Spotted Lanternfly

Keeping this Pest out of California

Presentation to California Nursery Advisory Board | September 9, 2021

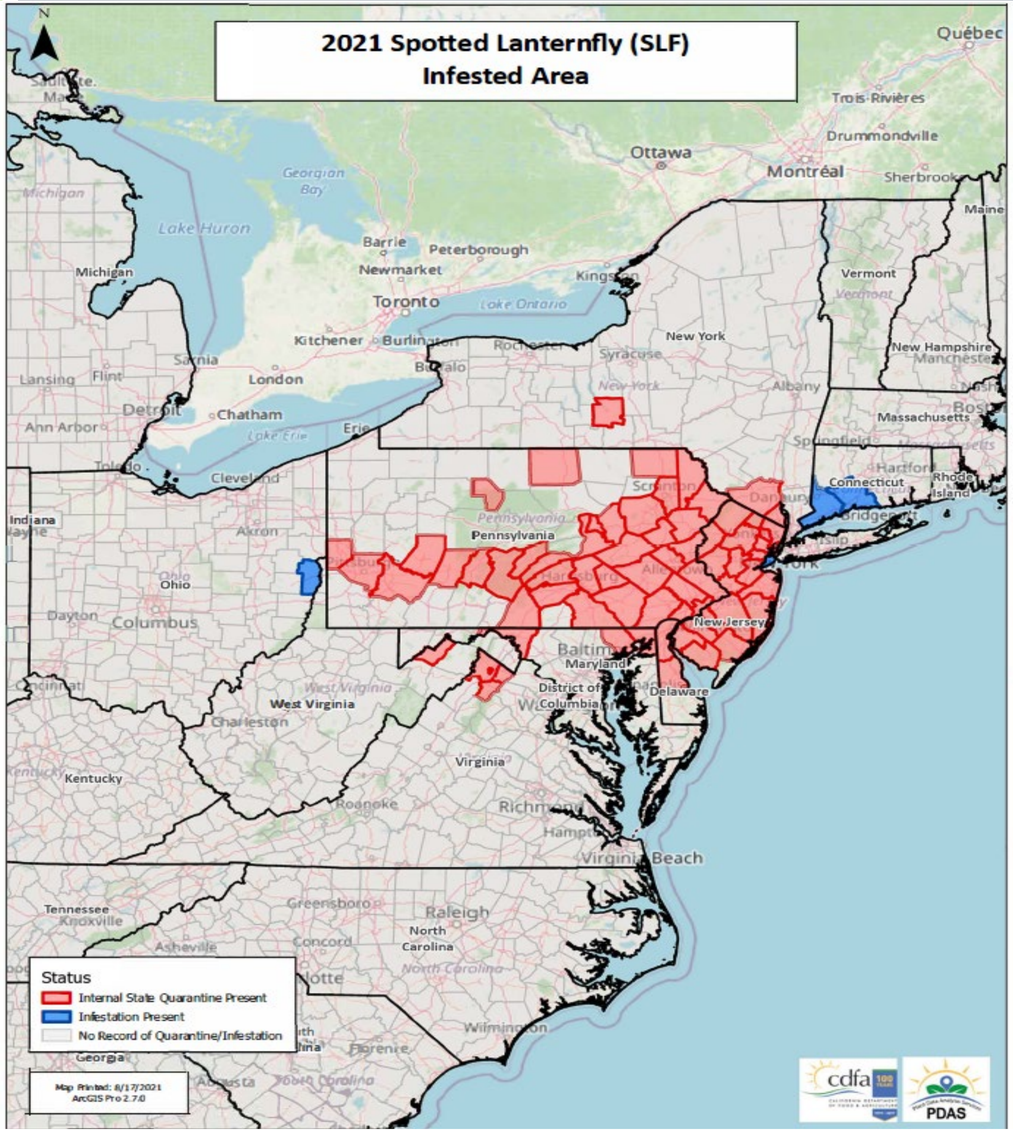
Spotted Lanternfly

Lycorma delicatula (White) (Hemiptera: Fulgoridae)

- Large in size (up to 25 mm long) & colorful.
- Detected in 2014 in Pennsylvania.
- Likely hitchhiked as egg mass on imported stone or associated packing materials.
- Lays eggs on any flat surface, including objects like the sides of trains including tree trucks as well as random non-living objects such as vehicles.
- Feeds on tree of heaven (*Ailanthus altissima*), but also appears to be preferring grape in North America.

Spotted Lanternfly

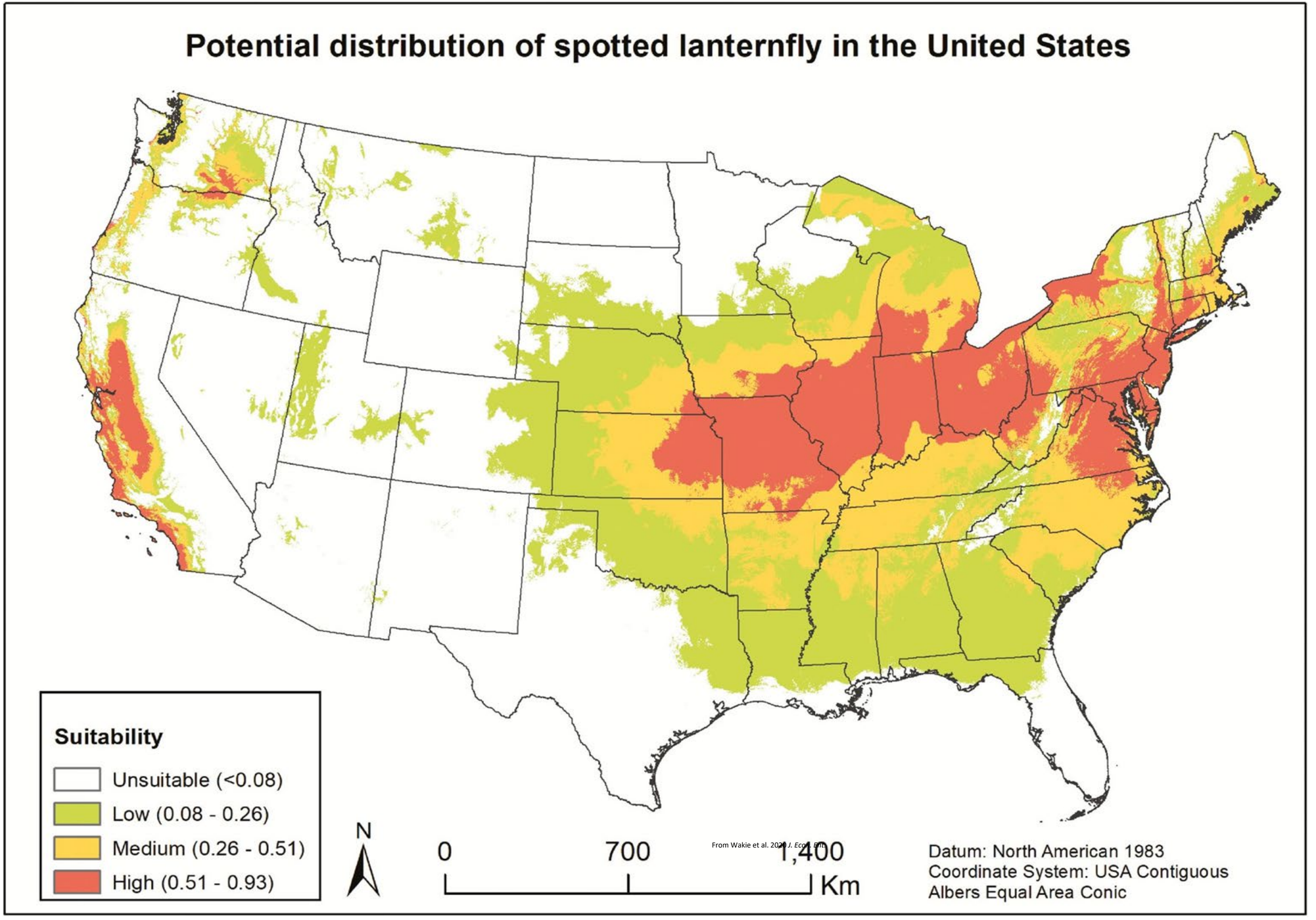
Lycorma delicatula (White) (Hemiptera: Fulgoridae)



- 9 states with infestations – Connecticut, Delaware, Maryland, New Jersey, New York, Ohio, Pennsylvania, Virginia and West Virginia

- 6 states with interior quarantines (no federal quarantine)

- 10 adults found in California on air cargo flights in 2019
- 44 (two live) adults found in California on air cargo flights in 2020
- Nine adults found so far in California on air cargo flights in 2021
- One non-viable egg mass, one dead adult and dead nymphs (three interceptions) found at the border in 2021



From Wakie et al. 2020 *J. Econ. Ent.*

Impacts to Grapes

- Mass feeding kills vines
- Honeydew & sooty mold – secondary "infection" affects photosynthesis and other plant physiology
- Reduced freeze tolerance, failed fruit set

*"We have vineyards in Pennsylvania that, after two years … **are dead**. They're done. Kills the plant, you're out of that business."*

-Pennsylvania Secretary of Agriculture

Photos: Erica Smyers, Penn State U; KYW News; WFMZ News

Impacts to Grapes

- Peak feeding near & at harvest
- Feeding can affect ripening/sugars
- Spraying disrupts harvest timing

Photo: Erica Smyers, Penn State University

Tools in the Toolbox

Photo: Heather Leach, Penn State University

INSECTICIDE SPRAYS:

- Mostly pyrethroids & neonicotinoids against nymphs/adults
- Repeat treatments necessary

Tools in the Toolbox

- Tree of heaven removal and treatment
- Egg scraping

In the Pipeline

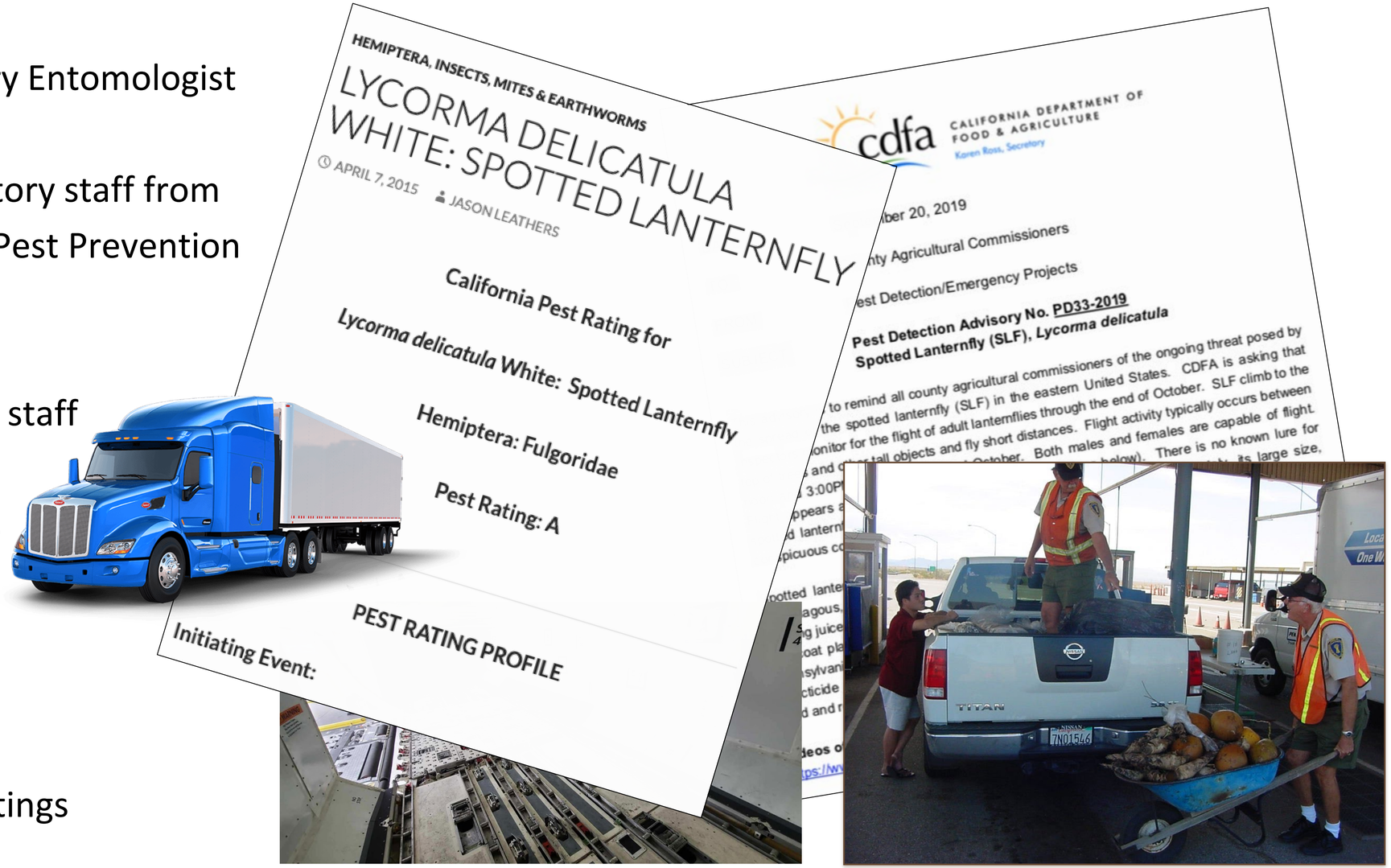
- Biocontrol with parasitoid wasps and entomopathogenic fungi (biopesticides)
- Biocontrol of tree of heaven using plant pathogens

Photos: Erica Smyers, Penn State U; Putah Creek Council

	European Grapevine Moth	Spotted Lanternfly
Lure	Effective pheromone lure	**NO LURE**
Mating Disruption	Available	**NO MATING DISRUPTION**
Dispersal	Human-mediated dispersal limited to host material and “dirty” ag equipment	Human-mediated dispersal more similar to gypsy moth, regulatory challenges
Research	Well studied, established control methods	Not yet well studied in U.S.
Food	Primarily feeds on and dependent on grapes Feeds on leaves and fruit	Moves between crops & landscape Feeds on shoots/wood

What We Have Done

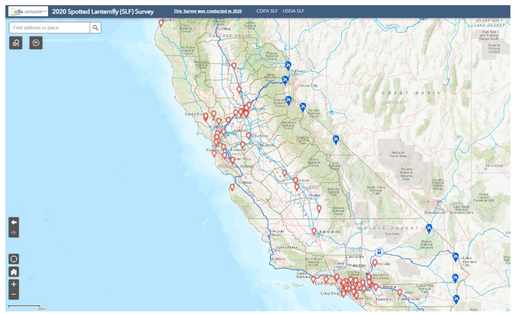
- A-rating from State Primary Entomologist
- Training for county regulatory staff from PHPPS and PDCP through Pest Prevention University
- Advisories to state/county staff
- Border Station inspections
- Air Cargo inspections
- CDFA participation in SLF Summit and national meetings

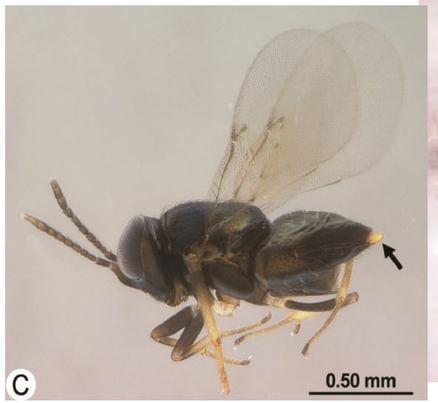


What We Are Doing

- Risk-Based Detection Survey
  - Initial survey conducted in 2020
  - 2021 survey in Aug/Sep
- Est. of California State Exterior Quarantine - 2021
- Biological Control efforts
  - CDFA research grant extended to UC Riverside
  - USDA, Cornell and Penn State also investigating parasitoids and pathogens

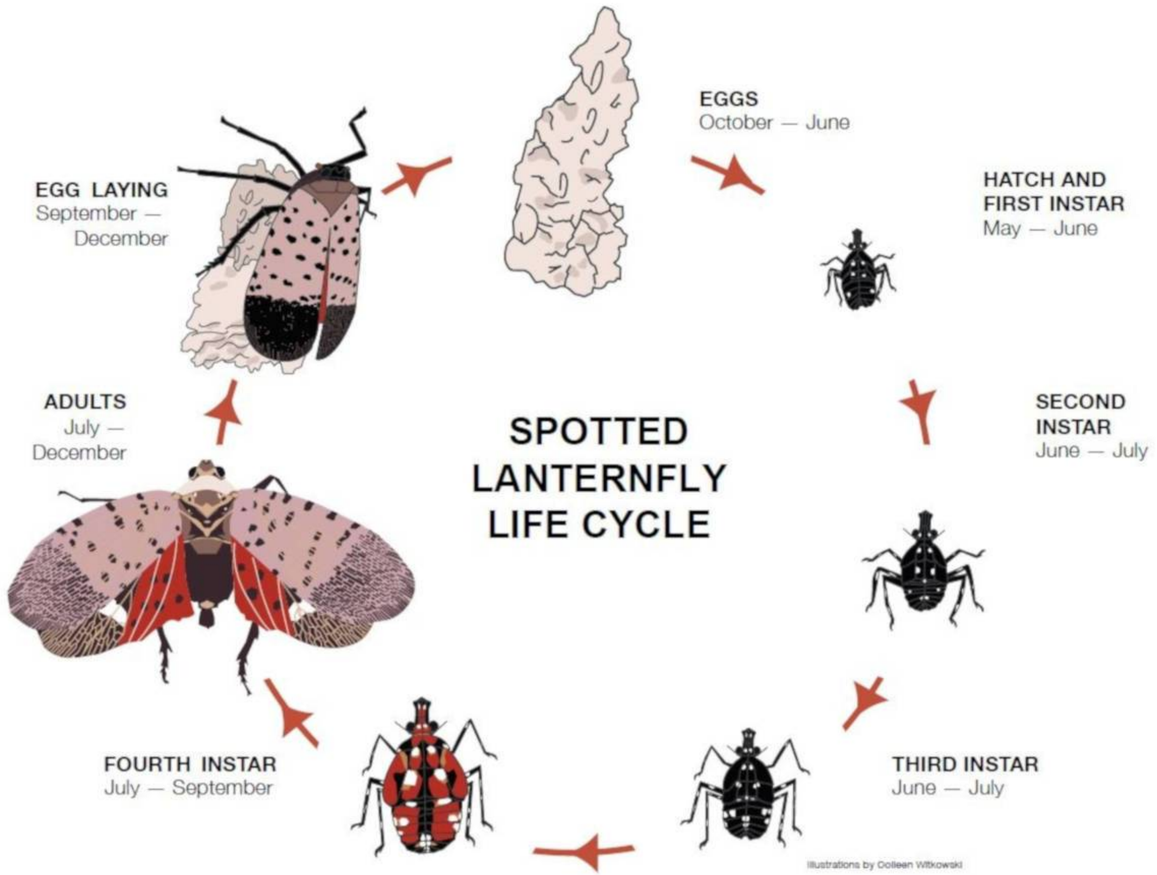
Interactive SLF Map





Photos: Liu & Mottern 2017 J. Insect Sci.

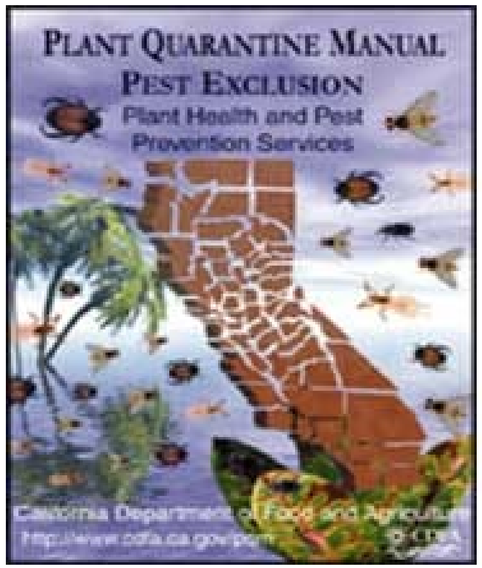
What We Are Doing



- Formation of a CDFA sponsored Science Advisory Panel
  - Gain input/insights from university and federal scientists on SLF research/operations in infested areas
  - Includes numerous scientists from eastern states, California, and USDA
  - 2-day event in September via online venue

- Development of a California Statewide Action Plan
  - California-specific approach to detection, delimitation, regulatory action, communication plan, and outreach

What We Are Doing



CDFA/CACASA SPONSORED RESEARCH EFFORTS

- Develop and deploy training module to familiarize Master Gardeners with SLF; develop an effectiveness evaluation of the training module with citizen scientists.
- Conduct host specificity testing using SLF in the UC Riverside Biosecurity Level 3 contained research facility. This data will help estimate future range potential in CA.
- Develop risk-based maps and models to forecast the establishment of SLF within CA, and support pathway analysis of SLF transport potential from known infested regions.
- Mapping of crop species at risk to SLF infestation in CA to help further refine modeling efforts for pest establishment.
- Determine suitability of specialty fruit and nut crops (avocado, almond, citrus, olive, etc.) as a host for SLF nymphs and adults. Evaluate feeding damage and host response

Outreach in Development

Content for ad

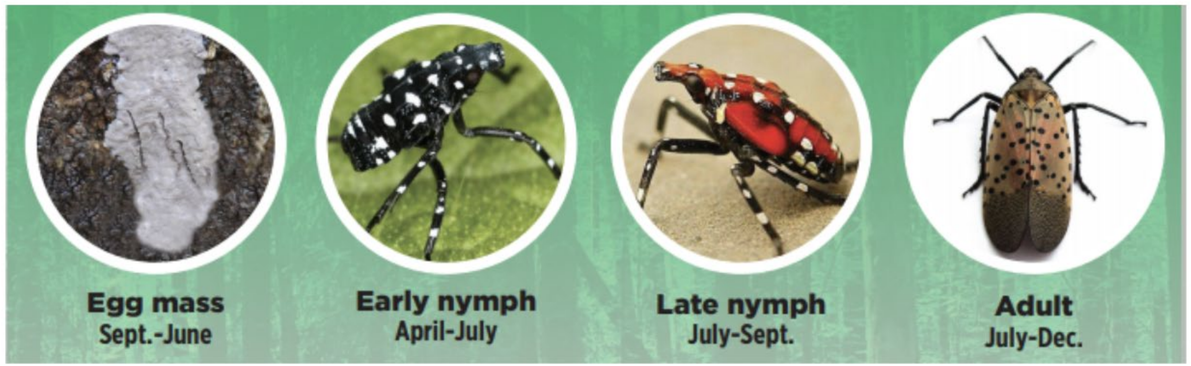
Keep Spotted Lanternfly Out of CA

Bad bug alert! Spot it? Report it!

CDFA Pest Hotline 1-800-491-1899

Print ads: include [short URL] (cdfa.ca.gov/pdcp/board/spottedlanternfly.html) and QR code

CDFA logo and PD/GWSS logo



- UC Master Gardeners Sentinel program
- PD/GWSS Board developing communications toolkit and advertising campaign
- iNaturalist and community-based science outreach
- Outreach with stakeholders about SLF across the state
- Coordination with other states including a unified western states outreach effort

Collaboration

DATA SHARING: establishing MOU's for detection activity data and research efforts

TRAINING for air cargo inspections, field crews, regulatory staff and citizen scientist efforts

COOPERATION to harmonize efforts for quarantines

Questions?