

Standing dead trees in the urban forest



David Humphries, *City of London Corporation Trees Management Officer*, takes a look at a maintained population of standing dead trees (SDTs – aka monoliths) within the context of a large well-used urban open space – Hampstead Heath. In total the City of London Corporation runs 11,000 acres of green space across the capital.

Site history

Hampstead Heath is one of London's most popular open spaces. Its mosaic of habitats provides a resource for wildlife just 6km from Trafalgar Square. At 791 acres it is spread across three London boroughs (Barnet, Camden and Haringey), and is preserved in its semi-natural state by North London Open Spaces (NLOS), a division

of the City of London Corporation. It is an island of beautiful 'urban countryside' whose magic lies not only in its rich wildlife and extensive sports and recreational opportunities, but also in its proximity and accessibility to millions of people.

As a Site of Metropolitan Importance, Hampstead Heath provides buffer land to the neighbouring SSSI (English Heritage's

Kenwood Estate) and is of national as well as regional importance, hosting a number of priority species identified in the UK Biodiversity Action Plan, including lesser spotted woodpecker, bullfinch, stag beetle and grass snake.

Having worked on this open space for almost three decades, I've had the opportunity to witness both natural and management changes over that period. The site has endured a number of significant storms (including the hurricane of 1987) which have altered the Heath and the perception of those who work on it and those who enjoy it.

Although the site has a healthy history of woodland and grassland conservation management for decades, the generic



Hampstead Heath's mosaic of habitats provides a resource for wildlife and people just 6km from Trafalgar Square.



Over the years, storms have altered the Heath and the perception of those who work on it and those who enjoy it.

attitude towards dying, dead or fallen trees had been to clear them up, processing all but the very bare bones of the trees with little or scant understanding of the ecology that resided on and within them. This was a Victorian legacy born of a desire to sanitise urban green areas. It wasn't until the Rio Earth Summit in the early 1990s that attitudes really started to change regarding dead wood and its importance as habitat for biodiversity. Naturalists took this opportunity to highlight the fragile ecosystems that were home and hunting grounds to a myriad of fungi, arthropods, mammals and birds and the need to protect them.

I was a product of that 'old school' having started on my apprenticeship in the 1980s, learning my trade from the 'tree cutters', and have had to change my own work practices and views first before being able to help bring about a local sea change amongst my colleagues for the benefit of the local tree ecology. I realised that there was more to learning than just racking up the City & Guilds and CS units, but it wasn't until an opportunity arose to spend a week on a workshop in East Anglia with Oliver Rackham during the mid-1990s looking at the history and ecology of our woodlands and landscape that I was introduced to the work of Dr Helen

Read, Dr David Lonsdale and Ted Green. This inspired me to visit sites with a rich understanding and history of managing trees and their ecological importance within their environment, such as Burnham Beeches and the forests of Hatfield, Windsor and Staverton Park.

The Heath has a number of fine veterans (bottom) but none of the age of the trees at the sites mentioned above. However, it does host wildlife that depends on the characteristic features of the ancient trees such as decay pockets, cavities and retained dead wood and wherever



Veterans at (clockwise from top left) Burnham Beeches, Hatfield, Staverton Park and Windsor.



The Heath has a number of fine veterans and hosts wildlife that depends on the characteristic features of ancient trees such as decay pockets, cavities and retained dead wood.



Older monoliths that have escaped the chainsaw by virtue of not being in open access areas near to paths/roads.

possible (with a mind to public safety target management) we now keep 'dysfunctional' trees standing as long as we can safely maintain them.



The most obvious difference between naturally disintegrating trees like those above (top and centre: Staverton Park; bottom: near Henley-on-Thames) and manmade monoliths appears to be the retention of lateral branches and canopy wood.

As well as managing the declining trees for their habitat and structural issues, there is now a population of dead standing trees on the Heath. These have been gradually growing in numbers and diversity over the last decade or so. These more recently created standing dead wood volumes supplement the few but significantly older monoliths (examples above) that have escaped the chainsaw by virtue of not being in open access areas near to paths/roads etc., but which are within hedgerows and woodland.



I have looked at dead trees in various woodlands on my travels, and the more obvious difference between naturally disintegrating dead trees and man-made monoliths would appear to be the retention of a greater percentage of the lateral branches and canopy wood on the unmanaged ones. Depending on species, these branches can stay attached to their parent stems for many decades, providing different types of niche habitats for a diversity of saproxylic species (living on and feeding in dead and decaying wood).



With a mandate of managing both the safety of the public and the biodiversity of the local ecology we have tried to create our monoliths with the retention of greater range of branch diameters and taper than had previously been tried on the site, with a mind to retaining these micro- and macro-niche habitats as safely as we can.

In time these branches do deteriorate and become a greater hazard, so after inspection they periodically get reduced in length and volume. The oak on the right has part 'self-dismantled' (where it was left unreduced away from the target of the path) and has also been worked down on a couple of occasions to a point where we can now leave it for a longer period of time to disintegrate at its own pace.



The oak in the three pictures above has part dismantled itself (where it was left unreduced away from the target of the path) and has also been worked down on a couple of occasions to a point where it can now be left for a longer period of time to disintegrate at its own pace.



This oak was reduced on the side overhanging a target and then a few years later reduced further because of a cross-country route within its fall zone. The heavy reduction and subsequent two-phase dead hedge at its base, plus cross country re-route, mean this SDT can now be left until it falls.

In another example, a declining oak (above) was reduced on the side overhanging a target (a cross-country route within its fall zone) and then a few years later further reduced down to retain the tree as a tighter monolith because of a cross-country route within its fall zone. This more than 800cm dbh oak tree has significant basal and branch wood brown rot from the presence of *Laetiporus sulphureus*. As such, this tree had been target assessed and deemed to be not only too unstable to leave, but too unstable to climb and reduce, so a mobile elevated work platform (MEWP) was utilised. The heavy reduction and subsequent two-phase dead hedge at its base, plus cross-country re-route, mean this SDT can now be left until it falls.



Yellow markers indicate trees still standing; red indicate fallen and felled ones.

Target assessment and monitoring

The site has an ever-increasing population of retained dead standing trees (DSTs), so it is important to catalogue, plot and monitor them.

In 2008 a survey of the historic and recently created monoliths was undertaken. These were then numbered and plotted onto a map. Yellow markers indicate DSTs; red indicate fallen and felled ones.

The population is now inspected annually and the map and list are updated according to any changes in condition, including vandalism (like arson), state of decay and failure incidence.

Currently the population numbers 70+, and is made up of a wide range of species including ash, oak, beech, hornbeam, elm, willow, birch, wild service, lime, maple, horse chestnut and London plane.

Failures

Species choice for consideration for retention is a significant factor. For example, willow will not endure decay and the associated lignin-destroying white rots (like *Ganoderma*) and gravity as long as oak and its associated cellulose-destroying brown rots (like *Laetiporus*) will. The willow below was reduced to a monolith in 2009 and fell in 2013. It had been programmed in for a further 3m reduction within 12 months of its failure. As a result of this, we are now more considered about where and how high we leave dead/declining species like willow and lime.

Management

An alternative to using a MEWP or rope access may involve pulling off individual

branches or sections of trunk at different heights (dependent on the state of decay and colonizing species). The beech here had been standing dead as a 10m monolith for five years before the decision was made to further reduce it.

The white willow opposite has had three reductions over a 10-year period. The last (2013) involved removing a delaminating section of the remaining stem. This tree is now low enough to be left to disintegrate down to a pile within its own time-frame. The cubical brown rot will continue to provide a home for many wood-boring insects.

It has been suggested by safety and ecology managers that monoliths within an urban environment should ideally be no higher than 3–4m. This is a view that limits the amount of wood



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This beech had been standing dead as a 10m monolith for five years before the decision to re-reduce was made.

volume available as habitat and restricts biological diversity.

Consideration of the location of maintained dead standing trees should be at the forefront of any risk assessment before a decision is made to manage a monolith. If there is significant target then the initial and/or final height should not be within falling distance of the target. A large *Meripilus giganteus*-colonised roadside beech has been brought down to a 6m fractured and coroneted monolith (see page 29).

If there is sufficient space for taller SDTs, and they are away from target and 'monitored', then the overall retained height has restrictions only based on its own decaying bulk and its stability.



This white willow has had three reductions over a 10-year period. The last (2013) involved removing a delaminating section of the remaining stem.



A large *Meripilus giganteus*-infected roadside beech brought down to a 6m fractured and coroneted monolith.



A spilt oak monolith in open woodland reduced to about 14m and an ash within a park (hosting stag beetles) reduced to 2m.

Ecology associated with dead wood

In the UK there are close to 5000 individual invertebrate and fungi species to be found living in or on dead wood volumes.

There are: 754 Coleoptera spp. (beetles), 737 Diptera spp. (flies etc.), 178

Hymenoptera spp. (ants, bees, wasps etc.), 46 Lepidoptera spp. (moths and butterflies) and 3216 fungi spp., including brackets, toadstools and jelly and slime moulds.

Many of these species are uncommon and even rare or Red Data listed and have biodiversity action plans associated with

them. A number of these species can be found within the dead wood on and around Hampstead Heath. Having these identified is a fundamental part of knowing what and how to manage the dead wood on the site. In addition to having access to an ongoing annual survey of the fungi at Hampstead Heath and the neighbouring Kenwood Estate (A. Overall), we commissioned an



Top, left to right: female stag beetle (*Lucanus cervus*), great tit (*Parus major*), black-headed cardinal beetle (*Pyrochroa coccinea*). Middle: beefsteak fungi (*Fistulina hepatica*) with unknown bee species, pipistrelle bat (*Pipistrellus sp.*), many zoned rosette (*Podoscypha multizonata*). Bottom: lesser stag beetle habitat, bearded tooth fungi (*Hericium erinaceus*), hoof fungus (*Fomes fomentarius*).



Some of the 18 monoliths included in the 2010 survey to assess the value of the Heath's saproxylic fauna within its regional context.



entomology report (D. Hackett) in 2010 to assess the value of the Heath's saproxylic fauna within its regional context. It comprised a survey of 18 of the monoliths from various habitat types across the site. These ranged from woodland and wood edge to pond side and grassland. They

were of varying age classes, structure types, states of decay and species (oak, maple, ash, beech, hornbeam and elm). The survey was carried out during the summer months. 26 species of beetle not previously noted on the site were recorded (including *Stictoleptura scutellata*, *Pyrochroa coccinea*, *Grammoptera ustulata* and *Cryptophagus micaceus*).

Examples of the monoliths from the survey are reproduced below:

The results (and ensuing discussions) from this survey suggest that the site has a good habitat range for the targeted species and would rank well in the regional (southern England) league table for its SQI (Saproxylic Quality Index). This has encouraged us to continue to monitor, create and maintain this valuable habitat type.

Many of the trees described in this article are featured in a VETree video about the creation of decaying wood habitats. This will be available for free download and distribution from the VETree website (www.vetree.eu).

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All images are the author's own: david.humphries@cityoflondon.gov.uk

