

# INVASIVE SPECIES

PLANTS, PESTS & PATHOGENS  
COLONIZING OUR LANDSCAPE





# Forest Health Focus

- ◆ Ash borer and its aftermath
- ◆ Spongy moth, the original forest pest terror
- ◆ Hemlock and the adelgids, threats to a keystone forest ecosystem species
- ◆ Oak decline: medley of diseases and pests
- ◆ Spotted lanternfly coming-out party!!



# Nursery of Nuisances

- ◆ Invasive Plant Community
  - ◆ Ailanthus (Tree of Heaven)
  - ◆ Asiatic bittersweet vine
  - ◆ Autumn olive
  - ◆ Bradford pear
  - ◆ Bush honeysuckle
  - ◆ Japanese honeysuckle, stilt grass and knotweed
  - ◆ Mile a minute
  - ◆ Multiflora rose



UGA1378044





# INVASIVE PLANT SPECIES

REPEAT OFFENDERS SHOWN ABOVE

LOCATION

FOREST EDGES...EVERYWHERE

OFFENSES

GIRDLING TREES, DISPLACING WIL





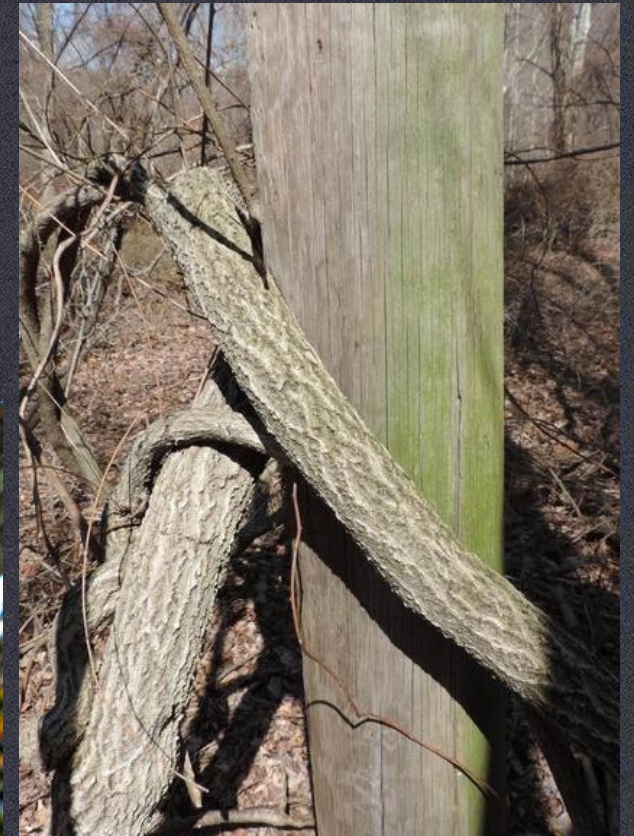
80



5535059



5576243



FUGITIVE

# BITTERSWEET VINE

Leaf: James Miller, USFS  
Yellow berry: Ansel Oommen, Bugwood  
Vine, Distant berries: Richard Gardner

## AKA KUDZU OF THE NORTH

LOCATION

FOREST FLOOR & EDGES OFFENSES GIRDLING TREES, BAD FOR B





5576202



UGA1344132



5576156



5576209

Photos: Richard Gardner, Bugwood

FUGITIVE

# AILANTHUS

AKA TREE OF HEAVEN

LOCATION

FORESTS, PARKS, ROADS ALLELOPATHIC-TOXIC TO NEIG

OFFENSES





FUGITIVE

# BRADFORD PEAR

PA, SC TAKING ACTION!!

LOCATION

ROADSIDES, EVERYWHERE

OFFENSES

JUST PLAIN STINKS, WEAK W





©Sally J. McHugh, University of Connecticut Bugwood.org

FUGITIVE

# AUTUMN OLIVE

Leaf underside: Chris Evans

## SHINY SILVER INVADER BY THE

LOCATION

FORESTS, PARKS, FARMS, ROADSIDES DISPLACING MARYLAND'S NATIVE UNDERSTORY

## ROADSIDE

DEFENSES





FUGITIVE

# JAPANESE HONEYSUCKLE

Berries, lobed leaf: Mehroff  
Flower, leaf: Gardner

## NOT THE HONEYSUCKLE YOU GREW UP

LOCATION

FORESTS, PARKS, ROADS

OFFENSES

GIRDLING TREES, BLANKETING NATIVE SEED BANK

## WITH





FUGITIVE

# MULTIFLORA ROSE

Thorn: Chris Evans  
Flower, leaf: Richard Gardner  
Fruit: David Cappaert, Bugwood

## ANOTHER LIVING HEDGE ROW GONE

LOCATION

FORESTS, FARMS, PARKS, SETTING ME UP IN THE WOODS

## WRONG

OFFENSES



# Any silver bullet solutions?

- \* Teamwork to make the dream work!
- \* Mass volunteerism: Volunteers Against Vines e.g.
- \* R&D into cellulosic biofuels with invasive plants as feedstock; medicinal uses of any invaders i.e. autumn olive
- \* Remove invasive, replant native 3x
- \* Goats vs. glyphosate
- \* Don't be afraid to get creative!



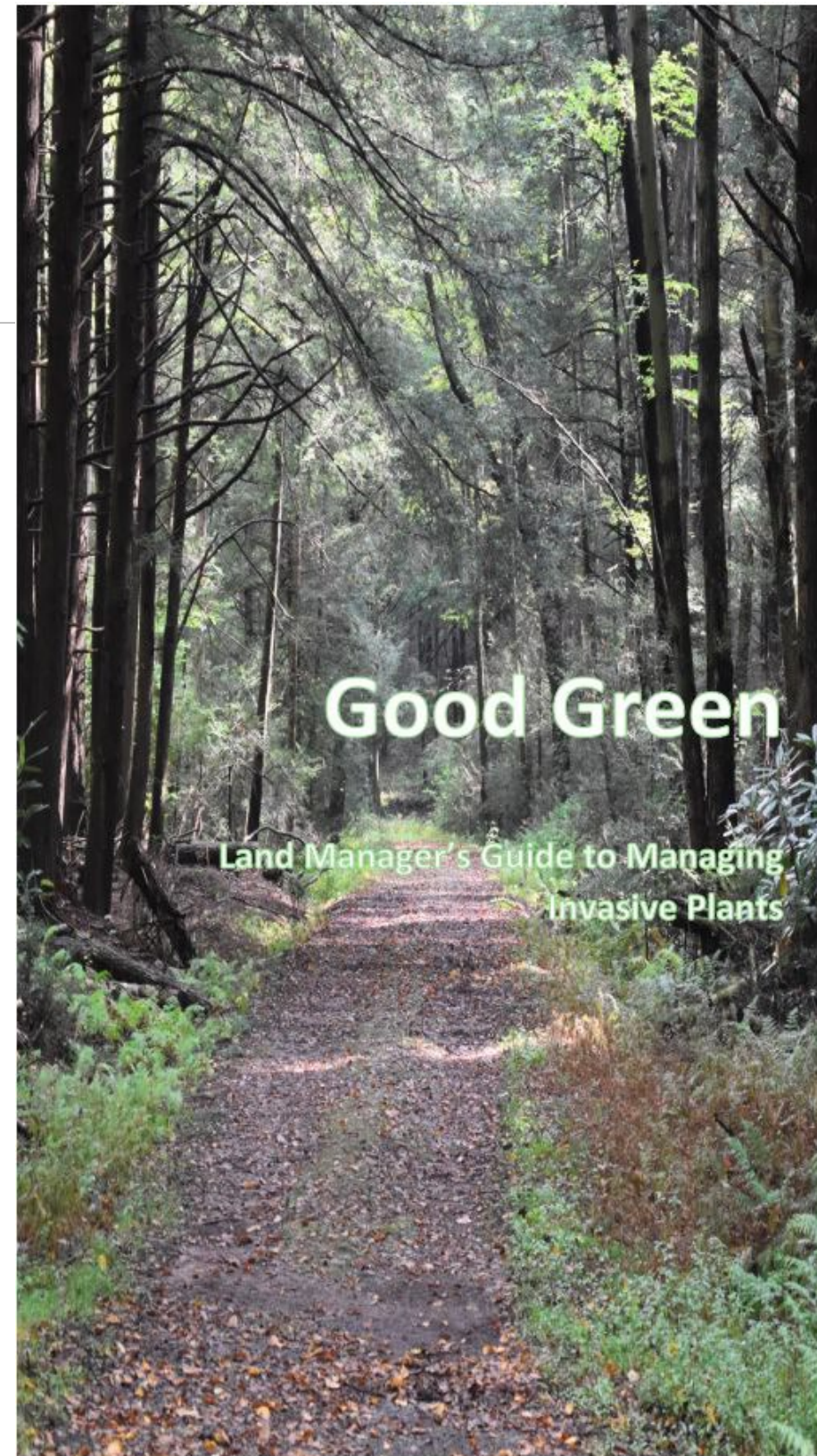
# Forest Service

Funding provided to six local governments to treat ash trees

Assisted park service with treatments in state parks

Development of invasive plant management guides for land managers and landowners

Hosted workshop for land managers on climate adapted silviculture



FUNDED BY A LANDSCAPE  
SCALE RESTORATION  
GRANT



# Emerald Ash Borer



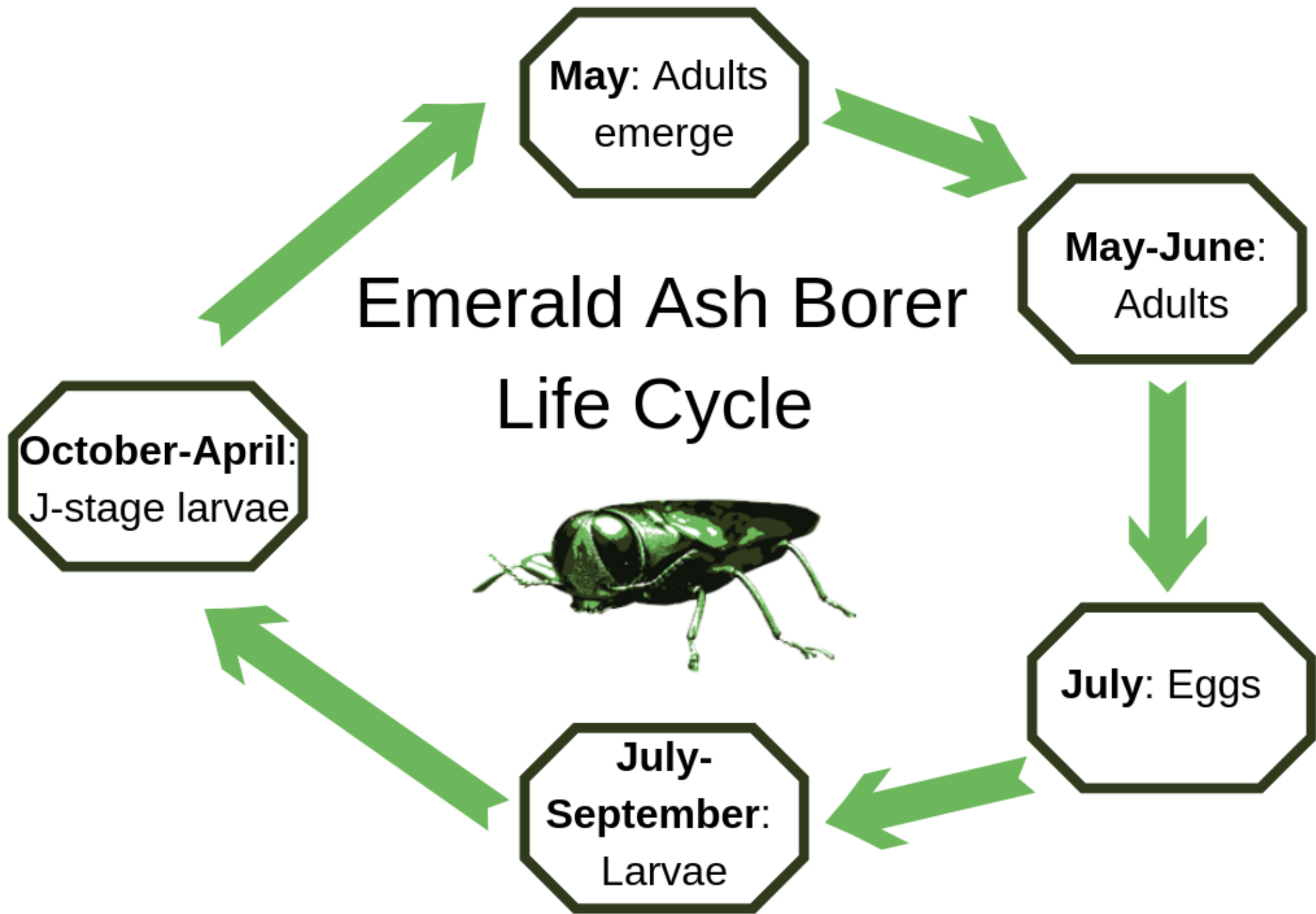
*Staple Forest Buffer Species In  
Peril*

*Lingering Hope?*





# Emerald Ash Borer Life Cycle





# EAB & THE DAMAGE DONE





# Gaining an edge on EAB???





# Emerald Ash Borer

## Trapping:

- 18 green funnel traps
- Six traps were positive
  - Somerset County- new county record

## Parasitoid releases:

- 12,661 parasitoids released at 7 locations (Garrett, Harford, Baltimore, Dorchester, Cecil, Caroline Counties and Baltimore City)
- Including 4,569 *Spathius galinae*, larval parasitoid from the BIIRL Lab in Newark, DE

## Tree Treatments:

- Assisted with treating trees on state park land



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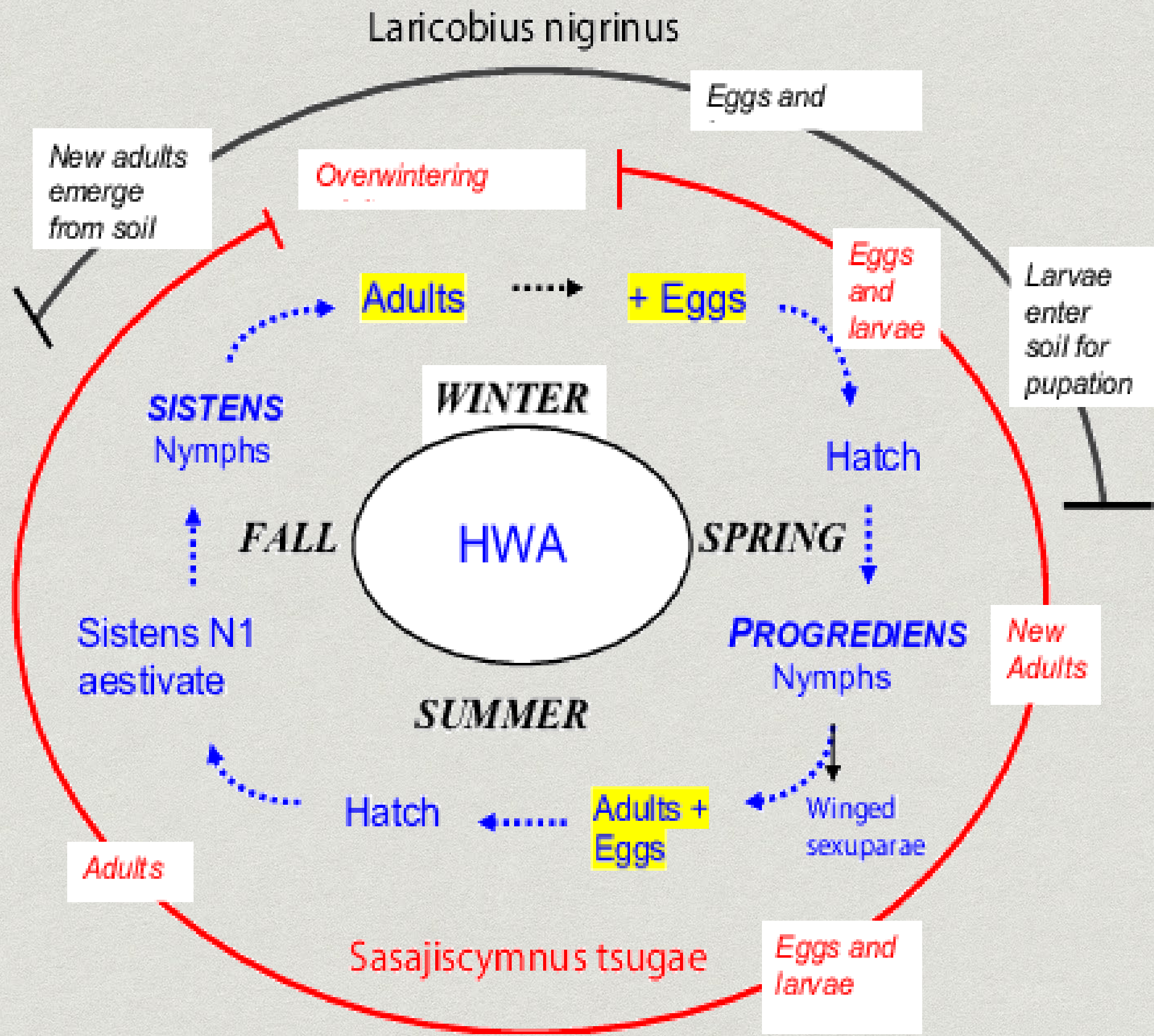
# Hemlock Woolly Adelgid

*Threatening a Unique  
Ecosystem*

*Positive News From The Field*









# Multi-Agency Partnerships: An Alphabet Soup of Success!

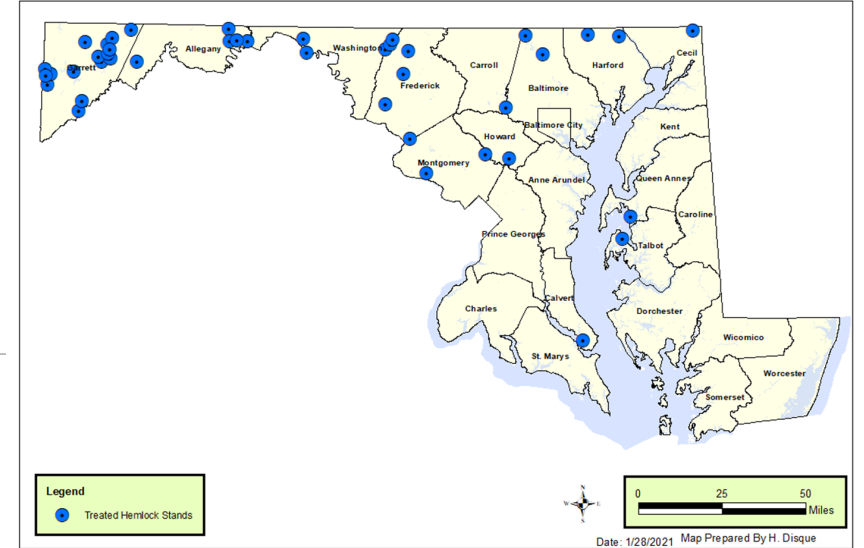






# Hemlock Woolly Adelgid Treatments

Maryland Department of Agriculture  
Maryland Hemlock Stands Treated for Control of Hemlock Woolly Adelgid 2004 to 2020  
Forest Pest Management Section



## Maryland Department of Agriculture Forest Pest Management Fall 2019 - Spring 2020 Imidacloprid Treatments for Hemlock Woolly Adelgid Control in Maryland

Hemlock Stand	County	Trunk Injection #Trees	Trunk Injection Inches DBH*	Soil Injection # Trees	Soil Injection Inches DBH*	Total #Trees	Total Inches DBH*
Prettyboy Reservoir	Baltimore			503	9020	503	9020
Big Run SP	Garrett	25	236.8			25	236.8
Savage River S F	Garrett	329	3129.4	719	6638.9	1048	9768.3
Swallow Falls State Park†	Garrett	62	709.4	1320	19172.9	1382	19882.3
Sang Run SP	Garrett	127	1893			127	1893
New Germany SP**	Garrett	50	762	495	6168.4	545	6930.4
Gorman Stream Valley Park	Howard	131	1133.7	185	1190.9	316	2324.6
<b>Total</b>		<b>724</b>	<b>7864.3</b>	<b>3222</b>	<b>42191.1</b>	<b>3946</b>	<b>50055.4</b>

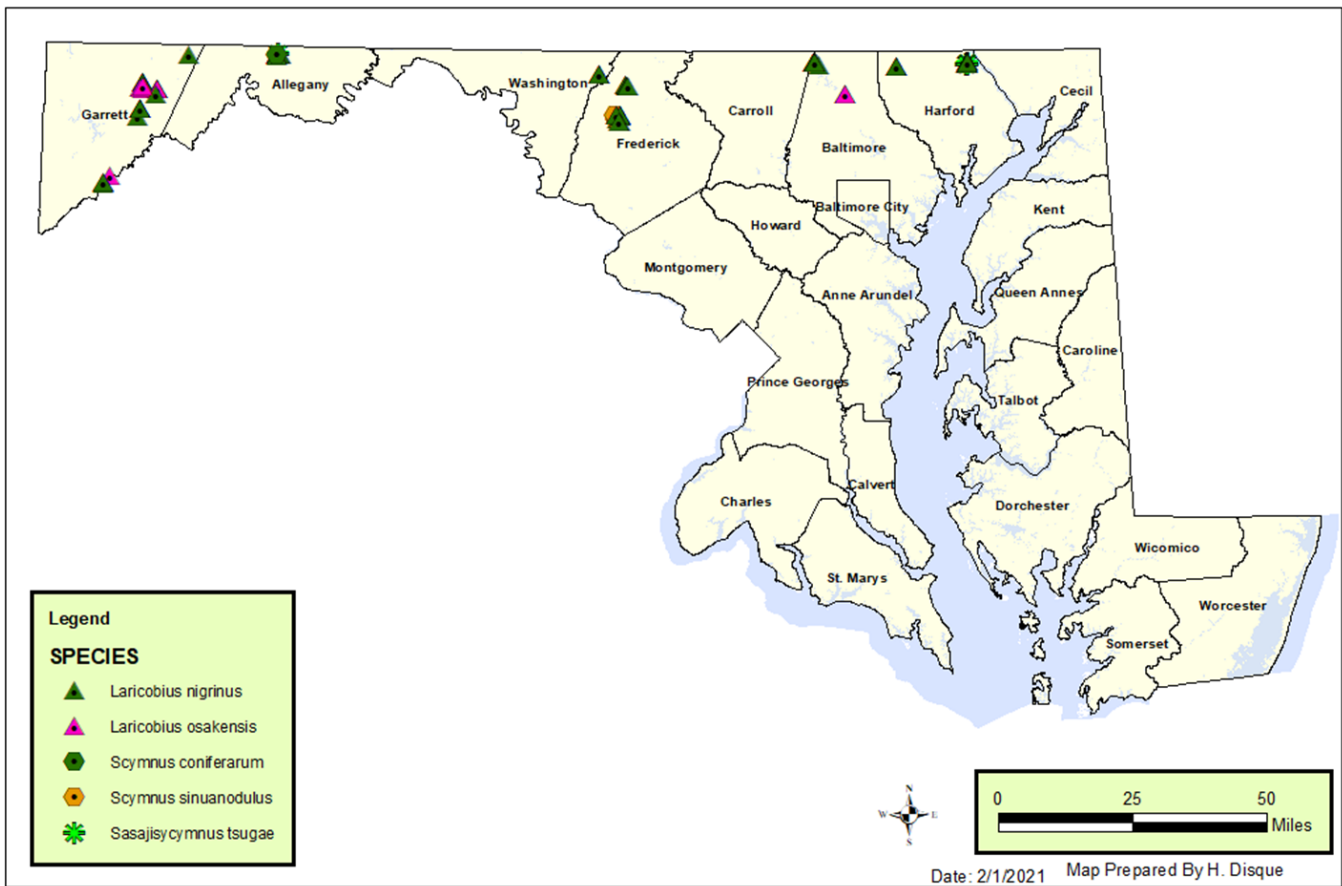
\*DBH = the diameter of the tree trunk at 4.5 feet above the ground

\*\*Treatments done in cooperation between Forest Pest Management and Maryland Conservation Corps (Department of Natural Resources)

† Treatments done separately by FPM/MCC and FPM alone.



Maryland Department of Agriculture  
Hemlock Woolly Adelgid Predator Releases in Maryland Hemlock Stands 1999 to 2020  
Forest Pest Management Section



*Laricobius nigrinus* were released at sites in Frederick and Baltimore Counties in 2020. *Laricobius osakensis* was released in Garrett County in 2020.



2020 HWA Predator Releases		
Location	Species	# of beetles
Cunningham Falls State Park	<i>L. nigrinus</i>	510
Prettyboy Reservoir	<i>L. nigrinus</i>	510
Poplar Lick (Savage River SF)	<i>L. osakensis</i>	512



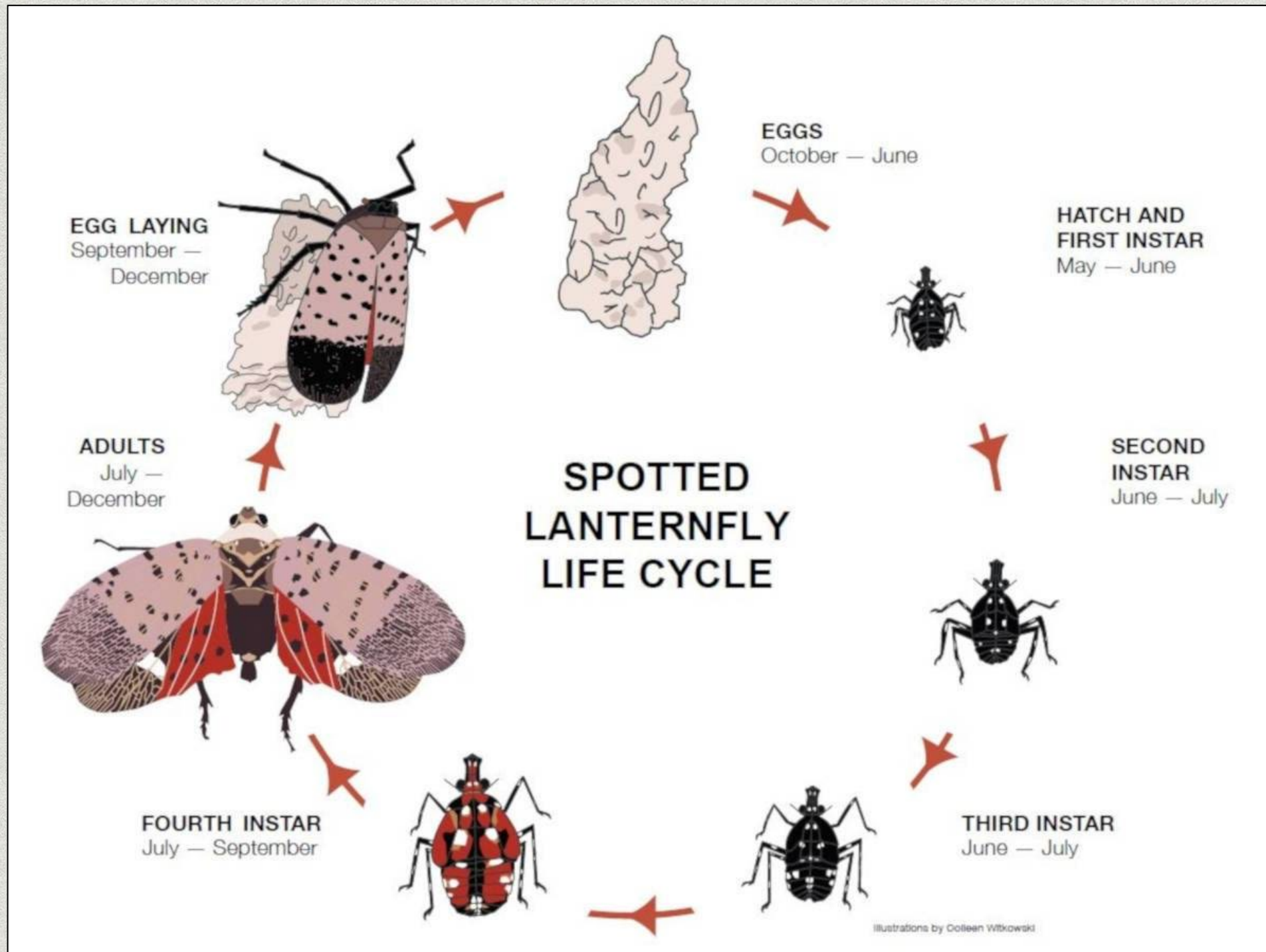


# Spotted Lanternfly: New Pest on the Block

*Unknown Impacts*



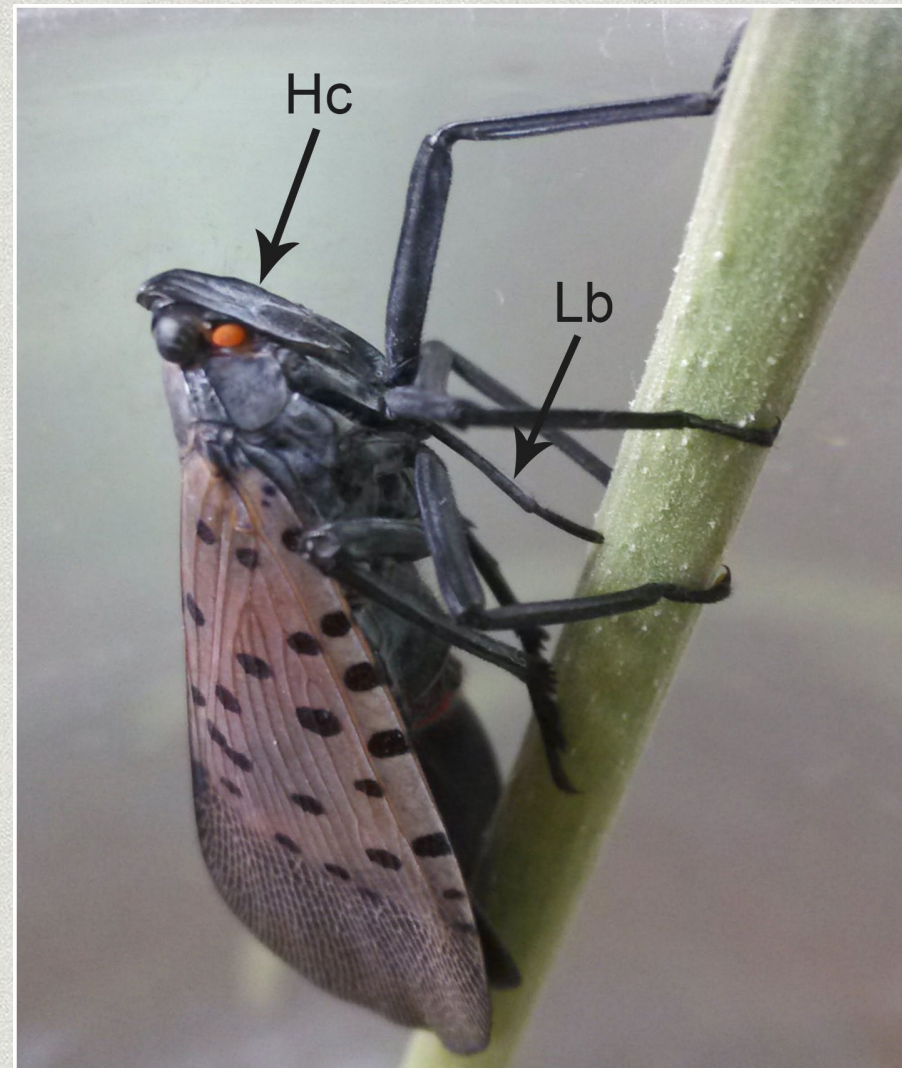
# It's hatching and 1st instar time!





# Lanternfly Behavior & Diet

- Sap feeding. Can be found on branches, stems and trunks.
- Preferred host is *Ailanthus altissima*, tree of heaven.
- Preferred secondary hosts include grape, black walnut, silver maple, red maple, willow, eastern white pine.
- Feeds on 70+ plant species.









# Trapping & Treating



- Circle traps.
- Look for tree of heaven or secondary host.
- Tree at least 8" DBH.
- Systemic insecticide - Dinotefuran
- Contact insecticide - Golden Pest Spray Oil,
- Manual - Smashing, scraping egg masses



# What Else is Being Done?

## Outreach Events

2021

1. Maryland Nursery, Landscape and Greenhouse Assoc.
2. Mid Atlantic Nursery Trade Show
3. Maryland Five-Star International Horse Show
4. State Fair
5. Cecil County Agronomy Meeting
6. MDA FPM forest pest update
7. Master Gardener webinar

2022

1. 2022 Flower & Garden Show at Hagerstown CC
2. Western MD forest pest update
3. Easton Utility training video
4. Mailing outreach materials to various interested parties

## Citizen Reporting

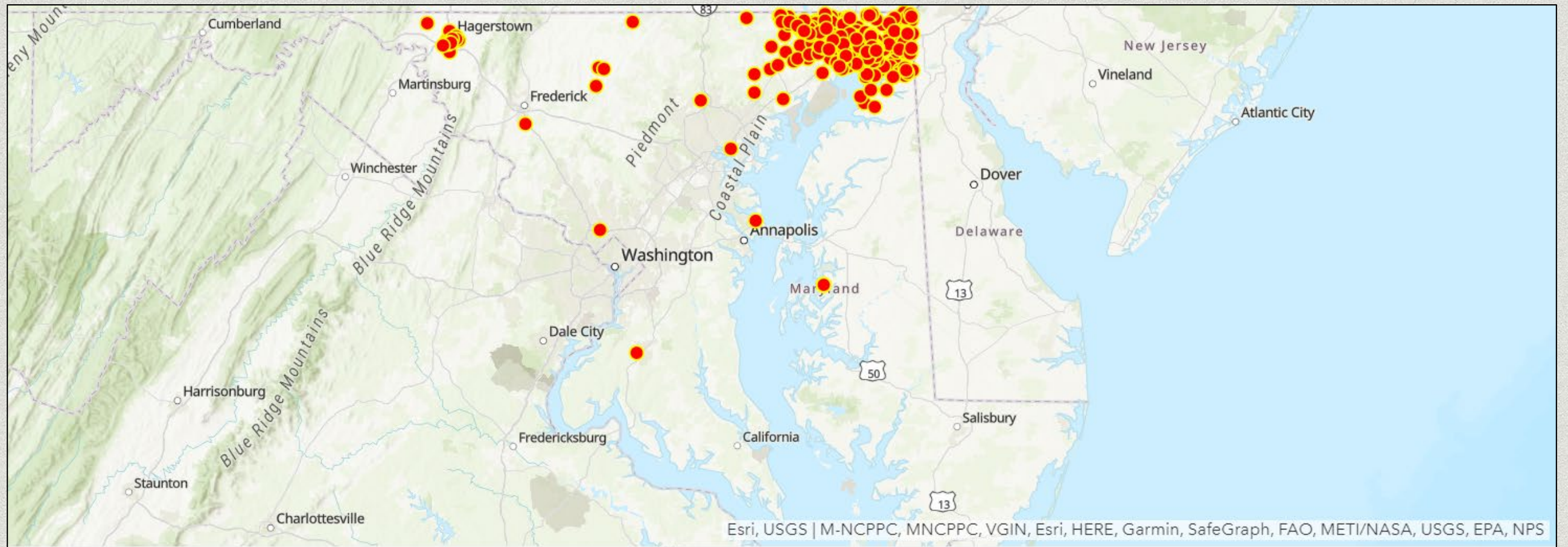
- Dontbug.md emails = 2,776
- Phone calls = 1,183
- Survey123 responses = 6,210





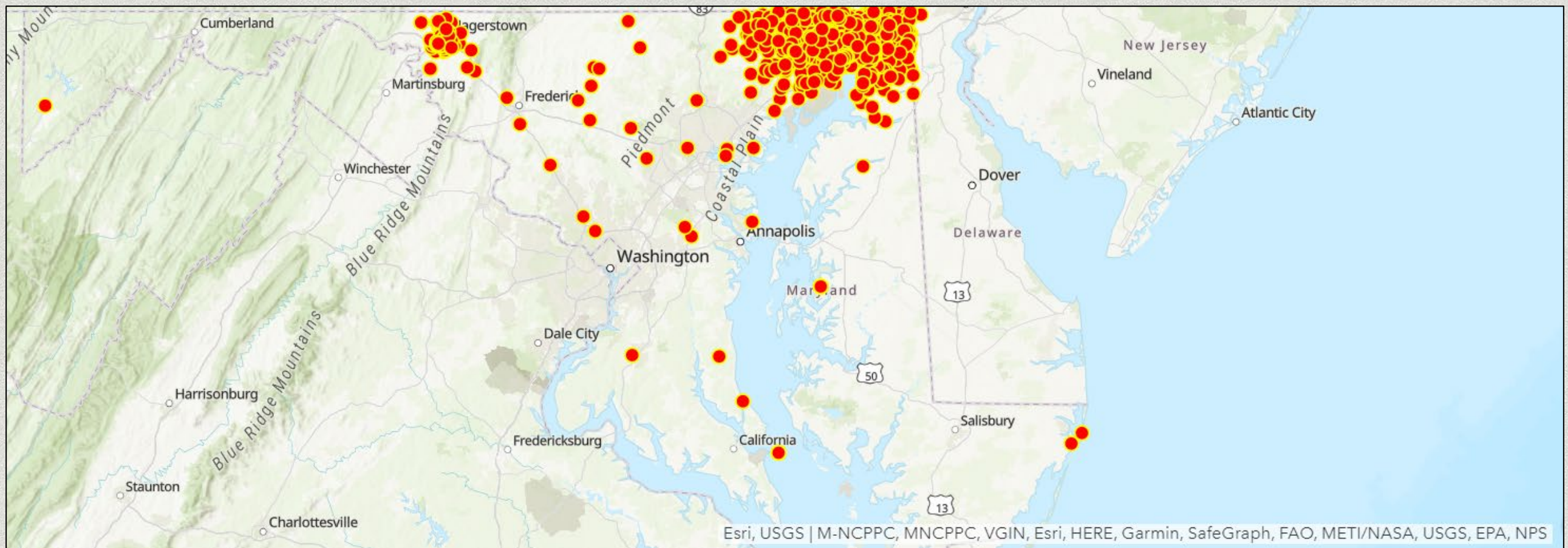
# July 12

## 342 public sightings



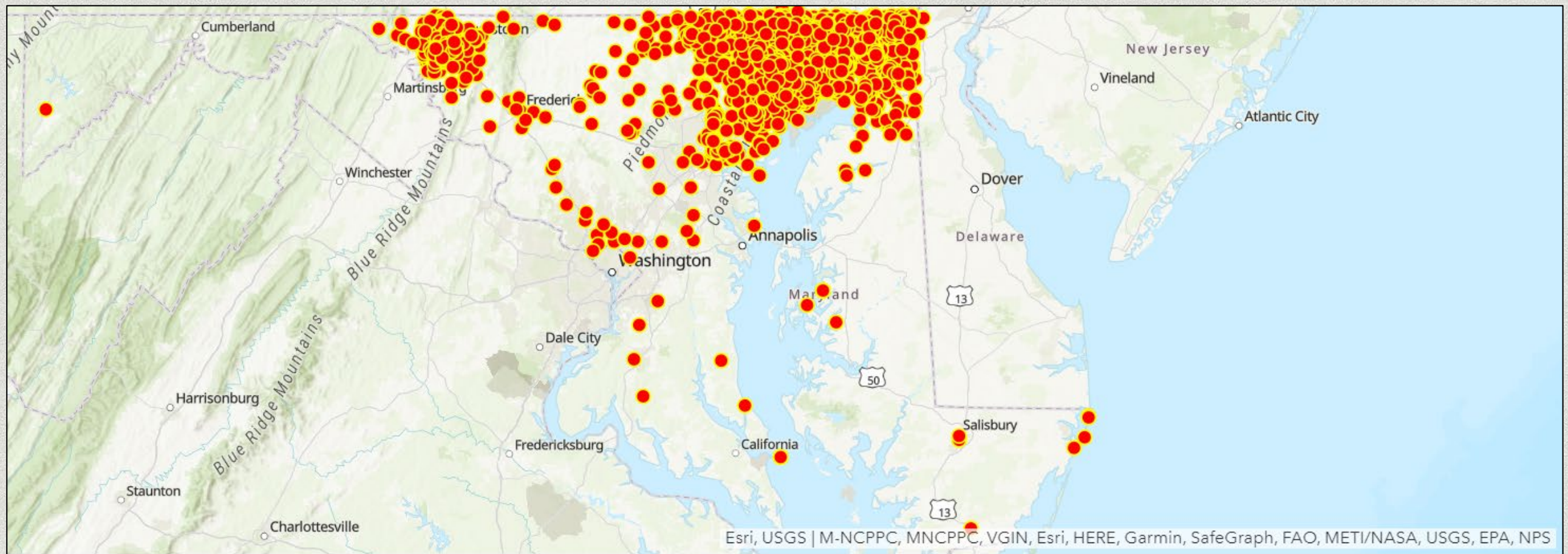


# August 1,281 public sightings





# October 2,207 public sightings



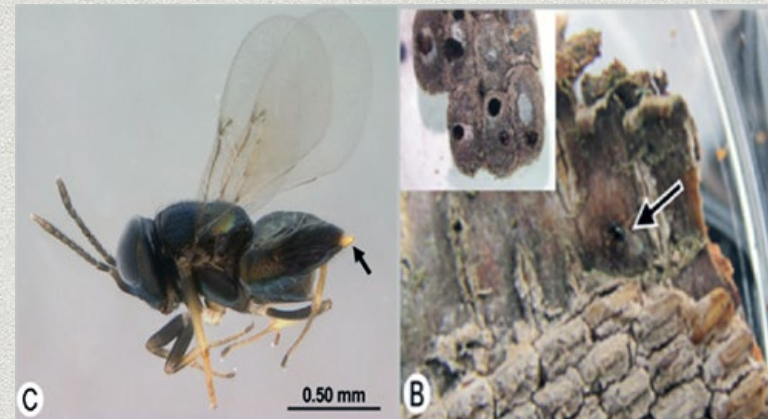


# Biocontrol Potential or Native Appetite?

- *Ooencyrtus kuvanae*  
Introduced from Asia in 1908 as a spongy moth egg parasitoid.  
7% of egg masses and 20% of eggs within.  
Here, but not specific to SLF.



- *Anastatus orientalis*  
Egg parasitoid - northern China.  
68.96% egg masses and 32.98% of eggs within.  
Research ongoing, but possible non-targets likely.



- *Dryinus sinicus*  
2<sup>nd</sup> and 3<sup>rd</sup> instar parasitoid.  
Up to 40% parasitism reported in literature.





<http://mda.maryland.gov/plants-pests/Pages/spotted-lantern-fly.aspx>

DontBug.MD@maryland.gov

(410) 841-5920





# What Can We Do?!?!

- ◆ Ask the experts!
- ◆ Start small...KISS rule
- ◆ Entomology inspectors on CBP and at the ports!!
- ◆ Commercial nursery outreach & education vs. multi-state nursery inspectors



Thank you!!!!

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