TREE HEALTH IN THE ROYAL PARKS

A commentary

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There are approximately 170,000 trees across all The Royal Parks.

They form the backbone of the Park landscapes and have considerable aesthetic, environmental and ecological value.

Hyde Park and Kensington Gardens are two of the busiest parks in London in which a high proportion of the estimated 77 million Royal Parks annual visitors spend time in or moving through these historic landscapes. The past decade has seen a significant rise in tree pests and diseases which threaten our park landscapes, both from a visual and health and safety perspective.

As an organisation we are totally committed to the preservation of our treescape but also providing a safe environment for people to enjoy which requires a careful balance between risk management and conservation.

Three tree pests are of particular concern within the central parks: a fungal disease called Massaria, *Splanchnonema platani*; Oak processionary moth; and a bacteria which causes Bleeding canker, *Pseudomonas syringae* pv. Aesculi.

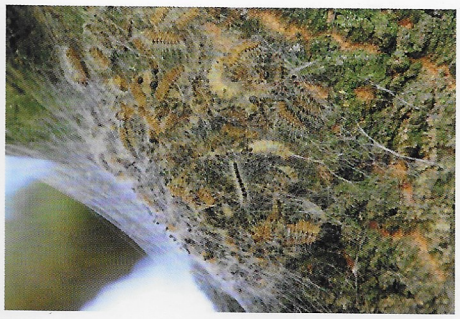
Massaria, Splanchnonema platani

A quarter of the trees in Hyde Park are London Planes and since 2008 there has been a significant rise in a fungal disease called Massaria, *Splanchnonema platani*; this kills the bark and decays the wood so rapidly that branches can snap out within three months of the infection being identified. With a large proportion of TRP's Planes growing in high occupancy areas it was decided to recruit a new member of staff solely to inspect Planes for Massaria and work with our tree contractors to remove the infected branches before they fail.

Published studies have indicated that drought is one of the main triggers of Massaria so in 2012 a research project was initiated to investigate soil improvements to try and mitigate water stress. Several groups of Planes were selected in Kensington Gardens and different combinations of de-compaction, mulching and aerated compost 'teas'. Soil samples have been analyzed and show a very positive rise in beneficial fungi and micro organisms; canopy densities have also improved over the untreated controls.

Oak processionary moth

A recent introduction from Europe, Oak processionary moth has colonised most of west and central



London and has been present in both Hyde and Kensington Gardens since 2012. In large numbers the caterpillars can completely defoliate trees but the main issue is with public health as they are covered in detachable poisonous hairs. The caterpillars form dense clusters, later nests on main stems which are protected within silk tents, these can be found anywhere on the tree from ground level upwards and from these they 'process' along branches to feed on the foliage.

Since 2013 preventative spraying of Bacillus thuringiensis (BT) has been used in Hyde Park and Kensington Gardens to control numbers of the caterpillars. This biological control affects the larva's ability to feed and kills it before it develops the poisonous hairs but it will also kill other non-target species of caterpillar which hatch at the same time so application is carefully planned and rotated each year.

Horse Chestnut leaf miner and Bleeding canker *Pseudomonas syringae pv. Aesculi*

One of the more noticeable pests in Hyde Park and Kensington Gardens is Horse Chestnut leaf miner, the larva of which eats the central layer of the leaf; these become brown and distorted by mid-summer and often fall early. Although very unsightly it only has a moderate effect on overall tree health unlike the Bleeding canker *Pseudomonas syringae* pv. Aesculi which has had a dramatic effect on Horse Chestnuts across all the parks. This bacteria kills strips of bark on the trunk and major limbs; symptoms visible on affected trees include areas of weeping rusty brown to black exudates, wilting and die back in the canopy and strips of dead, rapidly degrading patches of dying bark. Death in young trees can be rapid as the lesions quickly coalesce due to the smaller stem diameter, however the impact on the environment can be particularly profound when large, mature trees are infected and disfigured by subsequent limb failure and pruning due to the decaying lesions.

Management of this disease is difficult as the bacteria is endemic and research into treatments or resistance has so far been minimal, the only recourse is to monitor infected trees and prune to reduce the risk of limb failure and in the worst cases total removal.

These three pest and diseases are the main and most costly current problems in Hyde Park and Kensington Gardens but there are other very serious diseases on the horizon which could prove devastating to London's tree population.

Canker stain of Plane, *Ceratocystis platani* is a vascular wilt (similar to Dutch Elm disease) which affects London Plane causing wilt and die back in the canopy and death within a few years. Plane avenues will be particularly susceptible as

the disease can spread rapidly through natural root grafting but the main concern is that the spores can be spread on the tools of tree surgeons during pruning; this is also the most likely method for its entry into the country! This disease is mostly found in southern Europe but is slowly spreading northwards in France; The Royal Parks is very active on the local and national working parties established to prevent its entry into the country.

Having devastated the entire native Chestnut population in north America, Chestnut blight *Cryphonectria parasitica* has spread throughout Europe and there have been sporadic outbreaks in the UK. This fungus causes rapidly spreading cankers on the bark of Sweet Chestnut, *Castanea sativa* which disrupt the physiological processes of the tree eventually leading to death. There are some very valuable veteran Sweet Chestnuts in Kensington gardens and a significant young avenue in Hyde Park all of which are closely monitored by the park's arboricultural team.

Other devastating pests such as Asian longhorn beetle and Emerald Ash borer and diseases such as *Xylella fastidiosa* could be imported into the country on plant material or wooden packaging. The Royal Parks, working with other organisations,developed its own bio-security policy which restricts the purchase of any susceptible plant material, inspects all deliveries and insists on a robust bio-security management from its suppliers.

Combating the challenges

Along with the management of the current range of pests and diseases The Royal Parks is proactive in the improvement of the soil and growing conditions across the parks with a programme of de-compaction works and the use of mulch and other soil conditioners. Over time these will help to increase in beneficial soil fungi and micro organisms and this will increase the trees vitality and make them more resilient to drought stress, a major predisposing factor in tree diseases.

This vital work to monitor and protect our trees will make them safe for the public to enjoy and help preserve them for future generations.