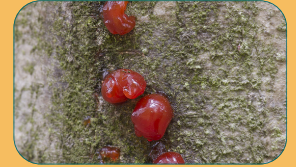


## Hornbeam (*Carpinus betulus*) decline

### *Anthostoma decipiens*



### Introduction

*Anthostoma decipiens* is a fungal pathogen linked to the decline of European hornbeam (*Carpinus betulus*) across Europe. The pathogen thrives in temperate forests and urban environments, particularly affecting trees weakened by environmental stress such as extremely hot and dry years. In cases where *Cryphonectria carpinicola* is also present, the infections tend to be more aggressive, resulting in faster tree mortality.

Although the fungus has been recognized in Central Europe since the late 19th century, it was considered to be a rare occurrence in deadwood and often went undetected or misidentified due to its co-occurrence with other fungi. However, since the 2000s, damage to hornbeams caused by this pathogen has increased, particularly in urban green spaces. The fungus has been identified in several European countries, including Italy, Austria, Switzerland, Hungary and UK, as well as Iran, with affected trees displaying bark necrosis, cankers, and progressive dieback.

### Host

The main host is hornbeam (*Carpinus betulus*). It can also affect other tree species that are taxonomically or ecologically related to hornbeam, such as: Maple (*Acer campestre*), Black Alder (*Alnus glutinosa*), Silver Birch (*Betula pendula*), Chestnut (*Castanea sativa*), Hazel (*Corylus avellana*), European Beech (*Fagus sylvatica*), European Hop-hornbeam (*Ostrya carpinifolia*), Black Poplar (*Populus nigra*) and Red Oak (*Quercus rubra*). Although these species can be colonised, the infection tends to spread less effectively than it does on hornbeam.

### Biology

The pathogenic disease caused by *A. decipiens* progresses through two distinct fungal stages. The asexual stage, *Cytospora decipiens*, produces characteristic clumps of orange to deep red conidia (asexual spores) that emerge from infected bark, during the growing season, when favourable temperature and moisture conditions occur. In contrast, the sexual stage, *A. decipiens*, develops later in the disease cycle, forming black fruiting bodies (perithecia) on necrotic areas or dead bark, where they produce ascospores (sexual spores).

The conidia and ascospores are dispersed primarily via rain-splash, wind, and possibly insects and contaminated working tools. Ascospores produced by *A. decipiens* support its persistence and facilitate its spread.

The fungus primarily infects the bark and cambium of affected trees, leading to progressive loss of vitality. Over time, symptoms such as crown dieback and bark lesions become increasingly apparent, and in severe cases, the disease can contribute to tree mortality.

### Symptoms

For details of the symptoms, scan or click on the QR code to access the accompanying poster.



### More information

- Waldwissen: <https://www.waldwissen.net/en/forestry/forest-protection/fungi-and-nematodes/new-fungal-disease-on-hornbeam>
- New Disease Reports: <https://doi.org/10.5197/j.2044-0588.2018.037.020>
- Journal of Plant Pathology: <https://www.cabidigitallibrary.org/doi/pdf/10.5555/20153189542#>

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## *Cryphonectria carpinicola*



### Introduction

*Cryphonectria carpinicola* is a recently identified species of fungus, formally described in 2021. This fungus has been found to cause hornbeam decline in several European countries, including Austria, Georgia, Switzerland, Italy, Bulgaria, Hungary, Serbia, Slovakia and UK. Additionally it has been discovered in Japan [see its [current distribution](#)]. In Europe, only the asexual form of *C. carpinicola* has been observed. However, in Japan, the sexual form was described for the first time, suggesting that the fungus originated in East Asia.

This species is often considered a secondary pathogen, primarily affecting trees that are already weakened or stressed due to environmental factors such as drought or high temperatures. The fungus causes bark necrosis and branch dieback in hornbeam trees, leading to a visible decline in the health and vigour of affected trees. Although *C. carpinicola* is frequently recorded in association with *Anthostoma decipiens*, it is considered as less aggressive.

*C. carpinicola* is closely related to other species in the *Cryphonectria* genus, which includes *Cryphonectria parasitica*, the cause of chestnut blight.

### Host

The main known host of the fungus is European hornbeam (*Carpinus betulus*). Although records have been also reported on *Carpinus japonicus* (in Japan) and other *Carpinus* sp. (in Japan and Georgia).

### Biology

*C. carpinicola* fungus has two life stages: sexual and asexual. However, the sexual form has not been identified in Europe.

The asexual stage of the fungus involves the development of compact masses of fungal tissue, which are initially bright orange and often visible on the surface of the host bark and producing asexual spores in large numbers.

Although no information is specifically available on the dispersion of *C. carpinicola*, it is probable the fungal spores are spread via wind and rain, as well as by indirect animal vectors such as birds, mammals, insects. In addition, the fungus may be transmitted through international trade, particularly via host plants intended for forestry or ornamental purposes, as well as wood and bark products.

### Symptoms

For details of the symptoms, scan or click on the QR code to access the accompanying poster.



### More information

- EPPO Global Database: <https://gd.eppo.int/taxon/CRYNCA/hosts>
- EPPO Alert: [https://www.eppo.int/ACTIVITIES/plant\\_quarantine/alert\\_list\\_fungi/cryphonectria\\_carpinicola](https://www.eppo.int/ACTIVITIES/plant_quarantine/alert_list_fungi/cryphonectria_carpinicola)
- IPPC: [https://assets.ippc.int/static/media/files/pestreport/2025/01/29/EPPO\\_IPPC\\_Cryphonectria\\_carpinicola\\_2025.pdf](https://assets.ippc.int/static/media/files/pestreport/2025/01/29/EPPO_IPPC_Cryphonectria_carpinicola_2025.pdf)
- Fungal Biology: <https://doi.org/10.1016/j.funbio.2020.11.012>
- Mycoscience: [10.47371/mycosci.2023.07.001](https://doi.org/10.47371/mycosci.2023.07.001)
- Forest Pathology: <https://doi.org/10.1111/efp.12845> AND <https://doi.org/10.1111/efp.12882>

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