



THE IMPORTANCE OF SURVEYING VETERAN¹ TREES AN EMERGING CRISIS IN OLD TREE POPULATIONS

Introduction

Treework Environmental Practice developed English Nature's Specialist Survey Method (SSM) as a consequence of a demand for improved survey consistency and data quality (Fay & de Berker 1997). The need was driven from the 'grass-roots' by individuals who were directly involved in the management of veteran trees. The formulation of the SSM was carried out through a multidisciplinary consultation process between members of the Ancient Tree Forum (ATF).

Since its publication, the Specialist Survey Method has been used as the national standard for veteran tree surveying and has been used to record veteran tree habitat at key sites with significant tree populations including Hatfield Forest, Epping Forest, Ashton Court Estate, Richmond Park and Dinefwr Park.

From a recent investigation into veteran tree recording to date, it is estimated that some 45,000 trees have been recorded either using the SSM or components of the SSM (Fay & de Berker 2003). Assuming that 1 in 200 trees have been recorded, as a conservative estimate, this would indicate that there are more than 9 million veteran trees in the UK. This might imply that with such numbers the associated habitat is secure. Veteran trees contribute extensively to UK biodiversity and are found in parkland, wood pasture, forests, hedgerows and the wider landscape. In recognition of the biological value of veteran trees, a number of Habitat Action Plans (HAPs) have been developed, each with conservation targets that include the protection of veteran trees (UK Biodiversity Group 1998).



The fate of many veteran trees in the UK, which have crown limbs prone to mechanical failure: Often crown limb loss threatens the viability of the entire tree. On most important parkland and wood-pasture sites the majority of the trees are in this condition.

Despite the declared intention to protect veteran trees expressed in various HAPs, experience indicates that the future of veteran trees in the UK is not promising. Through surveying, recording and monitoring a number of populations, evidence has been accumulated to reveal possible trends and the potential scale of the threat facing these habitats. Even at protected sites and those that are considered to be in the best condition (Cox & Sanderson 2001), populations have been found to be vulnerable to unsustainable rates of tree loss. Such circumstances pose a direct threat to the dead wood (saproxylic) communities.

Reducing the Risks of Tree Failure

The primary aim of managing old tree populations should be to ensure that no avoidable loss of veteran trees takes place², therefore remediation measures should be directed to enhancing tree longevity through a range of practices (Fay 2002).

¹ Between 1996 and 2000 English Nature led the Veteran Trees Initiative (VTI), a partnership of organisations involved with veteran trees. As a result of training, publications and promotional material that were produced by the VTI the term 'veteran tree' became widely used. For the purpose of this article, while there are distinctions to be made between them, the terms 'veteran', 'ancient' and 'old' are used interchangeably.

² This is the aim of the Ancient Tree Forum/Woodland Trust Partnership.



The cessation of pollard practice over the past two hundred years is a common cause of structural collapse in veteran trees, often leading to catastrophic failure (see Fig 1). Further threats to veteran tree continuity arise from pressures associated with intensification of agriculture, physical damage from human activity, pollution, compaction and deterioration in soil condition. Such threats have contributed to veteran tree decline and mortality, particularly in recent decades. The concern is that these pressures will lead to accelerated rates of loss of significant numbers of veteran trees, that will in turn lead to the break down of the continuity of habitat necessary for the persistence of local populations of a vast range of dependent organisms.

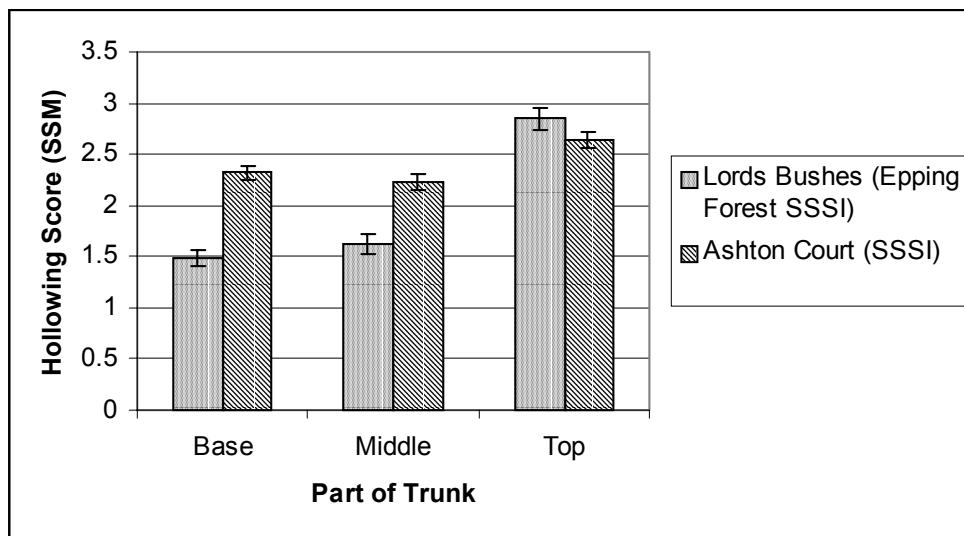
The solution to mitigating the adverse effects of these changes in historic management lies in improved systems of recording and monitoring, together with effective management programmes, particularly those that have been developed to support and mimic natural processes.

One of the recent major contributions to improved management practice has come from environmental arboriculture, which has introduced techniques to reduce the threat of tree loss as a consequence of mechanical failure. These techniques represent a departure from conventional arboricultural practice and are informed by natural processes that have been observed in old growth contexts and also through the experience of working on old trees.

The inherent condition of old trees necessitates that remedial practices should avoid increased physiological stress resulting from pruning while attempting to reduce end-loading. Therefore programmes are designed to remove the minimum foliar mass sufficient to reduce the end-weight, whilst encouraging rejuvenation processes within the canopy. This technique provides the means to develop a reduced, more stable crown framework with increased prospects for long-term tree vitality. This perspective requires phased programmes of long-term treatment that may span several decades. New approaches to management pioneered at premier sites such as Hatfield Forest have provided techniques for reducing stresses on the environment surrounding the tree.

Figure 1: Trunk Hollowing Results at Veteran Pollard Sites.

Data derived from surveys at Ashton Court (Bristol) and Lords Bushes (Epping) of 444 trees and 155 trees respectively. At sites where the veteran trees are neglected pollards, the extent of hollowing is significantly higher at the top of the trunk than at the base or the middle of the trunk. In maiden veteran trees trunk hollowing would be expected to be most common at the base. These trends are largely the result of large crown stems breaking at the mechanically weakened pollard points. Without arboricultural intervention the crowns of such veteran trees continue to fragment in this way leading to a potential terminal tree decline (error bars \pm one standard error).



Managing for a Sustainable Tree Population

The key to a sustainable population capable of supporting a functioning ecosystem is to consolidate the existing veteran population while ensuring that there are sufficient trees in the vicinity of current veteran trees that will develop into the veteran stage. This may require the recruitment of mature trees to create bridge saproxylic habitats, by mimicking natural damage through a process termed ‘veteranisation’.



Efforts aimed at the conservation of the specialised habitats that veteran trees provide have concentrated on the preservation of the living old trees. However to ensure that these habitats continue to be present in the landscape new trees must be recruited into the veteran population. Management for a sustainable tree population that is also targeted to maintaining functioning tree ecosystems needs to take into account that mortality and tree loss is present at every age class of tree development. By looking at the numbers of trees in each age class at a site and the rates of mortality in each age class the expected rate of recruitment into the veteran population over the following decades can be predicted. This form of modelling can identify expected change in the veteran population over time and is vital to understanding the actual vulnerability of the ecosystem at a particular locality. In many cases this method has identified the need to safeguard trees in younger age classes so that future habitat continuity is ensured. The need to plant trees has been highlighted in the past however the need to conserve mature and fully-mature trees is being increasingly understood.

Tree population dynamics has conventionally been used to model populations to favour utility, regarding the optimum target age-class as fully mature i.e. prior to the development of decay. Little consideration has been given to later age classes of tree, when saproxylic value progressively increases. Techniques of tree population management need to be developed to favour post-mature age classes. The numbers and mortality rates in each age class should be assessed and evaluated to ascertain whether these are sufficient to ensure adequate numbers of successors for the higher order age classes to produce a sustainable population structure. This may involve arboricultural intervention to reduce mortality rates in the older non-veteran generations. Site management techniques also need to be targeted to enhance tree longevity for all age classes.

It is possible that the life expectancy of a tree in the UK may now be shorter than ever before due to human influences on the environment with significant implications for the sustainability of veteran tree populations. There is concern that if the future veteran populations are too small or too fragmented to support local populations of dependent organisms then conservation efforts that are currently invested will have failed. To avoid these circumstances it must become a priority to target resources towards evaluating veteran tree populations within the context of their succession generations and the requirements to manage these at sustainable levels.

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References

- Cox, J. & Sanderson, N. (2001). *Livestock grazing in National Trust Parklands – its impacts on tree health and habitat*. The National Trust Estates Department, Cirencester.
- Fay, N. (2002). The Principles of Environmental Arboriculture. *The Arboricultural Journal* **26** (3) 213-238.
- Fay, N. & de Berker, N. (1997). *Veteran Trees Initiative: Specialist Survey Method*. English Nature.
- Fay, N. & de Berker, N. (2003). *Evaluation of the Specialist Survey Method for Veteran Tree Recording*. English Nature Research Report No 529, English Nature, Peterborough.
- UK Biodiversity Group (1998). *UK Biodiversity Group Tranche 2 Action Plans – Volume II: Terrestrial and freshwater habitats. Species and habitat action plans*. English Nature.