



# Spotted Lanternfly and Asian Longhorned beetle

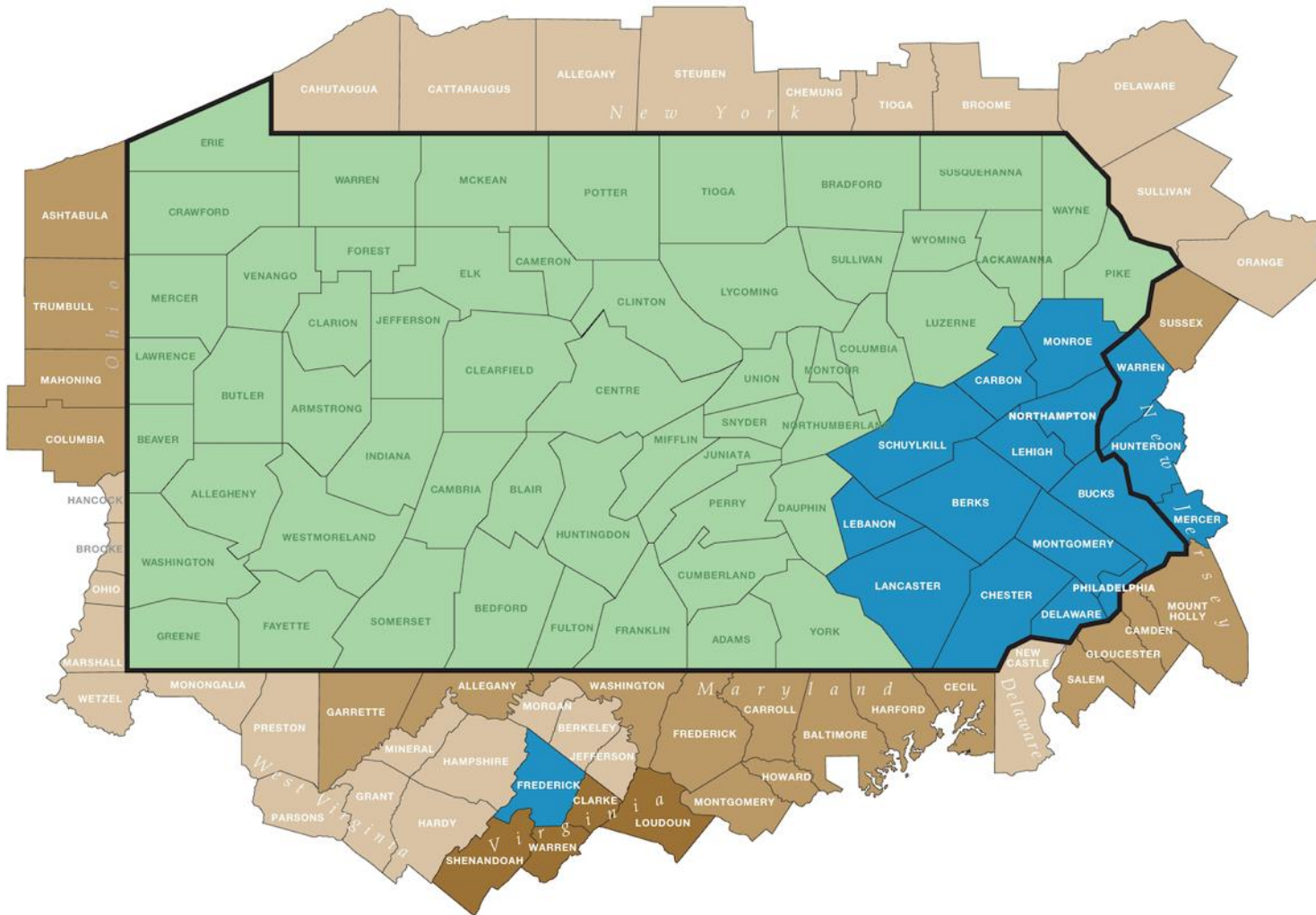
Eric Day Virginia Tech



**Virginia Cooperative Extension**

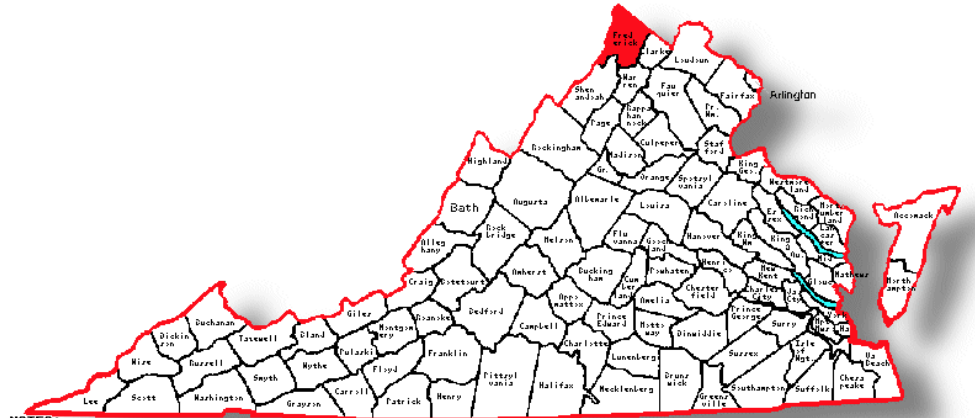
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Top to bottom:  
Early nymph stage (actual size: 1/3") Photo: PA Dept. of Agriculture  
Late nymph stage (actual size: 1/3") Photo: PA Dept. of Agriculture  
ADULT, wings closed (actual size: 1 1/2") Photo: PA Dept. of Agriculture  
ADULT, wings open (Photo: PA Dept. of Agriculture)  
Egg mass (Photo: Emale Spackman)

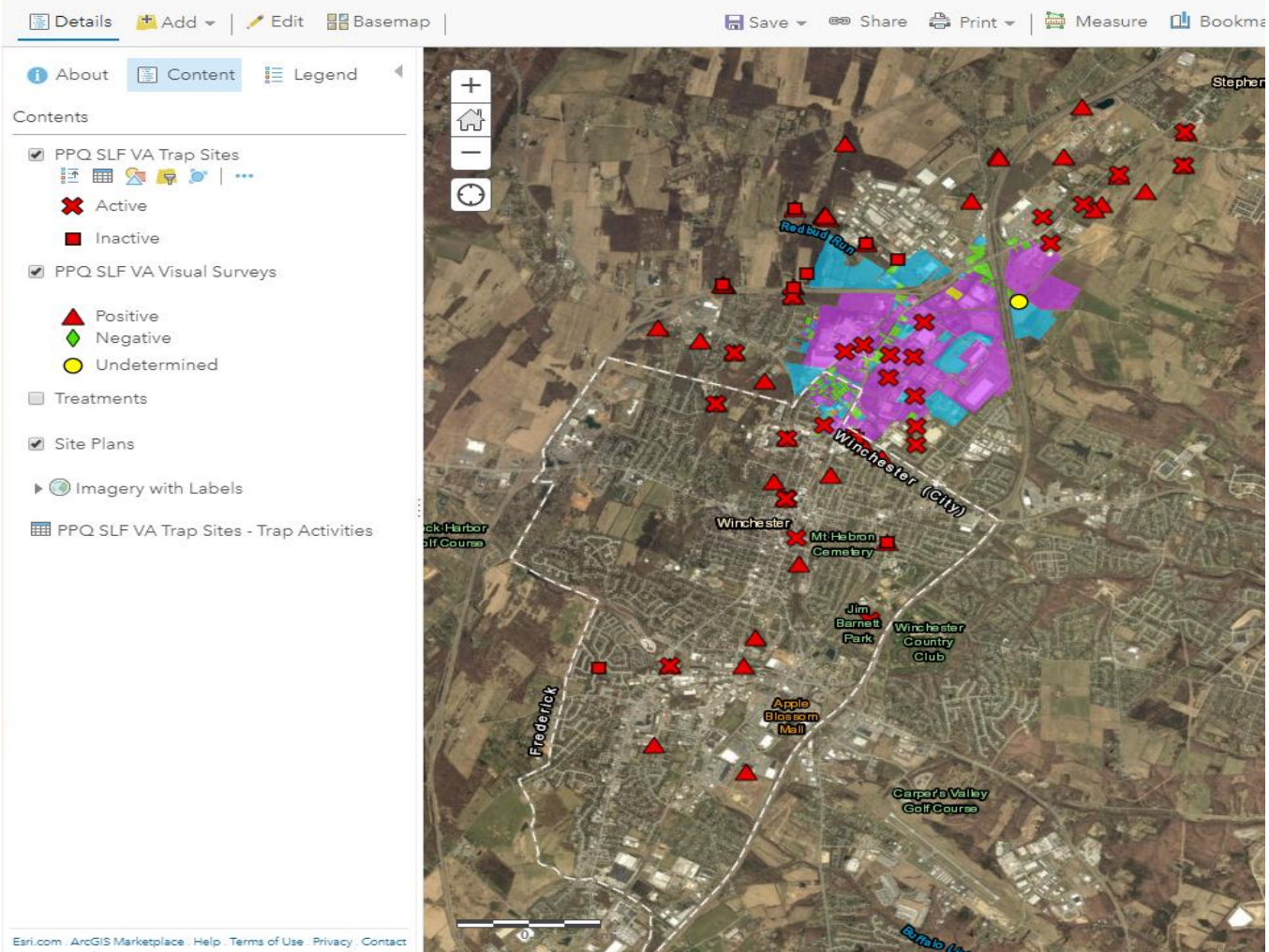
Map prepared by Heather Leach, PennState Extension



NOTES:  
Spotted Lanternfly 2018 Frederick Co.

Spotted Lanternfly in Virginia  
First detection: January 10<sup>th</sup> 2018,  
Tom Cary, VDACS  
Initially delimited to 1 square mile





Green diamond  
negative  
not included  
on this map

# *Lycorma delicatula* Spotted lanternfly

- Not an actual fly, but a bug related to aphid, leafhoppers and cicadas
- Originally from Northern China based on DNA analysis
- Found in SE Pennsylvania in 2014
- Survived polar vortex temperatures
- Discovered in Frederick County Virginia in 2018
- Prefers and may require tree-of-heaven



All Photos by Eric Day, Virginia Tech



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Spotted lanternfly, *Lycorma delicatula*

Nymphs black with white spots in stages 1-3, then red with black spots later in stage 4. Stages = instars



## Spotted lanternflies in the months of May and June



1<sup>st</sup> stage  
4 mm or 3/16 inch long.



2<sup>nd</sup> stage  
6 mm or 1/4 inch long.



3<sup>rd</sup> stage  
9 mm or 3/8 inch long.

**Less than 1/2 inch long.**

**Black with white spots.**

**Projection on the head, indicated by red arrow.**

**Quickly jump or hop away.**



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1<sup>st</sup> through 3<sup>rd</sup> stage of spotted lanternflies are black with white spots. They have a projection on the head. May 10<sup>th</sup> to June 25<sup>th</sup>



1<sup>st</sup> stage

4mm or 3/16 inch long.



2<sup>nd</sup> stage

6mm or 1/4 inch long.



3<sup>rd</sup> stage

9mm or 3/8 inch long.



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## Spotted lanternflies in late June and July

5/8 inch



Slightly bigger than  $\frac{1}{2}$  inch long.

Red coloration in addition to the black with white spots.

Projection on the head.

Quickly jump or hop away.

Also called the 4<sup>th</sup> stage.



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4<sup>th</sup> or final immature stage before it becomes an adult



4<sup>th</sup> stage of spotted lanternfly has red coloration in addition to the black and white markings

Size – 7/8 inch long or 12 mm

June 26 – First 4th stage

All Photos by Eric Day, Virginia Tech



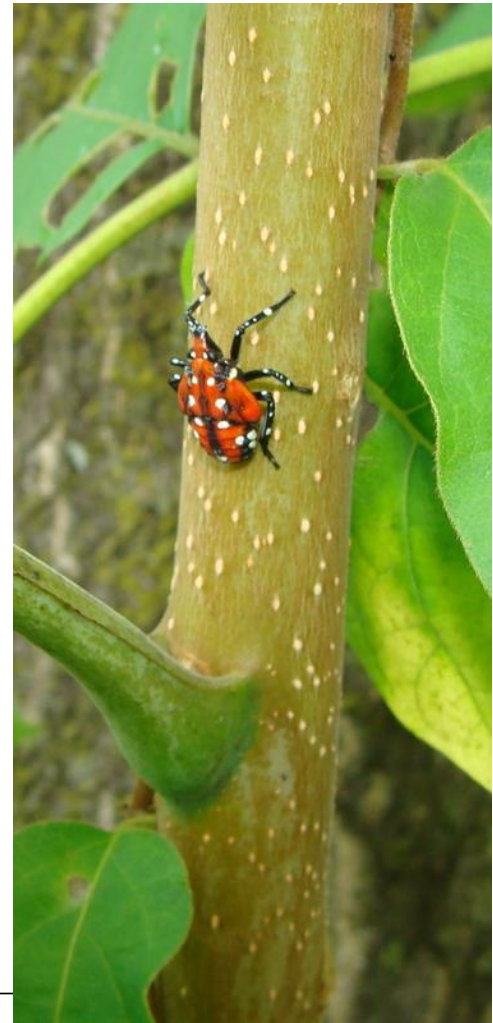
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## Where to find Spotted Lanternflies:



Tree-of-Heaven.

Nearby trees such as cherry and locust and vines such as wild grape and Virginia creeper.

Check small stems and undersides of leaves.

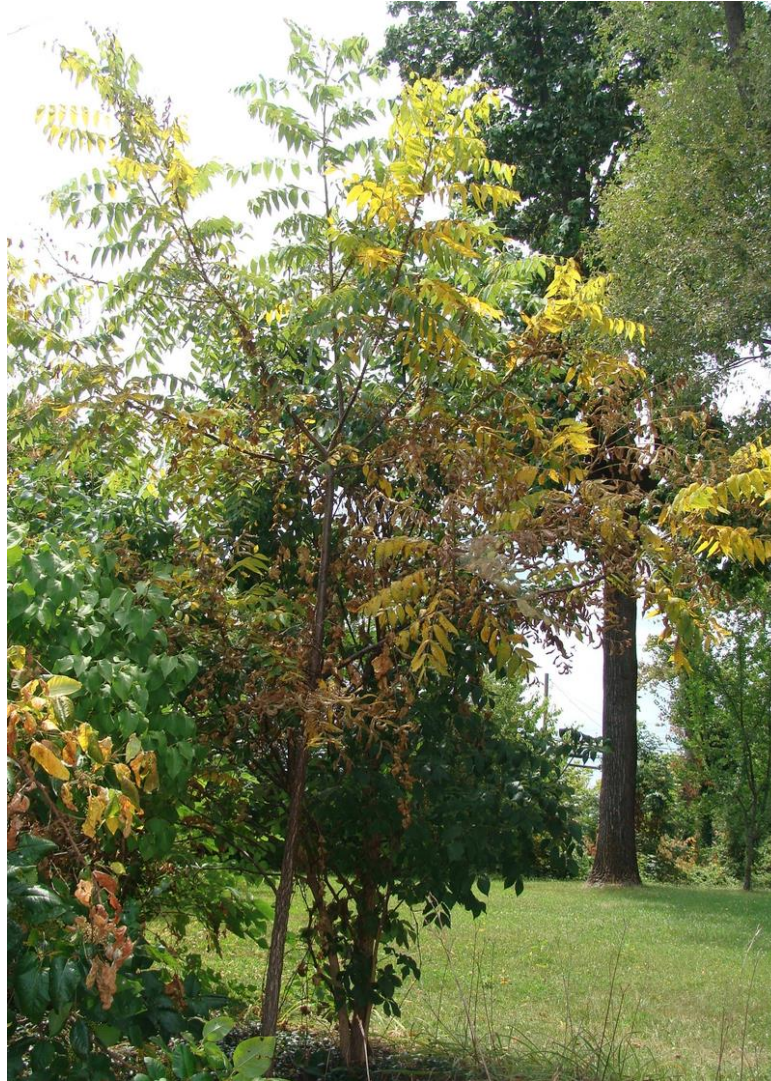
They will quickly move to the opposite side of a stem or hop away.

All Photos by Eric Day, Virginia Tech



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Walnut tree, in  
Winchester,  
First damaged  
tree in Virginia,  
July 20, 2018





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Molting stage: Pale adult emerges and leaves an empty cast skin behind. Adult quickly expands wings and develops full color.

All Photos by Eric Day, Virginia Tech



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1 inch

Adult spotted lanternflies hold their wings in tent-like manner.  
1 inch or 25 mm in length when resting on bark.  
The wingspan is about 1 ½ or 32 mm long.  
The long siphoning mouthpart are held under the body.  
Abdomen has yellow but it is covered by the wings

All Photos by Eric Day, Virginia Tech



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Worldwide Spotted lanternflies can be found on over 70 different host plants but prefer Tree-of-Heaven, *Ailanthus altissima*.  
Damage from spotted lanternflies occurs as yellowing and browning as well as leaf loss.

Photos center and right by Eric Day, Virginia Tech



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# Tree-of-heaven, *Ailanthus altissima*



Winter  
seed  
head

Cite as: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

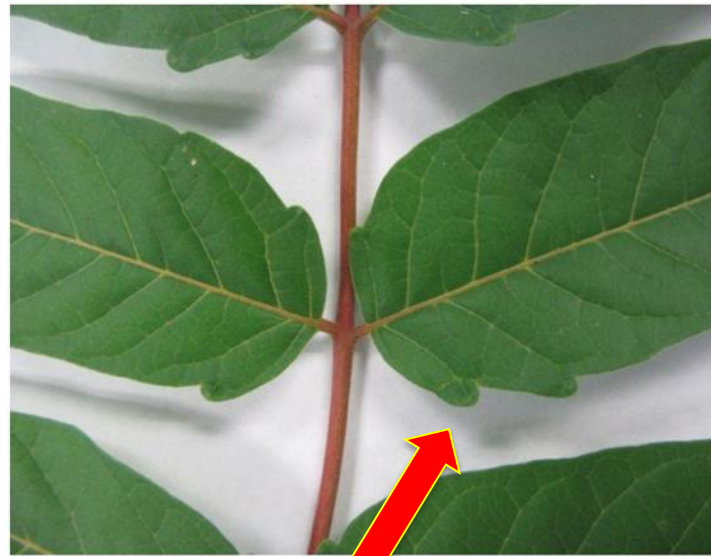


Leaf. Photo Dave Jackson



Pink  
flowers  
in June

Cite as: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Leaf Margin. Photo: Dave Jackson

Leaf notch on  
compound leaf

Left, top and bottom photos from L. Mehrhoff. Right top and bottom from D. Jackson, Pennsylvania State Coop. Extension



Sooty mold can be found on leaves and trunks.  
 White yeast patches may develop on trunk.  
 Ground under tree may smell of vinegar.

Sooty Mold

Adult SLF

Yeast patch

All Photos by Eric Day, Virginia Tech

# SLF 1<sup>st</sup> hatch

- May 9, 2018
- April 27, 2019
- Approximately 200 degree days, base 50 F., start March 1



All Photos by Eric Day, Virginia Tech



Molting stage in Mid July: Pale adult emerges and leaves an empty cast skin behind. Adult quickly expands wings and develops full color.

All Photos by Eric Day, Virginia Tech



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Adult spotted lanternflies hold their wings in tent-like manner and are about 1 inch or 25 mm in length. The wingspan is about 1 ½ or 32mm long. The long siphoning mouthpart are held under the body. July 12<sup>th</sup> first adult



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Male on left, female on right with red gonapophysis







Erica Smyers



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# Spotted Lanternfly in Pennsylvania



## Impact:

**Adult clustering, swarming and Honeydew accumulation can impact quality of life.**



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# New egg mass on black locust

Sept 17 – First new  
egg mass



# Old and new egg masses

- 2018 SLF egg masses on maple



Five Spotted Lanternfly egg masses on cherry (Mark Sutphin)



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# Old and new egg masses



# Old and new egg masses

- 2018 SLF egg masses on cherry



Five Spotted Lanternfly egg masses on cherry (Mark Sutphin)



Spotted Lanternfly egg mass are a flat gray color and are about 1.5 inches long



# Non plant egg sites

- Concrete (Jersey wall) (e)
- Metal 55 gal Drum (e)



November 2015



March 2016





# Spotted Lanternfly Life Cycle in Virginia

The Spotted Lanternfly (SLF) overwinters in an egg mass (gray bars) that begins shiny gray but quickly turns to a dull brownish gray. The eggs hatch in early May and the nymphs (red bars) are present until late July when they become adults (yellow bars). Adults start to lay eggs in September. The life stages can overlap and, depending on the time of year, multiple stages can be found at the same time.



Multiple egg masses



Young nymphs



Mature nymphs



Adult

Eggs

Nymphs

Adults

Eggs



Jan	Feb	March	April	May	June	July	Aug	Sept.	Oct	Nov	Dec
-----	-----	-------	-------	-----	------	------	-----	-------	-----	-----	-----

Prepared by Eric Day, Doug Pfeiffer, Theresa Dellinger and Mark Sutphin. Photos left to right: Cluster of 5 egg masses; nymphs, showing black with white spots coloration for 1<sup>st</sup>-3<sup>rd</sup> stages; red 4<sup>th</sup> stage; and adult. (Photo of eggs by Mark Sutphin, photos of nymphs and adult by Eric Day)

## Spotted Lanternfly Host list Virginia

- Tree of heaven (e)
- Wild cherry (e)
- Black locust (e)
- Boxelder (e)
- Silver Maple (e)
- Red Maple (e)
- Elm (e)
- Virginia Creeper (e)
- Honey Locust (e)
- Crab Apple (e)
- White pine (e)
- Concrete (Jersey wall) (e)
- Metal 55 gal Drum (e)
- Hackberry
- Multiflora rose
- Poison ivy
- Smooth sumac
- English Ivy
- Bush Honey Suckle
- Japanese Honeysuckle
- Black Walnut
- White mulberry
- Wild grape
- Table grape



e = ootheca found



# Wallet cards

**Stop the Spotted Lanternfly in Virginia**



The Spotted Lanternfly attacks tree fruits, grapes, hops, and over 70 other trees and plants. Sooty mold can cover anything under an infested tree.



Above and left: adult is 1 inch long, right: is egg mass, about 1 to 2 inches long

For more information and to report the Spotted Lanternfly Virginia go to <https://ext.vt.edu/spotted-lanternfly>

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**Spotted Lanternfly, *Lycorma delicatula***







Left: Red full grown nymphs  
Above: Young black and white nymphs

All photos by Eric Day, Virginia Tech

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## Ask a Question

Give your question a title

Question  
A Normal text - **Bold** *Italic* Underline Small    

Email

Location and County (optional)  
Virginia

County  
Montgomery County

Image (optional)  
You can upload .jpg .png or .gif.

no file selected

no file selected

no file selected

By submitting a question, you agree to the eXtension [Terms of Use](#).



**Spotted Lanternfly in Virginia, be sure to include name, address, and email contact information when submitting images for identification**

### About this group

This group is to enable Extension professionals to collect information about a new pest, the Spotted Lanternfly.

<https://ext.vt.edu/spotted-lanternfly>

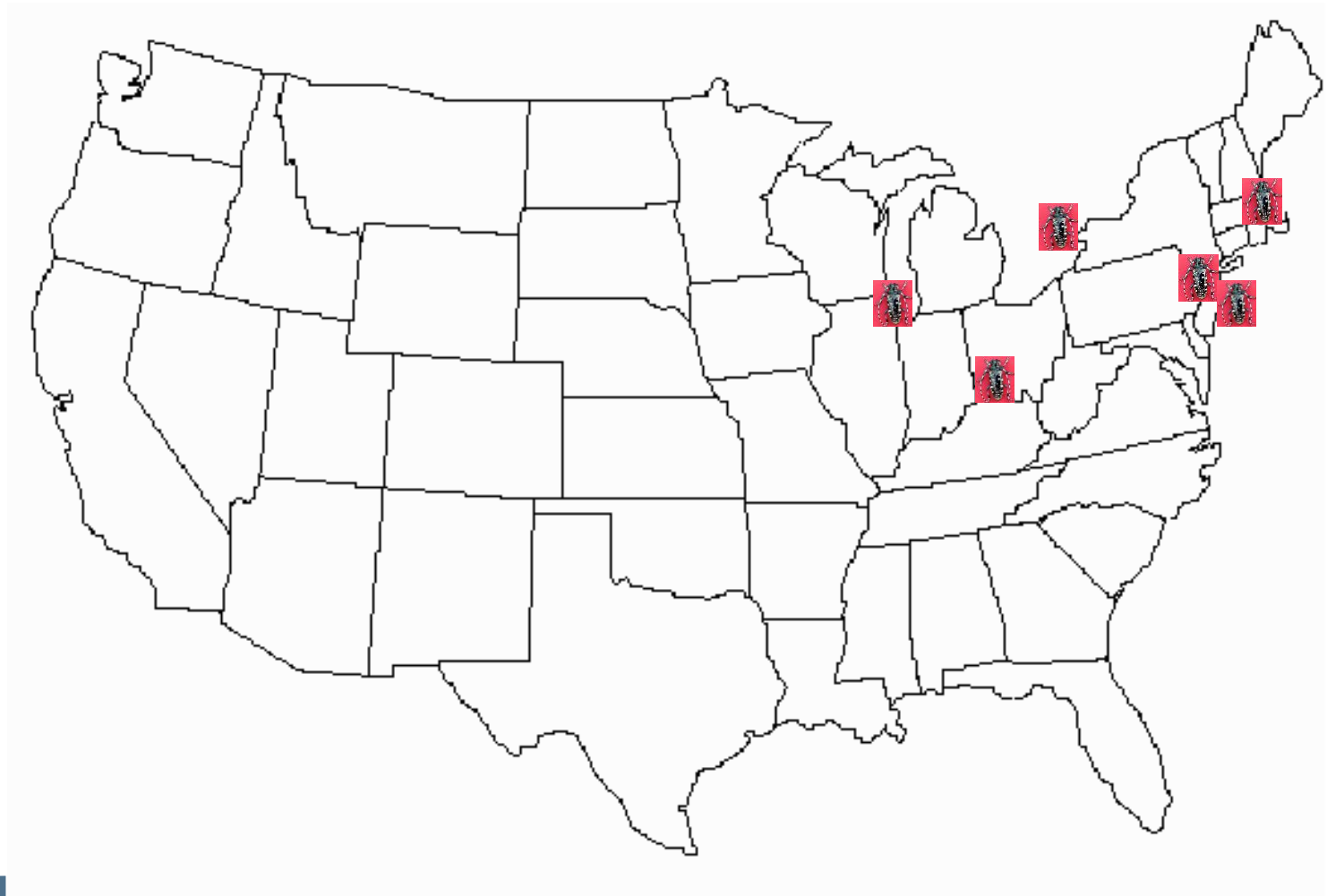
Think you have it?, report it

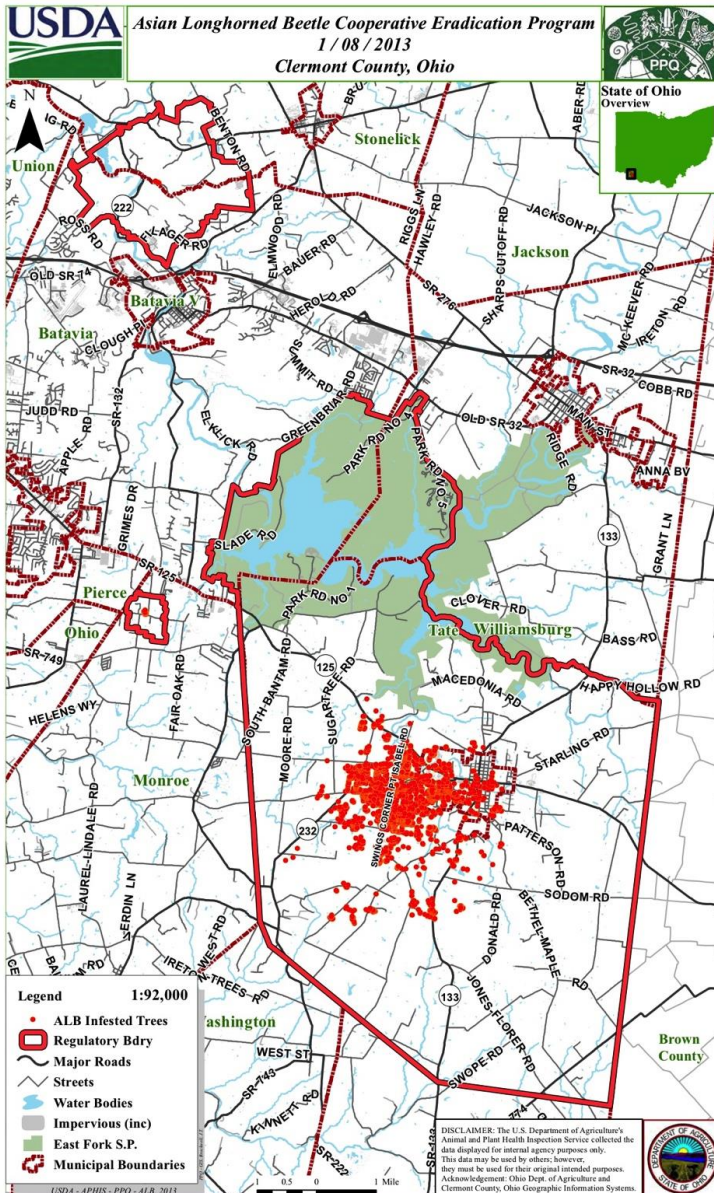
# Asian Longhorned Beetle

- First found in 1996
- NYC, NJ, Chicago, Toronto, Mass, and Ohio
- Primary Hosts
  - All Maples (*Acer* spp.):
    - Boxelder
    - Norway
    - Red
    - Silver
    - Sugar
  - Horsechestnuts / Buckeyes (*Aescelus* spp.)
  - Elms (*Ulmus* spp.)
  - Willow (*Salix* spp.)



# Asian Longhorned beetle in North America





# Asian Longhorned Beetle (ALB)

- Batavia, southern Ohio
- Initial discovery June 2011
- Found beetles in 2017 and are still taking infested trees down.







Patty Douglas, USDA APHIS

**Initial  
infestation  
site in  
Ohio.  
Look at  
Ends of cut  
branches.  
Photos  
from Joe  
Boggs and  
Patty  
Douglas**



Patty Douglas, USDA APHIS

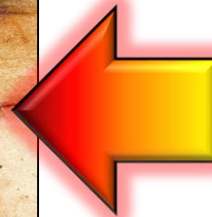
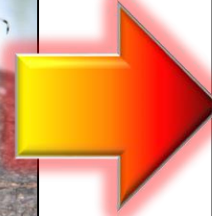
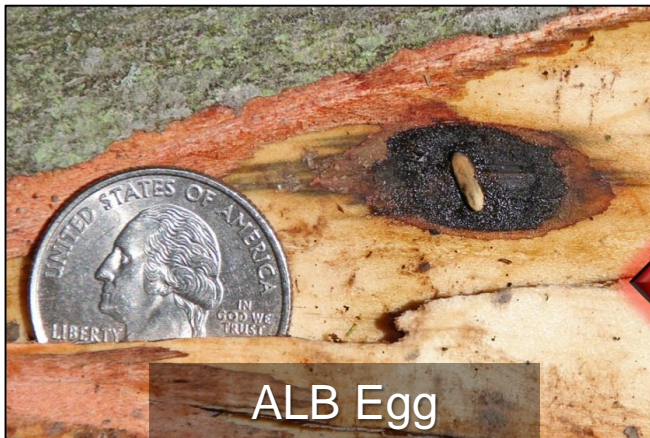
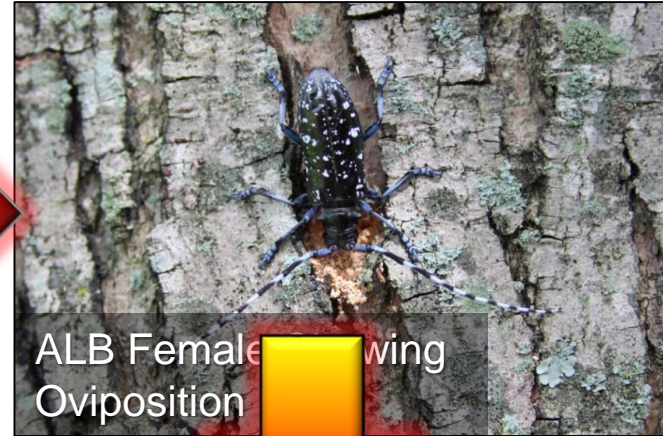


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# ALB: Complete Metamorphosis



Asian Longhorned Beetle slides from Joe Boggs, Ohio State University.

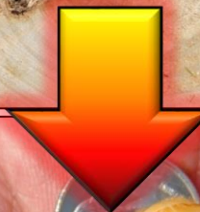
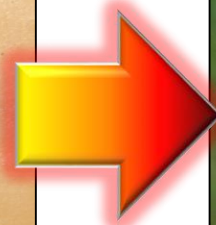
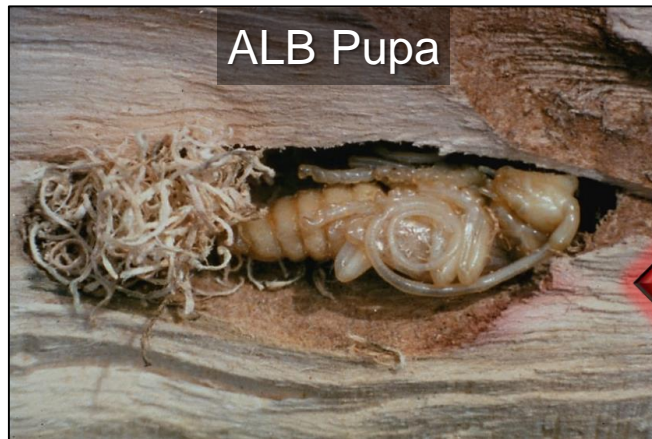
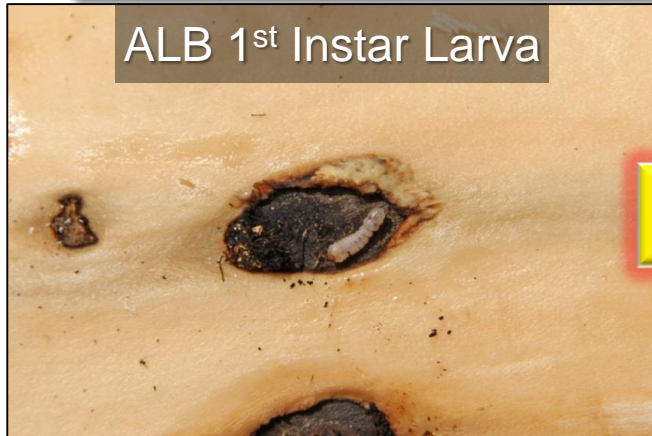


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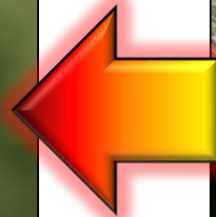
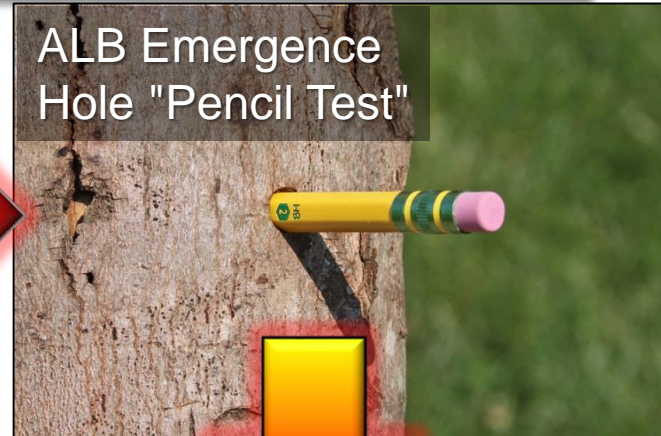
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# ALB: Complete Metamorphosis



# ALB: Complete Metamorphosis



Eggs to Adults Typically Takes 1 Year = 1 Generation per Year



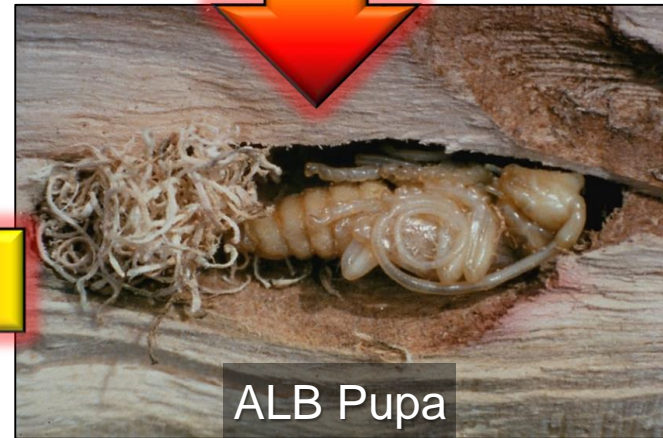
ALB Egg



ALB Last Instar Larva



ALB Adult Female



ALB Pupa



All Stages, EXCEPT Adults, Can Be Found Outdoors in the Winter



ALB Egg

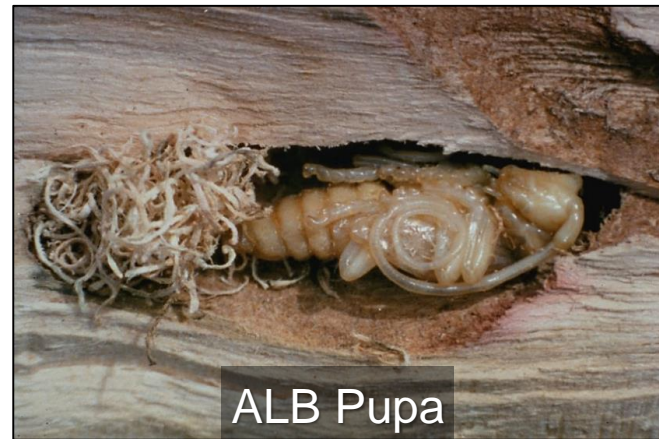


ALB Last Instar Larva

**Adults Die With the  
First Substantial  
Frost**



ALB Adult Female



ALB Pupa



# Report and suspicious beetles or damage on maple to your:

*County Forester, VA Dept. of Forestry  
Extension Agent, Virginia Cooperative  
Extension*

*Virginia Department of Agriculture and  
Consumer Services.*



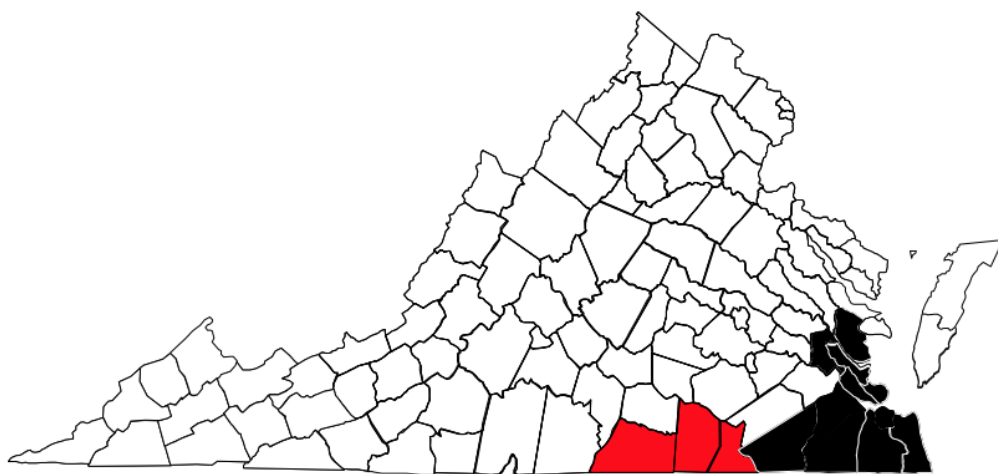
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## Fire Ants in Virginia: History & Current situation

- First Detected in 1989: Hampton
- Limited to far SE Va until 2017
- New records for Brunswick, Mecklenburg, and Greenville



Virginia County Map showing Imported Red Fire Ant records 2018



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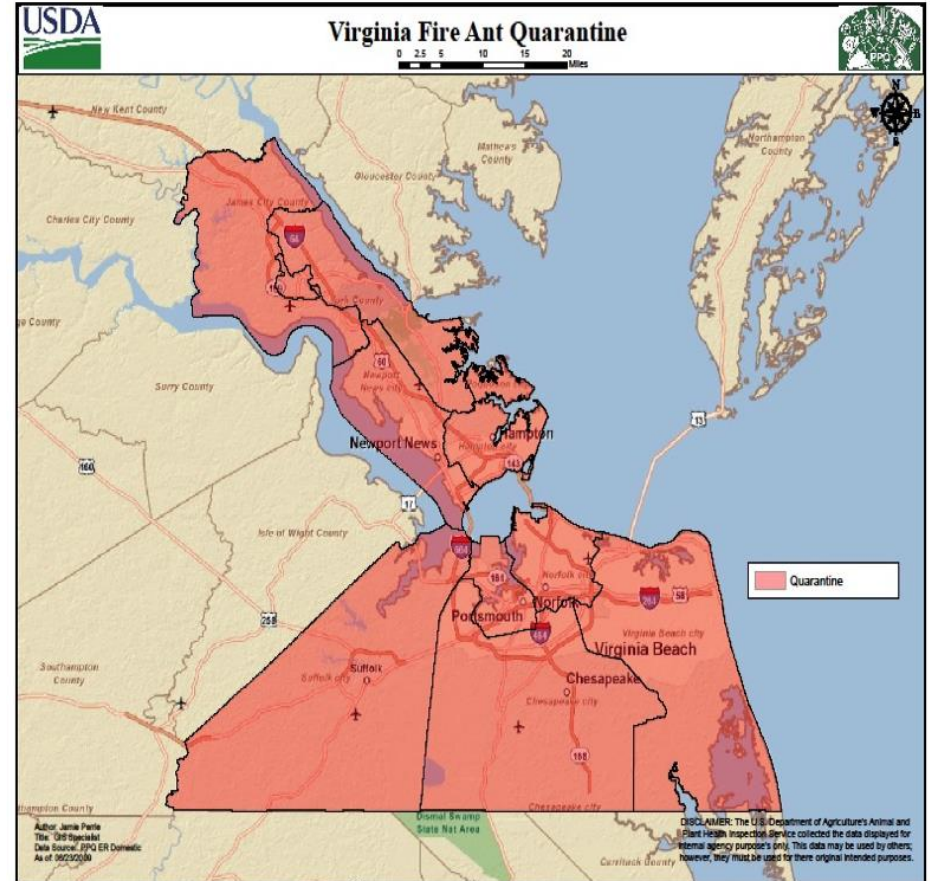
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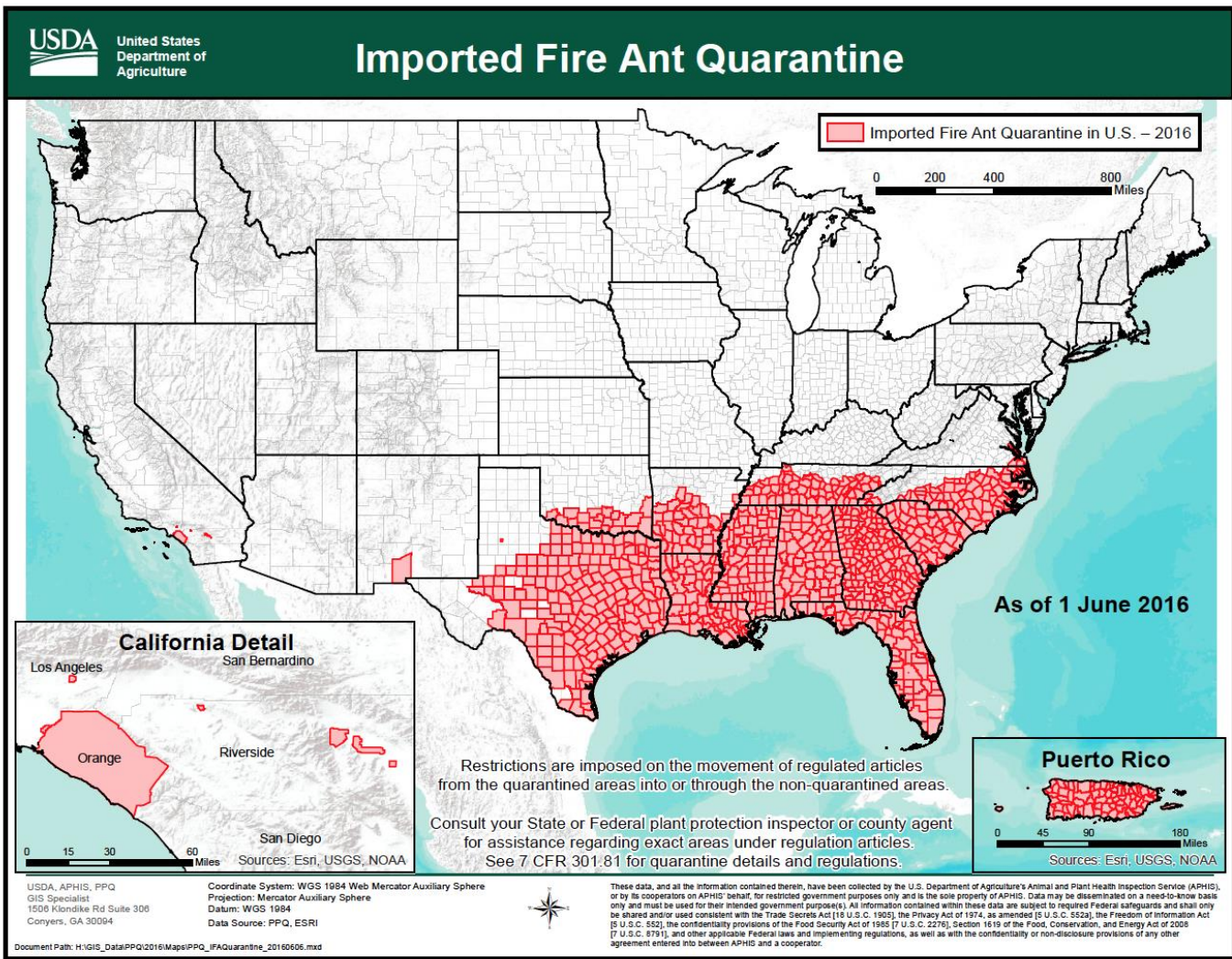
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# Quarantine:

- In an effort to limit the spread of Imported fire ants, Virginia established a quarantine.
- The current quarantine in Virginia includes James City and York counties and the cities of Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach and Williamsburg.
- The U.S. Department of Agriculture is responsible for a federal quarantine that covers the South-East US from East Texas to Southeast Virginia.





# Red Imported Fire Ant

(RIFA)

*Solenopsis invicta*

## Identification:

About 1/16 to 1/4  
inch long

Variable in size

Most without wings



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# Red Imported Fire Ant

(RIFA)

*Solenopsis invicta*

## Identification:

Stinger

No spines on thorax

2 segmented club  
on antenna



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# Red Imported Fire Ant (RIFA) *Solenopsis invicta*

## Identification:

Stinger

No spines on thorax

2 segmented club on  
antenna

2 segmented waist

Red head and thorax  
and dark abdomen



# Control considerations

- **Chemical Control:** Bait products
- Amdro Pro (hydramethylnon)
- Esteem (pyriproxyfen)
- Extinguish (methoprene)
- Extinguish Plus (blend of hydramethylnon and methoprene)
- Extinguish is labeled for agricultural situations. It's very important to follow the labeled amount of pesticide, as too much will repel the ants and they will not take the bait into the mound.



Applying bait to the top of fire ant mound. Photo by Eric Day, Va Tech

# Cultural Control:

- Drenching the mound with boiling hot water will kill the fire ant colony about 60% of the time. This must be done very carefully so as not to get burned.
- Home remedies such as grits, molasses, or club soda are not effective.
- Chlorine, ammonia, gasoline, or diesel fuel can contaminate the soil and ground water and are not recommended.
- Biological control is not available for sale



Applying bait to the top of fire ant mound. Photo by Eric Day, Va Tech



# Regulated Articles

- Articles that cannot be moved out of the quarantined area include:
- any life stage of imported fire ant
- Equipment
- Logs
- pulpwood or stumps that have loose soil attached
- untreated soil and plants with soil attached.
- If you would like to move regulated articles out of the quarantined area, contact the Virginia Department of Agriculture & Consumer Services (VDACS), Office of Plant Industry Services at 804-786-3515.



# The end



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## Questions and Answers: Moving Baled Hay From Areas Under Quarantine for Imported Fire Ant

**Q. What kind of hay is regulated in these areas for imported fire ants?**

**A.** In quarantine areas, USDA regulates only baled hay and baled straw that are stored in direct contact with the ground because they pose a risk for harboring imported fire ants.

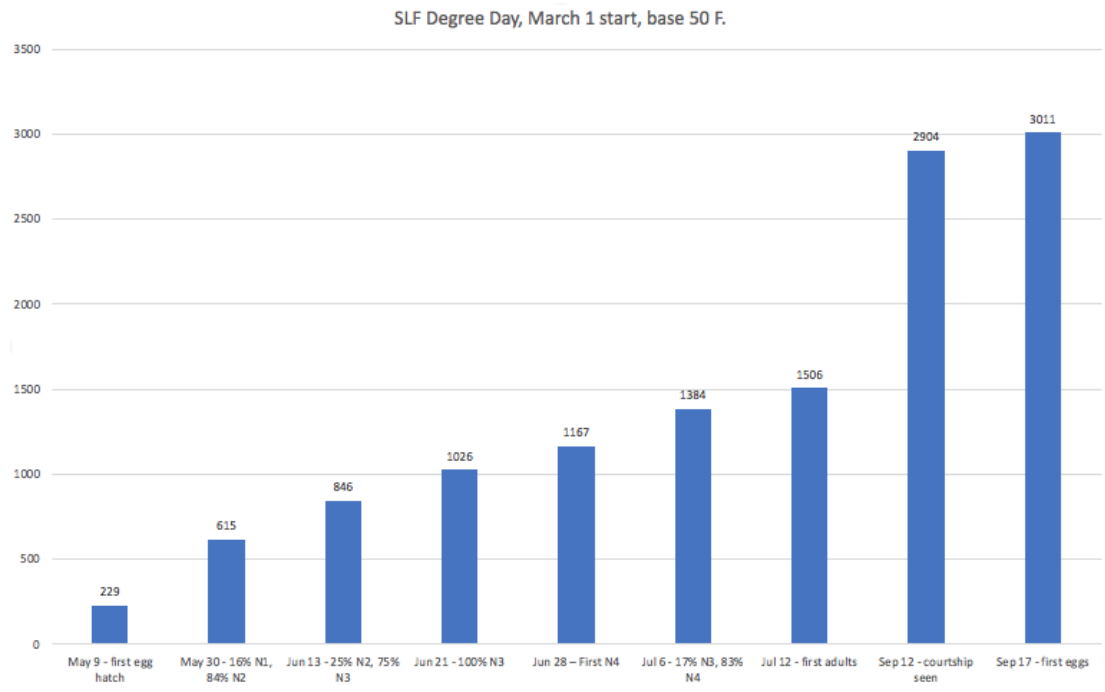
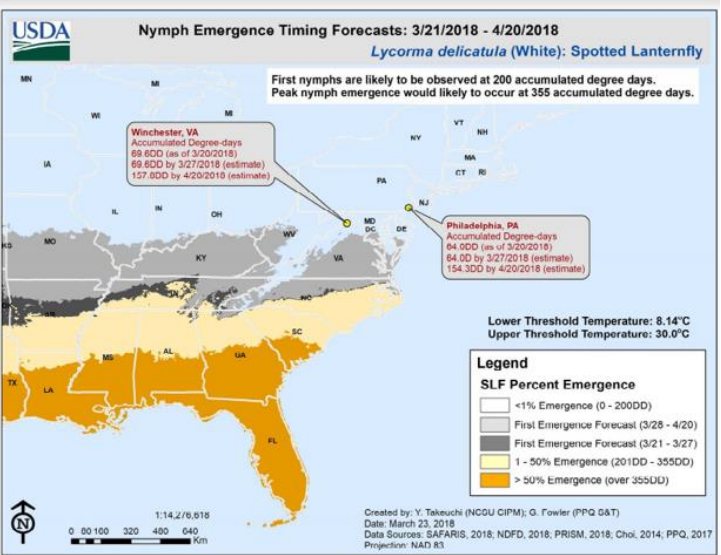
This hay may move anywhere within the quarantine area.

**Q. Under what conditions can baled hay leave the quarantine area WITHOUT restrictions?**

**A.** Baled hay that meets any of the requirements below is not regulated and has no movement restrictions:

- For baled hay that is stacked, all bales except the bottom layer that is in direct contact with the ground.
- Hay that is cut, baled, loaded, and shipped without storage.
- Baled hay that is stored on an impervious surface such as hard pan (highly compressed soil), asphalt, concrete, etc.
- Baled hay that is stored elevated above the soil on pallets or tires or stored on landscaping cloth placed over the soil.





May 9 - first egg hatch	229	DD since March 1
May 30 - 16% N1, 84% N2	615	
Jun 13 - 25% N2, 75% N3	846	
Jun 21 - 100% N3	1026	
Jun 28 - First N4	1167	
Jul 6 - 17% N3, 83% N4	1384	
Jul 12 - first adults	1506	
Sep 12 - courtship seen	2904	
Sep 17 - first eggs	3011	

Degree days were calculated using a lower developmental threshold temperature of 50° F and a March 1 starting date. The average method of calculation was used to determine degree days. To calculate degree days for a given day using the average method, the lower developmental threshold (in this case 50° F) is subtracted from the average of that day's high and low air temperatures.

# Asian Longhorned Beetle Infestations in North America

