Ceratocystis platani **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Fungi	Ascomycota	Sordariomycetes	Microascales	Ceratocystidaceae

Common name canker-stain-of-plane-tree (English), canker stain (English)

Synonym *Ceratocystis fimbriata* , f.sp. *platani*
Endoconidiophora fimbriata , f. *platani*

Similar species

Summary *Ceratocystis platani* is a fungal pathogen that causes canker stain of plane trees in the genus *Platanus*. The fungus, thought to be native to south-eastern United States, was introduced to Italy in the 1940s. It rapidly infects plane trees, causing disruption of water movement, cankers and eventually death. It has since spread throughout Europe and threatens natural and planted populations of economically, ecologically and aesthetically important plane trees.

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Species Description
Ceratocystis platani is an ascomycete fungus that causes canker stain of plane tree, a serious disease of *Platanus* spp. in the United States and Europe. The fungus is a wound parasite, and can colonise even small wounds upon contact. After wound colonisation mycelium develops throughout the conducting tissues of the underlying sapwood. Colonisation can be 2.0-2.5 m/year from a single infection (Soulioti *et al*., 2008). \r\n
The disease causes staining of the xylem, disruption of water movement, cankers and usually death of the tree. The most obvious disease symptom on oriental plane is sudden death of a portion of the crown. Cankers on the tree trunk, although not always visible through thick, rough bark, are characterised by necrosis of inner bark and bluish-black to reddish-brown discolouration of sapwood (Ocasio-Morales *et al*., 2007). Trees of 30-40 cm diameter may die within 2-3 years of infection (Soulioti *et al*., 2008).

Habitat Description
Ceratocystis platani attacks trees in the genus *Platanus*, including American sycamore (*P. occidentalis*), oriental plane (*P. orientalis*), London plane (*P. acerifolia*; a natural hybrid of *P. occidentalis* and *P. orientalis*) and California sycamore (*P. racemosa*). Oriental plane is considered highly susceptible to the fungus; American sycamore is relatively resistant and London plane is generally intermediate in resistance (18, 28 in Ocasio-Morales *et al*., 2003).\r\n
C. platani can survive for several years at -17°C but will not grow below 10°C or above 45°C. The fungus can survive for >105 days in soil during winter, but is killed by temperatures of 35-40°C (Accordi, 1989 in Soulioti *et al*., 2008).

Reproduction
Most *Ceratocystis* spp. have a sexual state but, like many *Ceratocystis* spp., *C. platani* can self via unidirectional mating type switching. Selfing is likely more common than outcrossing in such *Ceratocystis* spp. (Ocasio-Morales *et al*., 2007 and references therein).

General Impacts
Ceratocystis platani attacks plane trees in the genus *Platanus* causing canker stain. This is a serious disease of plane trees in the United States and Europe, causing staining of the xylem, disruption of water movement, formation of cankers and eventually death (Ocasio-Morales *et al*., 2007). Trees infested with the fungus usually die within 3-7 years (Fredon Corse, 2011).\r\n
The pathogen is having a dramatic impact on the natural populations of oriental plane (*Platanus orientalis*) in southwestern Greece. Hundreds of dead and dying trees have been found along streams and rivers, with patches of 15-20 often evident (Ocasio-Morales *et al*., 2007). Such significant losses of plane trees is expected to have a dramatic impact on riparian forests of the region. Streams have been found to have stretches of up to 100 m with no surviving plane trees. As the pathogen spreads forest composition may change dramatically because *P. orientalis* is highly susceptible to canker stain (Ocasio-Morales *et al*., 2007). In Greece many ornamental trees have died in residential and recreational areas too; some of which were large and centuries old, and thus have historical importance (Ocasio-Morales *et al*., 2007).
In 2006 *C. platani* was identified as the cause of dying plane trees in France's UNESCO world heritage site, the Canal du Midi. The canal is lined with around 42,000 plane trees which are under threat from the fungus. To date around 2,500 trees have been felled and destroyed. The trees have huge historical, aesthetic and personal value to many who live in the area, and the loss of trees could threaten the UNESCO World Heritage status (Willsher, 2011).

Management Info
According the INRA and various agencies there is currently no effective chemical or biological control against this fungus, as the mycelium penetrates deep into the wood and is not affected by current products (Fredon Corse, 2011). Thus control of this disease should focus on preventative measures. Such measures include avoiding injury to *Platanus* trees, disinfecting tools before and after working on trees, burning of any diseased tree tissue, removing any sawdust from areas, treating any wounds and injuries with antifungal washes and avoiding planting susceptible trees in contaminated areas (Fredon Corse, 2011). Such methods may make it to contain infestations or slow down its spread; particularly in areas where the disease is limited in extent, such as Greece where it is currently localised to the Messinia Prefecture. Such containment methods should be imposed before it spreads throughout the natural range of ecologically and historically important *Platanus orientalis* (Ocasio-Morales *et al*., 2007).\r\n
In the Canal du Midi, France large numbers of diseased plane trees have been removed and planted with resistant varieties (Willsher, 2011).

Principal source:

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