



Department
for Environment
Food & Rural Affairs

Plant Pest Factsheet

Spotted lanternfly

Lycorma delicatula

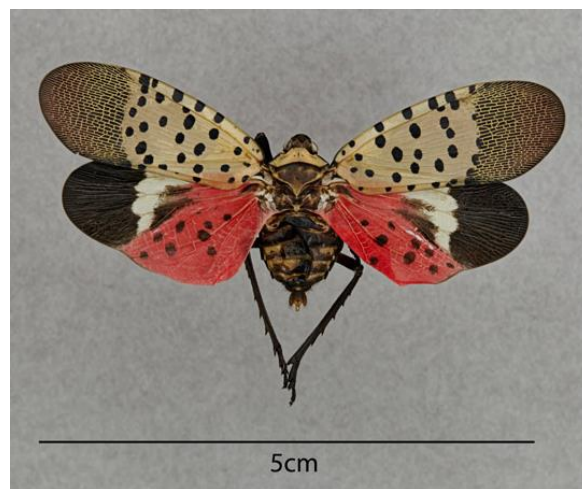


Figure 1. Spotted lanternfly adult with wings spread showing colourful hind wings and size of insect © Fera Science Ltd

Background

Lycorma delicatula (White) (Hemiptera: Fulgoridae) is a plant-hopper bug, commonly known as the 'spotted lanternfly', that is reported to be native to northern China. It was introduced to Korea in 2004 and the USA in 2014 where it is invasive. It feeds on a wide range of fruit, ornamental and woody trees, with tree-of-heaven (*Ailanthus altissima*) being one of its preferred hosts. The latter tree has become popular in the UK for planting along city streets, in urban parks and in landscaping schemes. Spotted lanternflies can be spread long distances by people who move infested plant material or items containing the cryptic egg masses. If introduced to the UK, this pest could have impacts on vineyard, orchard, and horticultural industries.

Geographical Distribution

Spotted lanternfly is native to China, and has been introduced to Japan, South Korea, Taiwan, Vietnam and the USA. In the USA, it has spread rapidly from initial findings in

Pennsylvania and populations are now found in 12 North-eastern states. Old reports from India and other countries in Asia, appear to be unconfirmed.



Figure 2. Adult spotted lanternfly, lateral view © Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org



Figure 3. Spotted lanternfly adult flashing the brightly coloured underwings © Orlyfotos

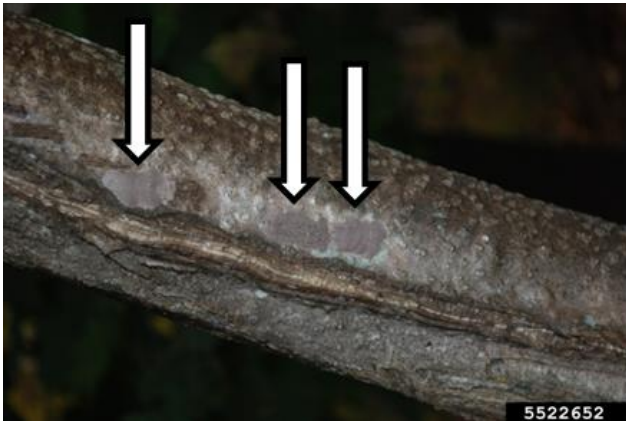


Figure 4. Spotted lanternfly, three eggs masses camouflaged on bark © Holly Raguza, Pennsylvania Department of Agriculture, Bugwood.org



Figure 5. Spotted lanternfly, eggs mass in centre of the picture © Holly Raguza, Pennsylvania Department of Agriculture, Bugwood.org



Figure 6. Spotted lanternfly, group of nymphs © by Вольдемар



Figure 7. Spotted lanternfly nymph © Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org



Figure 8. Spotted lanternfly feeding damage on bark of a tree of heaven © Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org



Figure 9. Spotted lanternfly feeding damage to the main trunk of a tree of heaven © Holly Raguza, Pennsylvania Department of Agriculture, Bugwood.org image 5522660, modified

Host Plants

Spotted lanternfly is polyphagous and has been found on mainly woody plants assigned to more than 30 families. Its hosts include several crops (*Malus*, *Prunus*, *Pyrus*, *Rubus*, and *Vitis*), and many plant genera found in both urban and natural environments in the UK (*Acer*, *Alnus*, *Betula*, *Fagus*, *Juglans*, *Magnolia*, *Morus*, *Pinus*, *Platanus*, *Populus*, *Prunus*, *Quercus*, *Rosa*, *Salix*, *Sorbus* and *Syringa*). Observations in South Korea suggest that young nymphs feed on a wider range of plants (including herbaceous) than the mature nymphs and adults. Spotted lanternfly can complete its lifecycle on *A. altissima* (tree of heaven), but the role of the other recorded hosts in supporting long-term viable populations of the insect is unclear. Preference for feeding on certain plant species has been linked to sugar composition and the presence of toxic metabolites, which are thought to help protect the nymphs from attack by natural enemies. Tree of heaven is on the [prohibited](#) list of invasive plants (listed in 2019) and is prohibited from growing on, transporting or selling. Tree of heaven is recorded to be one of the four oviposition host plants favoured by this insect along with black cherry, black birch, and sweet cherry in Pennsylvania. In the US, the damage is mainly seen on vineyards with large populations affecting fruit setting the following year.

Description

Adults at rest (Fig. 2) have a blackish head and grey or pinkish wings with black spots and are 25mm long and 12mm wide. The tips of the wings are a combination of black rectangular blocks with grey outlines. When startled or flying the spotted lanternfly will display its hind wings that are red and black blocks with a white stripe between them (Figs 1 and 3). The red portion of the wing is also adorned with black spots. The abdomen is a yellowish white with bands of black on the top and bottom. Adult spotted lanternflies can move quickly and are strong jumpers, but weak fliers. Grey, flattish, egg masses are laid on relatively smooth surfaces and depending on the substrate can be very difficult to spot (Figs 4 and 5). The early-instar nymphs are black with white spots and are a few mm long. The later instars also have patches of red (Figs 6 and 7). These insects are unlikely to be confused with any other insect native to the UK.

Biology

Spotted lanternfly has one generation each year. In the USA and Korea, adults can be seen from July. In the autumn the adult bugs often move to the tree of heaven (if available), which

is a preferred host for feeding. However, egg masses (each containing about 30-60 eggs) may be laid on any tree with a smooth trunk section, or on non-plant material with a vertical relatively smooth surface. Man-made items such as vehicles, furniture, farm equipment or any other items stored outside are suitable sites for egg laying. Egg-laying commences in late September and continues until the onset of winter. Almost 200 egg masses have been observed laid on a single tree of heaven in Pennsylvania. The eggs begin hatching from late April to early May, and the nymphs develop through four instars (stages).

Dispersal and Detection

All nymphal stages and adult spotted lanternflies can use their powerful hind legs to jump impressive distances; adults are able to fly short distances. On their own, they are able to move 3 to 4 miles through walking, jumping and flying. The nymphs disperse and will feed on both woody and non-woody plants. Egg masses may be transported over long distances by man on plant and non-plant materials. The adult bugs (Figs 1-3) and the nymphs (Figs 6-7) are large, colourful and tend to aggregate, increasing possible detection. The early instar nymphs may be found on smaller plants and vines, whereas the adults move to trees later in the season. The egg masses can be very difficult to detect if laid on a grey coloured surface (Figs 4-5).

Economic Impact

Spotted lanternfly feeds on the phloem and extensive feeding results in a loss of vigour, wilting, bark splitting, oozing wounds on the trunk (Fig. 8), and death of branches. Resulting sap-runs leave conspicuous greyish or black trails along the trunk (Fig. 9) which attracts other insects to feed, notably ants, flies and wasps. The nymphs aggregate to feed on some hosts. Secondary impacts, such as honeydew egestion, the growth of sooty moulds, and wounds allowing the entry of pathogens, can also be serious. Reports from South Korea and the United States indicate that it can cause mortality in grapevine.

Spotted lanternfly might potentially be a nuisance in urban areas, as there are reports of large congregations of populations near tall buildings in cities.

Pest Management and Reporting

Spotted lanternfly is an invasive species in South Korea and the USA. Pathways of entry into the UK include woody plants for planting. However, the cryptic overwintering egg-masses (Figs 4-5) may be laid on non-host plants and non-plant materials and appear to be the life stage most likely to move undetected in trade. The temperature requirements for development of this species are poorly known. Whilst it does survive cold winters, it is unclear how warm the summers need to be for the insect to complete its lifecycle, and UK summers may be too cool. However, the presence of the adults preferred host, *A. altissima*, may better determine whether this species could establish in an area, as this seems necessary to establish long-term viable populations. In the UK *A. altissima* is most commonly found in the south-east and eastern regions of England, especially around urban areas.

Early detection is vital for the effective control of this pest and the protection of horticulture, agriculture and the wider environment. Industry should source material carefully, and both commercial growers and gardeners may wish to monitor for its presence. Statutory action will be taken against the spotted lanternfly if intercepted on imported plant material and against outbreaks on commercial plant production premises.

Suspected outbreaks of *Lycorma delicatula* or any other non-native plant pest should be reported to the relevant authority:

For **England and Wales**, contact your local **APHA Plant Health and Seeds Inspector** or the **PHSI Headquarters**, York.

Tel: 0300 1000 313 (please select option 3 when calling)

Email: planthealth.info@apha.gov.uk

For **Scotland**, contact the **Scottish Government's Horticulture and Marketing Unit:**

Agricultural crops contact the local RPID officer:

<http://www.gov.scot/Topics/farmingrural/Agriculture/AOcontacts/contacts>

For non-agricultural crops, email: hort.marketing@gov.scot

For **Northern Ireland**, contact the **DAERA Plant Health Inspection Branch:**

Tel: 0300 200 7847 Email: planthealth@daera-ni.gov.uk

Web: <https://www.daera-ni.gov.uk/topics/plant-and-tree-health>

For additional information on UK Plant Health please see:

<https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/>

<https://planthealthportal.defra.gov.uk/>

<https://www.gov.uk/plant-health-controls>

<http://www.gov.scot/Topics/farmingrural/Agriculture/plant/PlantHealth/PlantDiseases>

<https://www.daera-ni.gov.uk>

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