

Commercial Horticulture

Special Report

In Maryland, spotted lanternfly (SLF) was first discovered in Cecil County, Maryland in 2018, and has been spreading to other areas since then. Beginning on March 6, 2023, the following eighteen counties are a part of the quarantine; Allegany, Washington, Frederick, Howard, Carroll, Montgomery, Baltimore, Anne Arundel, Prince George’s, Calvert, Harford, Cecil, Kent, Queen Anne’s, Caroline, Talbot, Wicomico, and Baltimore City. For more information on requirements of the quarantine, go to: <https://news.maryland.gov/mda/press-release/2023/03/06/maryland-department-of-agriculture-expands-spotted-lanternfly-quarantine-zone/> and <https://extension.psu.edu/slf-permit-training-md>.

Recipients of the weekly UME Landscape and Nursery IPM Report regularly submitted to us what they were seeing when it came to spotted lanternfly (SLF) activity in Maryland in 2023. Thank you to everyone who let us know what they saw with SLF populations. Based on their and our own observations, the following is a summary for 2023.

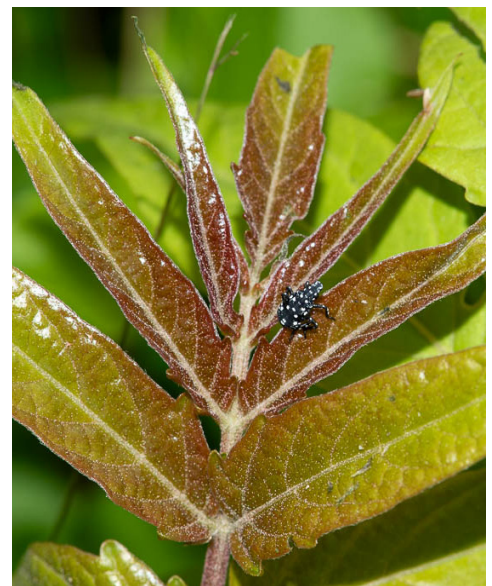
The areas from which we received reports were Laurel (Anne Arundel/Howard), Pasadena and Severn (Anne Arundel), Baltimore City, Carney, Essex, Monkton, Owings Mills, Perry Hall, Rosedale, Timonium, Towson (Baltimore), Mt. Airy and Sykesville (Carroll), Myersville and New Market (Frederick), Brookville, Columbia, Ellicott City, and Marriottsville (Howard), Chestertown and Galena (Kent), Beallsville and Silver Spring (Montgomery), and Clear Spring and Hagerstown (Washington). Kenton Sumter, MDA, reported that in 2023, Baltimore County and Baltimore City were the hottest areas in Maryland and numbers were also high in Kent County. Kenton also noted that numbers appeared to be down in Hagerstown. The SLF reports from out-of-state were Charlottesville, VA, Washington, D.C., Hanover, PA, and Falling Waters, WV.

Are Spotted Lanternflies Damaging Plants?

Throughout the 2023 season, we received reports of spotted lanternfly on various plants. *Ailanthus* (tree-of-heaven) is the preferred plant host for fourth instar and adult spotted lanternflies, so it is not a surprise that this plant tops the list. We received these observations of spotted lanternfly on plants, but there were no reports of significant damage on plants. Data out of Pennsylvania has demonstrated that grapes are susceptible to SLF, and there are reports of economic damage and plant death in vineyards.

Number of Reports by Plant:

- Ailanthus* - 10 reports
- Maple – 6 [Maple (1), Norway maple (1), silver maple (2), red maple (2), including October Glory]
- Vitis* sp. – 3
- Virginia creeper – 2
- Sumac – 2
- Rose – 1
- Coneflowers – 1
- Swamp white oak – 1
- Walnut - 1
- Raspberry – 2
- Yellowwood – 2
- Hydrangea – 1
- Juniper – 1
- Oriental bittersweet – 1
- Hedera helix* – 1



An early instar nymph on an *Ailanthus* leaf.

Photo: Suzanne Klick, UME

Honeydew

Later in season, honeydew is a big issue. Fourth instars and adults produce heavy amounts of honeydew. At a location in Baltimore where we collected SLF adults for a trial, the honeydew, which has a strong smell, was raining down from the *Ailanthus* trees. There was so much of it that it was pooling at the base of the tree. Vegetation under the tree was also sticky from the honeydew. Wasps, such as yellowjackets and European hornets, and bees feed on the honeydew, as well as spotted lanternflies.

The white substance at the base of this *Ailanthus* tree is the honeydew produced by spotted lanternflies. The honeydew pools around the tree. (8/30/23)
Photo: Suzanne Klick, UME



Life Cycle



Eggs are the overwintering stage. Look for the tan egg masses on trunks and branches. 3/8/22
Photo: Suzanne Klick, UME



P.M. Shrewsbury, UMD



P.M. Shrewsbury, UMD

In 2023, egg hatch was first reported on April 17 to April 21. Egg hatch is starting in the photo on above. To the left are first instar spotted lanternflies.

Photos: Paula Shrewsbury, UMD



First to third instar spotted lanternfly nymphs are black with white spots. Size increases with each molt. The photo shows early instar nymphs along this plant stem. (5/25/22)
Photo: Suzanne Klick, UME



The fourth instar nymph of the spotted lanternfly is red with black areas and white spots.(7/7/22) The adult is the winged form in the photo on the right. (7/26/22) The movement of the spotted wings will reveal a bright flash of red on the body.
Photos: Suzanne Klick, UME

Spotted Lanternfly Stages Based on Reports in 2023

STAGE	APR 1	APR 15	MAY 1	MAY 15	JUN 1	JUN 15	JUL 1	JUL 15	AUG 1	Sept 30 thru Nov
Egg Hatch (1st In-stars)		—————								
2nd In-stars				—————						
3rd In-stars							—————			
4th In-stars								—————		
Adults									—————	
Adults and Egg Laying										—————

No stages reported 6/2 to 6/30, so do not know amount of overlap of 1st, 2nd, and 3rd instars from our data for 2023. We will continue to monitor the different SLF stages throughout 2024.

Management

Target SLF egg masses during the dormant season.

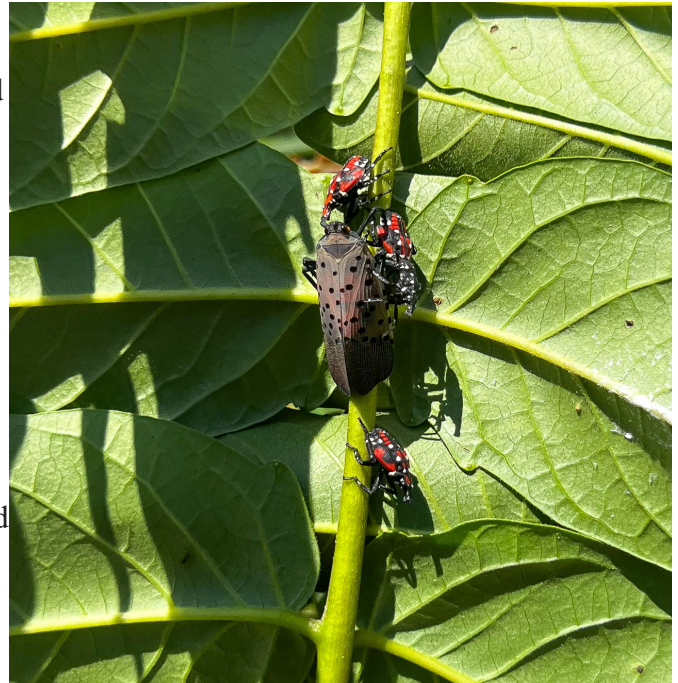
An additional management tactic to put in your SLF management plan during the dormant season is to target the overwintering egg masses. In 2023, we received a report of an adult female laying eggs during the third week of November. From late fall through early spring, egg masses are the only stage you will see. Eggs of SLF are reported to hatch around 270 DD, which is usually around late April / early May. So be sure to be monitoring for egg hatch at this time. Egg masses are covered with a gray-brown substance, flat, and laid on many surfaces, most commonly trees but also structures, stone, wood, and other locations in the landscape and nursery. On trees, egg masses are usually laid on the underside of tree branches, where abundant numbers of egg masses can be found on numerous branches. Take note that many egg masses will be above easy reach.

Physical removal by scraping the egg masses off their substrate will provide the highest rate of mortality (all the eggs you remove die). Unfortunately, research has found that less than 2 percent of egg masses laid on trees are at a reachable height. Research conducted in Greg Krawczyk's lab (Penn State Extension) evaluated a number of insecticides and their ovicidal action against SLF eggs (2018 to 2022). Although many synthetic insecticides were evaluated, they found that the most effective products were oils (ex. horticultural oil). All studies were done on intact egg masses (with covering) between February and April. Greg and his colleagues found: *“When oils were applied at a solution of at least 3 percent, they were effective in killing up to 75 percent of treated eggs. One of the most important parts to getting effective control is to make sure you have good coverage and apply the oil solution directly to the egg masses. The only plant-based oil, soybean oil, had similar control of SLF egg masses when applied at a 50% concentration. Oils, when applied at the correct time and with good coverage, can offer some control of egg masses and have very little non-target effects. The use of oils provides not only a safe, environmentally friendly option but also provides control to some egg masses that are not accessible for physical removal or smashing. However, for egg masses that are within a reachable area, smashing or scraping the egg masses will provide greater efficacy than the ovicides currently available”* (from [What should you do with SLF egg masses?](#)).

Treat egg masses with horticultural oil when the temperatures finally warm up to above 50 -55 °F during the day. This temperature increases the eggs respiration rate and increases the impact of the oil application. As always when using dormant oils, follow the label instructions.

Control of Nymphs

If you are considering insecticides to manage SLF nymphs, there are a few things to consider. First, be conscious of bloom times and select pesticides with the least likelihood of non-target impacts. Also remember that SLF early instar nymphs will likely move from the tree / location they hatched on to other host plants such as roses (both cultivated and multi-flora), many perennial plants, and possibly grapes, tree-of-heaven, and walnuts; while later 4th instar nymphs and adults move onto a wider range of tree species later in the season. At this time to target the early instar nymphs (1st – 3rds), you should use contact insecticides such as insecticidal soap, neem oil, horticultural oil, or natural pyrethrins. Synthetic pyrethroids have been shown to work, but they will have negative impacts on pollinators and natural enemies so those are not recommended. Remember, they will move a lot as they mature, so treating 1st and 2nd instar nymphs does not guarantee you will not have high numbers of SLF later in the season.



An SLF and several fourth instar nymphs.(7/19/22)
Photo: Sheena O'Donnell, UME

A comprehensive resource for SLF management is “Spotted Lanternfly Management for Landscape Professionals” <https://extension.psu.edu/spotted-lanternfly-management-for-landscape-professionals> by Penn State Extension. There is detailed information with images on all of the management tactics I just listed, including insecticide options and their optimal timing.

Late Instar and Adult Management:

As the insect reaches the fourth instar and adult stage, they consume more tree sap and excrete more honeydew. In heavy populations, honeydew may be seen to rain down from infested trees. At this time, you should consider if controls are necessary and what control measures are best for your situation. These control measures may include the use of traps, trap trees, removing tree-of-heaven, or chemical (contact, systemic, low toxicity) controls.

See the following links for information on SLF management options.

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

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

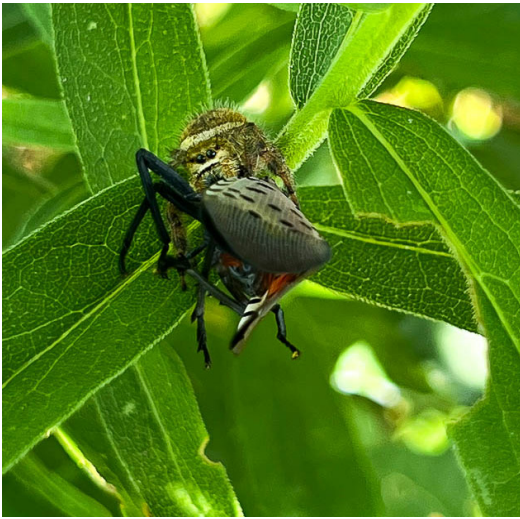
https://www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry/Entomology/spotted_lanternfly/Documents/Spotted%20Lanternfly%20%20Property%20Management.pdf

<https://www.vdacs.virginia.gov/pdf/Spotted-lanternfly-BMP-yards-and-lanscapes.pdf>

Monitoring the Impact of Parasitoids and Generalist Predators on Population Trends

We saw and received reports of quite a bit of activity from generalist predators including spiders, assassin bugs, yellowjackets, European hornets, praying mantids, and birds. All of these predators help keep this insect pest under control. These beneficials have had a significant impact on spotted lanternfly levels where SLF popu-

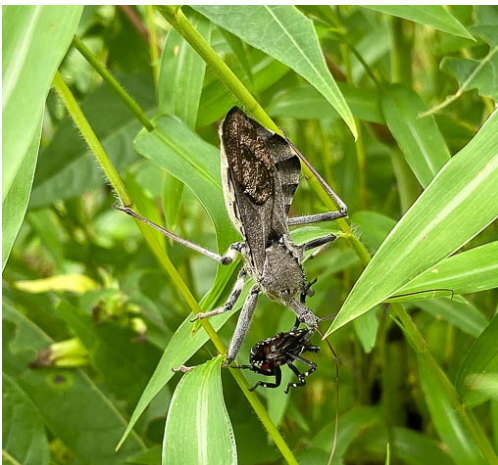
lations were high in 2020 through 2022. Andy Kness, UME-Harford County, reported only a few calls from homeowners about SLF this year. In 2022 at a research trial site in Harford County, we found plenty of spotted lanternflies and saw predators attacking this insect. In 2023, SLF populations, including at our research site, collapsed in Harford County and Cecil County. We will see if this trend of decreasing SLF populations in previously heavily infested areas continues.



A spider feeding on an SLF adult.
Photo: Sheena O'Donnell, UME



An Argiope spider is feeding on an SLF adult.
Photo: Suzanne Klick, UME



A wheel bug feeding on an SLF nymph.
Photo: Suzanne Klick, UME



Yellowjackets are generalist predators. The one in this photo is feeding on an unknown prey.
Photo: Suzanne Klick, UME

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