Ports, pests, and pathways





Joshua Milnes, WSDA

Cassie Knavel, WSDA

Mark Tauschner, Port of Vancouver

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agr.wa.gov/lanternfly

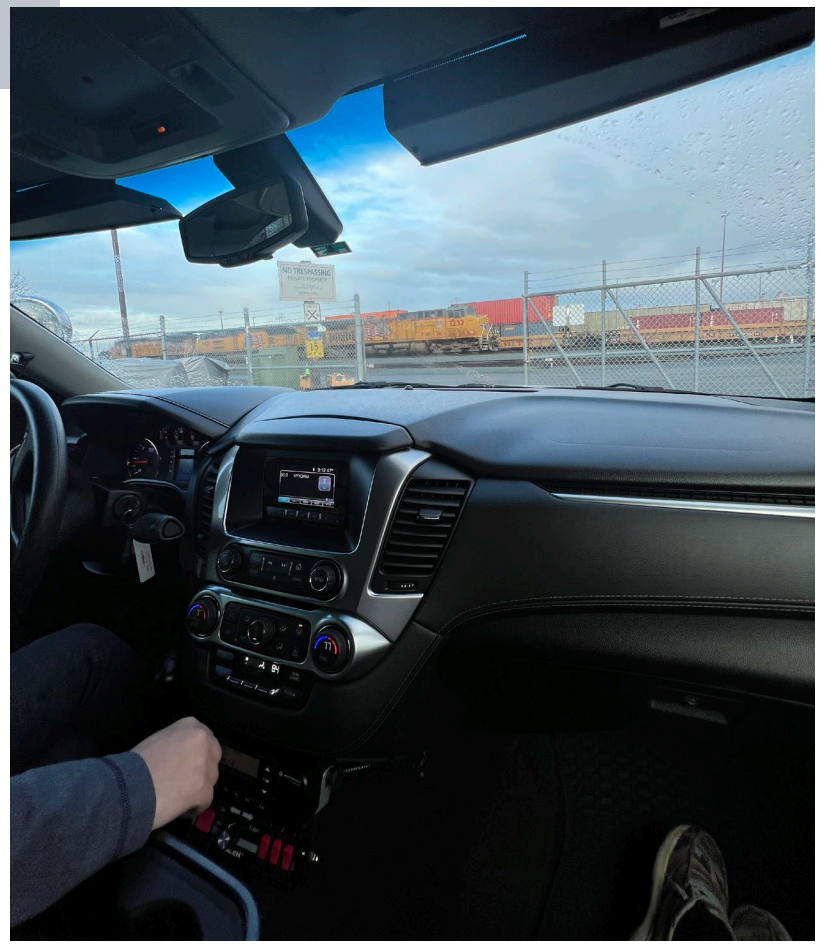
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Washington State Department of Agriculture



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spongy moth



PROTECTING WASHINGTON
50 years
1974 - 2024

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YouTube







Spongy moth: A nightmare for trees and you

https://youtu.be/nFQLg2Qhwlo



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https://www.facebook.com/watch/?v=3022769251157159





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yellow - legged hornet



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spotted lanternfly









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tree-of-heaven

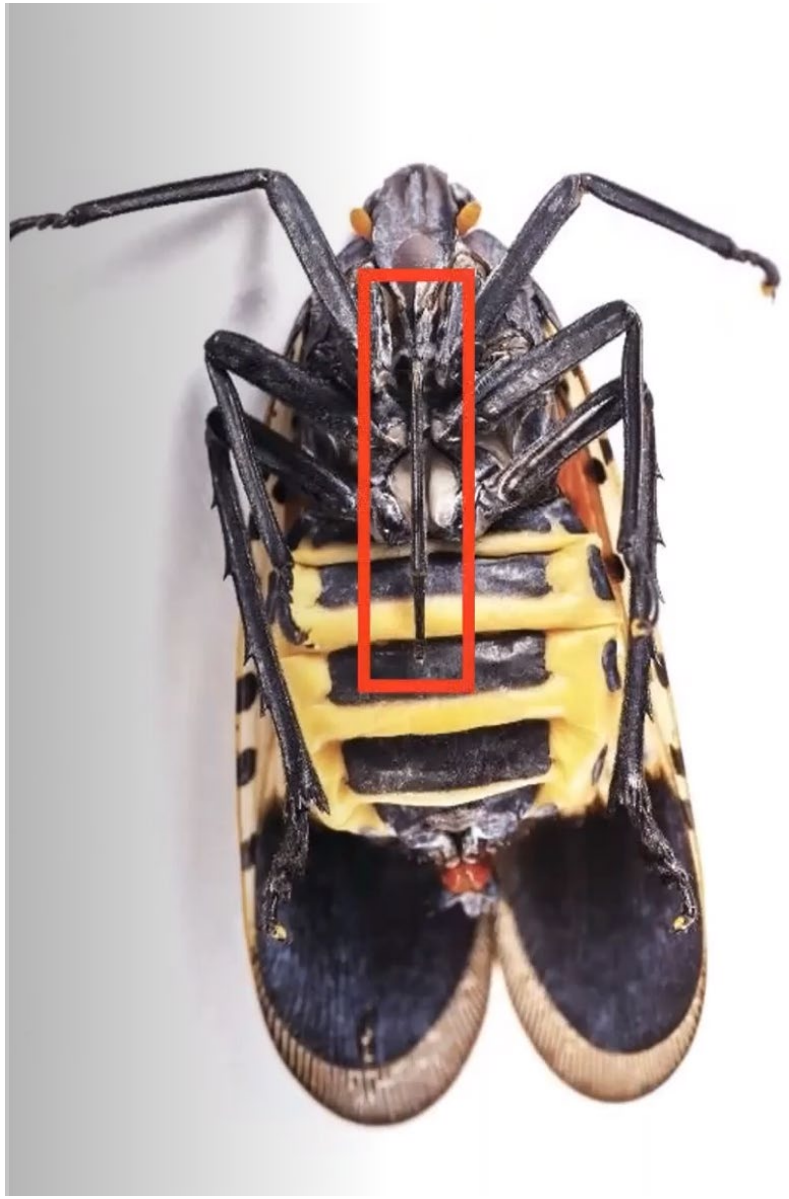
hardwoods

ornamental trees

fruit trees

vines

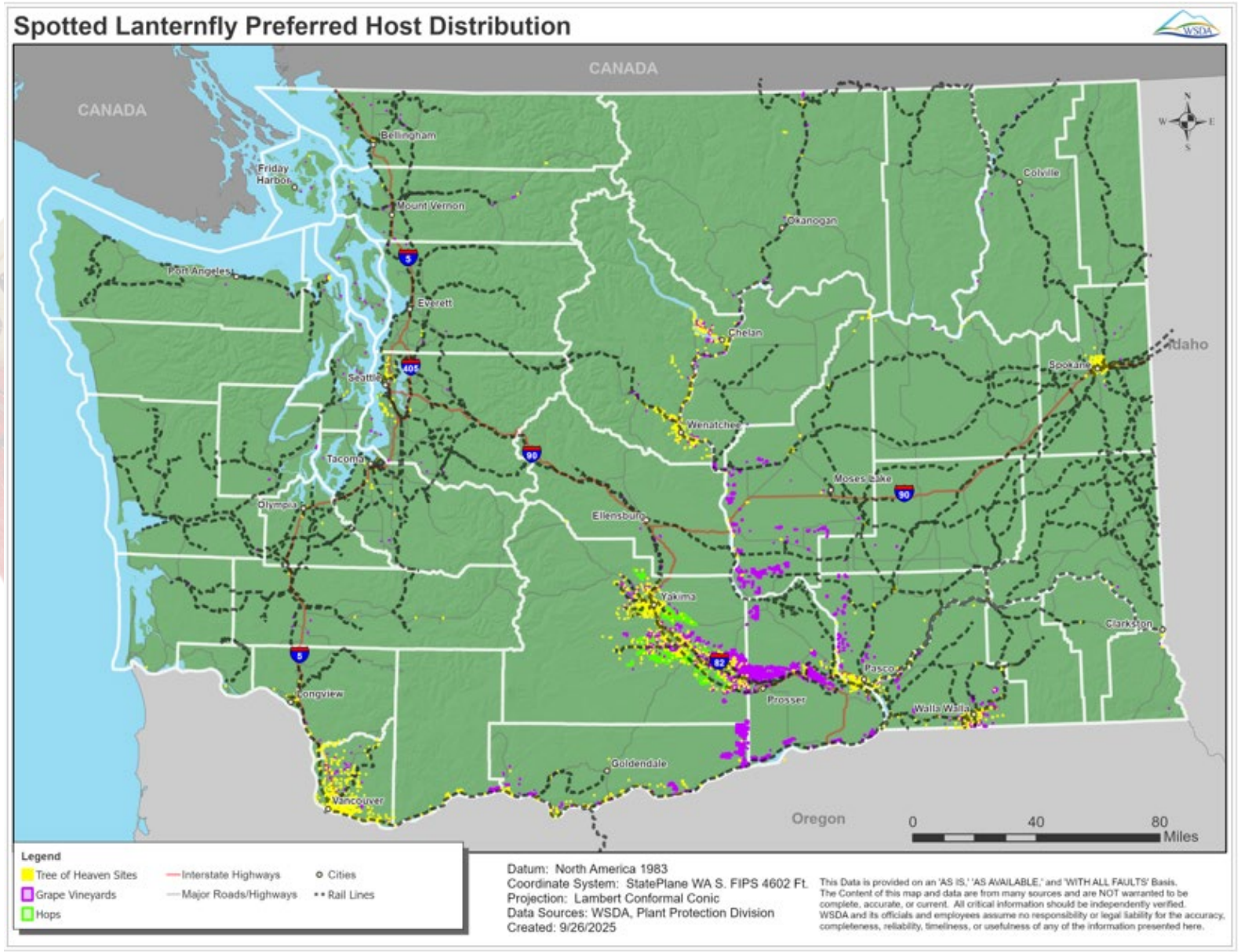
170 + plants



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Grape:
284 Million $

Hops:
320 Million $

Berries:
153 Million $

Apples:
Over 2 Billion $

Cherries:
435 Million $

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Spotted Lanternfly Life Cycle



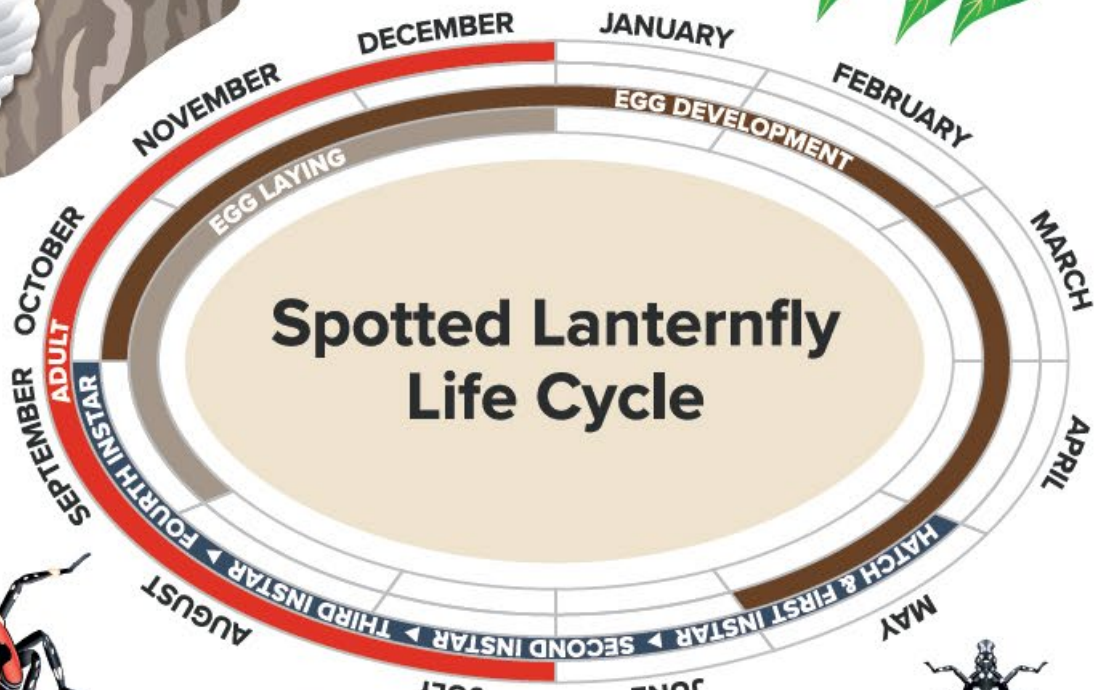
Egg Cases
1.5" (33 mm)



Tree-of-Heaven is the preferred host plant for egg laying Aug.–Sept.



Adult
1" (25 mm)



Egg case color can darken as the egg mass weathers



Uncovered
Partially Covered
Covered

EGG CASES



Mature Nymph
7/8" (12 mm)

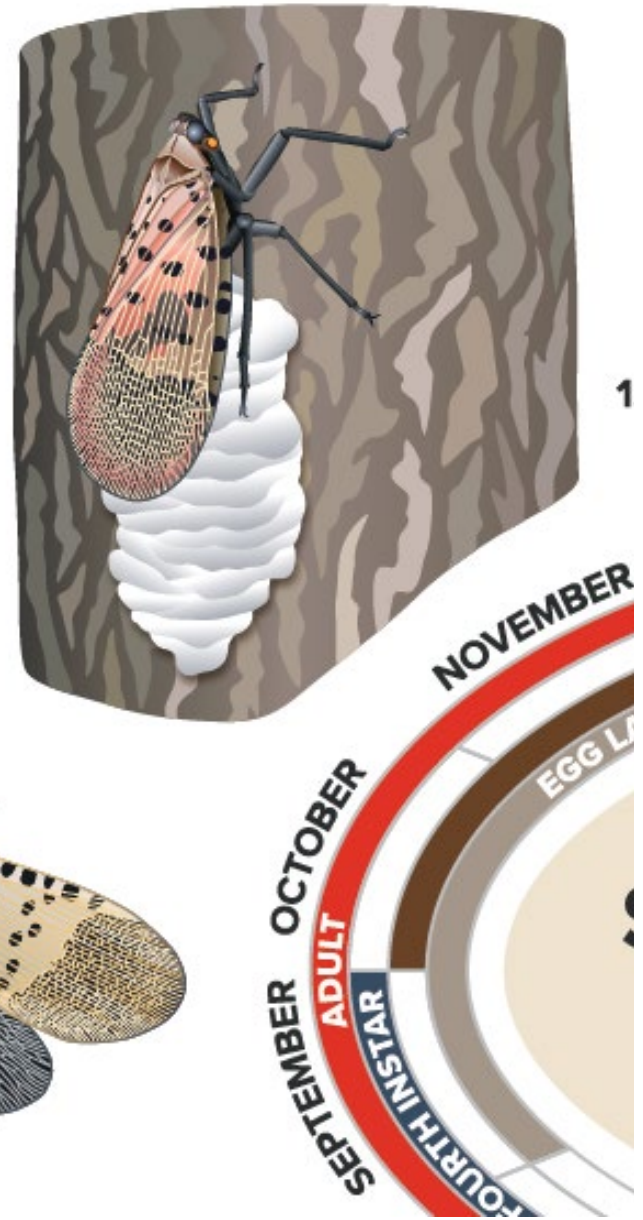






Young Nymphs
Up to 3/8" (4 mm)







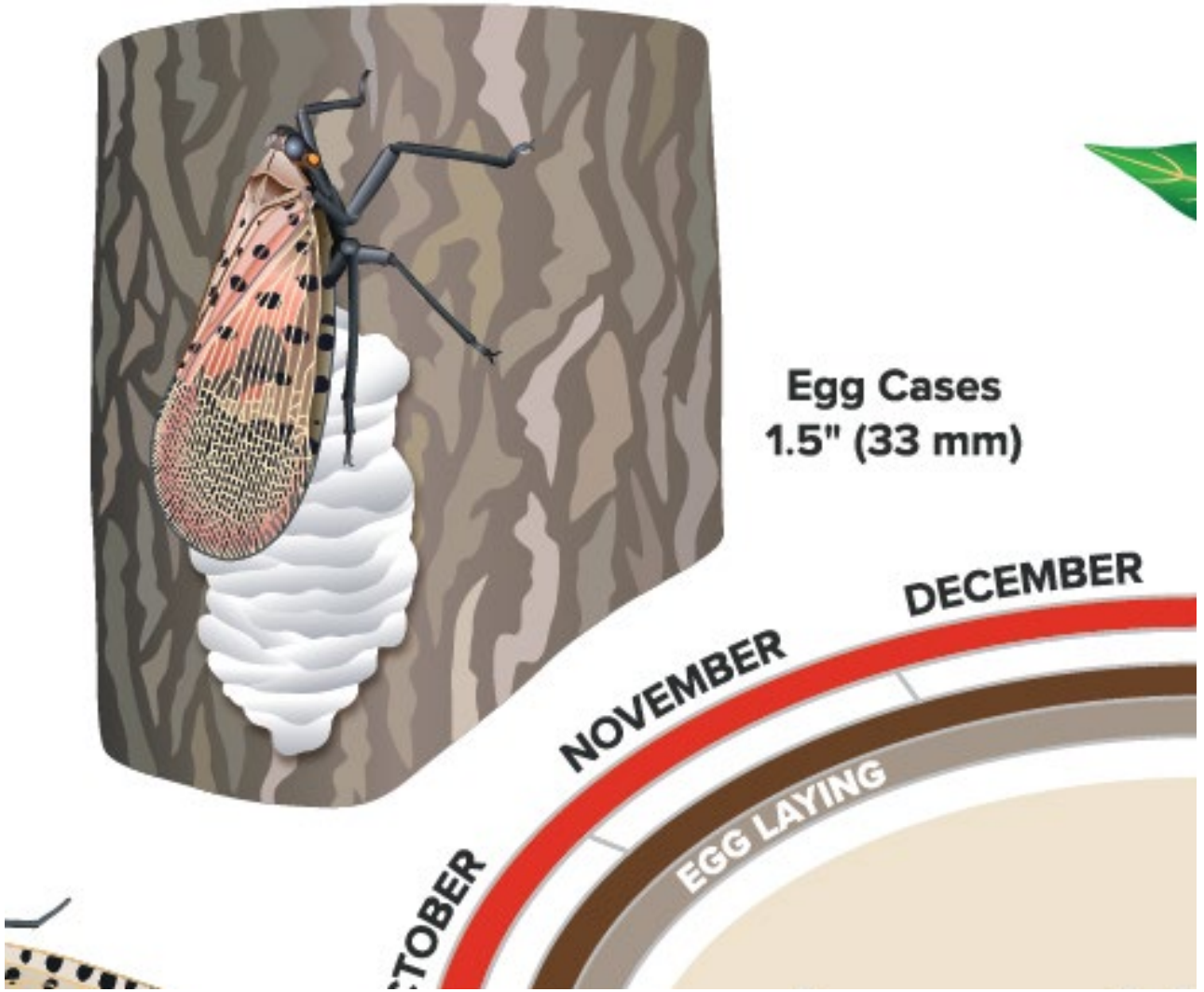
Adult
1" (25 mm)

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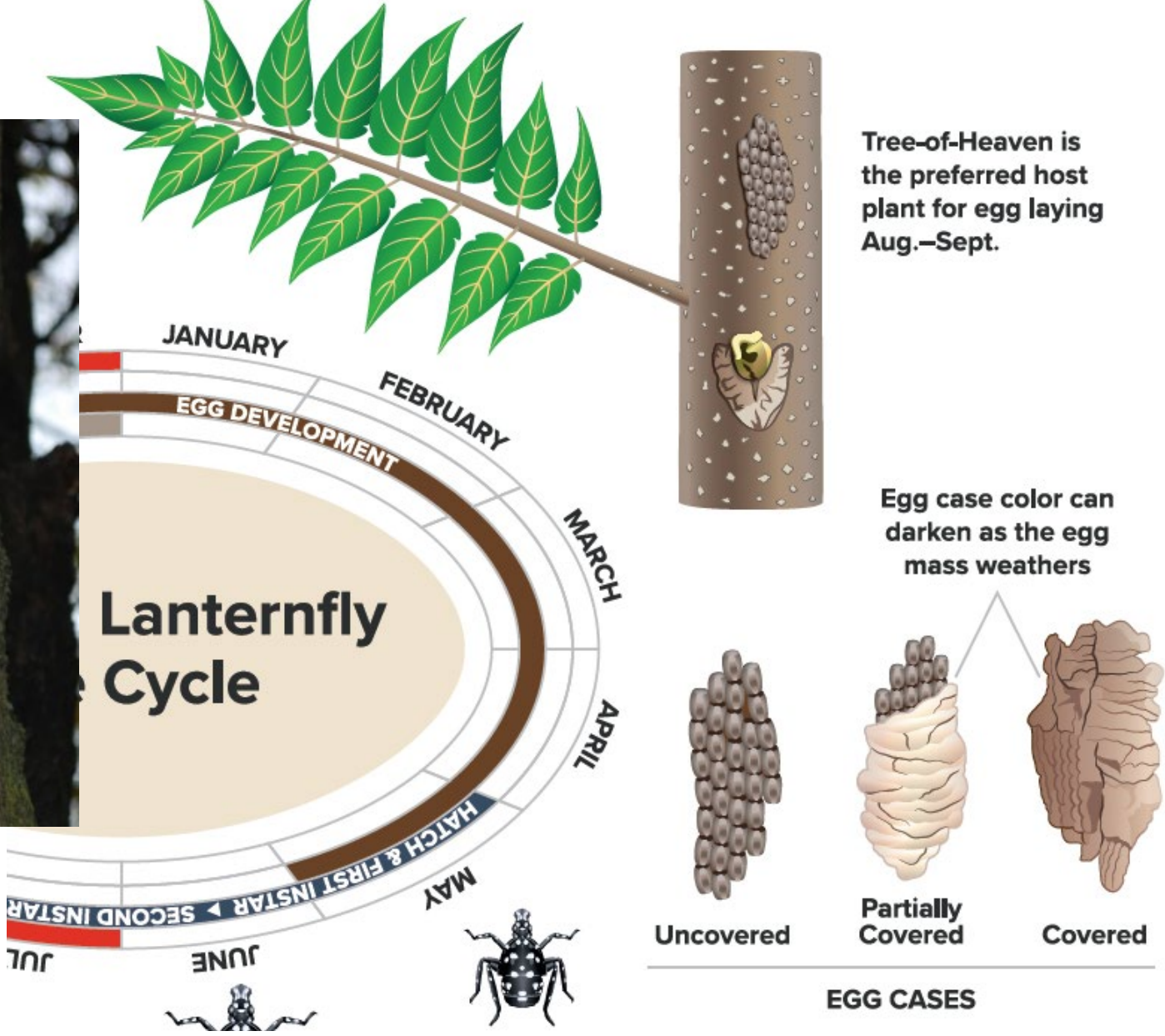


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Tree-of-Heaven is the preferred host plant for egg laying Aug.–Sept.

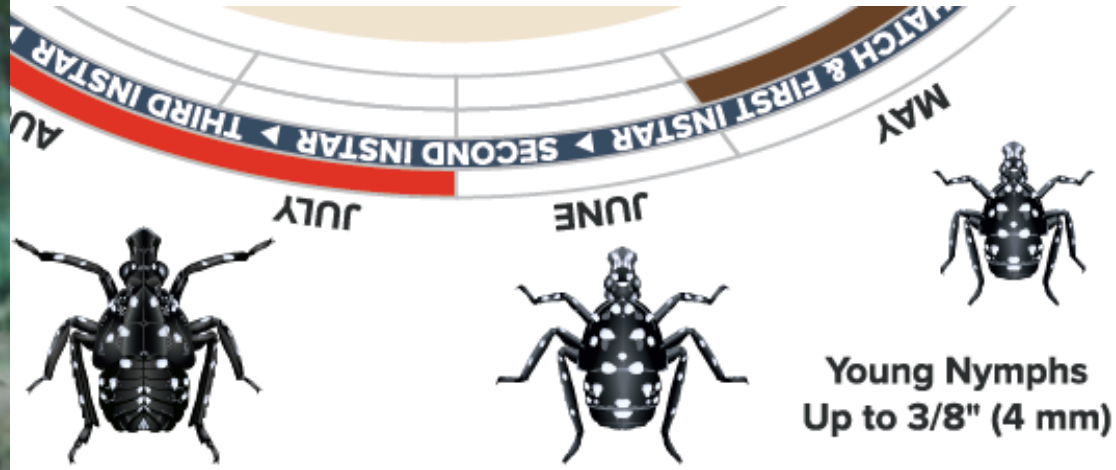
Egg case color can darken as the egg mass weathers

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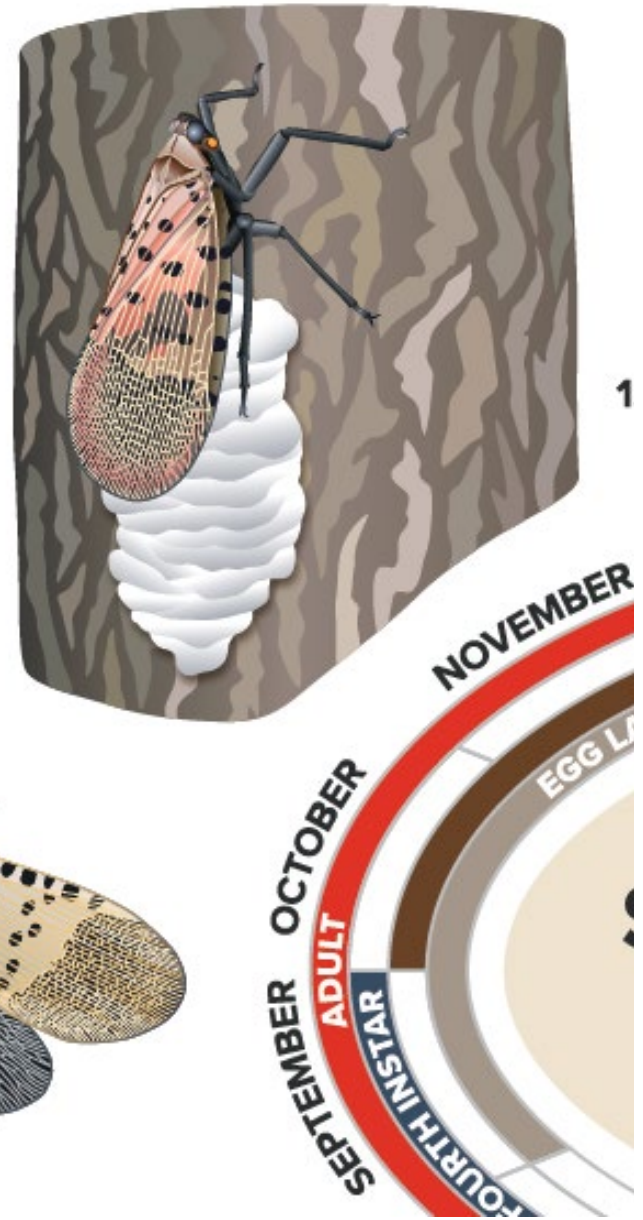


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1" (25 mm)

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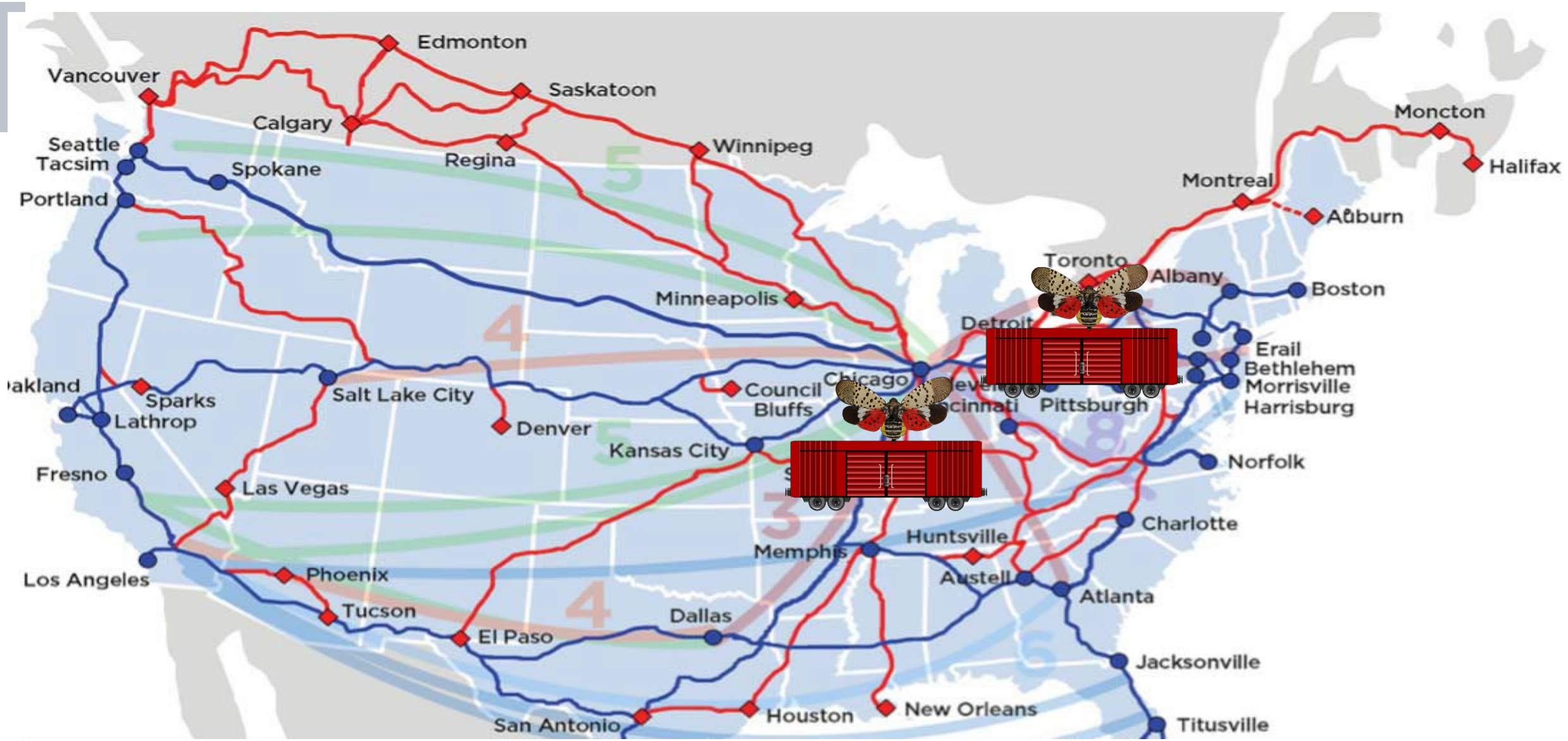




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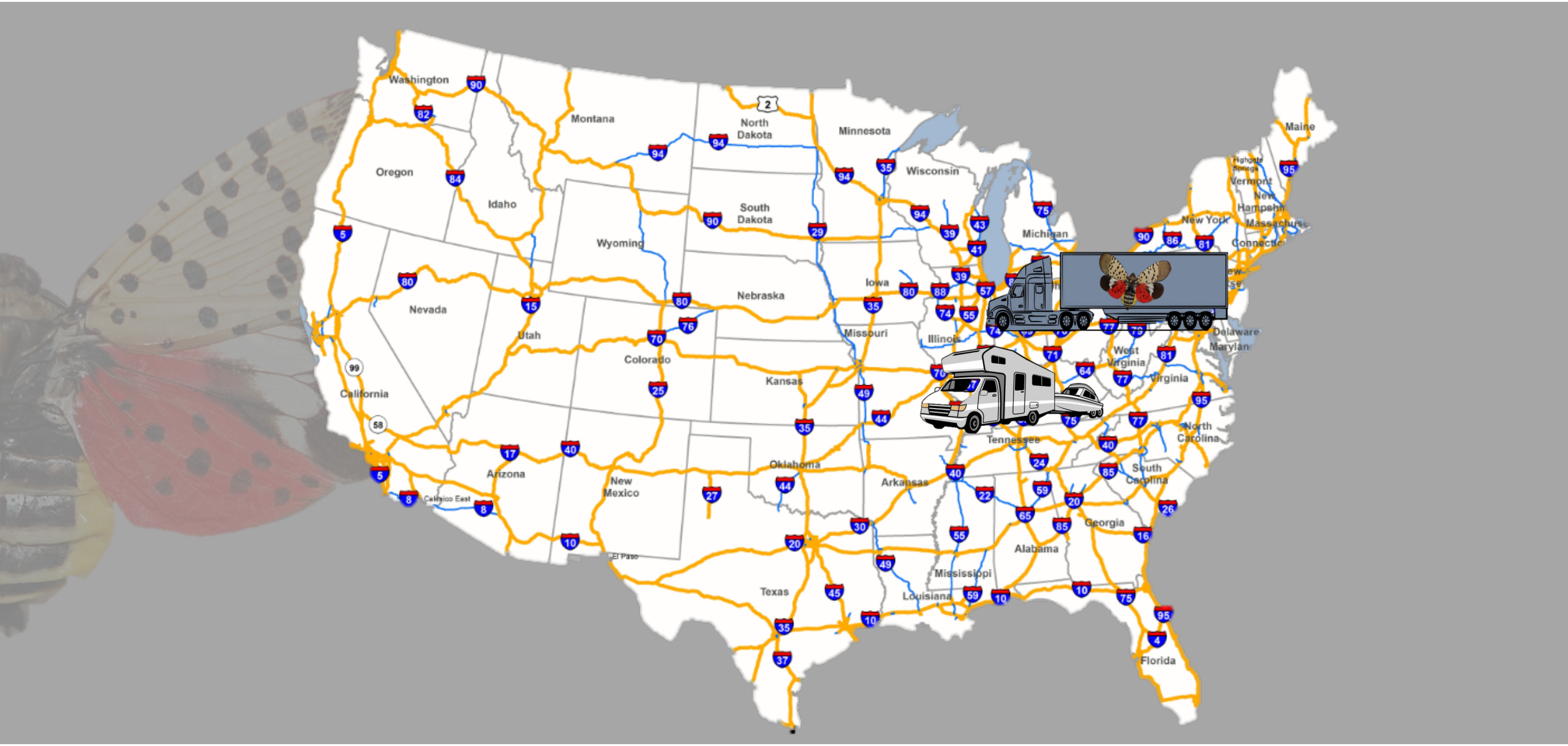




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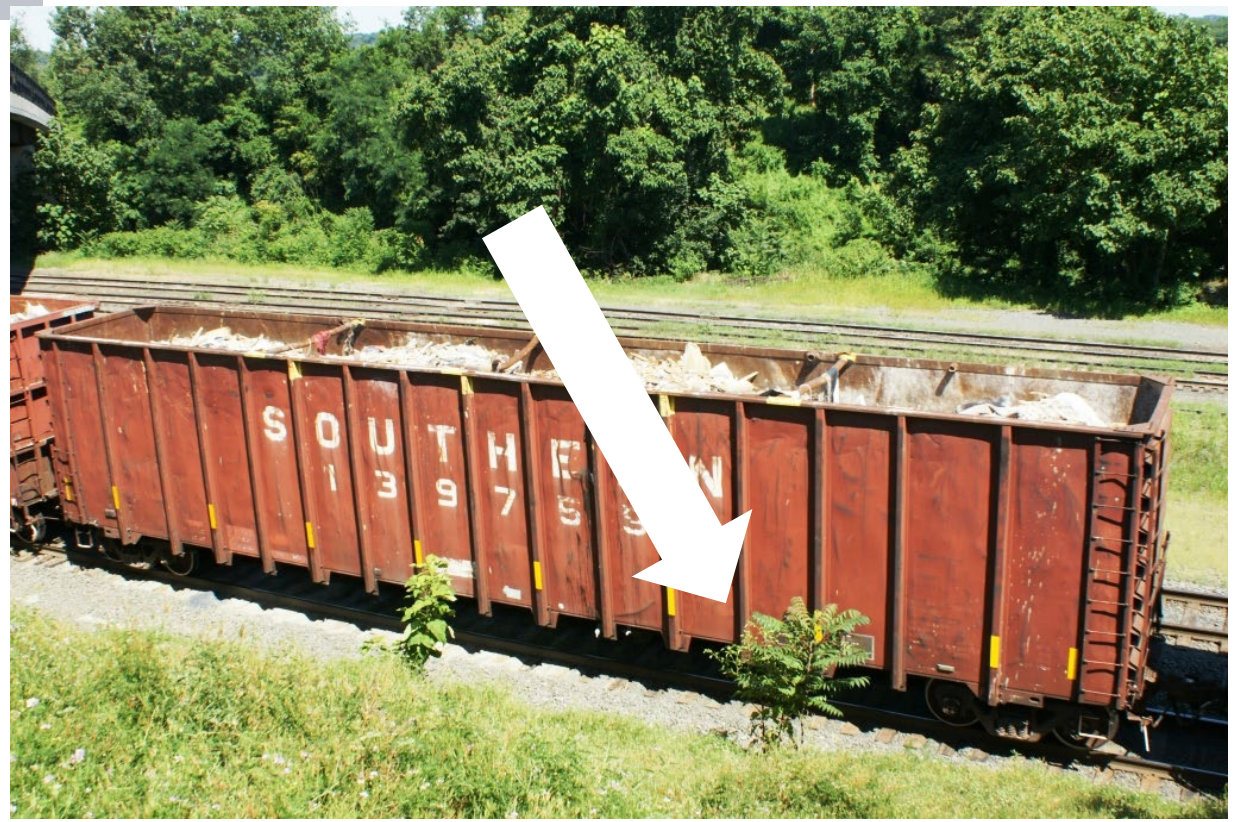
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Remove tree-of-heaven






Tree-of-heaven usually needs herbicide treatments, it resprouts

Where's it at in your vegetation management?



8/11/2026



9/8/ 2026



8/11/2026



9/16/2026



8/11/2026



8/18/2026

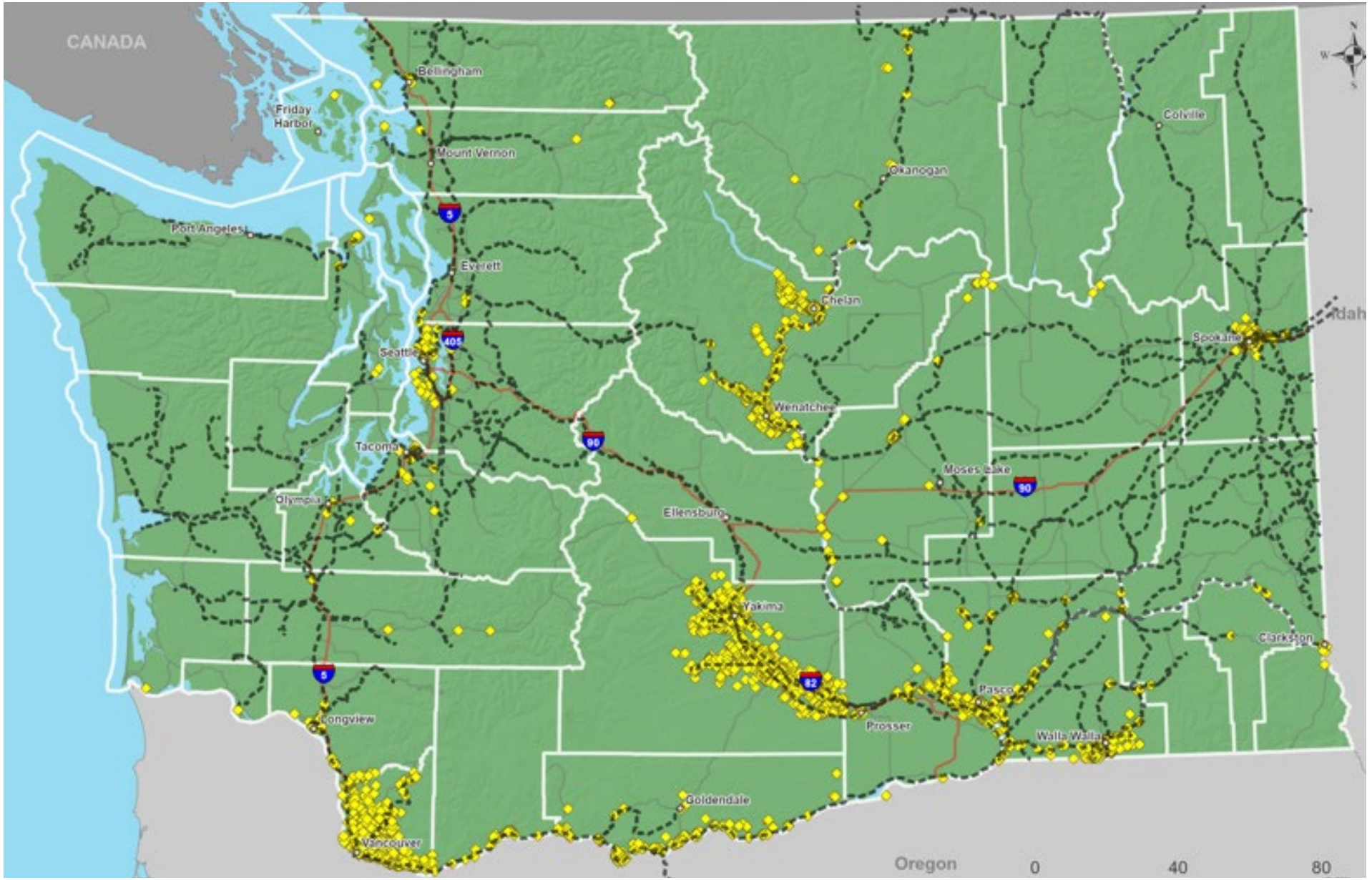


8/31/2026



9/8/2026





Legend

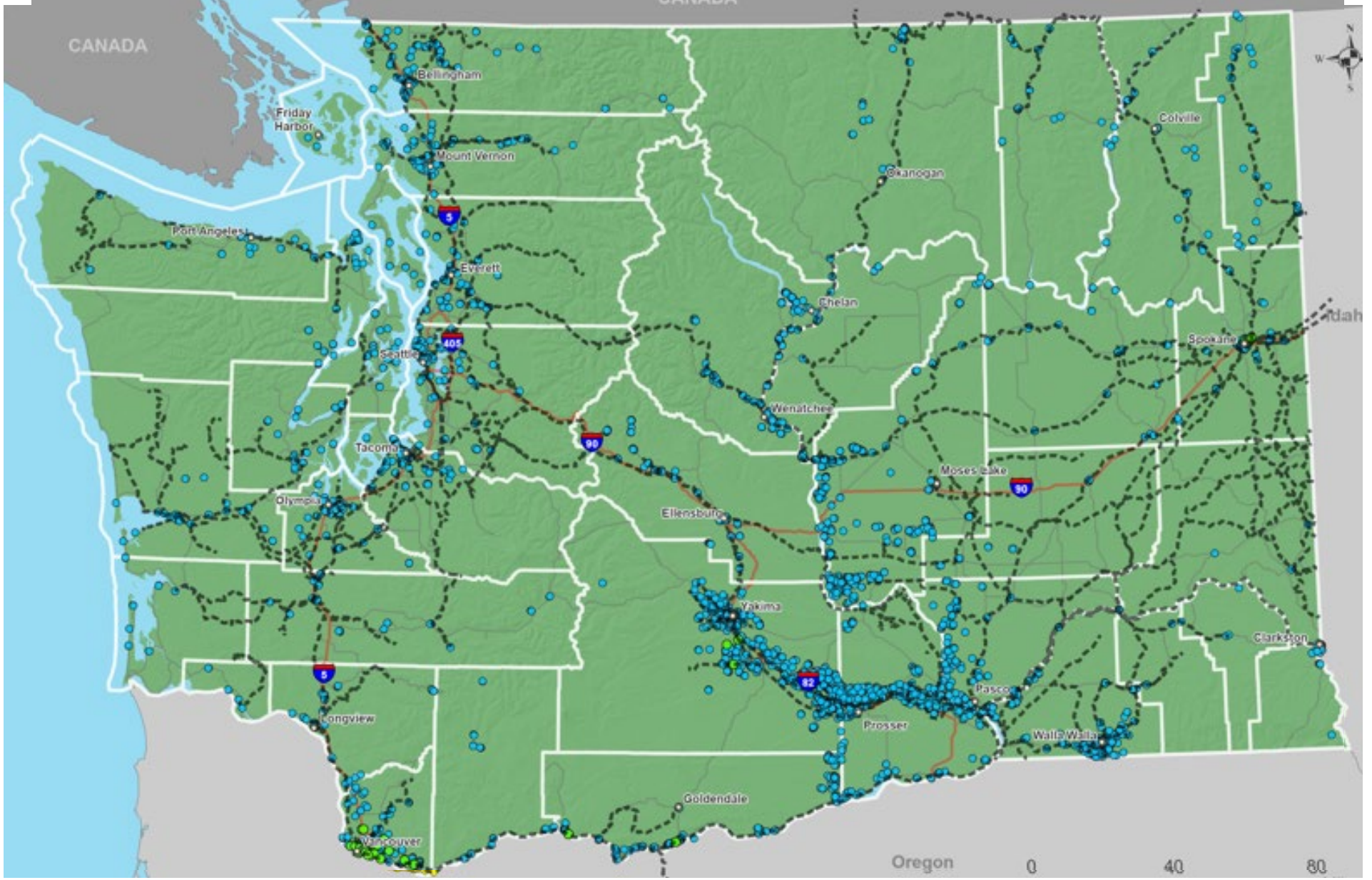
- Tree-of-heaven
- Rail
- Interstate
- Major roads

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Legend

- Negative
- Negative
- Interstate
- Road
- Rail lines

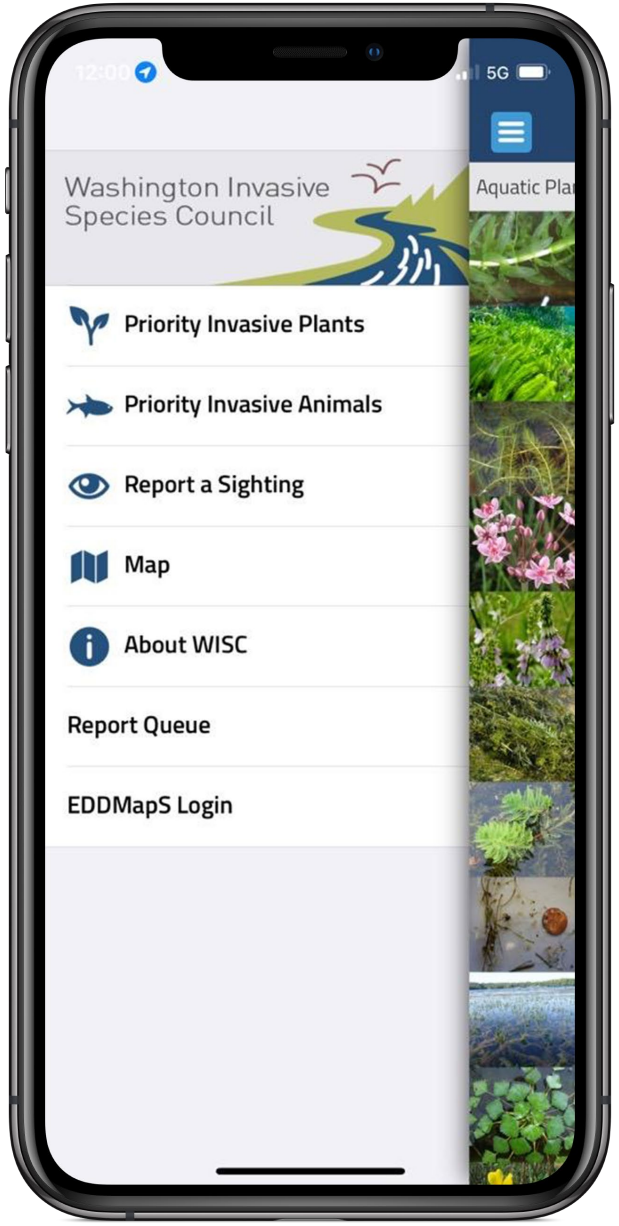
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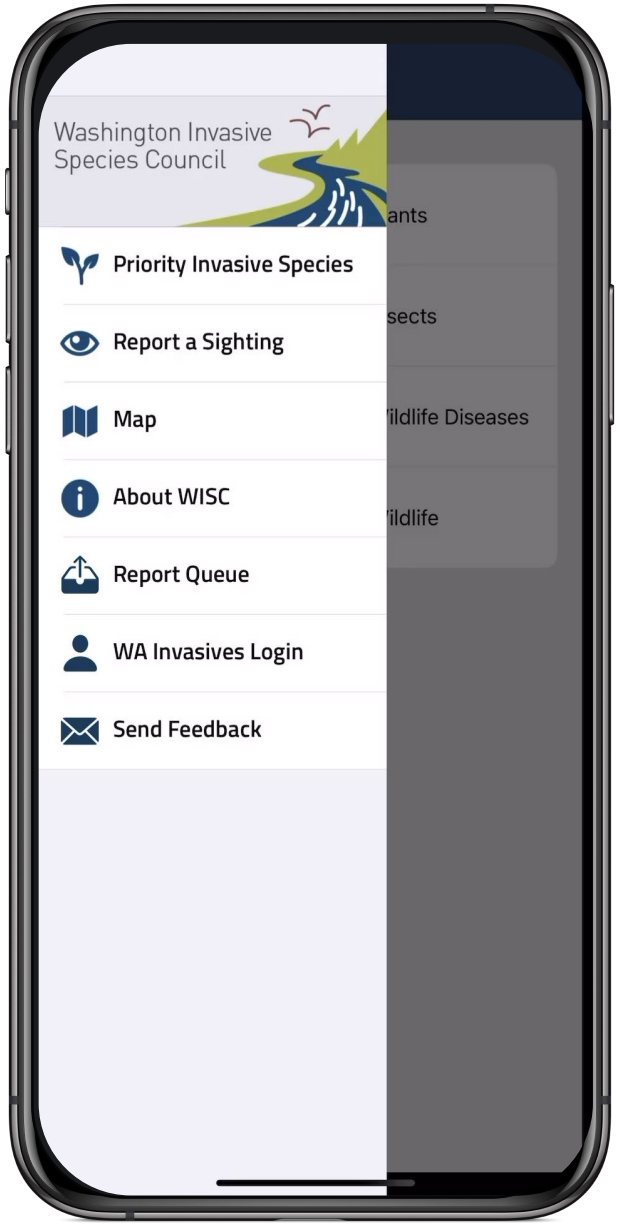
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WA Invasives





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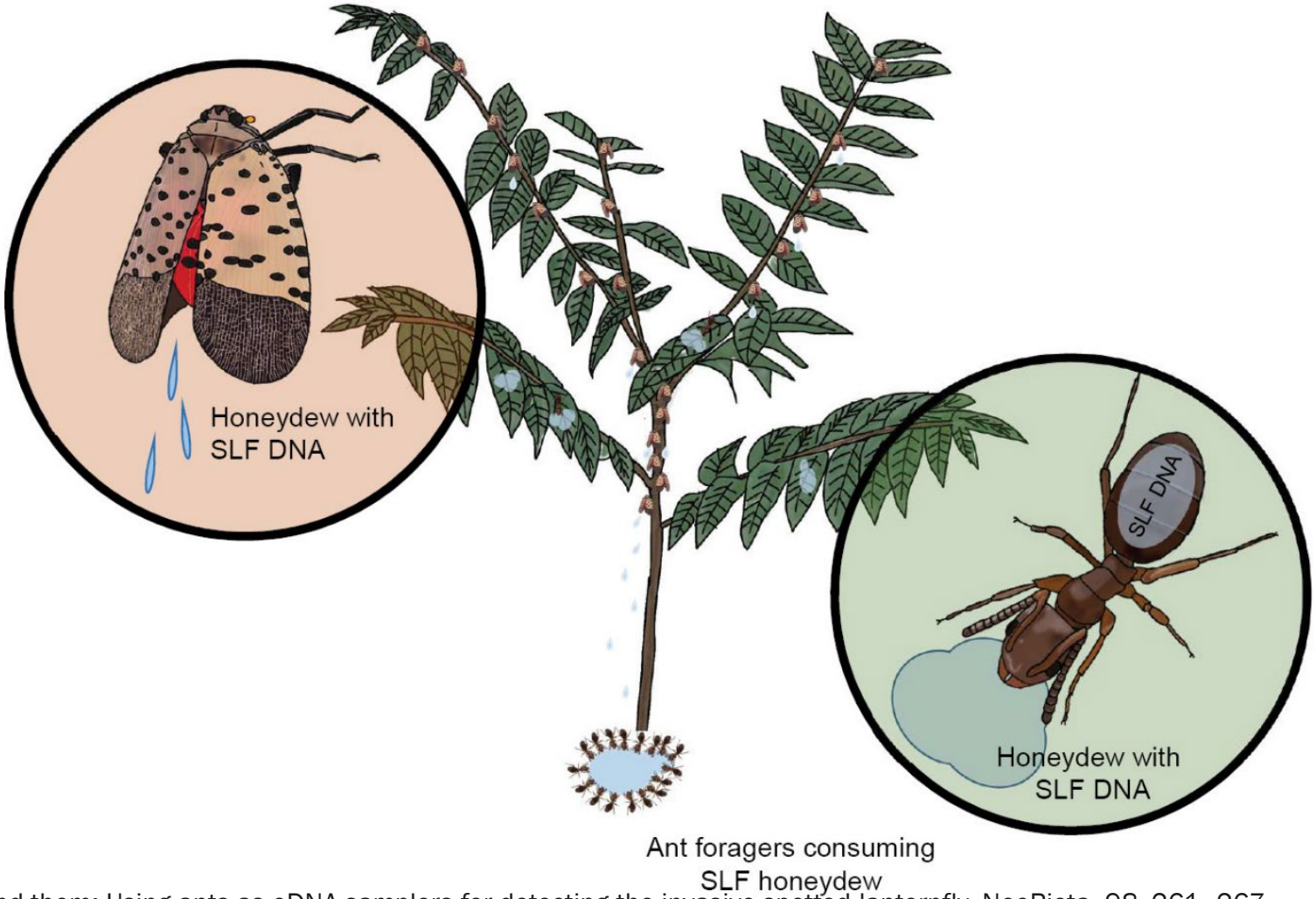
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SLF Ant Environmental DNA Survey

eDNA is a rapid, cost-effective survey and detection tool

Ants collect SLF eDNA from contaminated surfaces

Ants could improve early detection at ports



Ant foragers consuming SLF honeydew

Lin, W.-J., Liu, F.-L. C., Cho, L., & Yang, C.-C. S. (2025). Let ants find them: Using ants as eDNA samplers for detecting the invasive spotted lanternfly. NeoBiota, 98, 261–267.

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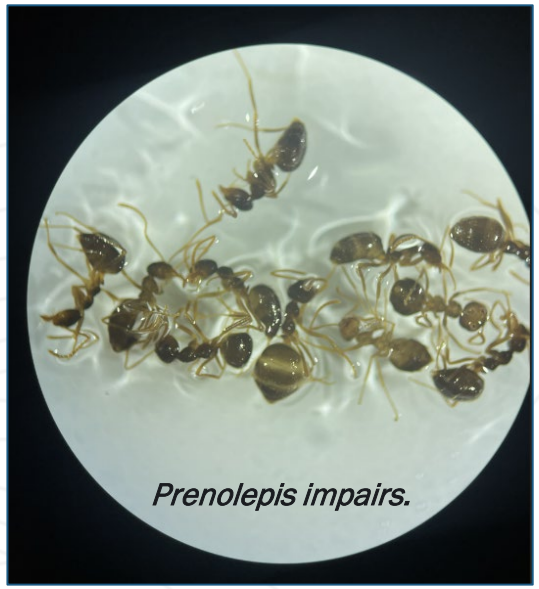
Collect ants on tree-of-heaven

Preserve in 95% ethanol and ship to Dr. Scotty Yang (Virginia Tech) for eDNA analysis

Dr. Yang's team extract ants DNA and runs a molecular test (qPCR) to look for SLF DNA

Positive SLF DNA = evidence that ants encountered SLF or SLF-contaminated material







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WA Alternative Host Plant Survey



Sampled native plants

- Big Sagebrush, Salmonberry, Golden Current, Oregon White Oak, Big Leaf Maples, Scotch broom, etc.

Penn State exposed SLF to plants

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150 SLF nymphs per cage x 15 reps = Nymphs fed on big sagebrush.

Survivors molted to reproductive adults so big sagebrush can support SLF development through adulthood.

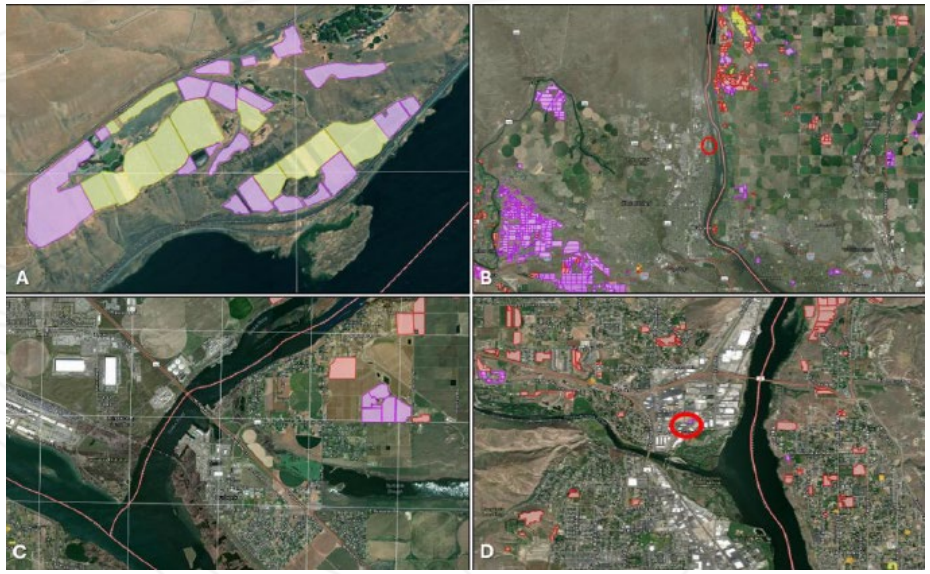
Requested to continue research

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Semi-Arid habitat surrounding hopyards and vineyards







- Monitor distribution and health of hosts in relation to areas water availability
- Using HOBO Loggers

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SLF Biological Control – Host Range Testing

Dryinus sinicus

- Native range is in China
- Small Parasitoid of SLF nymph stage
- Parasitism rates in field surveys up to ~30% in some Chinese sites

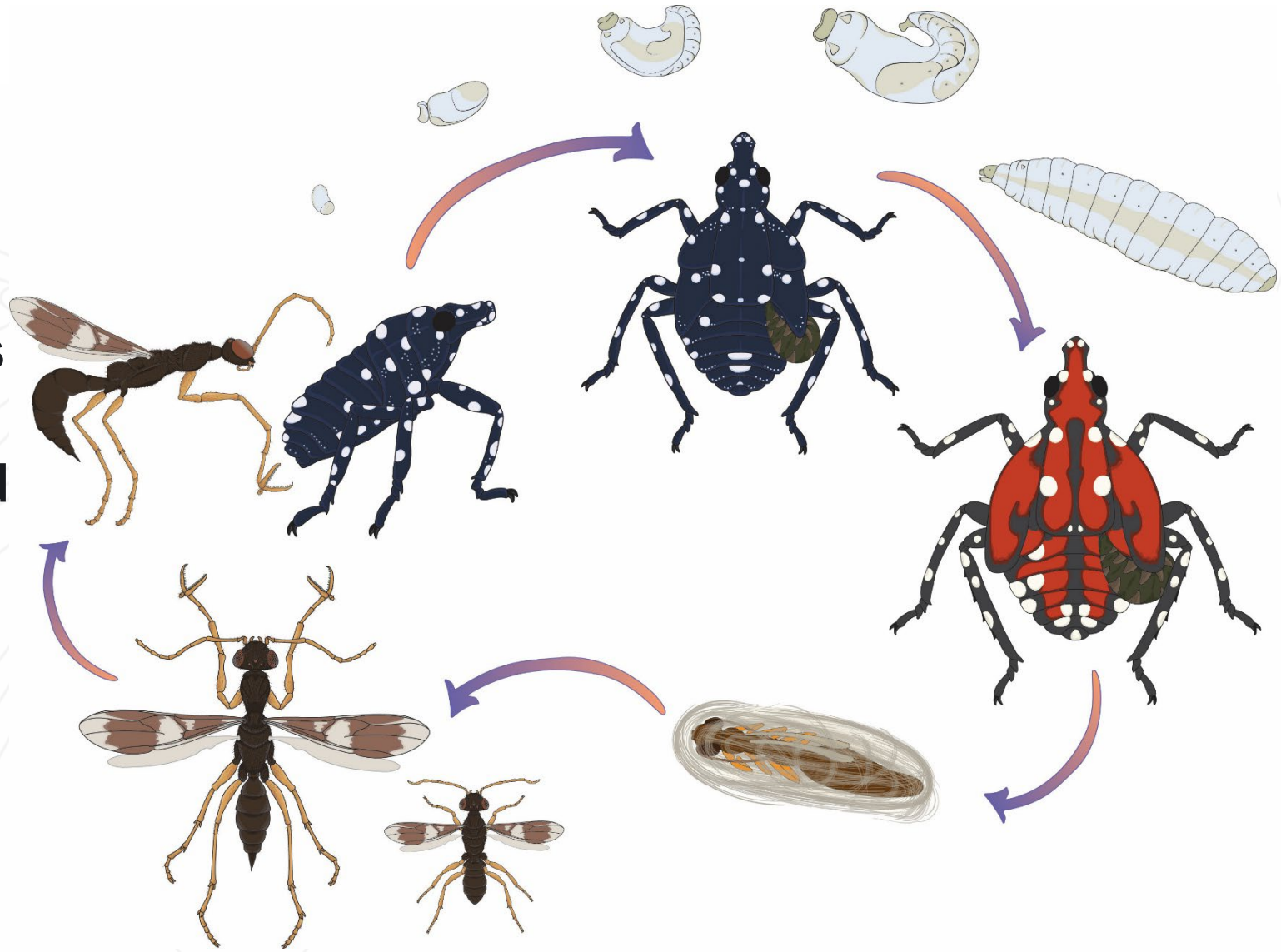




1. USDA APHIS PPQ S&T, Forest Pest Methods Laboratory
2. USDA ARS, Beneficial Insects Introduction Research Unit
3. Research Institute of Forest Ecology, Chinese Academy of Forestry, Beijing, China

Dryinus sinicus

- Egg: Female lays an egg on a young SLF nymph.
- Larva: Parasitoid larva develops on and feeds from the nymph.
- Pupa: Larva leaves the host and forms a cocoon.
- Adult: Adult wasp emerges and mates.
- Repeat: Females seek new SLF nymphs to parasitize



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Survey for *D. sinicus* host

55 sites for planthoppers and leafhoppers

Table 1. Non-target insects that will be surveyed in Washington State

Family	Species	Host Plant	Priority Target
Dictyopharidae	*Scolops perdix*	Western Goldenrod	Y
Membracidae	*Platycotis vittata*	Pin Oak	Y

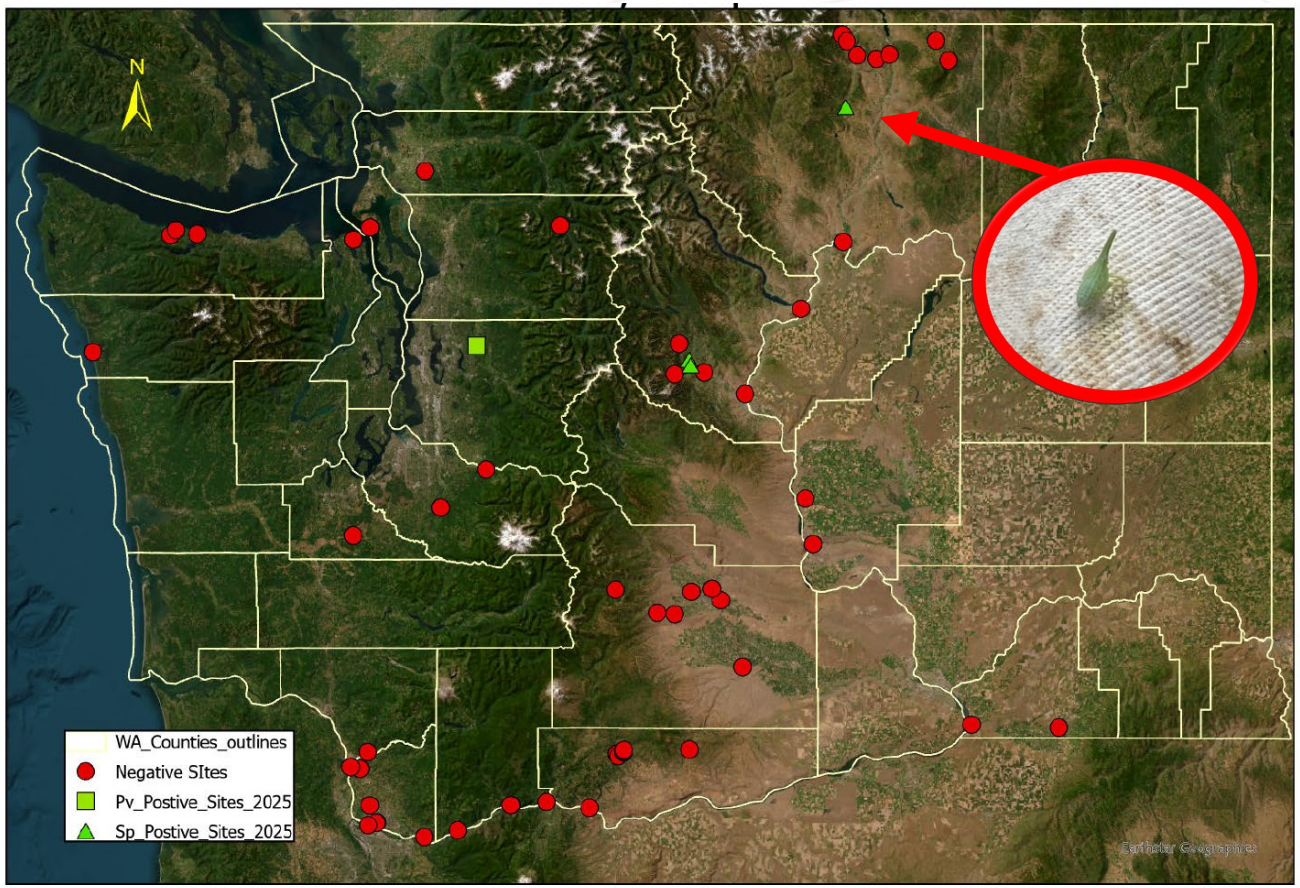


Photos by Claus Giloi





Strepsiptera *Halictophagus sp. NEW SPECIES!*



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Connect?

Workshop?

Feedback?

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Spot 3?







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