

Spotted Lanternfly

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Spotted lanternfly (SLF), *Lycorma delicatula*, is an invasive planthopper that was first discovered in the U.S. in Berks County, PA in 2014. Despite significant, large-scale management efforts, this insect has continued to spread across the East Coast and into the Midwest. Spotted lanternfly's native range is thought to be throughout most of China but it has also invaded nearby countries such as South Korea, where it has become a major pest of grapes and peaches. In the U.S., SLF has proven to be a significant economic and nuisance pest.

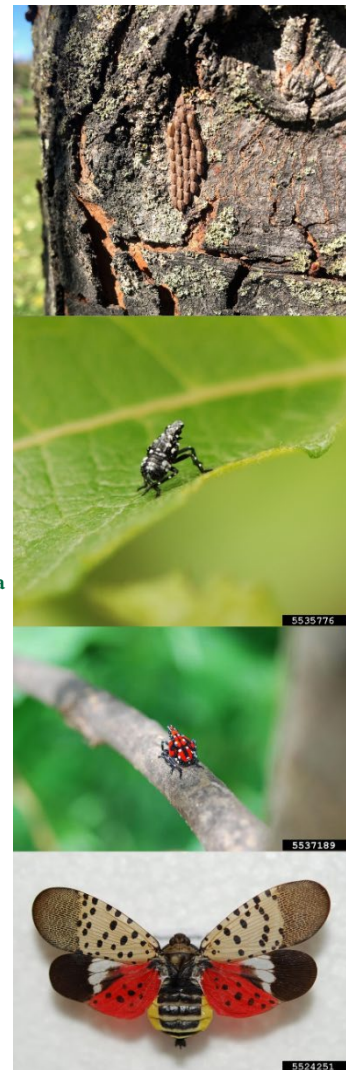
Identification and Life Cycle

Spotted lanternfly adults are hard to miss—they are about an inch in length with black dots speckling their large gray forewings and eye-catching red hind wings. At the tip of the hind wing is a band of black with a single white stripe. Nymphs are black with white spots from the time they hatch until their 4th and final stage of development before adulthood, where they take on a vibrant red and black pattern dotted with white spots. Egg masses usually contain 30 to 50 eggs but are often inconspicuous due to their grayish protective covering. Over time this covering often cracks and exposes neatly laid columns of eggs (Figure 1).

There is one generation of SLF within its invaded range. The insect overwinters in the egg stage and begins to hatch in late spring. Nymphs do not possess wings and must crawl and hop in search of hosts, on which they feed with their piercing-sucking mouthpart. Nymphs will feed and grow as they progress through 4 developmental stages before becoming adults in mid-late summer. As adults, SLF will fly to preferred hosts where they can form large aggregations as the season develops. Mating occurs in the fall and a new cohort of eggs is laid on trees, manufactured objects, and other available surfaces before adults perish with freezing winter temperatures.

Figure 1: From top to bottom, the three life stages of spotted lanternfly (egg, early nymph, late nymph, adult)

Photo Credit: Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org



Current Distribution

In the United States, SLF infestations have been confirmed in more than 10 states. The extent of the invasion is greatest in the Mid-Atlantic where this pest was first detected, but the invasion front continues to spread into the Northeast, Midwest, and Southeast.

Host Plants

In North America, research has confirmed that SLF feeds on over 55 different plant taxa which may be a contributing factor to its invasion success. However, nymphs display a strong preference for rose, grape, and other perennials while adults tend to favor walnut, river birch, willow, sumac, and red and silver maple. The highly invasive tree of heaven, *Ailanthus altissima*, is a preferred host for all life stages of this insect (Figure 2).

Figure 2: Spotted lanternfly adults aggregating on a tree of heaven sapling



Damage

Spotted lanternfly is capable of damaging plant material both directly and indirectly. Nymphs and adults use their mouthparts to pierce plant tissue and ingest the sugar-rich sap within. SLF feeding in small numbers is not usually problematic, but heavy feeding pressure can cause localized branch dieback and deplete carbohydrate reserves. Direct tree mortality has only been documented in a handful of instances and is generally not a primary concern.

As SLF feeds, it produces a sugary byproduct referred to as honeydew, which often coats the foliage of understory plant material. A black fungus called sooty mold typically colonizes this sugary resource. Sooty mold is not directly harmful to plants, but it can block leaf tissue from sunlight and reduce photosynthesis.

Management

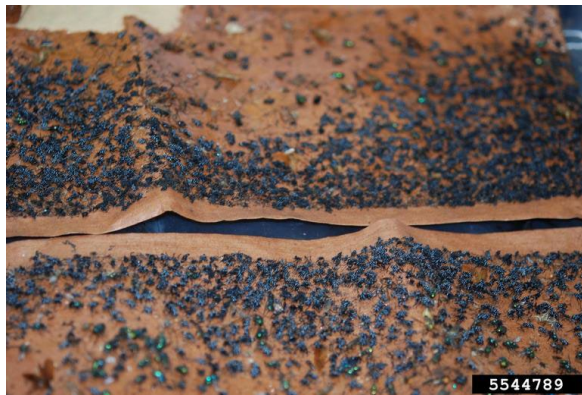
Developing a management plan for SLF begins with evaluating the specific site conditions and identifying program goals. Preventing all SLF from arriving on a property is not realistic; however, local population reductions and the maintenance of tree vitality can be achieved through an integrated pest management approach.

Remove Preferred Hosts: In areas where this pest is present or soon to be present, management should start with identifying and removing highly preferred or invasive hosts such as tree of heaven. All female tree of heaven should be removed to reduce reseeding, but a small number of male trees can be conserved to concentrate the pest population for targeted control efforts. Any trees that are removed should be kept within known SLF quarantine zones to avoid further spread of adults, nymphs, or egg masses.

Physical/Mechanical Controls: Nymphs or adults should be destroyed on site or collected and disposed of. During the fall and winter, egg masses should be scraped from trees and other surfaces and destroyed. Different types of traps can be deployed to help reduce SLF populations locally (Figure 3). With any form of trapping, it is important to make sure instructions are followed to limit the risk of catching birds and other non-target animals.

Figure 3: Tree wrap traps with SLF nymphs

Photo Credit: Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org



Biological Controls: To date, research has not identified any predator or parasitoid insects that could be commercially reared and released to enhance control of SLF in the landscape. Some common predators (Figure 4) including insects, birds, and spiders will feed on SLF but not sufficiently to cause meaningful reductions. Naturally occurring fungal pathogens may provide a measure of control of SLF populations, but more research is still needed.

Product Treatments: Correctly timed product treatments offer the best options for managing SLF populations and maintaining plant health. Systemic products are absorbed by plant tissues and translocated throughout the plant. SLF ingests these materials via feeding and is killed as a result. Products that function by making physical contact can provide more immediate suppression; however, they must be applied carefully to minimize harm to nontarget organisms. In both cases, selecting the most effective products while considering the broader management

plan is a key component of integrated pest management.

Figure 4: A predatory stink bug feeding on an SLF adult

Photo Credit: Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org



If you find spotted lanternfly in an area where it has not yet been reported, please report it immediately to aid in the control of this invasive pest. Contact your Bartlett Arborist Representative to learn more about spotted lanternfly and develop a management plan that is right for your situation.



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