

# ACUTE OAK DECLINE



Symptoms of AOD, including weeping stem bleeds, on *Quercus robur*

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Fluid between cracked bark plates caused by decaying underlying tissue.

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Status: Non-quarantine

**Causal organism:** *Brenneria goodwinii* is part of a pathobiome that includes *Gibbsiella quercinecans*, *Rahnella victoriana* and *Lonsdalea britannica*. These bacteria work together to cause Acute Oak Decline (AOD).

## Host species

In the UK, mature (older than 50 years) pedunculate (*Quercus robur*) and sessile oak (*Q. petraea*) are affected. However, Bali oak (*Q. fabri*), holm oak (*Q. ilex*), oriental white oak (*Q. aliena* var. *acutiserrata*), pin oak (*Q. palustris*), Pyrenean oak (*Q. pyrenaica*), red oak (*Q. rubra*), scarlet oak (*Q. coccinea*), Turkey oak (*Q. cerris*), water oak (*Q. nigra*), chestnut-leaved oak (*Q. castaneifolia*), Persian oak (*Q. brantii*) and downy oak (*Q. pubescens*) are also susceptible. In Iran, *B. goodwinii* has also been isolated from hornbeam (*Carpinus betulus*).

## Distribution

*Brenneria goodwinii* has been isolated from bleeding stem cankers on oak trees in the United Kingdom, Austria, France, Latvia, Netherlands, Poland, Spain, Switzerland and Iran.

## Occurrence in the UK

AOD is present in warm, drought-prone parts of the UK where there are also high levels of airborne nitrogen pollution and low dry sulphur levels. It is found mostly in south-eastern, central and eastern England, and in the Welsh Borders and South-East Wales. As of 2020, it has not been reported in Scotland or Northern Ireland.



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Longitudinal stem bleeds on *Quercus robur*.  
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D-shaped exit holes caused by two-spotted oak buprestid beetles (*Agilus biguttatus*)  
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## Symptoms of the disease

Affected trees have dark-coloured, vertical, weeping fissures, known as stem bleeds or cankers, which seep black fluid through vertical cracks between bark plates and down the trunks. A lesion (decayed tissue) forms in the live tissue beneath the bleeds. This seeping fluid can dry and cake on the tree stems at certain times of the year. D-shaped exit holes of emergent two-spotted oak buprestid beetles (*Agilus biguttatus*) are often found on bark panels close to bleeds. Larval galleries belonging to these beetles are frequently associated with the lesions.

## Control measures

A number of different plant pathogens can cause bleeding cankers on oak stems. It is therefore important to ascertain the cause of a bleeding canker by recording the location of the tree, taking photos of stem bleeds and associated D-shaped buprestid beetle holes, and sending this information together with swabs of the bleeds to Forest Research. Forest Research have developed a rapid test to detect the bacteria involved in AOD.

**Preventative:** If laboratory tests together with photographic evidence confirm that an oak tree has AOD, general advice is to leave infected trees in place and continue to monitor, unless there is immediate concern about safety. Try to minimise any contact with bleeds to reduce the possibility of transferring the disease from tree to tree. However, if only a limited number of trees appear to be infected on a site, and most are of the same oak species, it may be prudent to fell and destroy the infected individuals – to keep infection levels low and reduce the risk of infecting healthy trees. When felling trees, equipment should be thoroughly disinfected to prevent spread of bacteria to other trees. Logs and branches should not be removed until the bark and sapwood has been stripped away.

**Curative:** None known.

