

NEVILLE FAY

Old trees: Liability for habitat



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Veteran trees are significant for their habitat, whether as individual isolated trees or in groups.

They are valued for their natural heritage and their continuity of habitat.

Whether old trees are found in wood pasture, parkland, public open space or private gardens owners and managers need to balance issues of accessibility, habitat and public safety.

VETERANS TREES AND THE AGING PROCESS

Trees annually lay down a sheath of new wood over the previous years growth with a layer of tissues that carry out the primary functions of transportation of water, carbohydrates and minerals. When eventually bark is damaged, seams of dysfunctional wood develop, no longer carrying out their primary role. While these wounds may be effectively compartmented, early colonisation by fungi and other microorganisms will occur that contribute to the aging process in the tree. As roots die, decay enters from below ground, assisting with trunk hollowing. As the outer canopy closes and internal branches die off from restricted light, live limbs also become redundant and break off, progressively introducing fungal decay from above. Gradually, the aging hollow trunk supports a reduced canopy with rejuvenated shoot growth on shortened viable limbs.

The progression of damage and dysfunction, while placing demands on the tree's storage and energetic systems, are fundamental to the survival 'strategy' of an organism that has evolved to attain massive scale and static energy for a long period of time in a fixed location. Certain fungi act upon wood tissue, altering the chemical composition of the principal constituents of wood, the lignin and cellulose, so that gradually wood is converted from a solid, strong structural fabric into a softer, weaker or more brittle material. These changes recycle nutrients and offer a range of habitats. This results in an increasingly complex ecology in and around the body of the tree with a succession of fauna and flora able to take advantage of the changing quality and structure of the woody substrate. Old trees characteristically have a multitude of different niches for dependant

wildlife species that are associated with deadwood, fractured branches, hollowing and rot in the trunk or branches. These characteristics are often the same tree features that are observed when assessing trees for signs of potential structural weakness.

THE ASSESSMENT OF TREE HAZARDS

A hazard is defined as a thing that may cause harm. Therefore when assessing trees for hazards tree inspectors such as foresters and arborists tend to concentrate their attention on those parts of the tree considered liable to mechanical failure, (if they were to break, fall and impact). Where there is a large cavity in a major limb, in which there are nesting birds or bats, this could be seen as a sign that the limb may fail - not because birds or animals are present but because the normal growth pattern appears to have been significantly altered.

The relatively recent discipline of 'biomechanics' focuses on the tendency of trees to lay down



This veteran oak tree provides a wonderful habitat for many different organisms. The dead branches in the crown are a natural feature of oak trees as they age but are viewed by many people as a potential hazard as it is possible that they could fall onto people or their property. However, the risk may be very low if the tree is situated well away from areas where people regularly go. Even if this tree was in a high risk area there are various management options that could reduce the risk without threatening the life of the tree.

increased amounts of new wood near regions of inherent weakness. This is known as adaptive growth. This has the effect of causing irregularities in form, which are termed 'defects'. From the definition of hazard, it is evident that any part of a tree that is associated with an anomalous shape may be taken as a sign of potential failure. Whether it is or not, requires further evaluation. Such readings are made from an understanding of the 'body language' of trees and when trained, the tree inspector should be able to interpret the significance of these signs, as not all 'defects' of form are true structural weaknesses. Adaptive growth often results in improved tissue quality and wood strength. How effective this is in compensating for the original mechanical weakness will depend on the nature and extent of decay site or weakness, the health of the tree, the length of time since the wound or defect originated and the inception of decay.

There have been many instances where veteran trees and their valuable habitat have been felled or damaged unnecessarily as a result of poor training and inappropriate use of hazard assessment techniques. Therefore improved levels of skill, understanding and training in evaluation are necessary to support effective conservation practices. In addition, recent developments in veteran tree management have increased the range of options and techniques available for management to reduce the risk of disintegration and extend longevity of old trees.

THE ASSESSMENT OF RISK

Risk in this context is not concerned with tripping or toxic effects of leaves or berries. Risk is concerned only with the effects of harm from mechanical failure in trees. It is important to recognise that nothing is without risk and that while occasionally trees may fail and do cause harm, compared to the motorcar the risks posed by trees are notably extremely small. However, the community tends to tolerate the harm caused by motorcars to a far greater extent than damage arising from trees.

Risk may be quantified as a probability or it may be classified e.g. very high to very low. However, in assessing risk it is not sufficient to simply evaluate the hazards, (i.e. the potential for parts to break). It is essential to identify whether people or property (the 'Target') are likely to be harmed in the event of mechanical failure. For example, if the tree is exceptionally small and is near to an area where people congregate, the failure potential may be high but there will be a low level of actual risk or harm arising from collapse or breakage. Similarly, if a large tree which is prone to shed heavy limbs is situated far from any buildings, pedestrian or vehicle routes, it may similarly be assessed to pose a low level of risk of causing harm.

The assessment of risk therefore needs first to take into consideration the uses and context surrounding the tree. To assist with this, the area within the falling distance of the trees should be assessed in terms of its usage and the volume of traffic ('the Target Area'). The Target Area is then zoned accordingly (the 'Target

Zone'). The highest level of usage will require the greatest level and frequency of assessment and of expertise, while the lowest level may not require regular inspection.

THE SAFETY POLICY

In order to fulfil the responsibilities of a reasonable owner or manager of veteran trees it is advisable that risk is seen as a part of an integrated approach to site management. The key values associated with the site will dictate the aims of the safety policy, management of risk and the resources allocated to various activities. For example if deadwood habitat and public access are both regarded as high priorities in the overall management objectives. A safety policy may require retention of aerial deadwood wherever feasible. If this is the case then it may be necessary to identify exclusion zones where the public are not permitted or are redirected beyond the falling distance of trees and maintenance of high levels and frequencies of tree inspection.

The initial risk assessment will identify the risk zones so that priorities may be placed on managing different areas and determining the level and frequency of arboricultural inspections and subsequent programmes of work. It is important that any inspection and work programme is not only conscientiously undertaken but can be demonstrated to be so, if required. Therefore, to meet this need it is advisable that records are maintained of all inspections, consultations and programmes of work, for records will certainly be required in the event of an accident occurring in order to demonstrate that reasonable measures have been taken to fulfil the responsible management of risk.

OPTIONS FOR MANAGEMENT

When considering ways to reduce risk to an acceptable level, it is always best, first, to explore measures to separate the target from the tree. This may involve re-routing of paths, relocation of assembly areas and restricting access. Additional non-tree solutions may involve planting of thorny material within the falling distance or creating mown paths to direct traffic. With regard to sensible tree management to reduce safety concern, options may include selective end-weight reduction on heavy limbs that are prone to failure, selective and phased crown reduction (restoration pruning) and the reduction of dead wood rather than its removal. Knowledge of the species and its failure potential, when supporting end-loaded limbs and dead wood, is important in specifying remedial work. For example, dead wood in oak trees is seldom known to fail compared with end-loaded live branches in the same tree. When undertaking limb reduction, current practice favours the retention of a stub 3-5 times the diameter of the branch, with the end cut artificially to appear like a natural fracture (Natural Fracture Technique).

Lastly, it is important to maintain a perspective on risk. Old trees have aesthetic, historic, cultural as well as biological value. They may contain consider-

able quantities of internal rot, cavities and dead-wood. In many cases they will pose a low level of risk if they stand in an area at a considerable distance from the public or vehicle use. However, where veteran trees are within high-risk zones and require inspection and management, as far as hazard assessment is concerned, they are simply a class of tree.

The fact that they are old and contain a variety of features that may signify structural defects does not automatically indicate that they are any more liable to fail than, for example, a younger tree approaching early maturity. It should be remembered, that in southern England following the great storm of 1987, many ancient hollow pollards were left standing, while their taller neighbours with solid trunks and full crowns were blown to the ground.

We enjoy these trees today at Windsor, Burnham Beeches, Hatfield and throughout the South of England •

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