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The spotted lanternfly: a threat to viticulture in Europe

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The spotted lanternfly (*Lycorma delicatula*) is an insect native to southern China and Taiwan, introduced to other parts of Asia and then to the United States. It feeds on the sap of many plants, including grapevines and tree of heaven (*Ailanthus altissima*), and can cause significant losses in vineyards. The presence in Europe of a large number of host plants and the similarity between the European climate and that of the Asian and American regions already colonized make its establishment likely in the event of introduction. It is therefore essential to raise awareness among those involved in agriculture and to set up early surveillance systems.

Geographical distribution

The spotted lanternfly, *Lycorma delicatula* (White, 1845), is an insect of the order Hemiptera and the family Fulgoridae. Native to southern China and Taiwan, it was introduced to South Korea and Japan in the early 2000s. It then arrived in North America, in Pennsylvania (United States), around 2014, via goods imported from its region of origin, before spreading rapidly throughout the country. To date, *L. delicatula* has not yet been reported in Europe.

Range of hosts

This piercing-sucking insect feeds on plant sap by piercing leaves and stems. *L. delicatula* is highly polyphagous and can cause damage to a wide range of host plants, ranging from herbaceous species (mainly when the insect is in the nymphal stage) to ornamental, forest, and fruit trees. Chartois *et al.* (2025)[1] list 103 plant species that are hosts for *L. delicatula*, distributed across 65 genera and 39 botanical families. As adults, their preferred hosts are tree of heaven (*Ailanthus altissima*), grapevine (*Vitis* spp.), stone fruit trees, and species of the genera *Malus*, *Juglans*, *Acer*, and Salix[2].

Damage to grapevines and wine

Several authors report a major impact of *L. delicatula* on vineyard production and fruit quality[3]. Losses can reach 90 % of grape production, accompanied by a significant deterioration in fruit quality, despite several applications of insecticides[4]. In the Lake Erie and Finger Lakes regions (New York State), economic losses related to the insect are increasing during years of infestation, rising from $1.5 million, $4 million, and $8.8 million in the first, second, and third years of infestation, respectively[5]. Without preventive measures, the spotted lanternfly could spread as far as California by 2033, causing billions of dollars in losses[6].

How can you recognize the spotted lanternfly?

There are currently no species belonging to the Fulgoridae family in Europe, which greatly limits the risk of confusion. Adults measure between 20 and 27 mm long and 12 mm wide. The forewings are grayish, dotted with black spots, and have a reticulated tip (Figure 1). The hind wings are two-colored, with a red basal area decorated with black dots and a black apical area, separated by a whitish band. The head and thorax are black, while the abdomen is yellowish with black bands (Figure 1).

The eggs are laid in clusters, covered with a grayish waxy secretion. As it dries, this covering deteriorates, revealing eggs arranged in 4 to 7 vertical rows. The cluster is approximately 25 mm long.

The larvae have three initial stages of development, which are black in color with white spots and measure approximately 4.7 and 10 mm. The fourth and final larval stage, which is larger (14 mm), is distinguished by its black and red coloration adorned with white spots (Figure 1).

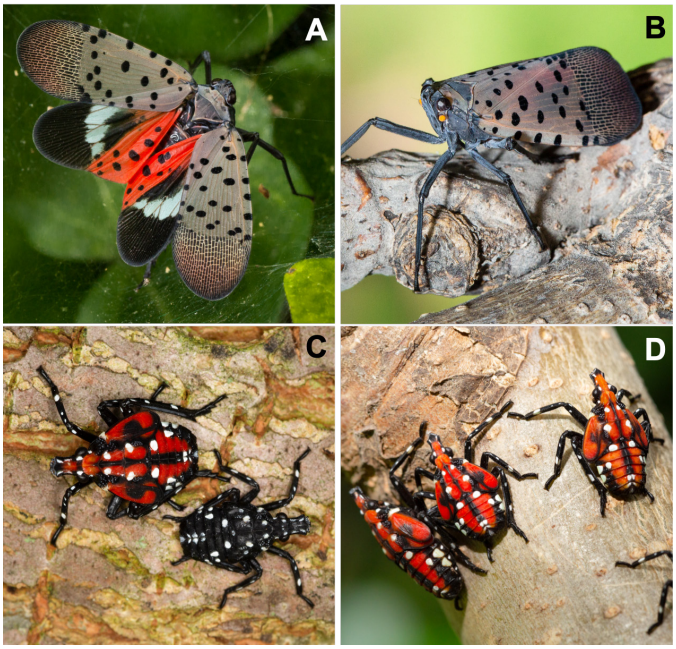


FIGURE 1. The spotted lanternfly, *Lycorma delicatula*: A, adult with wings half-open; B, adult at rest; C. Two larvae, one in stage 3 (black) and one in stage 4 (red); C, group of larvae in stage 4. © U.S. Department of Agriculture.

Life cycle

L. delicatula can lay its eggs on any smooth surface, whether it be a tree trunk, a rock, or another vertical surface. In North America, the species develops in a single generation with hibernation at the egg stage. The first larval stage emerges in large numbers between May and June, while the last larval stage is observed from July to September, depending on the region. Adults appear between July and December. They are poor flyers but good jumpers, and they move mainly by leaping. In the fall, adults gather on their preferred host, the tree of heaven (*Ailanthus altissima*), where mating and egg laying take place (September-December), but any tree with smooth bark can also serve as a support.

Invasive potential in Europe

The very wide range of host plants for *L. delicatula* greatly favors its establishment when introduced. Chartois *et al.* (2025)[1] list 57 species of potential host plants in Europe, including its preferred tree, the tree of heaven. The availability of host plants is therefore not

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a limiting factor for the insect's establishment on the continent (with 1 to 43 potential host plant species per European country) (Figure 2). Available modeling work[1 3] shows that European climatic conditions are compatible with those of the insect's area of origin and regions already invaded by it (Figure 3). Thus, neither climate nor food resources represent an obstacle to the establishment of *L. delicatula* in Europe.

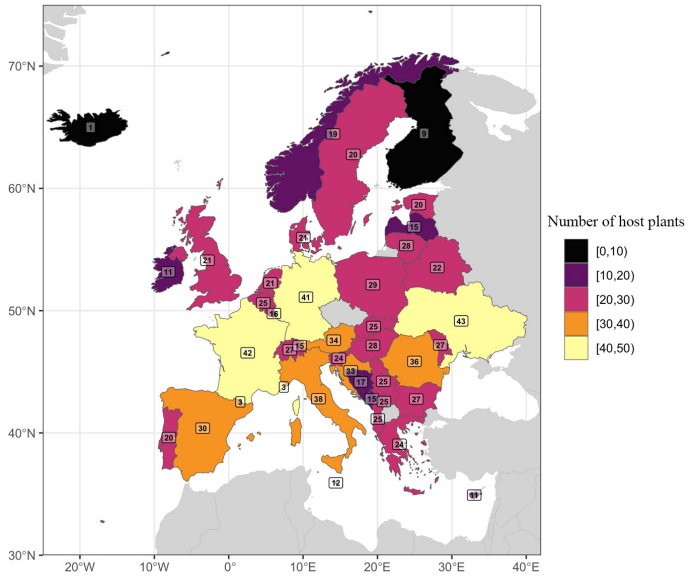


FIGURE 2. Number of plant species hosting *Lycorma delicatula* in different European countries. Modified from Chartois *et al.*, 2025[1].

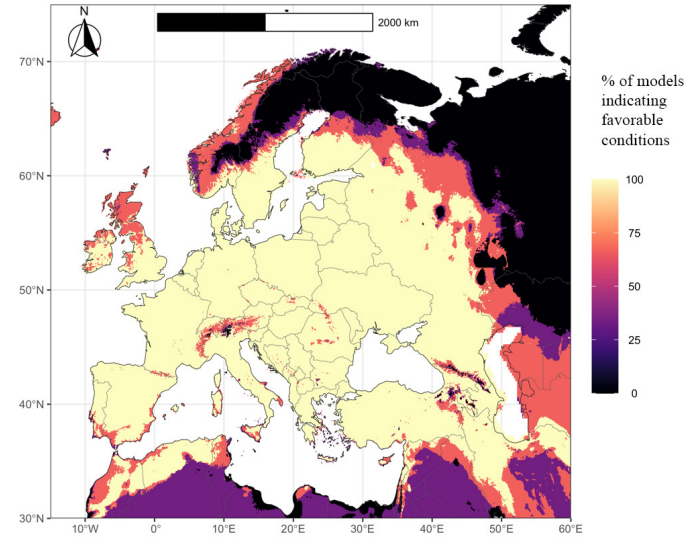


FIGURE 3. Compatibility of the current climate with the development of *Lycorma delicatula* in Europe. The map presents the results of several distribution models and shows, for each area, the proportion (%) of models indicating favorable climatic conditions for the spotted lanternfly. It can be seen that most of Europe is considered climatically favorable for the insect by the majority of models. Modified from Chartois *et al.*, 2025[1].

If the species were to become established, its spread would probably be accelerated by the egg-laying behavior of females, which deposit discrete masses of eggs on plants as well as on stones or human infrastructure (containers, wagons, pallets, etc.). Once exported, these substrates facilitate its transport over long distances. From this point of view, *L. delicatula* is similar to the brown marmorated stink bug (*Halyomorpha halys*), a well-known "hitchhiking" species[7]. This type of pest is particularly difficult to control because it often escapes even the most rigorous phytosanitary inspections.

Conclusions

The spotted lanternfly poses a significant threat to European crops and ecosystems, particularly grapevines and fruit trees. Neither climatic conditions nor the availability of host plants constitute a barrier to its establishment if introduced. Increased phytosanitary vigilance is therefore necessary to prevent its introduction and establishment. In this context, raising awareness among stakeholders in the agricultural sector and implementing early surveillance appear essential, as it is always more effective—and much less costly—to prevent the arrival and establishment of a pest than to attempt to eradicate it once it has become established. You can report any sightings of *Lycorma delicatula* using a dedicated AGIIR app, which is free and available on smartphones (download the mobile app from the App Store or Google Play) or on Ephytia (https://ephytia.inrae.fr/fr/C/27321/Agiir-Le-fulgore-tachete). ■

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