals WARNING/AVISO

Causes substantial but temporary eye injury. Harmful if swallowed. Do not get in eyes or on clothing. Wear protective eyewear (goggles, face shield, or safety glasses). Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

IMIDACLOPRID GROUP 4A INSECTICIDE

Mauget
IMICIDE™

SYSTEMIC INSECTICIDE
 FOR TREE INJECTION USE
 IN READY TO USE CAPSULES

MFG. BY: J.J. MAUGET CO.
 TOWN, STATE: Arcadia, CA 91006
 EPA REGISTRATION NO: 7946-16
 EPA ESTABLISHMENT NO: 7946-CA-1

ACTIVE INGREDIENT:

Imidacloprid
 1-[[6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine..... 10.0%

OTHER INGREDIENTS:..... 90.0%

Total 100.0%

*Contains 1.11 g/mL active ingredient.

Net Contents:

Includes: 24 capsules plus 24 feeder tubes per carton/quarter flat.

___ 24 capsules @ 0.06 fl. oz. (2 ml) ea., 1.44 fl. oz. (48 ml) net

___ 24 capsules @ 0.09 fl. oz. (3 ml) ea., 2.16 fl. oz. (72 ml) net

___ 24 capsules @ 0.14 fl. oz. (4 mL) each, 3.25 fl. oz. (96 mL) net

Shipping box: 12 cartons/quarter flats as above.

**KEEP OUT OF REACH OF CHILDREN
 CAUTION**

	FIRST AID
IF SWALLOWED	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
IF IN EYES	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses if present, after the first 5 minutes, then continue rinsing. • Call a poison control center or doctor for treatment advice.
IF INHALED	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth to mouth, if possible. • Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-535-5053 for emergency treatment information.	
NOTE TO PHYSICIAN	
There is no specific antidote available. Treat patient symptomatically.	

Oak injected with Tree-Age three months prior to examination

Dead GSOB adult



Dead larvae



Let nature takes its course?



Potential management options



Wrapping trunks with physical barriers – plastic sheeting, steel window screen, etc.



Planting resistant native hybrid oaks or nonsusceptible oak species?



Thermal energy?



Predators, parasites, parasitoids?

plasti

**c
wrap**



velvety

**tree
ants**



Fire charred oak trunk



Placerita Canyon

wood pecker



Native parasitic wasps such as
Ichneumon wasps as
biological control agents?



Straw Itch Mite (ectoparasitic mites)



40

0x



Identified by: Joelene Tamm
Natural Resources Director
La Jolla Band of Luiseno Indians

Unknown mites





Questions?

Thank You!

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e.lacounty.gov