

Glassy-winged sharpshooter management in nursery crops



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An invasive vector of *Xylella* diseases

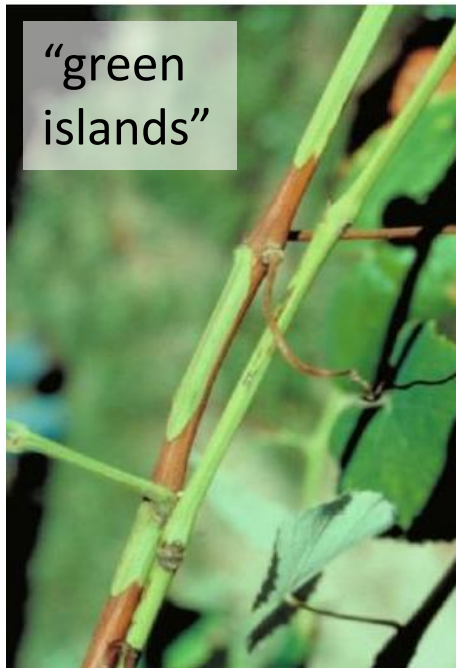
GWSS first reported in CA in late 1980s

- triggered novel *Xylella* diseases
- major Pierce's disease epidemic (~40% loss)

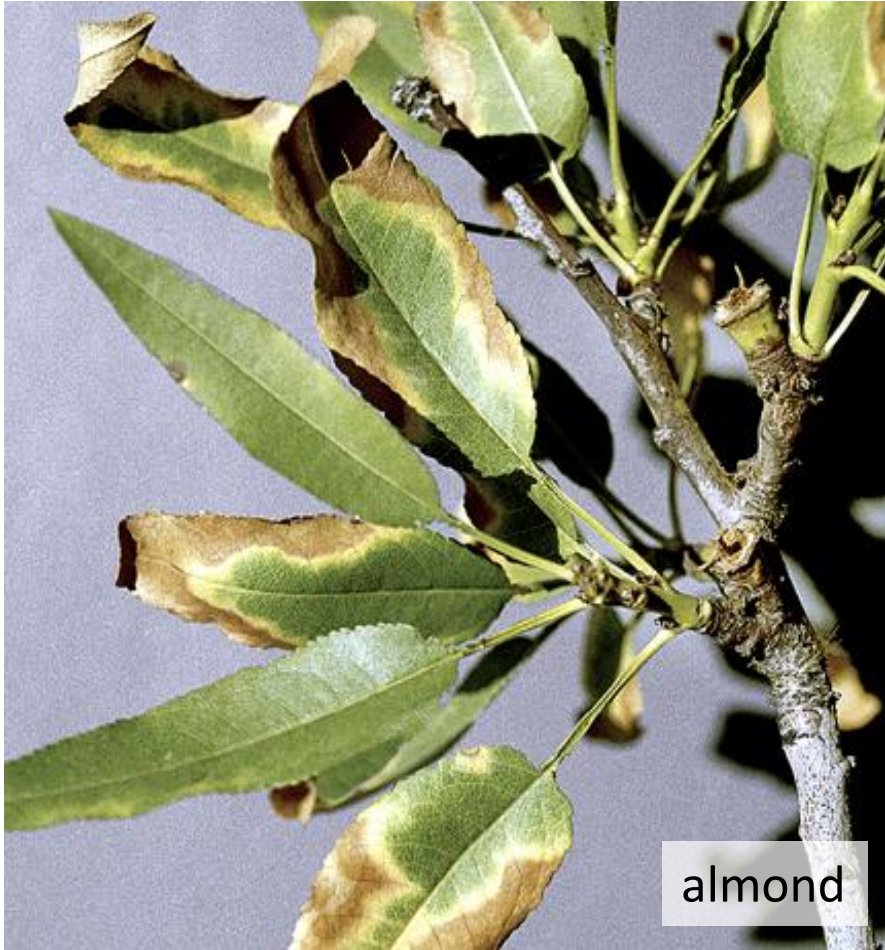
Reach high densities in vineyards near citrus

Invasion has impacted citrus and nursery industries





Other *Xylella* diseases



Economic impact of Pierce's disease

- estimated yearly costs of \$100m
- vine losses, management costs, nursery regulations, area-wide control
- majority of impact in areas where GWSS is not established
- ~50-90% in just North Coast



GWSS and PD management strategies

Area-wide management

- sharpshooter monitoring
- biological control
- chemical control in citrus



Vineyard management

- vector control
- removal of disease vines



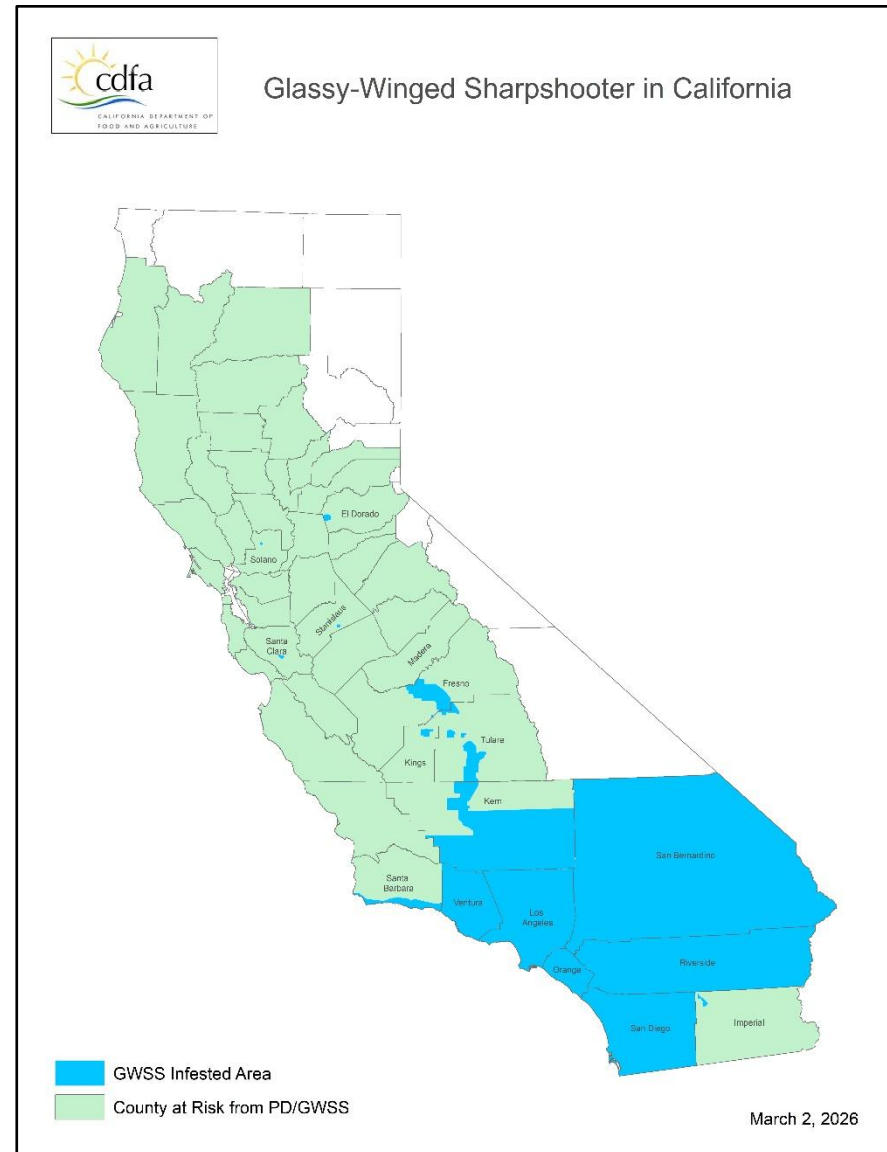
Current GWSS distribution

Widespread in Southern CA,
parts of Central Valley

Not established in Central
Coast and Northern CA

Major efforts to limit further
spread

- eradicate incipient invasions
- quarantine programs



Since 2000, there have been 22 new GWSS detections



- monitoring, treatments, biocontrol
- 19 eradicated
- 3 are ongoing
- no significant spread beyond initial detection

Risk of further GWSS invasion

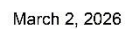
Glassy-winged Sharpshooter Host List by Common Name

<u>Common Name</u>	<u>Scientific Name</u>
Abelia	<i>Abelia</i> spp.
Acacia	<i>Acacia</i> spp.
Aeonium	<i>Aeonium</i> spp.
Agapanthus	<i>Agapanthus</i> spp.
Albizzia	<i>Albizia</i> spp.
Alder	<i>Alnus</i> spp.
Aleurites	<i>Aleurites</i> spp.
Amaranth	<i>Amaranthus</i> spp.
Ananas	<i>Ananas</i> spp.
Angel's trumpet tree	<i>Brugmansia</i> spp.
Annona (cherimoya)	<i>Annona</i> spp.
Apple	<i>Malus</i> spp.
Aptenia	<i>Aptenia</i> spp.
Aralia ivy	<i>Fatshedera</i> spp.
Arborvitae	<i>Thuja</i> spp.
Arizona rosewood	<i>Vauquelinia</i> spp.
Ash	<i>Fraxinus</i> spp.
Asparagus	<i>Asparagus</i> spp.
Aspidistra	<i>Aspidistra</i> spp.
Avocado	<i>Persea</i> spp.
Azalea	<i>Rhododendron</i> spp.
Baccharis	<i>Baccharis</i> spp.
Banana	<i>Musa</i> spp.

...

1. GWSS has a broad host range

- 300+ plant taxa
- major crops (avocado, citrus, grape, olive)
- natives (oaks, sycamore, willows)
- ornamentals (rose, oleander, boxwood, Photinia, Crape myrtle, Vinca, privet)



- since 2001, ~1.2M shipments out of infested areas
- ~300M total plants

In fact.....

Purchased a Grapevine or Desert Willow at Costco? Important GWSS Information

Last updated: July 2, 2026

The California Department of Food and Agriculture (CDFA) is responding after invasive glassy-winged sharpshooter (GWSS) insects were found on grapevines sold at select Costco locations in Northern California between April 21 and May 19 and desert willows sold at Costco locations between June 22 and 26.

If you purchased a [grapevine](#) or [desert willow](#) from Costco in an affected county during this, contact your local [County Agricultural Commissioner's Office](#) right away.

<https://www.cdfa.ca.gov/pdcp/gwss-costco-plants.html>

1. GWSS nursery regulatory program
2. Assessing the effectiveness of the GWSS nursery quarantine programs

1. Nursery Regulatory Program

- compliance agreement with county ag commissioner or CDFA
- employee training, GWSS monitoring, staging area
- “Blue Tag” shipping permit and pre-notification for destination county

Nursery shipping protocols:

<https://www.cdfa.ca.gov/pdcp/Documents/NurseryShipProtocols.pdf>

Approved treatment protocol:

<https://www.cdfa.ca.gov/pdcp/Documents/NSATP.pdf>

Nursery quarantines

Shipments must be free of all GWSS life stages

Establish a staging area

Sticky-trap monitoring

- treatment required if threshold exceeded, pause on shipments

Pre and post-shipment inspection

- shipments may be rejected or destroyed



Active Ingredient	Product
acephate	Acephate 97UP
imidacloprid	Admire Pro® *
imidacloprid	Alias 4F® *
flupyradifurone	Altus®
acetamiprid	Assail 30 SG®
acetamiprid	Assail 70 WP®
permethrin	Astro®
cyfluthrin	Baythroid XL®
imidacloprid	CoreTect® *
cyfluthrin	Decathlon® 20 WP
cyfluthrin/imidacloprid	Discus®
imidacloprid	Marathon II Greenhouse and Nursery Insecticide
tau-fluvalinate	Mavrik Aquaflow®
acephate	Orthene® 97
permethrin	Perm-UP 3.2 EC
imidacloprid	Quali-Pro Imidacloprid 2F®
dinotefuran	Safari 20 SG
carbaryl	Sevin SL®**
bifenthrin	Talstar S Select®
fenpropathrin	Tame 2.4 EC Spray®**
neem oil	Triact 70®
acetamiprid	Tristar® 30 SG
acetamiprid	Tristar® 8.5 SL

Approved treatment protocol

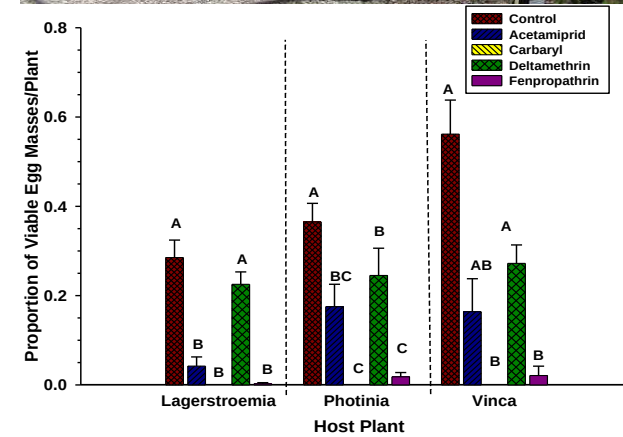
ATP started in 2009 to provide flexibility

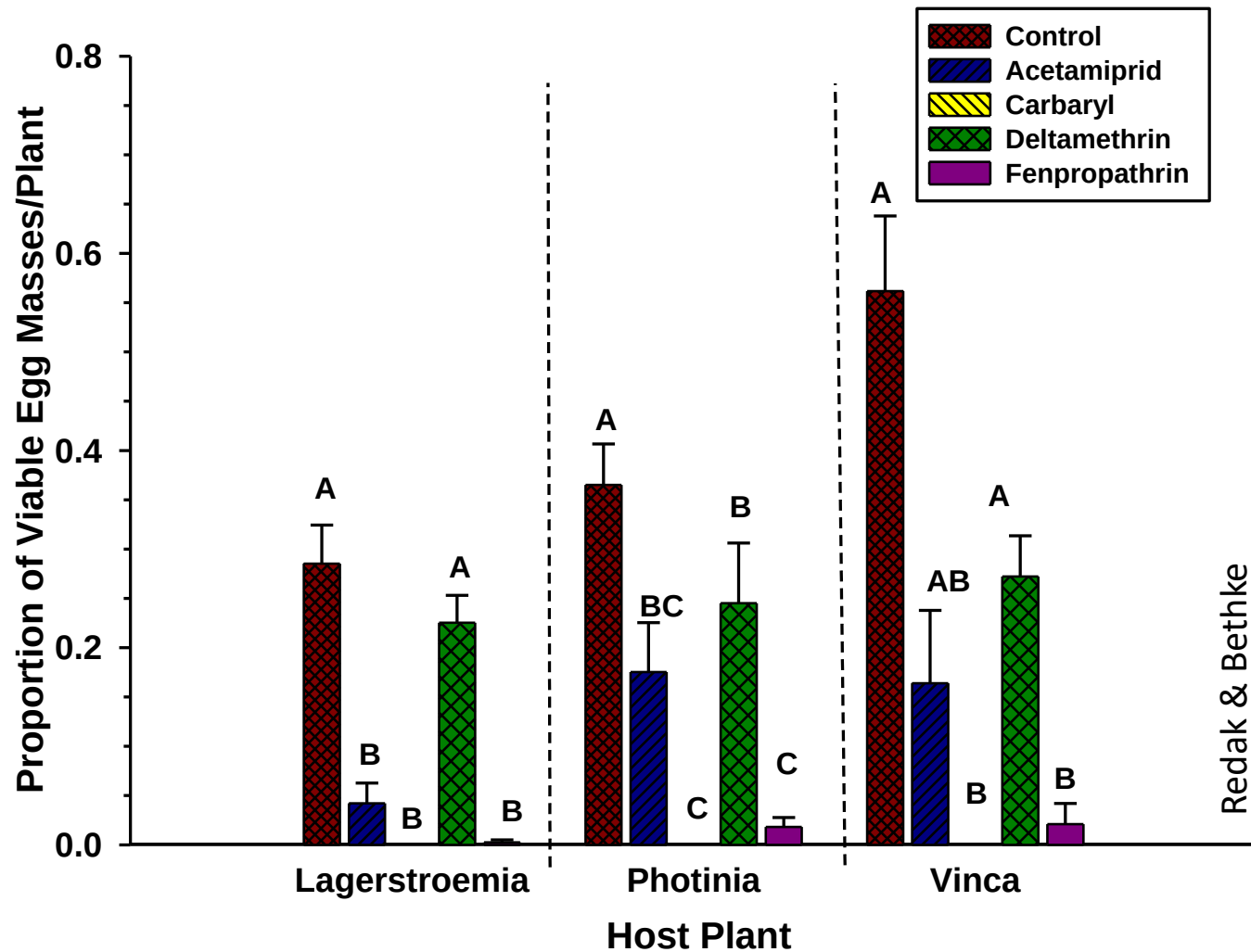
Drops inspection requirement

Prophylactic disinfestation treatment

- carbaryl (Sevin)
- fenpropathrin (Tame)

Based on pilot program that showed high efficacy





- carbaryl and fenpropathrin resulted in > 95% disinfestation of GWSS egg masses

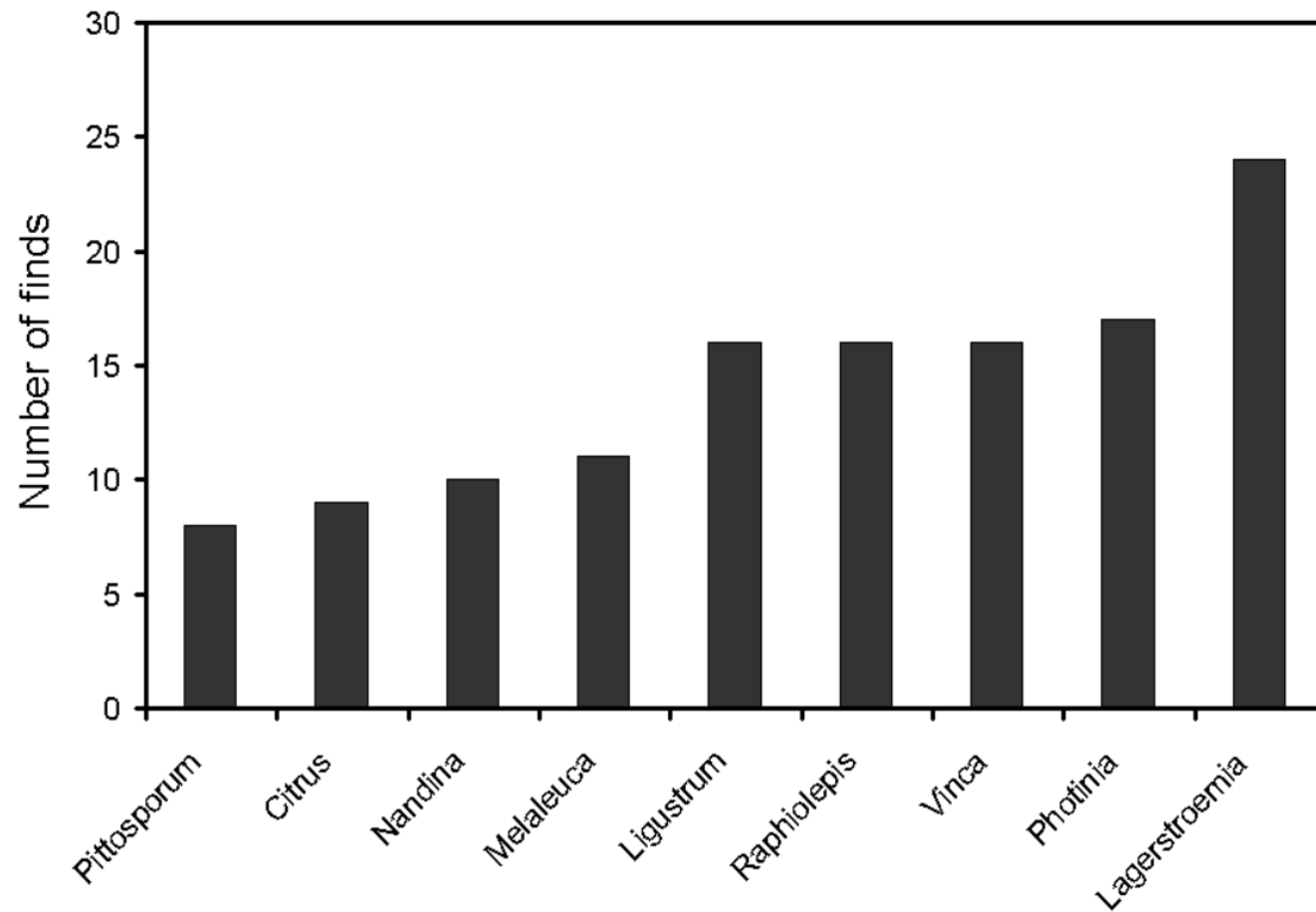
2. How effective have the nursery quarantine programs been?



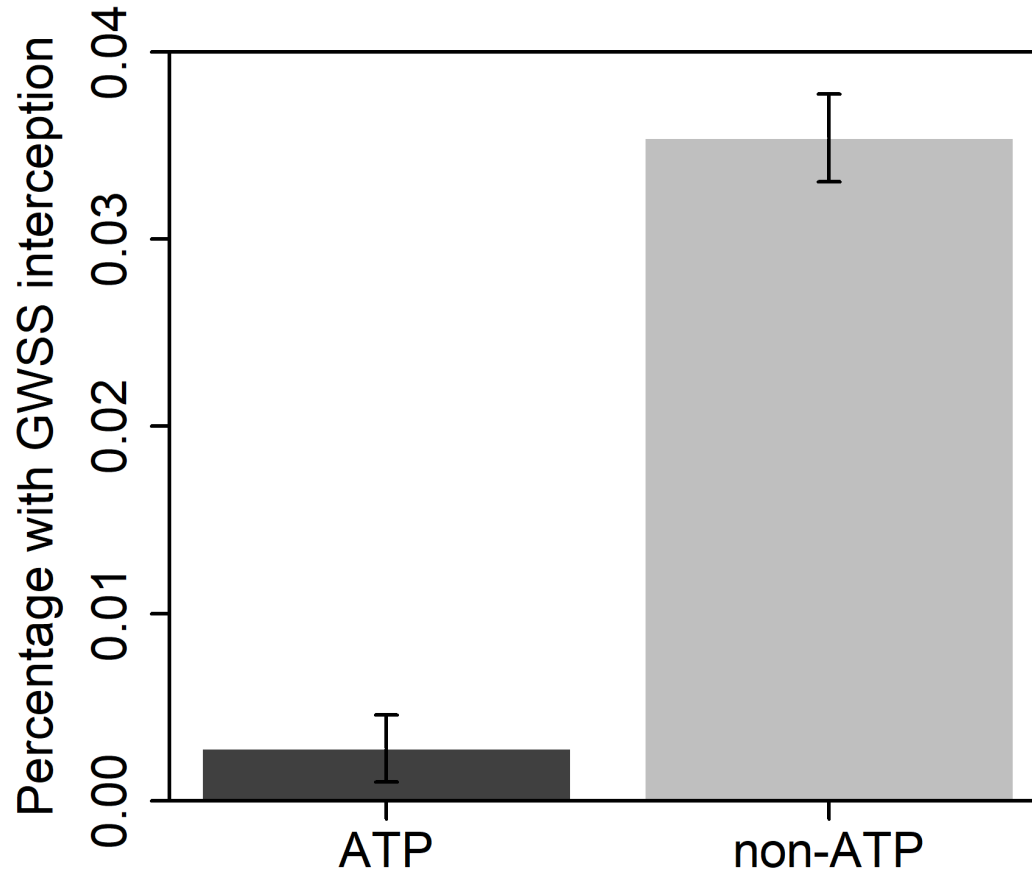
- GWSS interceptions on nursery stock
- parasitism on nursery stock

GWSS interceptions on nursery stock

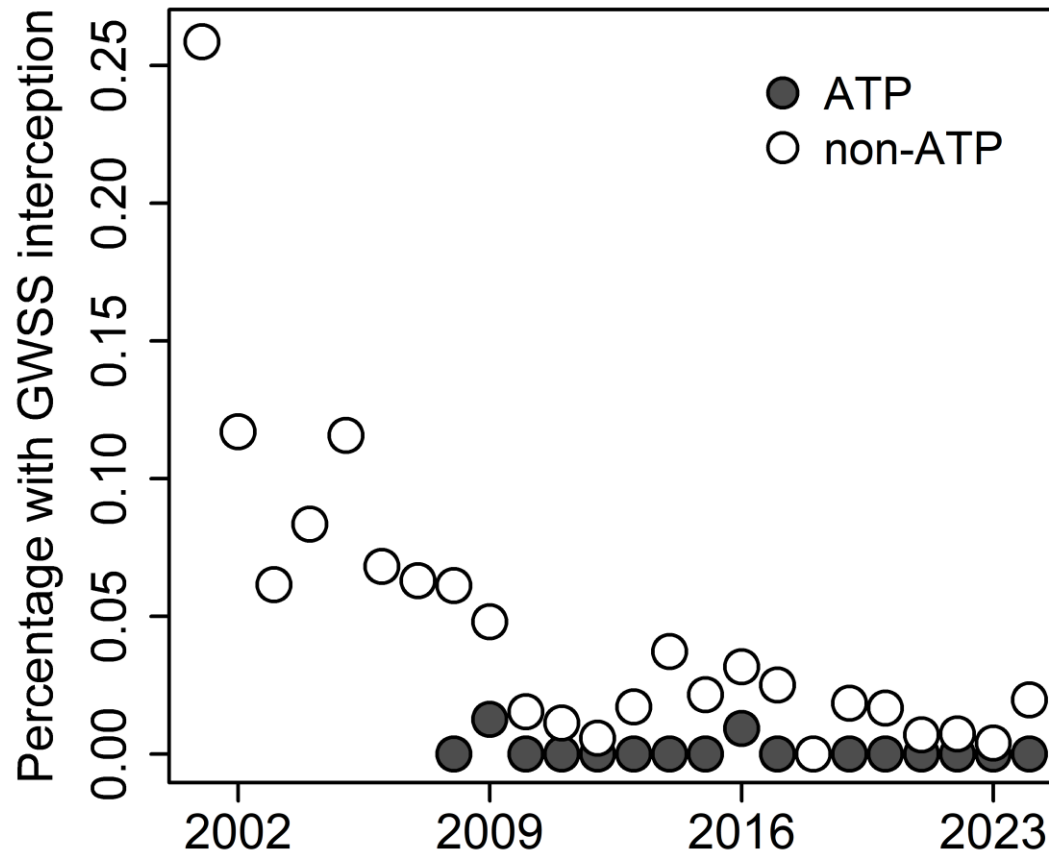
- 1.2M total shipments, 166k as part of ATP
- 639 total interceptions, only 2 from ATP
- 99.95% of shipments uninfested (i.e. 1 interception per 1,900 shipments)
- egg masses, nymphs, and adults accounted for 92.3%, 5%, and 2.7% of interceptions, respectively



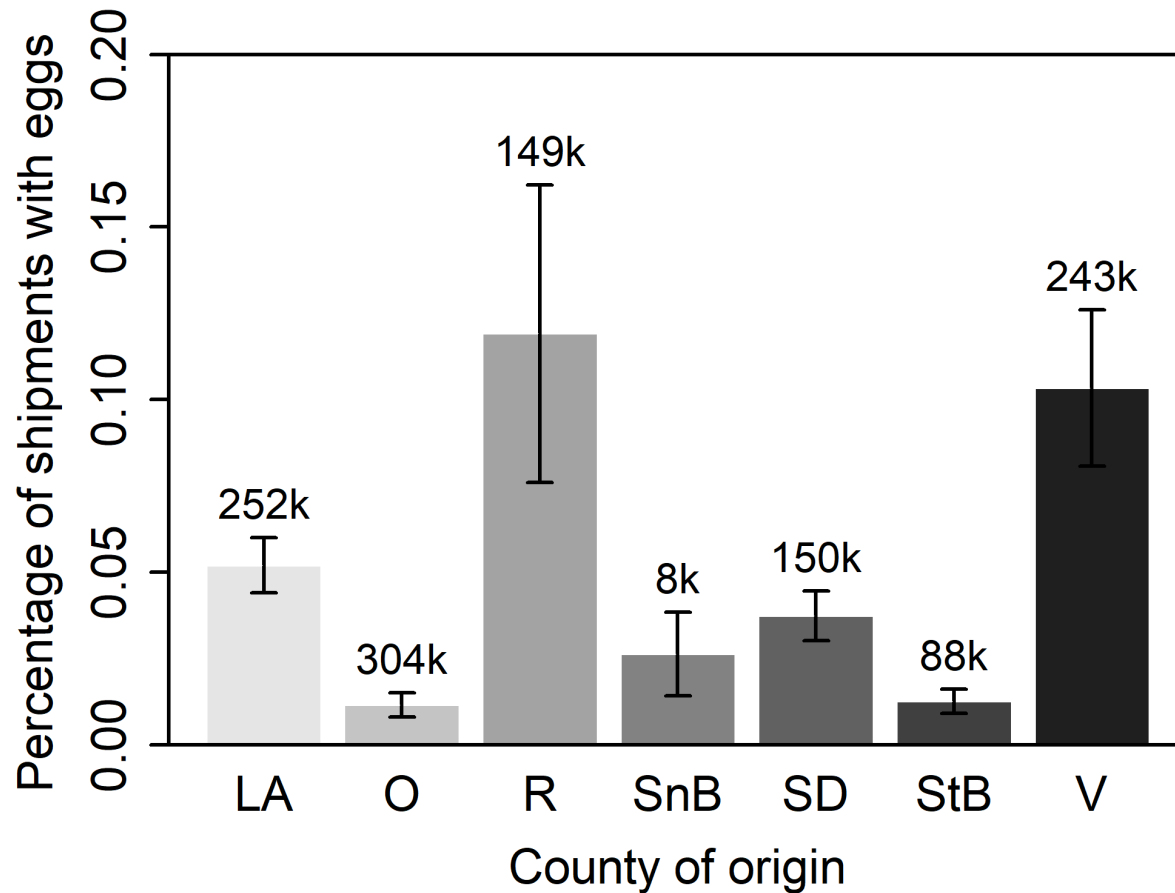
- nursery plants with most frequent GWSS interceptions, 2001-2006



- ~50x difference in interception rates (1 per 1,600 vs. 1 per 83,000)



- sharp decline in interceptions over time (from $\sim 1/400$ to $\sim 1/5000$)



- interceptions most frequent for Riverside and Ventura nurseries, least for Orange and Santa Barbara



GWSS biological control

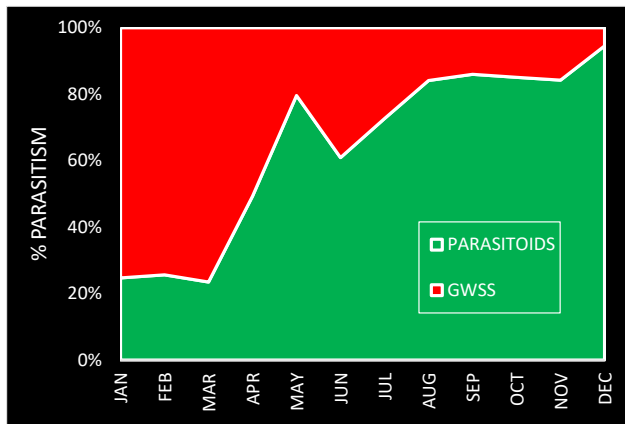
Native and introduced egg parasitoids

- *Cosmocomoidea* (= *Gonatocerus*) spp.
- not commercially available



CDFA release program in invasive range

- Southern California releases halted in 2012 (except Ventura)



High parasitism rates Summer – Fall

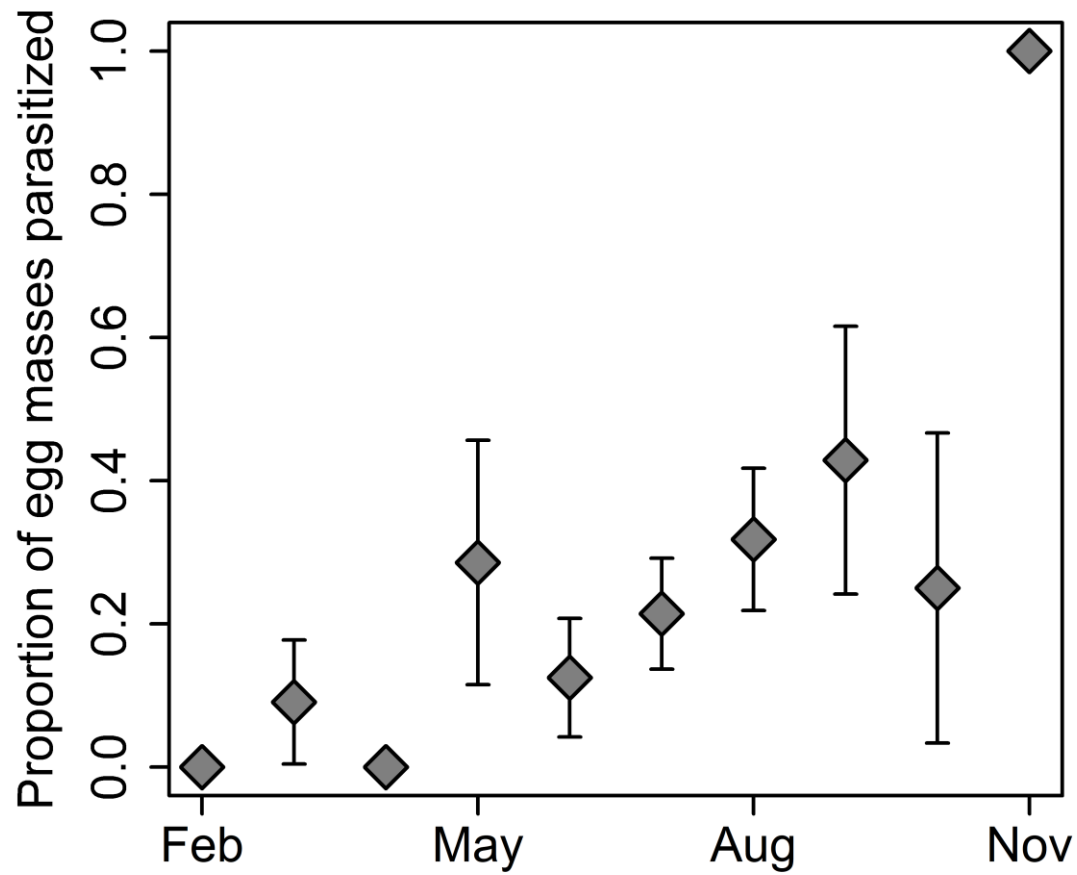
Impact in nurseries?

Parasitism on nursery stock

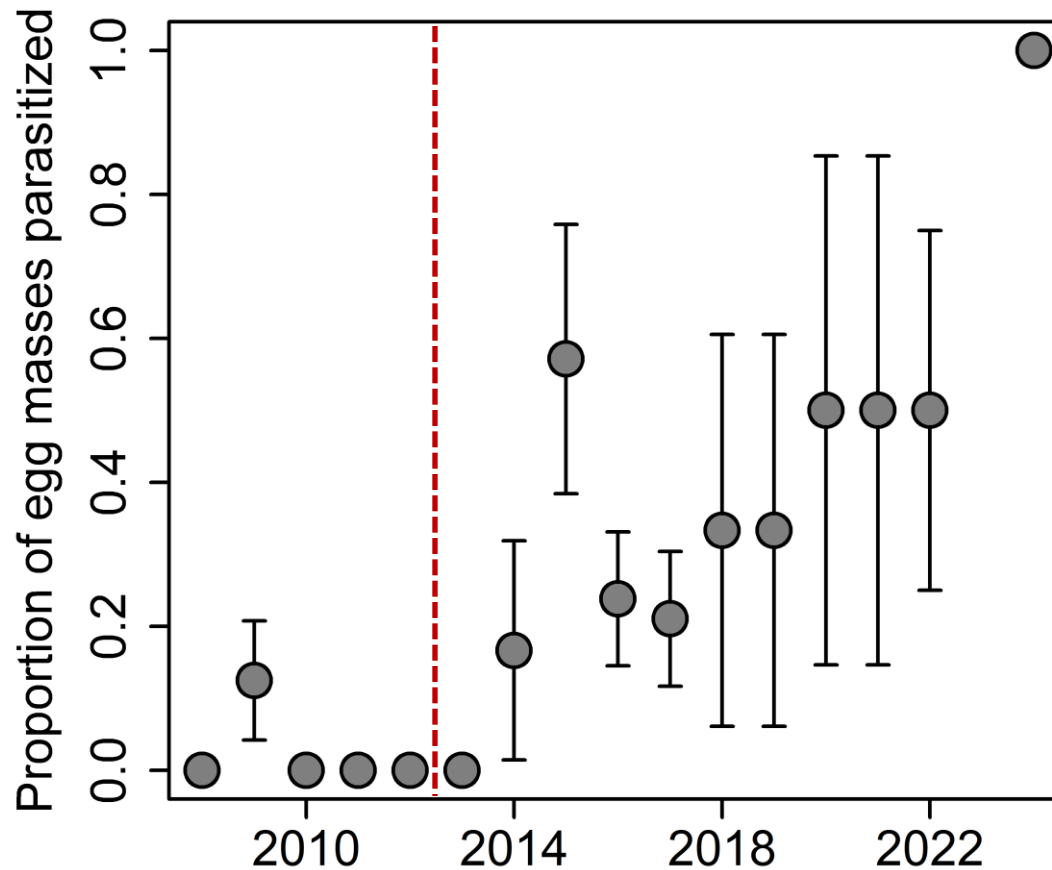
Monitored parasitism on 102 egg masses found during inspections

- overall, ~25% of egg masses had some parasitism
- parasitism observed on 13 of 37 nursery taxa: *Arbutus*, *Azalea*, *Buxus*, *Cercis*, *Dalbergia*, Jujube, *Lagerstroemia*, *Metrosidero*, *Olea*, *Podocarpus*, *Quercus*, *Rhamnus*, *Tristania*





- parasitism higher later in the year (late Spring through Fall)



- parasitism higher in more recent years (post 2013) despite release program being halted

Nursery quarantine programs appear to successfully limit human-assisted spread of GWSS

- biggest risk is if program requirements aren't followed?
- movement of infested nursery stock is rare
- Approved treatment protocol is especially effective at disinfesting nursery stock
- biocontrol may be playing a meaningful role in nurseries despite releases no longer occurring in most of Southern CA

Rick Redak

Jim Bethke

John Kabashima

Greg Morris

Stacie Oswalt



Pierce's Disease
Control Program



CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE