

# Field Identification Guide

## Acute oak decline



Photograph courtesy of Forestry Commission

## Acute oak decline

Acute oak decline (AOD) is a complex decline disease involving a number of bacterial species which cause bark lesions, and a native buprestid beetle *Agrilus biguttatus* (oak jewel beetle). The disease causes a rapid decline in oak trees and can kill them within 5 or 6 years.

Species affected	Mainly pedunculate oak ( <i>Quercus robur</i> ) and sessile oak ( <i>Q petraea</i> ) and also Turkey oak ( <i>Q cerris</i> ).
Signs and symptoms	<p>Although AOD is mostly noticed on mature oaks (50 years plus), much younger trees (diameter of tree at breast height, DBH, as small as 12 cm) can also be affected. The most obvious symptom is the oozing of a dark, sticky fluid from cracks in the bark on the stem of affected oak trees. This stem bleeding usually first occurs between 0.5 and 2 metres above ground and can be visible around the entire girth of the tree and along the whole length of the stem, extending up into the canopy. The number of bleeds present on a tree can vary from just 1 or 2 to more than 50 in a severely affected tree. The bleeds are vertically aligned on the stem and originate from longitudinal cracks between the bark plates caused by dead patches beneath the bark. These cracks are typically 5–10 cm long and have blackened, ragged edges.</p> <p>In some cases the bark cracks heal and become occluded by callus material and this becomes more visible when the outer bark around the infected areas has been displaced or fallen off.</p> <p>AOD may cause the crown of the tree to show signs of deterioration, but in many cases this does not occur until the tree is severely affected and near death, with trees in the early stages of the disease retaining healthy-looking crowns.</p> <p>There is co-occurrence between AOD lesions and stem bleeding and the native beetle <i>A. biguttatus</i>. However, it is unlikely that you will see the adult beetle as it is a canopy dweller; instead, the exit holes of <i>A. biguttatus</i>, which are characteristically D-shaped, are often visible on the stems of trees on sites affected by AOD. The exit holes can occur in close proximity to the stem bleeds, but may also be found some distance away. The larval stage of the beetle feeds on the inner bark where it creates larval galleries and this can weaken the tree in severe infestations.</p>

	Please be aware that symptoms of other pests and diseases (e.g. honey fungus and <i>Phytophthora</i> spp.) may also cause bleeding on oak trees.
Timing	The bleeding usually occurs in the springtime and then again in the autumn – and is very infrequent in mid-summer or winter months. However, the dark sap stains the bark, leaving dry, black streaks on the stems which may be visible all year round unless rain washes them off.
Biosecurity	The single most important biosecurity measure for this disease is to make sure that your sampling tools (e.g. chisels, knives) and hands are cleaned and disinfected of the AOD bleed fluid between samples to reduce the risk of spreading the disease to other oak trees on the site. Don't touch the bleed fluid and then touch other trees without first disinfecting your hands.
Reporting requirements	<p>If you find this disease complex, please report it through Tree Alert (<a href="https://treealert.forestresearch.gov.uk">https://treealert.forestresearch.gov.uk</a>).</p> <p>In Northern Ireland please report via the TreeCheck website (<a href="http://www.treecheck.net">www.treecheck.net</a>) or phone app, or by emailing <a href="mailto:planthealth@daera-ni.gov.uk">planthealth@daera-ni.gov.uk</a></p> <p>For traded plants and any non-tree hosts please email <a href="mailto:planthealth.info@apha.gov.uk">planthealth.info@apha.gov.uk</a> (England &amp; Wales), or <a href="mailto:hort.marketing@gov.scot">hort.marketing@gov.scot</a> (Scotland).</p>

Based on information available in August 2016.



## Signs and symptoms



Photograph courtesy of Forestry Commission

Multiple AOD bleeds on an oak tree stem.



## Signs and symptoms



Photograph courtesy of Forestry Commission

Extensive AOD bleeding on an oak with bark staining.



## Signs and symptoms



Photograph courtesy of Forestry Commission

Profuse AOD bleeding on an oak trunk.



## Signs and symptoms



Photograph courtesy of Forestry Commission

External symptoms of AOD featuring dark, weeping patches on oak trunk.



## Signs and symptoms



Photograph courtesy of Forestry Commission

Clear dark fluid seeping from cracks between bark plates on the stem of a mature oak with AOD.

## Signs and symptoms



Photograph courtesy of Forestry Commission

Bark crack with inactive bleed, with staining on the sides of the bleed.



## Signs and symptoms



Photograph courtesy of Forestry Commission

Bark crack with inactive bleed, with the staining partially washed off.



## Signs and symptoms



Photograph courtesy of Forestry Commission

Crusty black AOD stain.



## Signs and symptoms



Photograph courtesy of Forestry Commission / Ana Perez-Sierra

Partially occluded bark crack.

## Signs and symptoms



Photograph courtesy of Forestry Commission

Fully occluded bark crack.



## Signs and symptoms



Photograph courtesy of Forestry Commission

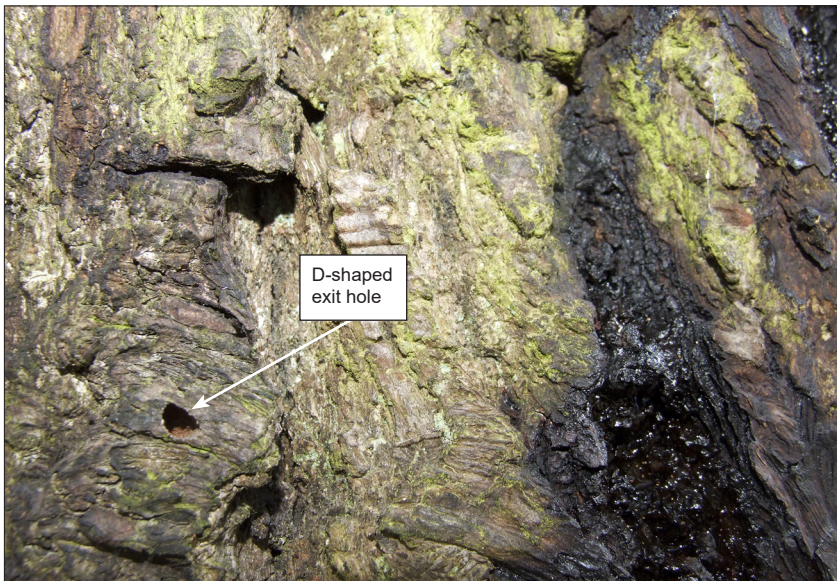
Fully occluded bark lesions – outer bark has fallen away from occluded areas, giving a pock-marked appearance to the stem.

## Signs and symptoms



Photograph courtesy of Forestry Commission

*Agrilus biguttatus* adult.



Photograph courtesy of Forestry Commission

*Agrilus biguttatus* D-shaped exit holes associated with stem bleeding.



## Signs and symptoms



Photograph courtesy of Forestry Commission

*Agrilus biguttatus* D-shaped exit hole.



## Signs and symptoms



Photograph courtesy of Forestry Commission

*Agrilus biguttatus* larva. Fully grown larva will be 25–43 mm in length.

## Signs and symptoms



Photograph courtesy of Forestry Commission

*Agrilus biguttatus* larva and stained larval galleries.



## Signs and symptoms



Photograph courtesy of Forestry Commission / Ana Perez-Sierra

Canopy deterioration caused by AOD.



## Signs and symptoms



Photograph courtesy of Forestry Commission

Severe canopy deterioration caused by AOD.



## Look-alike signs and symptoms

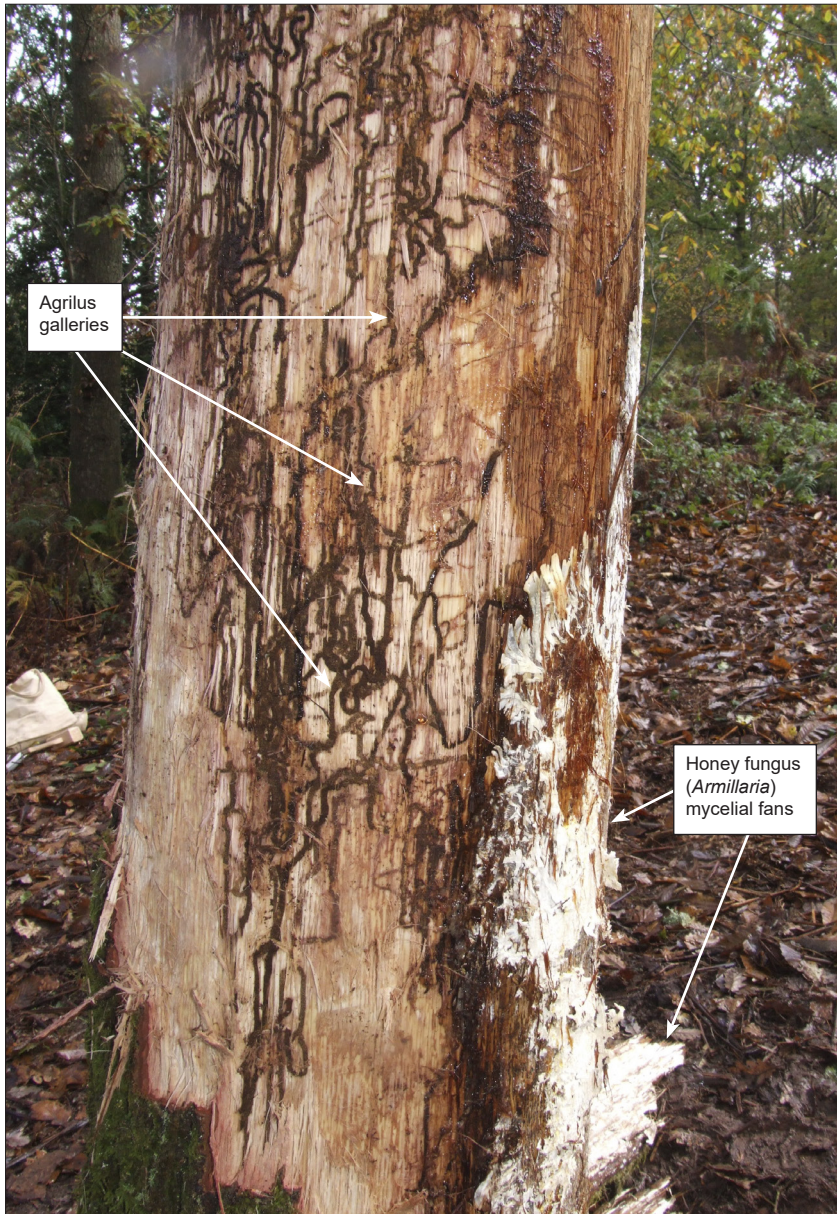


Photograph courtesy of Forestry Commission

Bacterial wetwood.



## Look-alike signs and symptoms



Photograph courtesy of Forestry Commission

*Agrilus* galleries may be present in trees not affected by AOD but weakened by other pathogens such as Honey fungus (*Armillaria* sp.)



## Look-alike signs and symptoms



Photograph courtesy of Forestry Commission

*Phytophthora* bleeding on an oak.

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Observatree aims to create a tree-health early-warning system using citizen science.

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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:

**[www.observatree.org.uk](http://www.observatree.org.uk)**

**[www.forestresearch.gov.uk/tools\\_and\\_resources/fthr/pest-and-disease-resources/](http://www.forestresearch.gov.uk/tools_and_resources/fthr/pest-and-disease-resources/)**

**[www.gov.uk/guidance/prevent-the-introduction-and-spread-of-tree-pests-and-diseases](http://www.gov.uk/guidance/prevent-the-introduction-and-spread-of-tree-pests-and-diseases)**

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