

Field Identification Guide

Oak lace bug



Photograph: Joseph Berger, Bugwood.org

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Oak lace bug

The oak lace bug (*Corythucha arcuata*) is an insect pest of oak trees (*Quercus* spp.). It can reduce growth and weaken trees, making them more susceptible to other pests and diseases. This pest can be particularly damaging after several consecutive years of severe infestation, combined with other stress factors such as drought. In large numbers, lace bugs can cause public nuisance problems and have very occasionally been reported to 'bite' humans, which can result in dermatitis.

Species affected	Oak (<i>Quercus</i> spp.) and occasionally maple (<i>Acer</i> spp.).
Signs and symptoms	<p>The oak lace bug feeds on the foliage of oak trees causing chlorosis (loss of normal colour) to occur on the upper surface of the leaves. Lace bugs use their piercing–sucking mouthparts to rupture plant cells in order to feed on the nutritious sap within. The first sign of feeding damage is a stippling of small, yellow spots on the upper leaf surface, often concentrating around the leaf veins. As the lace bug populations increase, the chlorotic spots coalesce to produce large, yellow and bronze coloured areas on the upper leaf surface. Heavy infestations can also cause premature leaf drop.</p> <p>Oak lace bugs can produce two to three generations per year and the damage they cause to their host trees increases with each new generation. Adults and juvenile (nymphal) stages, as well as eggs, may all be present simultaneously on the underside of affected leaves. The adults are recognisable because of their delicate milk-white lacy wings with variable brown markings, and the nymphs because they are flattened, wingless, black, spiny and oval in shape. The adults can reach a length of 4 mm with the nymphs attaining a maximum length of approximately 2 mm. The eggs are 0.5 mm long, elliptical and brown with a lighter coloured lid and tend to be found in clusters along main leaf veins on the underside of leaves.</p> <p>Lace bugs deposit droplets of liquid frass onto the undersides of leaves as they feed. These dry out into hard, black spots and are characteristic of lace bug infestations. Cast nymphal skins will also be visible on the underside of leaves.</p> <p>Although there are a number of native lace bugs in the UK, none of them breed on oak trees, so if you come across a lace bug on oak then it may possibly be the oak lace bug.</p>

	<p>Various other insects cause foliar symptoms on oak, in particular leafhoppers (mainly in the sub-family Typhlocybinae which feed in a similar manner to oak lace bugs and therefore cause similar damage), and aphids (<i>Phylloxera</i> spp.). However, an oak lace bug infestation is distinguishable from those of leafhoppers and aphids by the presence of adult and juvenile lace bugs on the underside of the leaves. Other insects such as leaf miners can also affect oak leaves. However, the relatively large mines which they produce bear no resemblance to the damage caused by the oak lace bug.</p>
Timing	<p>Damage to the leaves is visible during the summer months and tends to increase through the year from July to September. Adults, nymphs and eggs may be present on leaves throughout late spring and the summer. Adults are present in leaf litter and bark crevices during the winter. Some populations may have a partial generation late in the year so the nymphs may also be found in the late autumn or early winter.</p>
Biosecurity	<p>The pest is spread locally by adults flying/being blown to new tree hosts. It is extremely important that no leaf litter/soil, wood or foliage from infected trees is removed from a site because there may be oak lace bug adults, juveniles and eggs present. All clothing, including the inside of boots, hoods and outer pockets, should be brushed down and checked for insects and tree-derived material. Boots should be cleaned and disinfected before and after every site visit. Keep vehicles on hard tracks and ensure that they are kept clean so that they are easier to disinfect when necessary.</p>
Reporting requirements	<p>This is a notifiable pest so if you find it you must report it. Please report through Tree Alert (www.forestry.gov.uk/trealert).</p> <p>In Northern Ireland please report via the TreeCheck website (www.treecheck.net) or phone app, or by emailing planthealth@daera-ni.gov.uk</p>

Based on information available in August 2017.

Signs and symptoms



Photograph: Jim Baker, North Carolina State University, Bugwood.org



Photograph: Utah State University Extension IPM Program

Feeding damage on oak leaves caused by the oak lace bug.

Signs and symptoms



Photograph: Joseph Berger, Bugwood.org

Adult oak lace bug.



Photograph: Jim Baker, North Carolina State University, Bugwood.org

Hatched eggs of the oak lace bug on the underside of an oak leaf.

Signs and symptoms



Photograph: © Yurika Alexander

Lace bug nymphs on the underside of a leaf.



Photograph: USDA Forest Service - Northeastern Area, USDA Forest Service, Bugwood.org

Nymphs and adult oak lace bugs on the underside of an oak leaf. The small black dots are dried liquid frass produced by the insects.

Signs and symptoms



Photograph: © Yurika Alexander

Nymphs and adult oak lace bugs on the underside of an oak leaf. The small black dots are dried liquid frass produced by the insects.

Look-alike signs and symptoms



Photograph: Jerry A. Payne, USDA Agricultural Research Service, Bugwood.org

A leafhopper (*Scaphytopius* spp.).



Photograph: Jack Kelly Clark, courtesy University of California Statewide Integrated Pest Management Program

Severe aphid (*Phylloxera* spp.) damage to oak leaves.

Look-alike signs and symptoms



Photograph: Suzanne Sandisi-Frey, Forest Research

Chlorotic speckling damage on an oak leaf caused by aphids.



Photograph: Jack Kelly Clark, courtesy University of California Statewide Integrated Pest Management Program

Aphids on the underside of oak leaves.



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This booklet forms part of a set that supports Observatree volunteers when out looking for priority pests and diseases. It supplements face-to-face training and is not intended as a full or detailed description. It will also be useful for others who have some knowledge of the particular pest or disease and understand how to look for these. Further information is available online from the websites listed below:

Observatree: **www.observatree.org.uk**

Forestry Commission: **www.forestry.gov.uk**

Forest Research: **www.forestry.gov.uk/forestresearch**