



THE
ROYAL
PARKS

Arboricultural Briefing Note

Massaria related branch breakage on London Plane

Massaria or *Splanchnonema platani* is a fungal disease capable of killing the bark and cambium on the branches of London Plane, *Platanus x hispanica*. It is becoming common in Europe but has yet to be formally identified in mainland U.K.

The symptoms:

A strip of dead bark starting at the branch collar, and stretching along the top of the branch. The width of the dead strip varies but nearly always tapers to a distinct point.



Aerial shot of dead bark strip caused by Massaria (Hyde Park).

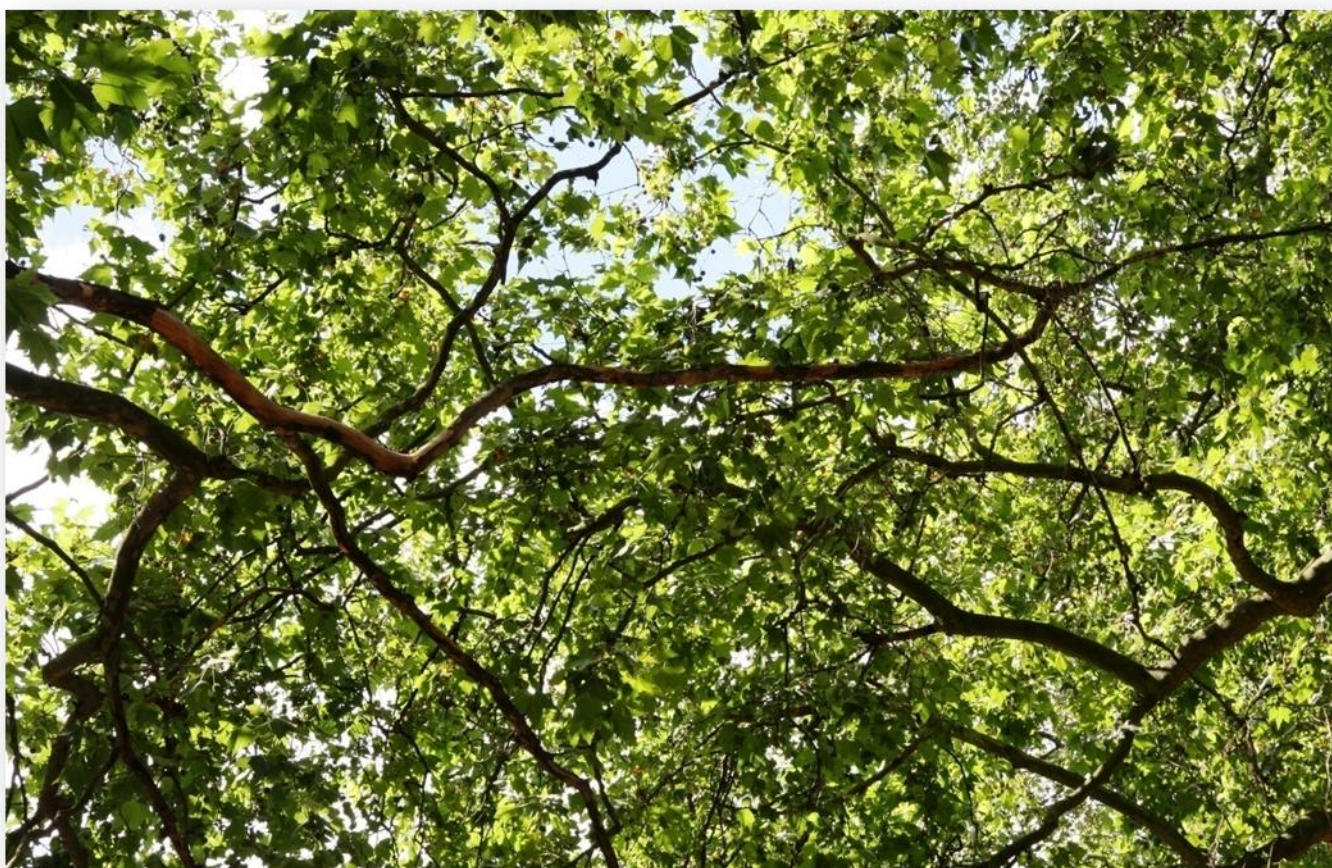
On smaller diameter branches 10 to 20 cms, death can occur within a year and these are normally obvious from the ground due to young twigs, seed clusters and sometimes leaves still being visible on the dead branch.

Larger diameter branches may not exhibit any symptoms and the dead strip of bark is mainly on the upper side of the branch which makes it almost impossible to see from the ground.

It is most frequent on shaded lower order branches which are in the mid to lower canopy level.

Identifying Massaria:

On smaller diameter branches, sudden decline in vigour with twiggy dieback and premature defoliation. Dead flaking bark, very rapidly exposing the sapwood.



Recently dead branch with flaking bark exposing orangey sapwood



Twigs on recently dead branch, buds and undeveloped fruit intact

On larger diameter limbs it is much more difficult to spot but there may be secondary fungal fruit bodies (e.g. *Auricularia*) along the upper side of a limb or dead branches or twigs arising from the upper side of the limb along the dead strip.



Auricularia (secondary) fungi on dead bark strip

On fallen limbs white fungal mycelium may be present at the break point and a clearly zoned area of decay may be present.



Cross section of decay



Break point

The fracture point is very distinctive with splintered sound wood at the base and cleanly snapped on the upper half of the fracture.

Problems caused by Massaria:

- Sudden branch breakage
- More frequent inspection regime (up to three times a year)
- Increased maintenance cost on London Plane
- Eventual loss of canopy shape

History of Development

Locations

We have a high concentration of this problem in Hyde Park, The Green Park and St James Park, with a smaller proportion of affected trees in Kensington Gardens - upwards of 50 trees in total have been identified to date. We have had trees with branches still attached, previously failed branches, and we have retained samples from all branches recently failed.

Development

In terms of development, we first started to be aware of this about three years ago. I spotted a failed branch and recalled a photo of the damage identified in a Claus Matthech book. I showed our contractors a photo, and asked if they had seen it in the crowns and they confirmed that they had. I referred it to Forest Research, and Kath Tubby attended very quickly. She agreed that it looked likely and that they were interested, but stopped short of a full diagnosis. Samples were taken away and she tried to culture a fungus from it but was unsuccessful.

Last year, 2008/09, Two Arboricultural Assistants started working at TRP, and we started to identify more failures related to *Massaria*, but it was still occasional rather than frequent.

This year 2009/10, we have started to identify large numbers of failed branches with *Massaria*, or identified symptoms in branches in the crowns of a number of trees (as identified by the photographs); even those inspected last year and the year before.

Diagnosis

Our diagnosis is that this seems to develop within a year. Examination of branches and photographs, suggests that there does not appear to be little or any barrier or reaction zone, and the staining extends right from the edge of the sapwood to the branch heartwood, without any callus developing.

When fracture occurs, it seems to be defined by the central plane of the fibres at the proximal end of the branch. Exceptions to this seem to be when there is a stress notch formed by a small aperture or secondary branch, when failure may develop further away from the trunk at the axial end of the branch. The lack of reaction zone and wound wood (although some larger branches appear to exhibit some zoning at the axial end of the canker), suggests that the whole cycle develops in some trees in a single year. Many of the branches are killed with fruit and leaves still on the tree, so it would appear that the tree also uses the function of abscission to shut down the branch at the collar as a reaction to the wood being degraded.

We also seem to have a number of different secondary fungi developing with the *Massaria*. The photos show *Auricularia* (itself unusual on *Platanus*), but also *Exidia glandulosa* (which I mistakenly thought was *Ustulina*), and Forest Research cultured *Phomopsis* from the wound. Whether these are adding to the speed of failure I couldn't say.

Other Reports

We also sent out a report last year - similar to that attached - to the LTOA, and a second update yesterday. Today I have had an e-mail from a London Borough that they have found it, but although I've seen it here and there - mainly on branches on the ground - I've had no reports of it occurring anywhere else in London.