

Spotted Lanternfly: Information & Update



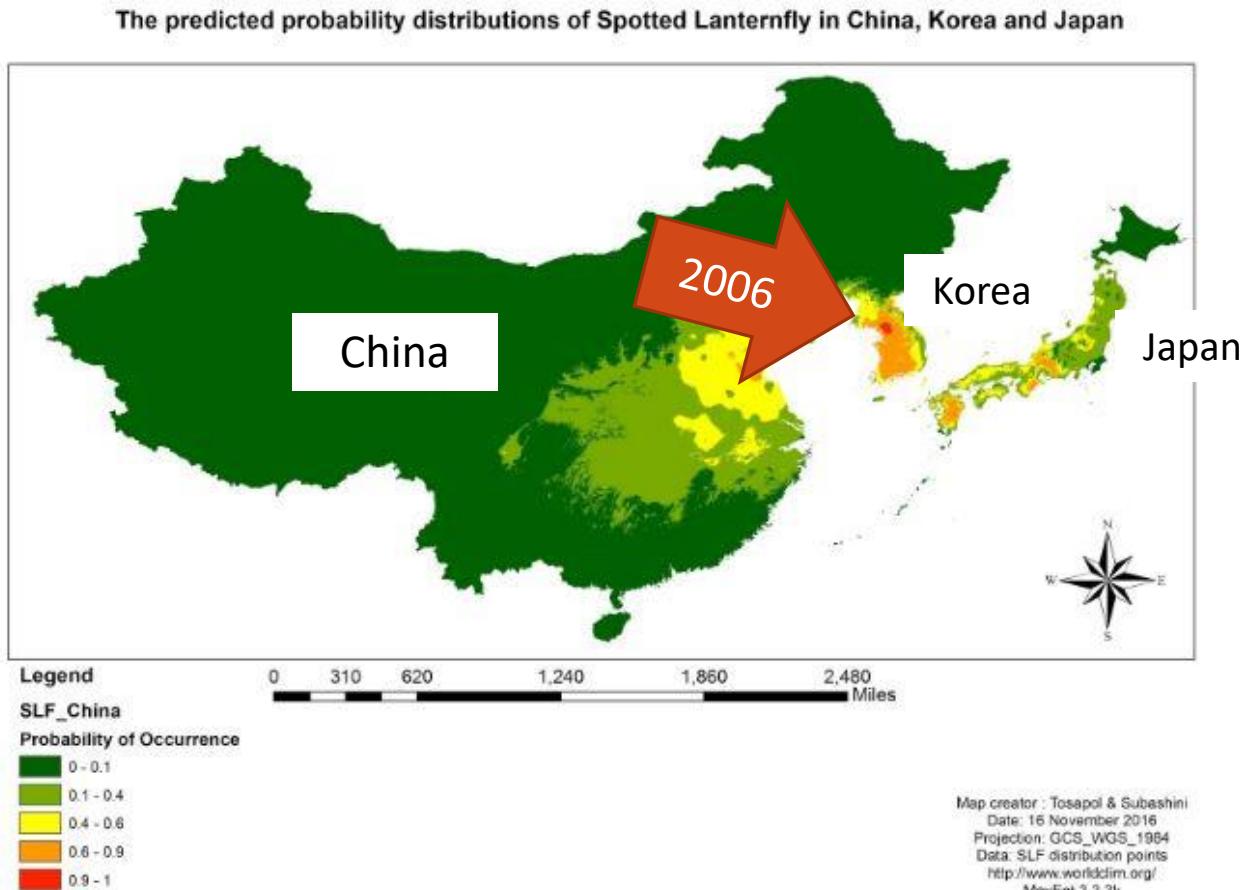
*Alina Avanesyan
University of Maryland*

MOFFA WINTER MEETING 2019

What are the native and invaded ranges of spotted lanternfly in Asia?

Native to China

Invasive in Korea, Japan, Taiwan, and Vietnam



Map: The predicted probability distributions of Spotted Lanternfly in China, Korea and Japan

Host plants in China



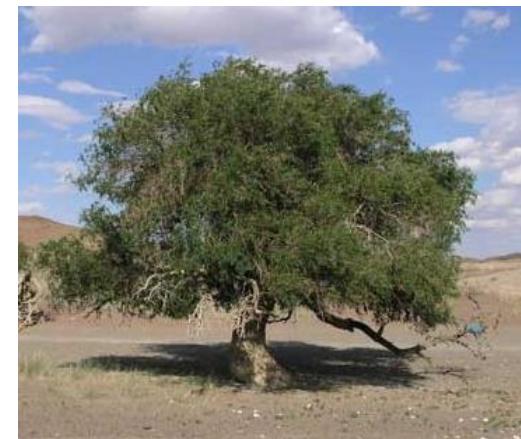
Tree-of-heaven



Manchurian catalpa



Chinese mahogany



'Chinese Elm'



Soybean plants

- Ornamental and fruit trees
- Soybean and some agricultural crops

Host plants in Korea



Tree-of-heaven



Manchurian walnut



Amur grape



Chinese mahogany

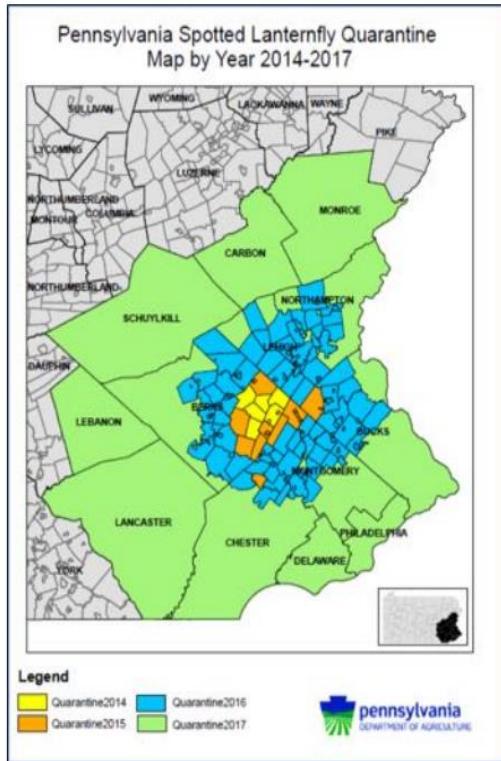


Korean
Evodia

- Ornamental and fruit trees
- Herbs

Where is spotted lanternfly in the US and how fast will it spread?

Invasion process



Pennsylvania – Berks (2014) now in 13 counties, established

Delaware – New Castle (2017), established

New Jersey – Hunterdon, Mercer and Warren Counties (2018) established

New York – Albany, Suffolk and Yates (2018)

Virginia - Frederick County (2018), established

Spotted Lanternfly in Maryland!



- October 2018: first confirmed spotted lanternfly in Maryland!

Life stages of spotted lanternfly



Eggs

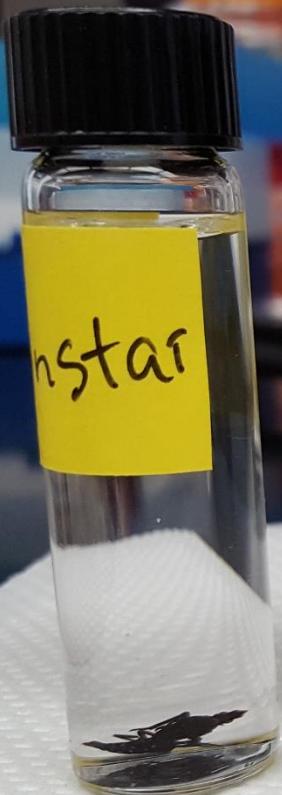
1st
instar

2nd
instar

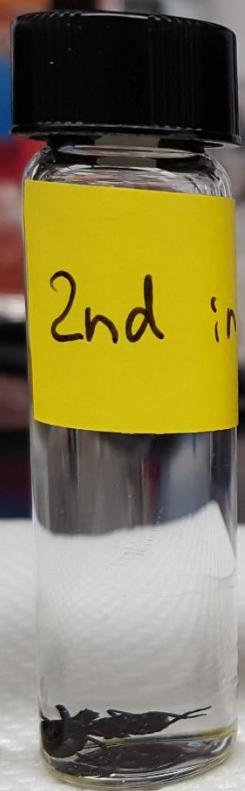
3rd
instar

4th
instar

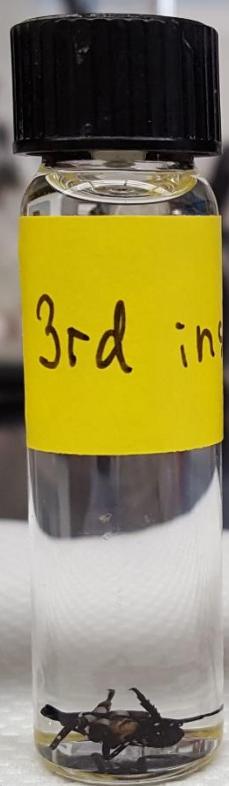
Adult



1st
instar



2nd
instar



3rd
instar



4th
instar

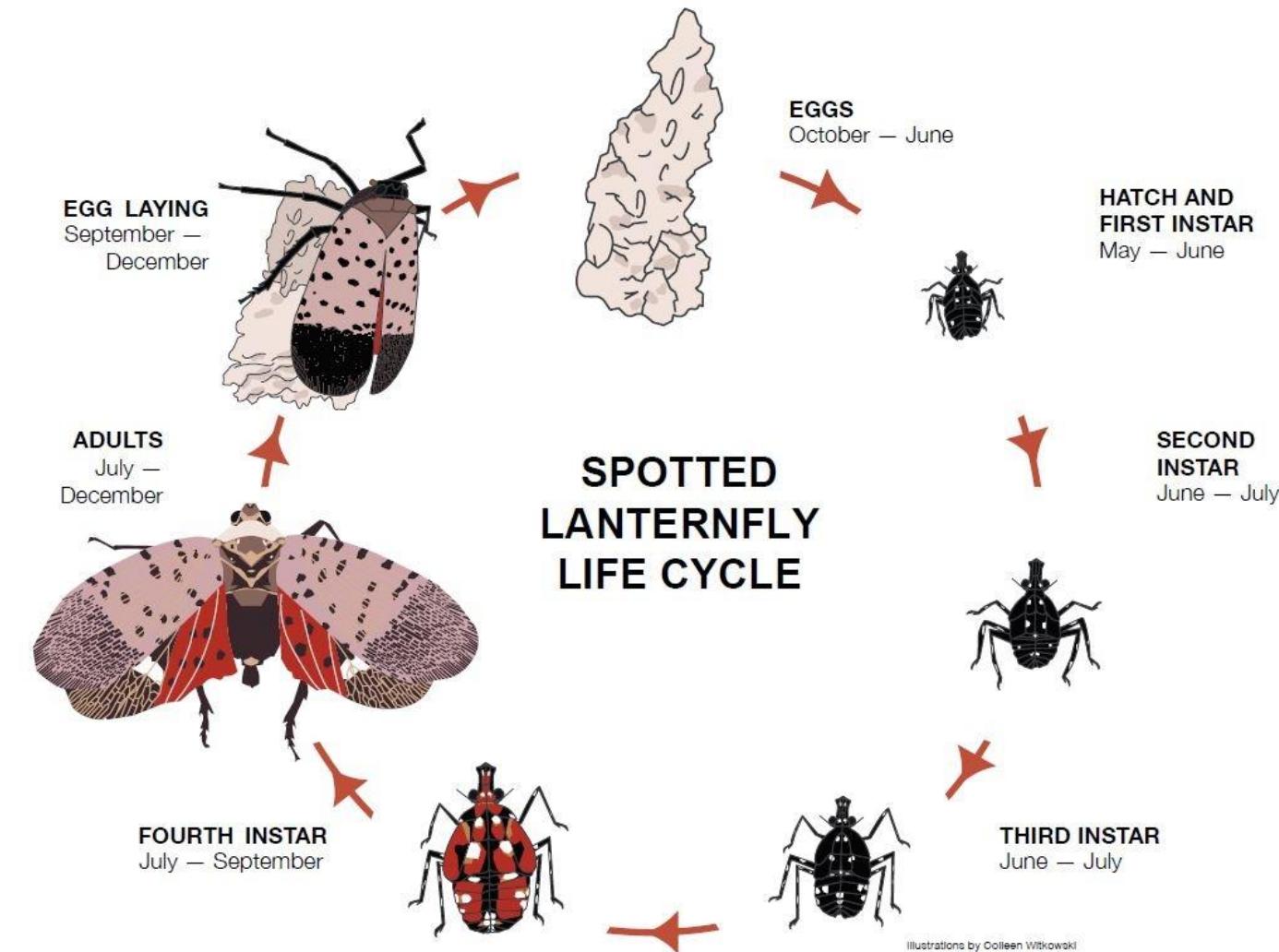


Adult
male



Adult
female

Life cycle of spotted lanternfly



PennState Extension

Modes of SLF dispersal

- One of the most aggressive leaf-hopping pest in Mid-Atlantic region
- Very high potential to breed and increase its population size
- It can be spread long distances by any material (including manmade material) containing egg masses:

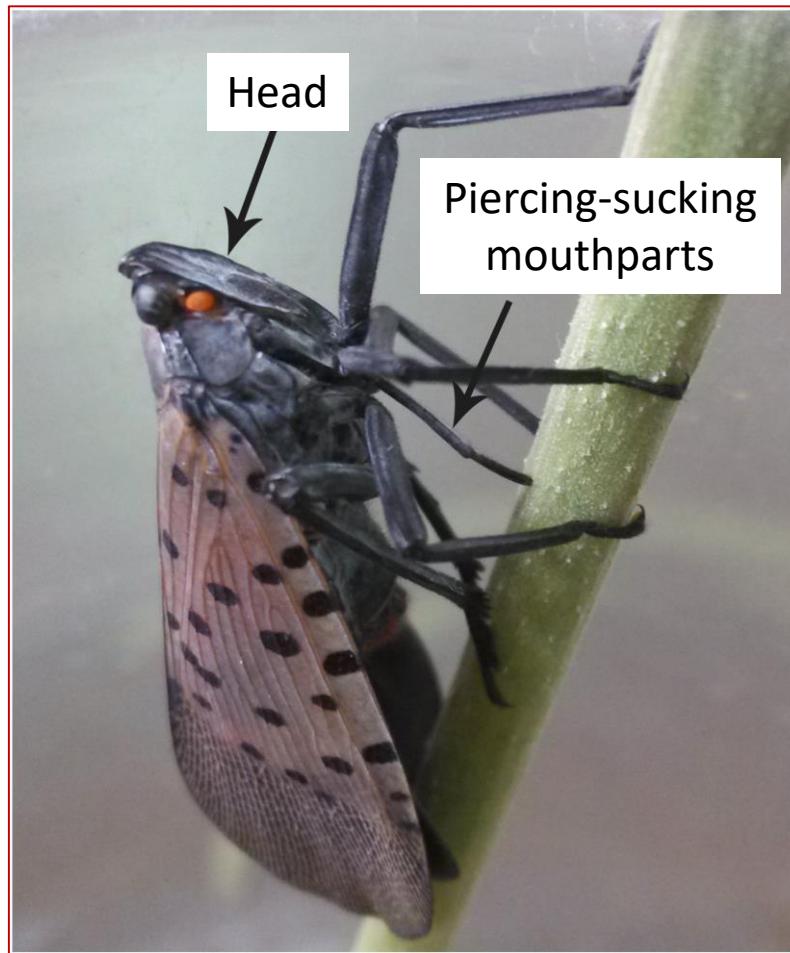
- ❖ trunked tree
- ❖ stones
- ❖ vehicles
- ❖ yard furniture
- ❖ farm equipment, etc.



Egg masses



How does the lanternfly eat and damage plants?



Sap-feeders

Damage caused by lanternfly



Consumes phloem sap



Reduction in photosynthesis



Weeping wounds



Decreasing plant's growth

5522645



PennState

Plant damage



Create a sugary substance (honeydew)



Attract other insects - ants, wasps, etc.



Colonized by sooty mold -> blackening of parts of the plant



Photo: M. J. Raupp



Host plants

Sap-feeder

SLF can utilize over 70 host plants:

- **Apple**
- Plum
- Cherry
- Peach
- Apricot
- **Grape**
- Pine
- Tree of heaven (preferred tree host)
- and many many others....



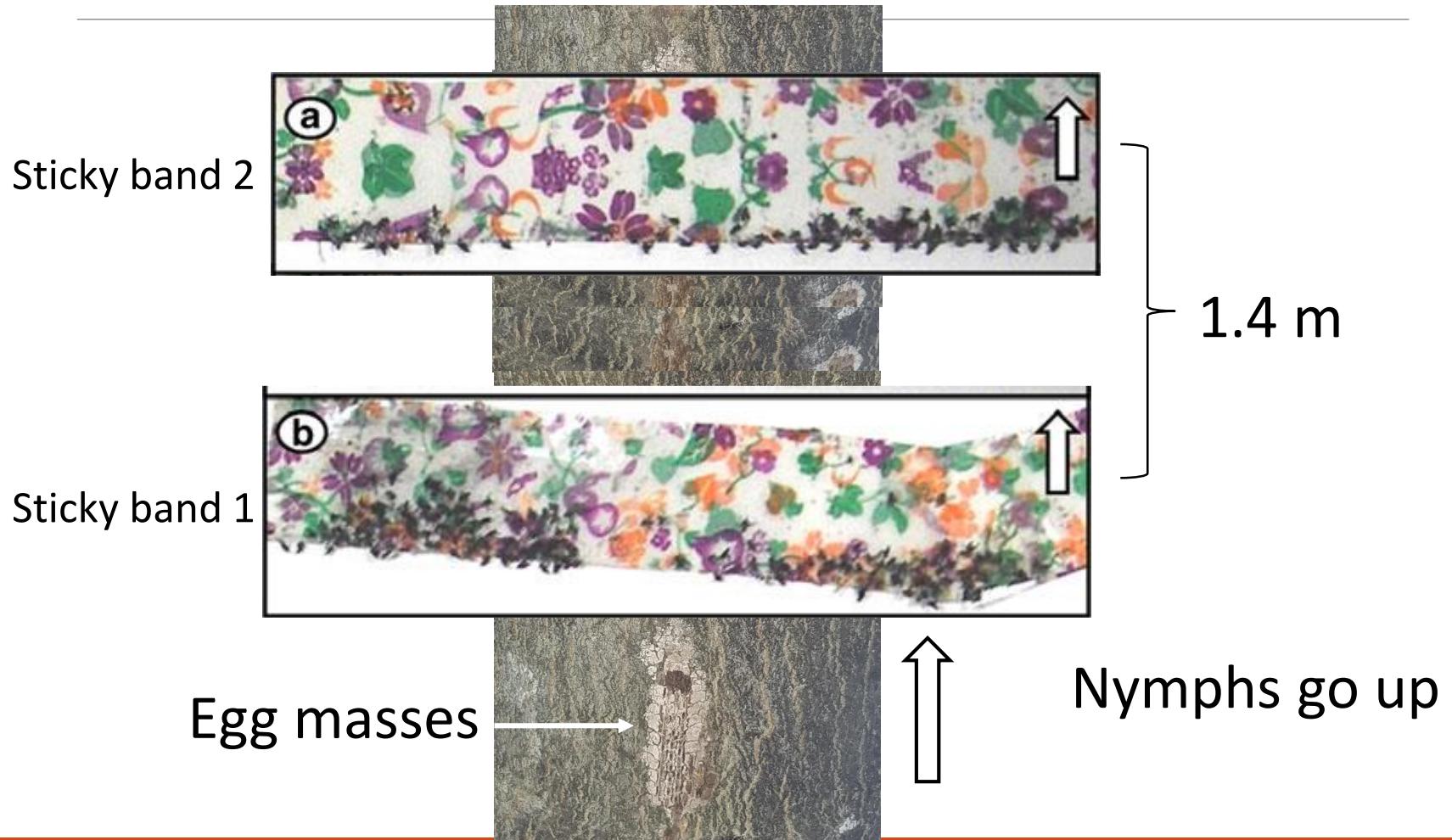
Collection trip to PA - July 2018

Lanternfly observed and collected from:

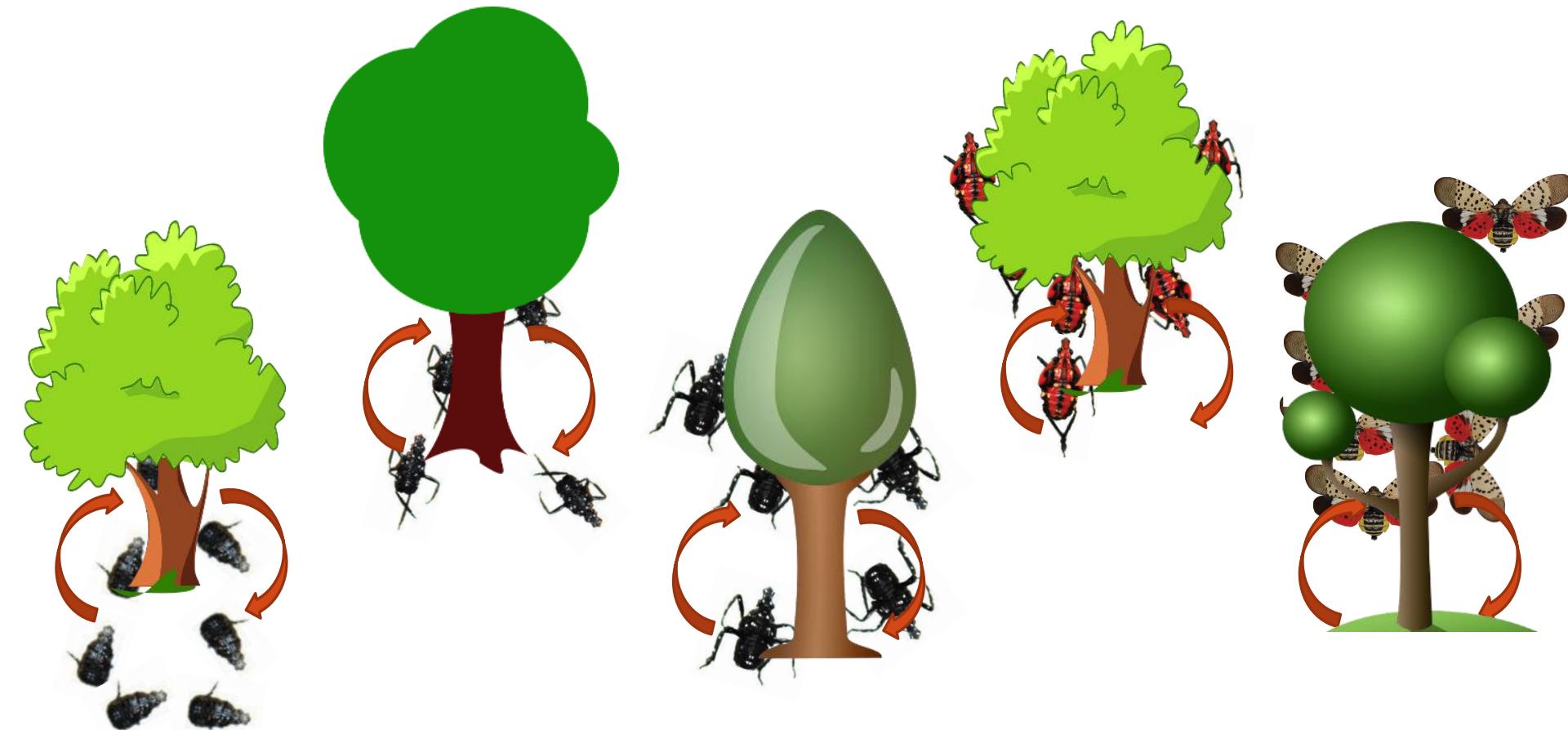


1. Three-flowered maple
2. Amur honeysuckle
3. Mapleleaf grape
4. Staff vine
5. Sumac
6. False poison sumac
7. Tree of heaven
8. Tropical burnweed
9. European dewberry
10. Norway maple
11. Roundleaved maple
12. Pokeweed
13. Late boneset

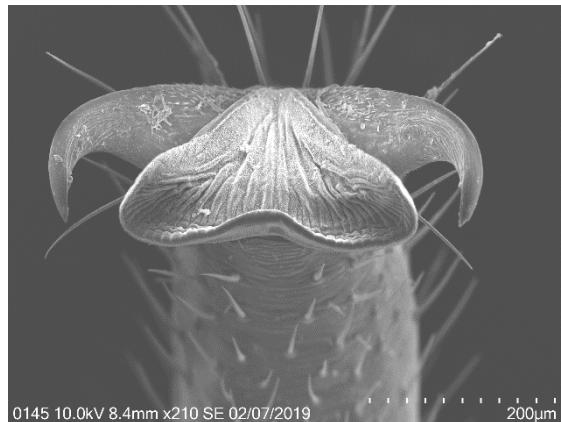
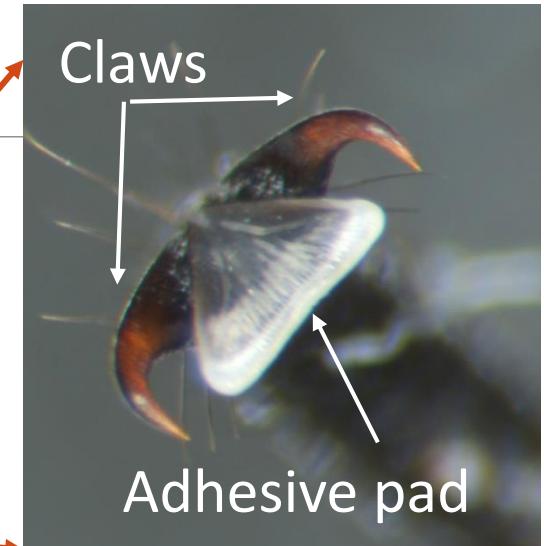
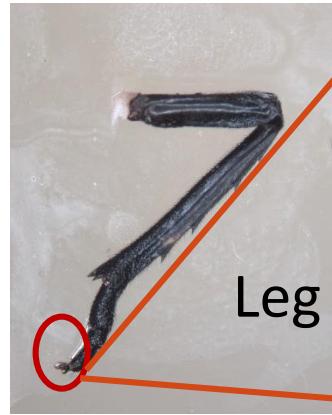
Behavior on host trees



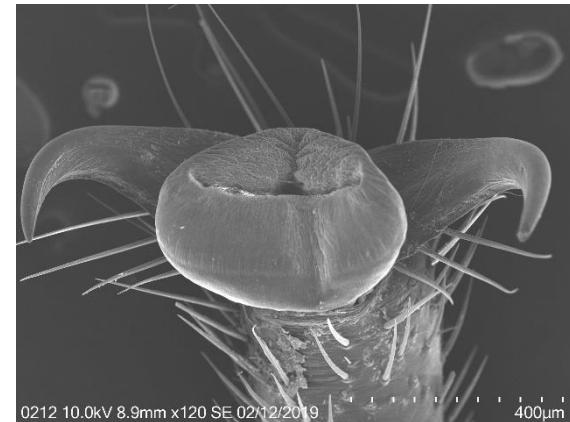
Behavior on host trees



Holding on to the host trees



Lanternfly resting



Lanternfly moving

Behavior on host trees



Photo: Bill Lamp; PA, July 2018



PA, July 2018

Behavior on host trees



M. J. Raupp

Behavior on host trees



Photo: Bill Lamp; PA, July 2018

Behavior on host trees

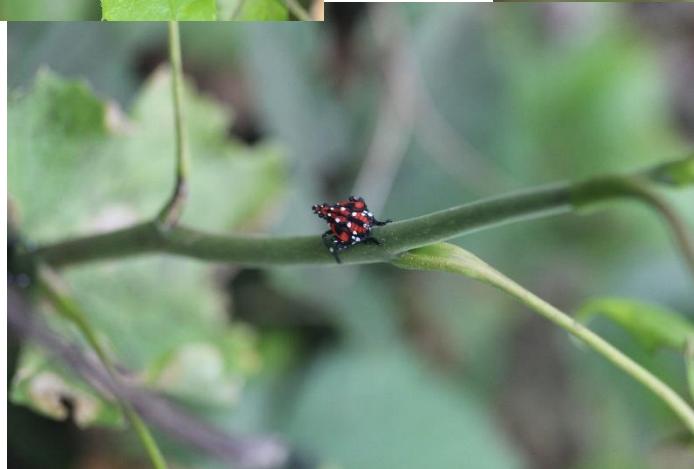
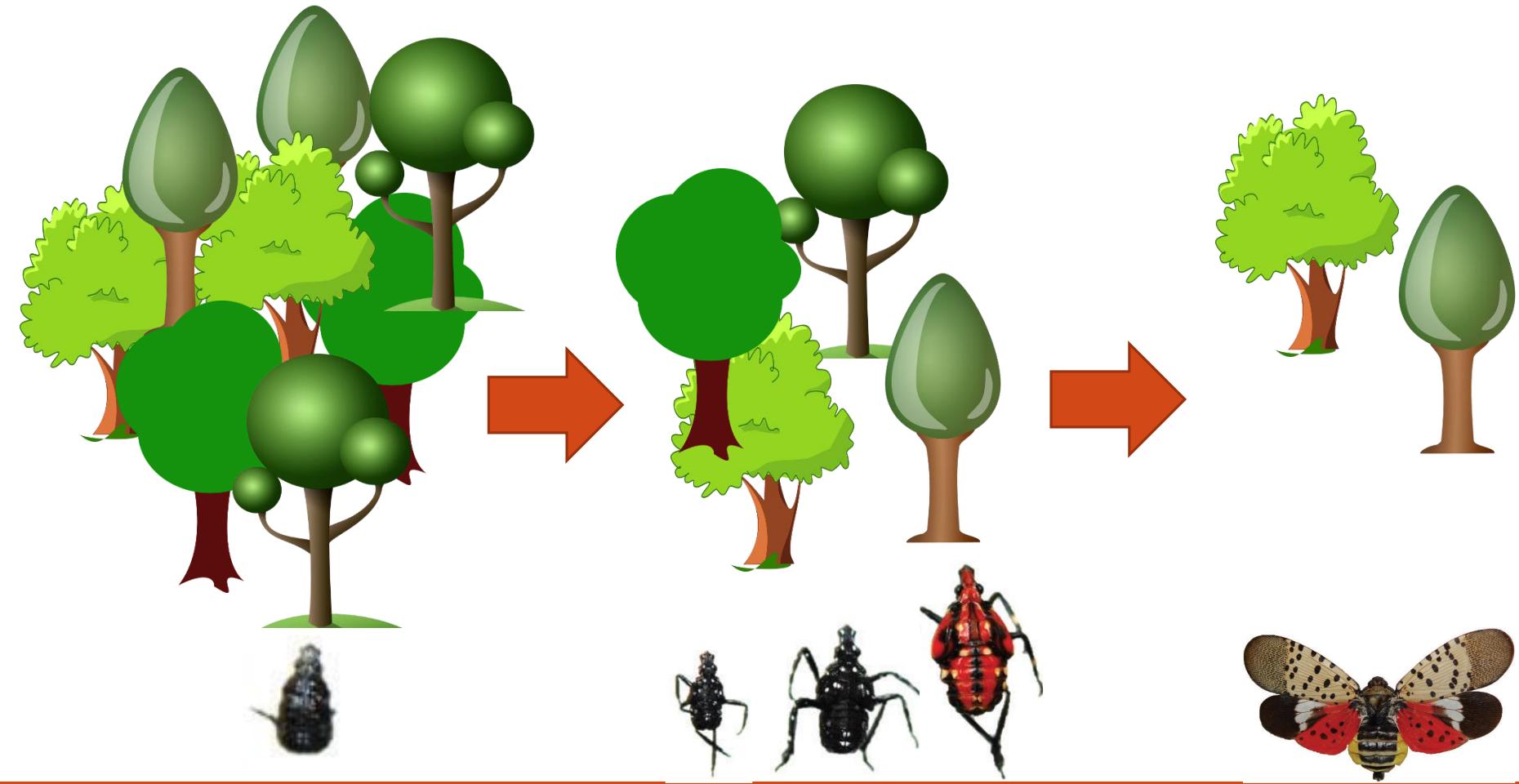


Photo: Bill Lamp; PA, July 2018

Behavior on host trees



Seasonal behavior



May-June

June-August

September-December

Management strategies in PA



Band trees to catch nymphs

Did you know?

In the spring, spotted lanternfly nymphs crawl up trees to find a place to feed—stop them by banding trees with sticky paper or tape.



Pennsylvania Department of Agriculture



PennState

Scrape eggs

Eggs should be scraped off of trees, posts, stones, houses, and anywhere else you find them!

Use a plastic card, putty knife, or stick to scrape eggs downward into a bottle or bag.

Eggs can then be killed by putting them in rubbing alcohol, smashing them, or burning them.

Removes 30-50 eggs per mass

Link to video:

<https://extension.psu.edu/how-to-remove-spotted-lanternfly-eggs>



PA Dept. Ag.



Biological control

Indigenous natural enemies including spiders, mantises, and assassin bugs are now attacking and killing lanternflies



A tiny wasp called *Ooencyrtus kuvanae* was imported in 1908 to control gypsy moth. It was taken a liking to spotted lanternfly and now parasitizes and kills eggs of the lanternfly.

Insecticidal control



Synthetic pyrethroid - deltamethrin 1% EC

Organophosphate - fenitrothion 50% EC

“Quick and strong insecticidal activity against the 2nd-3rd nymphs”

Neonicotinoids - imidacloprid 4% SL and clothianidin 8% SC “showed 100% insecticidal activity at 24h after treatment”

Park et al. 2009

Pyrethrum, Sophora, and neem extracts (at 1,000 fold dilution) killed 95% of adults within 48 h, but the extracts tended to be less effective against nymphs in some tests

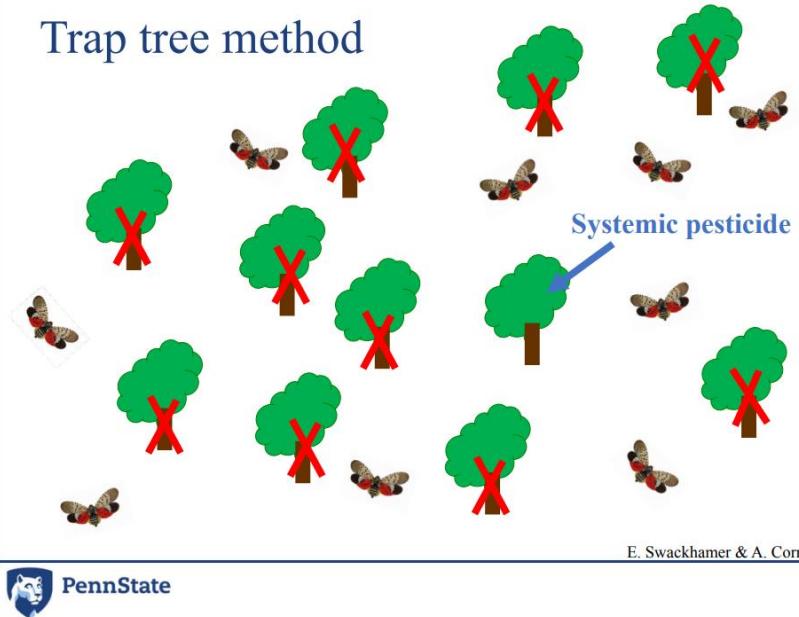
Dara et al. 2015



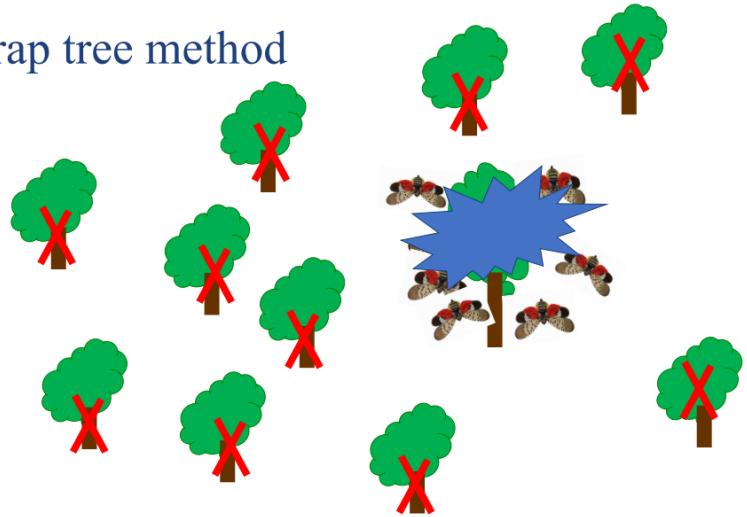
Penn State Extension

Use trap-trees to reduce populations

Trap tree method



Trap tree method



E. SWACKHAMER & A. CORMAN

Use trap-trees to reduce populations



Monitoring and scouting



Egg masses: on tree trunks, stones, etc.



www.aphis.usda.gov

Adults: in clusters on tree trunks



www.aphis.usda.gov

2-4th instars: plant leaves, stems, tree trunks

1st instar: close to the ground, plant shoots, stems, etc.

May

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June

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July

->

August -December

What can be done to assist with management of lanternfly?

Pennsylvania Department of Agriculture and Penn State web sites assist citizens with identification of this new pest, learning how to destroy egg masses, and for reporting sightings in general.

<https://extension.psu.edu/spotted-lanternfly>



If you discover an egg mass, nymphs, or adult lanternflies, report to your University Extension Service or State Department of Agriculture.

<http://extension.umd.edu/hgic/topics/spotted-lanternfly>



Thank you!



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PennState

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