Ancient and Veteran Trees
Data collection and management opportunities in the New Forest National Park

on behalf of
Bryan Wilson
Senior Tree Officer
New Forest National Park Authority
South Efford House, Milford Road, Lymington, Hampshire, SO41 0JD

Neville Fay MA (Hons), FLS, MArborA, FRSA
Project Manager
Principal Consultant TEP

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Ben Rose BSc.(Hons) MSc. Dip.Arb.(RFS) M.Arbor.A MIEEM CEnv
Research assistant:
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1 INTRODUCTION

1.1 Background

1.1.1 This project is undertaken on behalf of the New Forest National Park Authority (NFNPA) by Treework Environmental Practice (TEP). Ancient and veteran\(^1\) trees are part of the cultural heritage of the New Forest National Park (NFNP) and they are also integral parts of the New Forest ecosystem.

1.1.2 It is widely appreciated that there is a very large number of veteran and ancient trees in the New Forest and that this population contributes in an important way to the forest’s landscape character and its habitat resource. Despite this, the NFNP has no current up-to-date or consistent system for finding, recording and monitoring this valuable resource.

1.1.3 Given that two key purposes of the New Forest National Park Authority are; a) the conservation and enhancement of the natural beauty, wildlife and cultural heritage and b) the promotion of its special qualities through understanding and enjoyment, this project, which aims to record the Park’s veteran and ancient tree population, highlight its cultural, biological and historic importance to determine conservation priorities, provides a prime opportunity to realise both these key purposes.

1.1.4 In addition to providing a brief for the implementation of a tree recording facility, this project seeks to review existing relevant tree data and identify stakeholders who could potentially participate in the recording and management of the veteran tree resource. The project aims to recommend data to be collected, appropriate to the level of engagement of potential stakeholders to inform future strategic management of this resource.

1.1.5 General project outputs are to:

- provide a record of current stakeholders and dataholders and a list of potential sources that are likely to add value to existing data, recommend an appropriate method for future data collection and storage
- propose a strategy for achieving a cost-effective means of data storage that:
  - reviews data fields currently used for recording
  - recommends additional fields where required
  - recommends an appropriate method for future data collection and storage
- provide a report summarising the outcome of a) and b) above, including reviewing the nature and extent of current data of the ancient/veteran tree resource within the NFNPA, and its quality - together with recommendations for further improvement and development.

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\(^1\) Technically, the term ‘ancient’ describes an age class; specifically referring to trees that are in their post-mature state and old for their species. The term ‘veteran’ identifies tree habitat features associated with dead wood and the colonisation characteristic of an ancient tree. In the text, the term ‘veteran tree’ is used interchangeably with ‘ancient tree’ unless a distinction between the terms is considered necessary.
• Make recommendations for:
  - collaborating with relevant organisations with reciprocal interests in the veteran resource that can add value to any future NFNPA initiative
  - propose a structure relating to veteran/ancient tree conservation which could provide a framework for stakeholders to engage in
  - propose long term measures for the management of data and information on veteran trees

1.2 Terminology: old, veteran and ancient

1.2.1 The term ‘veteran’ was given common currency during the life of the Veteran Trees Initiative (VTI), during which the terms ‘old’, ‘veteran’ and ‘ancient’ where explored to assist with the communication and exchange of ideas between landscape historians, ecologists, foresters and arboriculturists. In general ‘old’ refers to the chronological age of a tree, the time, if known, since planting. A veteran tree displays veteran features which represent woody habitat, i.e. the potential for colonisation. The term borrows the experience of a war survivor to describe a tree that has undergone ‘hard times’ and has lived to ‘tell the tale’, revealed in its ‘body language’. Veteran features often derive from abiotically induced damage or disturbance (stress induced decline, accumulation of dead wood, physical wounding).

1.2.2 Despite a tendency to use these terms interchangeably, it was considered helpful that clarification would benefit tree recording and conservation management. An early general definition of veteran used by the Ancient Tree Forum (ATF) described a tree that is of “interest biologically, aesthetically or culturally because of its age, size or condition” (Sisitka, 1996; Read, 2000). In this context “condition” refers to dead wood or decaying wood features. The reference to age may be qualified when considering that a veteran tree may have survived beyond the typical age range expected for the species (Lonsdale, 1999), acknowledging that different tree species have different average life expectancies and will decay at different rates. Clearly, here we are considering age as a “veteranising” factor and not just physical causes of damage, wounding or impacts resulting in physiological change.

1.2.3 Exploring the age connection further, from a dendrochronological point of view, as the tree ages patterns of growth relate to periods when the current annual increment (CAI) is spread evermore thinly over an expanding volume of the tree. In the maturing state the CAI increases, but there is a point when the cross-sectional area of annual rings begins to decline relative to the cross-sectional area, as a whole, when spread over the post mature tree. It is argued that when this state persists, this defines when the tree has entered the ancient stage (White, 1998). In this sense, ‘ancient’ is an arboricultural term, in the context of the aging process referring to an age-class when the tree passes beyond the ‘fully mature state’.

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2 In 1996 the Veteran Trees Initiative (VTI) was established by English Nature as a multi-agency partnership of non-governmental and governmental organisations to include the Ancient Tree Forum (ATF), the National Trust (NT), English Heritage (EH), Corporation of London (CoL), Forestry Commission (FC) and others with the aim of raising awareness of the biodiversity and heritage values of trees through publications, training and educational events.
1.2.4 The ancient stage is further divided into three phases, *early ancient* (with the onset of crown retrenchment), *late ancient* (where annual rings become discontinuous) and *senescent* (the onset of terminal decline) (Read, 2000). From study and from the experience of the ATF this senescent final stage is now considered to be ambiguous (or at least paradoxical) in that ancient trees can pass through a rejuvenation phase, sometimes on a serial basis, displaying “phoenix” properties (Fay, 2002), reflecting vegetative survival strategies, which provide the means for parts of the tree to live on when the parent or original parts decline or fall away (referred to as “breaking free from the system” (Fortanier & Jonkers, 1976, Raimbault, 1995)).

1.2.5 For most practical surveying purposes, guidance has been devised to account for the fact that veteran trees have a high level of physical complexity and, by identifying and counting veteran features and through recognition that different rates of growth occur in varying root environments, it is possible to take some account of the size of tree that might be expected to be typically ancient in observed conditions.

1.3 **Strategic view of NFNP tree data collection project**

1.3.1 *Background information:* This assessment has been carried out in cooperation with the NFNP, who has supplied relevant background material, including mapping information, records of past surveys and stakeholder recommendations etc., with the NPNF facilitating certain communications with potential stakeholders. Following initial discussion with Bryan Wilson, the NFNP Senior Tree Officer, and other contact individuals and organisations with interests in veteran/ancient trees in the New Forest were identified. Though wide ranging, these included both contacts at parochial level and some with specialist interests.

1.3.2 *Strategic considerations:* The strategy needs to consider the following factors; the project development stage, agreed aims, budget allocation, hierarchy of responsibility, project implementation with delivery times for defined stages, including start, launch, review and completion. To strategically address project objectives, certain organisations and individuals were approached with potential to contribute to the current or future development of the survey project, including stakeholders who might play a role by virtue of holding information, having potential to acquire information or having relevant skills and experience in data collection and management.

1.3.3 *Stakeholder options:* The assessment of stakeholder options needs to take account of agencies, governmental and non-governmental bodies, in relation to resource availability or influence that might be brought to a project. From a strategic point of view consideration should be given to whether organisations have potential as partners or as operators, e.g. connected to specific aspects of the project at different stages of development. As individuals and organisations will contribute in different ways, project planning needs to clarify the skill contribution and the ‘membership level’ needed; including whether this be in terms of leadership or practical contribution, human resource capacity and availability and specialist/local knowledge. In addition to the New Forest National Park Authority, key consultee-
stakeholders included Forestry Commission (FC), Natural England South East (NE), Hampshire Biodiversity Information Centre (HBIC), Hampshire and Isle of Wight Wildlife Trust (HWLT), Hampshire Biological Information Centre (HBIC), Hampshire County Council, and New Forest District Council (NFDC). These organisations have been involved in past surveys and recording of trees, habitat and conservation issues in the New Forest. It is considered likely that the involvement of these organisations in future data gathering would complement each other’s interests and provide mutual benefit; a strategic consideration is that the deployment of resources should avoid duplication and provide access to a wider pool of funding through the strength obtained by participation of appropriate partnership organisations.

1.3.4 Consultation: Other potential stakeholders were consulted with a view to their inclusion at functional level for contacts, surveying and recording, not necessarily for their principal organisational contribution. These organisations included the Woodland Trust/Ancient Tree Forum, the Ancient Tree Hunt and the National Trust. In this category the Ancient Tree Hunt is considered crucial to the success of the proposed project, operating nationally for the purpose of recording veteran and ancient trees with a web-based inventory. We consulted further with Andrew Bell, NFNPA officer who has a responsibility for geographic information systems (GIS). He provided guidance on data management systems currently used by the Authority. Based on these discussions our proposals for future data collection development have taken into account compatibility with existing facilities.

1.3.5 Management: The management structure of a broad-based collaborative enterprise needs careful consideration if the project is to optimise contributors’ efforts by identifying the functions of core participant organisations for the duration of the project and those that are subsidiary (with specific limited roles available for consultation or dissemination of information), or temporary (likely to be involved at certain stages). Though none may be less important than others, the levels of involvement need to be clarified at an early stage to avoid later conflicts.

1.3.6 Communication: Similarly, systems of communication need to be clarified and established between stakeholder participants, with particular reference to identifying; who is responsible for management, what are appropriate communication systems, channels and media for projected activities, how are different aspects of the project to be communicated, what frequency is communication to take place at and whether communication is to be one-way or reciprocal? This might consider, for example, the way information about the project should be made available and updated for different levels of engagement involving the general public, organisational stakeholders, others involved in specific operations, and what protocols should be used for data gathering.

1.4 The potential project benefits

1.4.1 A survey of the veteran and ancient trees would allow the New Forest National Park to:
• Identify the scope and scale of the veteran and ancient tree population
• Clarify the importance of the New Forest National Park for this tree population, both nationally and on a European scale
• Provide a well-informed framework for compliance with good practice for veteran and ancient tree management
• Increase the scale and enhance the quality of data held on this resource
• Place its own dataset within the context of other major local and national similar data gathering initiatives
• Undertake spatial analysis for future baseline monitoring, benchmarking and comparison
• Evaluate the sustainability of this resource through population analysis and assessment of attrition rates
• Develop a well informed, prioritised conservation management strategy to maintain sites in good condition
• Understand factors informing criteria for intervention
• Develop experience and obtain information as a platform for survey and conservation funding
• Build on past survey work and link into other related projects within the Park
• Meet objectives for social inclusion, stakeholder objectives and partnership opportunities
• Meet broader conservation objectives relating to grazing animals - their impacts and stocking densities, habitat fragmentation, linkage with other key conservation concerns (ornithology, bats and mammals)

1.5 The New Forest habitat and grazing history: the context for veteran tree surveying

1.5.1 The vegetation and grazing history of the New Forest’s ancient and ornamental woods and wood pasture system is well documented with many studies and authors describing an evolving treescape spanning a great many centuries (Spencer, 1997; Vera, 2000). Management practices have reflected cultural and historic traditions and even before its time as a hunting forest there is evidence of how species and habitats have changed, reflected in pollen records dating from the Bronze Age (Rackham, 1993).

1.5.2 Ancient trees may be maiden, coppice or pollard. Historical influences affecting the plains and wooded areas reflect transition stages in management, such as that between the seventeenth and nineteenth centuries, where trees surviving today have developed from periods when grazing levels were reduced or pollarding practice changed (Peterken and Tubbs, 1965; Tubbs, 1968). Certain currently surviving pollards may derive from a time before pollarding was stopped in the late seventeenth century, when the initiation of new pollards was proscribed, pollard practice being regarded to deprive the navy of timber (Muir, 2000). Though still found on wood banks Rackham refers to medieval ancient coppices falling into decay since the seventeenth century. He also refers to old surviving pollards uncut since 1698 (Rackham 1990).

1.5.3 There are conflicting views about such cases and it is thought that while pollarding oak ceased in the late seventeenth century with remnants in the landscape preceding this date, the major cessation of pollarding for fodder dates from 1851 when the Deer Removal Act no longer obliged keepers to feed deer, affecting species, such as holly,
cut for fodder (Sanderson, 1996). Old pollards that can be aged greater than 200 years may derive from the earlier period, before the end of the seventeenth century. Though there are many stands with numerous veteran pre-ancient trees, in the forest, and where beech has come to replace oak, there are also remnant high forest areas with oak and beech dating back many centuries. The opportunities for recording these veteran and ancient trees are therefore very considerable.

1.5.4 Given the importance of the site, the consequences of the cessation of pollarding on a flourishing holly understorey eventually led to light being restricted to beech and oak overstorey with adverse consequences on lichen communities. The reintroduction of pollard management to holly areas has been monitored and found to be beneficial. The relatively unpolluted condition and the great continuity of woody habitat of the New Forest favours epiphytic lichen communities with indicator species characteristic of lowland England’s Wildwood (Rose, 1992). Indeed Rackham refers to its unpolluted state making the New Forest “the supreme place in Europe for the special lichens in old trees.” (Rackham, 2003).

1.5.5 This continuity of trees on such a large site also favours a diversity of invertebrates, similarly testifying to an exceptional saproxylic richness of species dependant on veteran and ancient tree habitats. The area of wood pasture, the largest of its type in southern England having the highest UK score for saproxylic quality (Fowles, Alexander, & Key, 1999), is additionally remarkable as one of the most important decaying wood sites in Europe (Butler, Alexander & Green, 2002). Over recent years the sheer size of the New Forest, with 20,000 hectares of unenclosed woodland, heath, grassland and mires and with over 3,000 hectares of woodlands containing large numbers of old trees, whose numbers, though unknown, are estimated to be in the tens of thousands, has driven management considerations in the direction of landscape scale old growth dynamics.

1.5.6 Although abundant biological data has been collected over the years, there appears to be little detail regarding the arboricultural status of the veteran and ancient tree population. Nor does there appear to be quantified data sufficient to take due regard of veteran and ancient trees and their saproxylic habitat specifically connected to their biodiversity or to permit analysis of negative trends to inform future conservation management and planning in terms of population sustainability.

1.5.7 Given the rich accumulation of disparate biological data and the dearth of targeted information on the veteran tree resource, a project in the New Forest that focuses on veteran and ancient tree population is relevant in the context of other similar initiatives and is also timely.

1.6 Legal, regulatory, historic and current framework affecting Forest conservation and future recording

1.6.1 The unenclosed woodlands of the New Forest were safeguarded from commercial forestry by the New Forest Act 1877. Although precise interpretation of the wording of the relevant section is arguable, the Act confirmed the historic rights of the Commoners and prohibited the enclosure of more than 16,000 acres (65 km²) at any
time. It also reconstituted the Court of Verderers as representatives of the Commoners (rather than the Crown). Further New Forest Acts followed in 1949, 1964 and 1970. The New Forest Act 1964 constrained the Verderers and the Forestry Commission by stating that in all their functions the Forestry Commission shall have regard to the desirability of conserving flora, fauna and geological or physiological features of special interest - conservation values that are consistent with the importance conferred on the forest by subsequent biodiversity and habitat designations.

1.6.2 In May 1971 the Minister of Agriculture provided the Forestry Commission with a new mandate for management, which confirmed that the unenclosed woodlands should be “conserved without regard to timber production objectives” and adjusted the balance between commercial forestry, conservation and visual amenity objectives in the Statutory Silvicultural Enclosures, running counter to a prevailing Forestry Commission policy concerned with commercial exploitation of broad-leaved woodland and the widespread planting of conifers. Management and planning policies were published to conserve the important facets of the Forest and reduce the impact of damaging factors, including from cars and recreational use. A New Forest Consultative Panel formed, comprising forty-six bodies, involved with management and recreational use of the Forest.

1.6.3 The New Forest was designated a Site of Special Scientific Interest (SSSI) in 1971, and was subsequently granted special status as the "New Forest Heritage Area" in 1985, with additional planning controls added in 1992. The New Forest was proposed as a UNESCO World Heritage Site in June 1999 and became a National Park in 2005.

1.6.4 The profound significance of the New Forest in UK and European nature conservation terms is reflected in its various designations as an EU Special Area of Conservation (SAC), a Special Protection Area for birds (SPA) and as a Ramsar Site. The New Forest National Park, extending to approximately 58,000 hectares (29,000 of which comprise the New Forest Special Area of Conservation (SAC)) is part of the network of Natura 2000 sites, comprising a range of habitats and supporting a rich species’ diversity. These include wet and dry heaths, valley mires, bogs, wet and dry acid grassland, wood pasture, beech woodland, oak woodland, and riparian, bog and Inclosure woodlands. The New Forest Biodiversity Action Plan (BAP) identifies conservation values, objectives and targets.

1.6.5 The Natura 2000 citation recognises not only the biodiversity, but the social context and history in which such biodiversity flourishes. Within a pastoral economy based on the existence of Rights of Common, cattle and ponies extensively graze areas of the New Forest, historically maintaining the wood-pasture and pasture-woodland landscape character; a key component in maintaining the wooded and heath habitats (Tubbs, 1968). A SAC Management plan, prepared in 2001, seeks to maintain the area’s good condition by conserving, enhancing and maintaining the special habitats.

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3 The 1992 European Union Habitats Directive is designed to protect seriously threatened habitats and species. This complements the Bird Directive (1979) requiring member states to designate Special Protection Areas (SPAs) and Special Areas of Conservation (SACs); the former protecting important areas for rare and vulnerable birds, the latter protecting other rare and vulnerable species and habitats.
1.6.6 The Natural Environment and Communities Act (NERC Act: 2006) extends the biodiversity duty set out in the Countryside and Rights of Way (CROW Act: 2001), setting out a duty on public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity. The duty as set out in Section 40 states that: “Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”, and applies to all local authorities, community, parish and town councils, police, fire and health authorities, and utility companies. In the context of the NERC Act, a successful outcome of a New Forest veteran and ancient tree recording project will serve to strategically redress knowledge deficiencies and enable the NFNP Authority to meet its duties in this respect.

1.6.7 Priority habitats and species cannot be managed in isolation. The conservation of ecosystem structure and functioning is a key component of the Ecosystem Approach, in that it is necessary to consider ecosystems as a whole and recognise how the different components function and depend on one another (and that such relationships respond to climatic and other environmental changes). The highly fragmented condition of ecosystems, typical of much of the UK, will be a major constraint for the long-term viability of many species and habitats.

1.6.8 A key biological study for Nature Conservancy Council highlights the value of old trees to the ecology of the New Forest, confirming that they are a major contributor to areas of scientific importance: “The widespread representation of older age classes of trees, which in turn support an invertebrate fauna and epiphytic lichen flora unequalled in diversity in any other British woodland; and a breeding bird fauna unique in its representation of species dependent on old, dead and decaying timber or on the invertebrates of these habitats.” Several earlier studies have noted that there are distinct regeneration phases detectable in the unenclosed woods. The Numbers of old large oaks (girth greater than 5m, termed Pre-A-Generation) are in marked decline: “Measurement of 100 oaks of girth greater than 4m, in 17 unenclosed woods, shows that there is an abrupt fall in numbers above 5m. So far, throughout the Forest, only 24 oaks have been recorded with girths greater than 5.2m, trees which have survived the intensive felling of the 17th Century” (Flower & Tubbs, 1982). Trees of this generation are, almost without exception, of short-stemmed wide-branching habit, with wide growth rings in their youth, all the result of development in unshaded, open conditions. Most (but by no means all) of the large resource of dead timber in various stages of decay, derives from the A and pre-A-generations, mainly of beech. It comprises a biological resource of great importance as an invertebrate habitat.”

1.6.9 The report lists the conservation of wood-pasture as a primary management objective for the area “to conserve, in particular, the older generations of trees, and dead and fallen timber, on which much of the woodlands’ rich epiphytic lichen flora, and bird and invertebrate fauna depend.”

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4 An ecosystem approach, as referred to in the 1992 Earth Summit in the Rio de Janeiro Convention on Biological Diversity, provides a framework for looking at whole ecosystems in decision making, and for valuing the ecosystem services they provide, to ensure that we can maintain a healthy and resilient natural environment now and for future generations (http://www.defra.gov.uk/wildlife-countryside/natres/dea.htm).
1.6.10 The importance of this early unenclosed woodland survey work and its recommendations for their management lies in focusing on conserving the spatial and structural diversity of unenclosed woodlands and relic areas of the Statutory Inclosures. Taking the view that a blanket non-intervention policy was not desirable, this Nature Conservancy Council report (1982) is particularly concerned to conserve the older generations of trees and dead and fallen timber. The appreciation of this forest, being Britain’s largest natural assemblage of ancient and veteran trees, together with its exceptional associated habitat, has led to the New Forest’s highest conservation priority being the retention and management of the quality of the ancient tree resource (Spenser, 1997). Helping to quantify the resource will be an important contribution to implementing this commitment.

1.6.11 The Forestry Commission undertook a detailed survey of the New Forest Crownlands as part of the LIFE II Project 1997 - 2001 (Cooch, 2001). The LIFE II Project sought to restore heathland and woodland habitats. The monitoring and survey work focused on understanding factors that have influenced and can inform improved management to achieve favourable habitat condition. This detailed survey project, based on nine transects in eight sites in the New Forest, refers to the large numbers of veteran trees. The report refers to ‘veteran’ and ‘old’ trees and a dataset is held with the Forestry Commission on spreadsheet. It cites the New Forest harbouring perhaps the largest concentration of veteran trees in the United Kingdom and possibly over most of north Western Europe, some 45,000 to 55,000, in addition to which are veterans in old Inclosures. The survey adopted species size criteria, assessed general population characteristics and recommended resurveying to evaluate tree status to assess wood pasture condition. The scale and importance of the veteran and ancient trees in the New Forest, highlighted in the Cooch 2001 study, underpins the worth of more accurately identifying and quantifying this resource.

1.6.12 The European Union Partnership Project, PROGRESS, (Promotion and Guidance of Recreation on Ecologically Sensitive Sites), which ran from 2003 to 2007, is an interesting model for stakeholder partnership and participation in which the Forestry Commission provided leadership, engaging with other statutory organisations (principally Natural England) and public involvement. This PROGRESS project explored the impacts of the social and tourist economy upon natural features and resources within the New Forest and the Forêt de Fontainebleau, two of Europe’s most ecologically valued wooded landscapes with exceptional recreation value. Fontainebleau and the New Forest participated in this project in the face of risks posed to them from escalating visitor levels with the key aim of finding ways to reconcile conservation and recreation needs. An earlier research report on sustainable management of recreation in the New Forest had identified the need for ‘An holistic recreation management strategy’ which looked at recreation as a form of sustainable land use, (Byrt and Edwards, 1997). This 1997 report recommended the assessment of specific environmental problems, identification of measures to ensure the sustainability of indigenous species emphasising the importance of monitoring the health of habitats and species as an audit facility contributing to effective management strategies. Principally addressing recreational impacts upon the environment, it nonetheless attempts a clarification of what constitutes ‘sustainability’ and ‘unacceptable harm’ in environmental terms. The report emphasises that an
adequate understanding of environmental damage requires long term monitoring to establish its extent and duration.

1.6.13 The PROGRESS project was characterised by the use of a number of features and processes that could be valuable as a model for partnership arrangements and for engagement with the public and stakeholder groups. It focused on pilot schemes, prioritised geographically and according to specific concerns relating to sustainability and conservation impacts. The project operated by means of a stakeholder forum (e.g. Forestry Commission with 30 other members including nature conservation groups, local businesses and statutory organisations), project implementation (supervised data collection involving the public and subsequent compilation, modelling and analysis of records), plan of action (formulated by FC staff in consultation with stakeholders), implementation of recommendations (practical measures), progress assessments (consultation, presentation of information and reporting of outcomes), and project conclusions (a conference defining future action). It is understood that the PROGRESS team has secured joint funding from the Forestry Commission and other government statutory bodies for a further five years of monitoring beyond the project 2007 completion date.

1.6.14 If the proposed New Forest veteran tree project is capable of making links with other initiatives and related pioneer schemes it may have potential to draw on wider national and European funding streams. Synergic opportunities have the potential to transform the funding and durability of projects. In considering this kind of option, forging links with other ventures and National Parks in the UK and Europe with similar interest may open opportunities to enhance the project potential to obtain wider resources. The PROGRESS initiative provides an interesting model process that may have application to the current project.

1.6.15 An interesting outcome from the PROGRESS initiative is the award-winning ‘Walking in Mind’, a health and well-being New Forest project involving teaming together of the Forestry Commission and Hampshire Partnership NHS Trust scheme. The project offers fellowship through countryside exploration. Though in its early stages, the collaborative project brings sectors of the public closer to the wildlife associated with wooded and ancient tree landscapes and is aiming to roll the scheme out throughout Hampshire and Dorset with the intention of it being taken up across the NHS. It is suggested that the NFNP veteran tree recording project explore links with this and similar projects to assess the potential for enhancing public support, methods of engagement and potential partnership funding.

1.6.16 The compilation of relevant population data is crucially linked to understanding the condition and sustainability of the veteran and ancient tree resource. As such it contributes to previous biodiversity, habitat and Forest use surveys, providing the means to develop a long term strategy, to manage the sustainability of the ancient tree habitat, minimise fragmentation and adverse impacts that threaten this keystone species. Resulting survey information will inform long term conservation strategy including extension and buffering of the habitat. These potential benefits from the proposed survey constitute a strong argument for leveraging in partnership arrangements and resources in support of a veteran tree recording project.
1.7 Planning context for protection of ancient and veteran trees

1.7.1 In considering the role of the NFNP Authority as a planning authority, the proposed appraisal is in line with statutory, national planning policy guidance in that planning strategy is required to be duly aware of planning implications for veteran trees. The collection of good data on veteran trees, particularly in areas of recognised biological importance, is necessary for the Authority’s formulation and implementation of its planning policy. Veteran trees are formally recognised in national planning guidance as an important natural feature. “Development plan policies and planning decisions should be based upon up-to-date information about the environmental characteristics of their areas. These characteristics should include the relevant biodiversity and geological resources of the area. In reviewing environmental characteristics local authorities should assess the potential to sustain and enhance those resources”. According to the Key Principles of Planning Policy Statement 9 (PPS9) “Plan policies should promote opportunities for the incorporation of beneficial biodiversity and geological features within the design of development”.

1.7.2 The NFNP, being located in one of the richest ancient woodland and wood-pasture sites in the UK, has specific responsibility towards the veteran tree resource from a planning perspective. This is reflected in the following statement: “Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland”. As the importance of ancient woodland is recognised, in that “Once lost it cannot be recreated” local planning authorities (LPAs) are required to “identify any areas of ancient woodland in their areas that do not have statutory protection (e.g. as a SSSI)”. As LPAs are instructed not to grant consent for developments resulting in the loss or deterioration of ancient woodland “unless the need for, and benefits of, the development in that location outweigh the loss of the woodland habitat”, therefore such decisions will need to be informed by reliable information of any threatened resource. As guidance recognises that “aged or ‘veteran’ trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided” planning authorities are required to “encourage the conservation of such trees as part of development proposals”.

1.7.3 Additionally, planning authorities are required to take account of the fact that “veteran and other substantial trees and many types of woodland, especially ancient semi-natural woodland, can be of importance for biodiversity conservation. When considering whether particular trees or woodlands merit a TPO in the interests of amenity, local planning authorities should, where appropriate, include consideration of their nature conservation value” (Para. 91, ODPM Circular 06/2005).

1.7.4 The development of up-to-date records of the existence of veteran and ancient trees within the curtilage of the NFNP Authority is a precursor to informing relevant planning policy and decisions for veteran and ancient tree protection by insuring that

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these trees are mentioned in relevant sections of local development plans. This will provide a mechanism for recognition within the planning system so due weight may be accorded to their protection. *This project supports a range of conservation principles covering veteran trees in recent planning policy guidance. The compilation of relevant accessible information is an essential aspect of protecting veteran trees and their related habitat.*

1.8 **The potential for recording veteran and ancient trees to supplement and enhance previous data**

1.8.1 Lowland parkland and wood pasture form a priority habitat. \(^7\) Research has shown that at certain key UK lowland ancient tree sites (e.g. Burnham Beeches, Richmond Park), while there may be local abundant collections of trees, attrition rates are sufficiently high to jeopardise the ancient tree population in the medium term without there being an appropriate management strategy; with, in some cases, attrition rates reaching levels of 16% over a decade\(^8\).

1.8.2 A broad forestry or landscape scale perspective, though informative in the general quantitative sense, does not necessarily address veteran and ancient tree population trends or parochial impacts upon dependant species associated with decline, loss and sustainability of saproxylic habitat. The current proposal for a veteran and ancient tree survey addresses many of the policies requiring appropriate management of features of conservation value within the New Forest SAC and SPA. *It offers the potential to understand the nature of the resource and add value to existing survey data. Key benefit would result from quantifying the number and distribution of living veterans, identifying the sustainability of tree population age classes and identifying gaps, where bridge habitat may be required to maintain substrate levels.*

1.8.3 There has been a long history of public engagement and responsibility in the New Forest. This readiness for involvement in the life of the Forest might usefully contribute to the aspect of public participation in the veteran and ancient tree survey. Democratic involvement, identifying and engaging stakeholders, carries both opportunities and pitfalls. Confirmed by experience of the Ancient Tree Forum, Woodland Trust’s Ancient Tree Hunt and other related tree recording projects, the charismatic subject of ancient trees generates strong public appeal. The success of the ATF and ATH is testimony that the subject of ancient trees is capable of attracting wide public involvement, appealing to heritage, history, cultural and educational interests. On the other hand, it is worth considering, when developing a tree recording project dependant on public engagement, that promoting the topic can lead to high expectations which, in turn, unless properly resourced and planned from the outset, carry the risk of disappointing participants. *Effective planning, careful consultation and management of public interest and participation, will be key to avoiding the above pitfalls.*

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\(^7\) Rio Convention (1992) established the fundamental commitment of signatory nations to the importance of safeguarding biodiversity. In the UK this commitment was resolved into the establishment of a Sustainable Development Strategy, resulting in the UK Biodiversity Action Plan (1994). The UK Biodiversity Steering Group Report (1995) identified action plans for priority habitats (HAPs) including lowland wood pasture and parkland.

1.8.4 The proposed veteran tree survey will need careful planning to ensure capacity is available to support the initiative. To optimise the potential for involvement the project development will need to take account of the levels of interest and their potential to add value to the organisation of information. It will be important to strategically distinguish areas of involvement and roles to be fulfilled by, (a) professionals or individuals or organisations with specialist interest and (b) volunteers and non-professionals, who would be recruited for survey participation. Both professional interests and ‘lay’ interests will need to be identified and carefully addressed.

1.8.5 The experience of the Ancient Tree Hunt is relevant to public engagement and will help planning the type and level of involvement with stakeholder groups. Having been in existence for over two years the ATH has successfully managed to mobilise public enthusiasm and could in certain respects help with a project, both in terms of assisting with its launch and planning how resources might be efficiently directed to avoid conflicts. Given the size of the New Forest, the scale of the project promises to be substantial and therefore demands strong leadership. It is recommended that a project of this nature be led by the New Forest National Park Authority in partnership with the Forestry Commission to consolidate the wealth of knowledge already accrued through long-standing management of the forest. It will be important to identify areas of skill and levels of involvement in support of the overall aims of gathering data and disseminating information, necessary to achieve a durable system for recording. These elements will be important for ensuring that new data can be integrated with existing records, and also that this is consistent with other parallel projects with common objectives that might be current during the life of this initiative.
2 STAKEHOLDER OPPORTUNITIES & BENEFITS

2.1 Early developments in veteran tree recording

2.1.1 The Veteran Trees Initiative and Ancient Tree Forum. The Veteran Trees Initiative (VTI), set up by Natural England’s predecessor English Nature\(^9\), is an example of a multi-disciplinary stakeholder partnership. It suggests a possible model insofar as it had far reaching impacts - achieving changes in conservation and influencing societal perspectives and professional standards through publications. It also helped to define good conservation management practice and develop education and training on this important topic. The VTI was established by English Nature in 1996 as a multi-agency partnership which included non-governmental and governmental organisations (the Ancient Tree Forum (ATF), the National Trust (NT), English Heritage (EH), the Corporation of London (CoL), the Forestry Commission (FC) and others).

2.1.2 VTI publications. Key publications emerged from the VTI including comprehensive guidance for the good management of veteran trees (Read, 2000), a systematic standard for surveying veteran trees from a habitat point of view (Fay & de Berker, 1997) and guidance on veteran tree risk management (Davis et al., 2000). In its four-year life, the VTI marked some important developments for veteran trees, the fruits of which are now beginning to be harvested; not only for conservation and recording but also in British arboriculture, forestry and agricultural practice. The terms ‘tree ecology’ and ‘conservation arboriculture’ have come to be incorporated in mainstream arboriculture, reinforced through an understanding of the ‘tree as habitat’\(^10\). The significance of the VTI illustrates how a well-orchestrated initiative, within a reasonably short time, can improve management practices. This partnership model, has now also applied to the Ancient Tree Hunt (ATH) (involving the Woodland Trust (WT), the ATF and the Tree Register of the British Isles (TROBI)), demonstrating that core-funded stakeholder consultation can create significant opportunities through sharing resources and information.

2.2 Identification of Stakeholders

2.2.1 Veteran trees are found throughout the NFNP. The co-operation of landowners and managers will be important for a successful project. When commissioning this report

\(^9\) The government agency responsible for nature conservation at that time; from October 2006 its functions were incorporated within ‘Natural England’, the statutory organisation charged with “championing integrated resource management, nature conservation, biodiversity, landscape, access and recreation” (English Nature website August 2006).

\(^10\) The VTI publications and training has been successful in improving public and landowner knowledge about the importance of veteran trees and professional awareness as well as influencing British arboricultural standards e.g. BS5837 (British Standards Institution 2005) and planning guidelines for biodiversity and geology conservation (ODPM 2006).
the NFNP Senior Tree Officer, identified contexts where stakeholders of different persuasions, who as landowners would likely become involved through there being veteran or ancient trees on sites for which they are responsible. This identified trees in different landscape settings with indications of landowner categories as follows:
- Crown Lands (FC, Lyndhurst, Inclosures, Open Forest, Riparian sites)
- Churchyards (Winchester Diocese, church parish councils)
- LA Schools (County Councils)
- Highway Verges (County Councils)
- Private Schools (Walhampton, Moyles Court)
- Open Spaces and Commons (Parish Councils)
- Private Parks and Estates (e.g. Beaulieu, Cadland, Paultons, Hale Park, Pylewell Park)
- Farmland (Country Landowners’ Association, National Farmers’ Union, individual landowners)

2.2.2 The above landowner contexts and responsibilities for veteran trees suggest the range and type of stakeholder that could become actively involved over the lifetime of a tree survey project. Given the value of veteran trees for nature conservation, cultural heritage and landscape history, they draw upon professional, specialist and general interests engaging with ecologists, foresters, historians, archaeologists and local enthusiasts. With such a variety of interest, it is important to consider the degree to which the project would seek to function through an inclusive forum and if so how to manage the level of participation sufficient to carry the impetus of a survey to conclusion. This suggests that at least two levels of participation would be appropriate for a project such as this:
- a forum in which discussion and information can be shared, including those who may be involved in surveying or tree ownership
- a management team with active participants meeting to define policy, strategy and oversee and monitor project implementation

2.2.3 A forum would be important for developing the support for the project and engaging public interest in veteran and ancient tree surveying. It would also help with obtaining data, facilitating exchange of ideas and communication, economising resources and generating and maintaining interest during the life of the project.

2.2.4 At present there is no agreed ‘lead body’ that is responsible for veteran tree recording in the NFNP. It is likely that this is one of the main reasons that the existing information on the veteran trees within the NFNP is limited and diffuse. It is proposed that a group of stakeholders be formed into a management team, a key function of which would be responsibility for recording, collating and maintaining records and ensuring adequate data quality and that other stakeholders be consulted and/or directly engaged who can contribute to information, conservation and management. These stakeholders would have varying levels of involvement at stages throughout the project.
2.3 Levels of organisational involvement

2.3.1 Below is an attempt to categorise the involvement of potential stakeholders. This is a non-exhaustive list intended to indicate the level and type of engagement appropriate for a project of this nature.

- **Lead organisation**
  Primary project lead organisation / Project leader
  NEW FOREST NATIONAL PARK AUTHORITY
  This scoping project has been initiated by the senior tree officer at the NFNPA. Initial investigations for this project have demonstrated that, while there are specialist studies, there is very little relevant accessible extensive information available on the numbers and condition of veteran trees in the NFNP. This project is timely, as the importance of veteran trees is increasingly widely recognised through a number of agencies and initiatives over the last decade that have culminated in a major national drive, the Ancient Tree Hunt (see 2.6 below). The NFNP is well placed to derive considerable benefit from such wider initiatives and thereby easily obtain public support for its veteran tree recording efforts.

- **Lead organisation**
  Primary project lead organisation / Partner leader:
  THE FORESTRY COMMISSION
  The Crown lands cover around 26,756 hectares of the New Forest. Since 1924 this land has been managed by the Forestry Commission, on behalf of the Secretary for State. The Forestry Commission is required to “plan and manage the provision for access and recreation for local people and visitors to the New Forest in ways consistent and compatible with conservation of nature and heritage.” veteran tree recordings around Crown Land within the Forest falls within the Minister’s Mandate for recreation\(^1\), which for 1999-2008 identifies the Forestry Commission’s objectives for the management of the Crown lands to be:
  - conservation of the natural and cultural heritage as the principal objective of management;
  - community engagement through greater public participation in decision making, promotion of rural development opportunities, provision of access and recreation opportunities and increasing public awareness and understanding,
  - insofar as is consistent and compatible with the first and second objectives, efficient management of the Forestry Commission’s operations and appropriate generation of income from timber production and other uses of the Crown lands.
  A survey of the veteran trees in the National Park would meet these objectives. Additionally, as the Accord between the Association of National Park Authorities and the Forestry Commission provides a framework for the two organisations to work together at a national and local level to deliver shared objectives, the FC is ideally placed to be a lead partner in this initiative.

• *Lead organisation*
Potential partner:
NATURAL ENGLAND
As the statutory body for Nature Conservation in England, Natural England is responsible being lead agency for the biodiversity and habitat action plans, and therefore is concerned to ensure good quality and adequate sustainability of the NFNP habitats. Important in this responsibility is gathering and maintaining records concerning veteran and ancient tree populations and associated habitats about the New Forest. Natural England can bring to bear a significant range of expertise for the benefit of the project and its involvement will be essential when deciding upon conservation and management.

• *Secondary lead organisation*
Key support partner with special role:
THE ANCIENT TREE HUNT (Woodland Trust)
The Ancient Tree Hunt began in 2004, as a joint venture between the WT, TROBI and the ATF. It has to date collected some 18,000 records. It is supported with Heritage Lottery Fund funding and grant aid from the Esmee Fairbairn Foundation. Assisted by volunteers and many partner organisations, the ATH aims to record 100,000 ancient trees throughout the UK by 2011 and through these means to improve the understanding and conservation of Britain’s veteran and ancient tree population. The ATH has developed an online interactive database that enables users to find details of ancient trees, whether they be recorded through local involvement or professionally collected from wide-ranging surveys. The database makes it clear which trees can be easily visited. Once verified, data can be accessed at a national, regional or local level and information can be used for purposes of education, community engagement, natural history, cultural interest and conservation.

• *Secondary lead organisation*
Support partner with special role:
HAMPSHIRE BIODIVERSITY INFORMATION CENTRE (HBIC)
In the UK there is an enormous amount of biodiversity information that has been gathered over the years by all manner of organisations and individuals. Much of this is derived from volunteer effort through national and local societies and recording schemes. The UK government (through its conservation and environmental agencies), local government and non-government wildlife-related organisations all collect and use biodiversity data. One of the principal means of collation and interpretation of this data is the network of local records centres. This information is of great value in understanding the distribution and abundance of species and habitats and of great potential benefit for informing decisions for wildlife protection. The Hampshire Biodiversity Information Centre (HBIC) covers the area containing the NFNP. HBIC will be an important partner to help maximise the benefits of the project.
• **Tertiary organisation**  
Special role (ownership):  
THE NATIONAL TRUST (especially large estates)  
The National Trust owns several Parklands and Estates within the National Park. The organisation has been pro-actively managing veteran trees for many years and it is understood that they will soon be appointing a person to manage veteran tree recording across the whole estate. It is natural for the National Trust to be a stakeholder in this project due to the shared objectives and the mutual assistance that any local recording scheme and the National Trust team could provide each other.

• **Tertiary organisation**  
Local authority: tree responsibility / management services  
Hampshire County Council  
Hampshire County Council manages council-owned land within the National Park boundary. It is unlikely that they have large numbers of veteran trees but if a recording system were developed their tree officers and other staff would use it when they did come across veteran trees.

• **Tertiary organisation**  
Nature conservation / recording & management potential  
Hampshire & Isle of Wight Wildlife Trust  
The Hampshire and Isle of Wight Wildlife Trust are a well established and active organisation. They offer a variety of education opportunities for people of all ages and it is likely that they can bring valuable expertise to the volunteer management aspect of the project. In addition they also have a network of volunteers and means to publicise such a project. The local trust also has relevant experience having spearheaded the Hampshire veteran tree recording project in the 1990s. Furthermore the Trust provides management advice to landowners and these could be excellent opportunities to help identify veteran trees and improve their management in the local area.

• **Tertiary organisation**  
Local authority: tree responsibility / management services  
New Forest District Council - Tree Team  
The New Forest District Council manages council-owned land within the National Park boundary. It is unlikely that they have many veteran trees on their land but if a recording system were developed they would use it when they did come across veteran trees.

• **Tertiary organisation**  
Professional support / specialist consultancies / societies / educational organisations  
Independent Specialist Consultants  
Biological Societies  
Universities  
E.G. Alan Lucas (British Mycological Society); Dr. Neil Sanderson (British Lichen Society); Treework Environmental Practice (arboricultural / environmental), Ancient Tree Forum, Local History Groups, Parish Councils, Universities (Portsmouth - Land Management Research Unit, Southampton - GeoData Institute).
There are numerous consultants and individuals that have expert knowledge and skill sets that could be of benefit for the project. Such advice includes expert arboricultural advice or the taxonomy of dependent organisms. Professional support from private individuals or consultancies will from time to time be valuable for the project and provision will need to be made when it is considered necessary to recruit relevant support, experience and knowledge to add value to the project.

2.4  Considering the potential role of the Ancient Tree Hunt

2.4.1 The Ancient Tree Hunt has managed to galvanise thousands of people nationally in finding and mapping old trees across the UK. It aims to be at the heart of the Woodland Trust’s veteran and ancient tree conservation work. It is currently in the process of creating a comprehensive, interactive database of ancient trees with the intention of being an important step towards their protection and good management. Relevant examples of partnerships the ATH has developed include those with the National Trust, the Lake District National Park (LDNPA) and the Kent Favourite Trees Project (KFTP). The latter two partnerships have been established recently and as initiatives they have similar aims to that of the NFNP project. *As the ATH works through such partnerships supporting veteran tree surveys that are being carried out by different interest groups, it is anticipated that it will be a key partner providing a valuable resource to this NFNP project.*

2.4.2 It is apparent through direct communication with the ATH that its partnership experience with the Lake District National Park provides a model for potential engagement with the NFNP project. It is understood that a NFNP veteran and ancient tree recording project could benefit from this wider relationship, obtaining assistance with:
- Developing work time tables with the stakeholders
- Providing suggested milestones for achievement
- Identifying funding requirements / opportunities
- Assisting with training and other relevant survey resources (e.g. Key Stage 3 resources and Train the Trainer)
- Assisting with devising working group meetings
- Meeting targets and assisting with problem solving
- Assisting with learning exchange
- Supplying ATH resources to participants, facilitators and verifiers
- Land owner liaison advice
- Networking with relevant stakeholders through the working group
- Developing regional and national PR opportunities under the ATH umbrella
- Underpinning the future role of the NFNP as an expression of a sustainable outcome beyond the lifetime of the ATH initiative (2011)

Given that the ATH has started a related project on a national scale it is important that records obtained in the NFNP project are compatible, and are suitable for incorporation within the ATH dataset and that ATH data can flow in the direction of the NFNP project; this approach will ensure that the benefits of this survey will be maximised.
3 CONSIDERING EXISTING DATA ON VETERAN TREES IN THE REGION

3.1 The European LIFE Project

3.1.1 Eight ancient woodlands on crown land within the National Park were surveyed during a European LIFE funded project based with the New Forest Forestry Commission. It is understood that this data included girth recordings of individual trees. Few individual trees appear to have been recorded in the main report of the EU LIFE II project (Cooch, 2001). Extrapolations from this dataset suggest that there could be 55,000 veteran trees on Crown Land within the New Forest. For the purposes of this project the European LIFE Project should be regarded not as providing a dataset of veteran and ancient trees but rather as a valuable resource indicating where surveying and tree recording might be targeted and prioritised.

3.2 Hampshire Wildlife Trust Survey

3.2.1 It is known that there was a veteran tree survey managed by the Hampshire Wildlife Trust (HWT) during the period from 1995 to 1998, comprising some 59 records of which 32 are considered to reside within the NFNP. The data is held by the Hampshire Biodiversity Information Centre. The digital records consist of a grid reference and tree species; however the paper recording sheets contain more detailed information. This dataset has not been updated since compilation. Some anecdotal information suggests that some of these trees have already been lost in the time since the survey was carried out.

3.3 The Ancient Tree Hunt and Tree Register of the British Isles

3.3.1 The Tree Register of the British Isles (TROBI) has a long-established track record in tree recording and measuring and now works in close partnership with the ATH (and the Ancient Tree Forum). TROBI assists with data management and has incorporated relevant records from its own dataset onto the ATH dataset. TROBI mostly records trees with greatest girth and height (whether native and non-native) and trees notable for their origin and provenance. However, the organisation does not itself hold significant quantities of data on veteran trees and very little data on veteran trees in Hampshire. It is understood that all of their records have been incorporated into the ATH dataset.

3.3.2 The Ancient Tree Hunt (ATH) currently holds 234 verified records on veteran trees for the whole of Hampshire, a considerable number of which have yet to be verified. As the NFNP only covers a portion of Hampshire it was necessary to use GIS to identify which records represented trees within the National Park. Using an overlay of the NFNPA boundary and adding all the existing records for Hampshire we have been able to produce a plan showing where the recorded trees are located. This is provided as a plan at appendix 4.
3.3.3 From these efforts it is apparent that the ATH holds some 76 records of veteran trees that have been verified and a further 32 unverified records within the NFNP (apparently being derived from a list recorded primarily by the Hampshire Field Club and Archaeology Society). The number of verified trees has not significantly changed since original report compilation and these trees are shown in the plan in the appendix to this report.

3.4 **ATH / TROBI and WWT records**

3.4.1 A summary of ATH numbers (verified and unverified and the numbers from the HWT) is provided in Table 1. The numbers in the table differ because both the ATH and HBIC hold data for the whole of Hampshire and only some of these trees are located within the National Park boundary. In attempting to clarify the data the records were placed in a GIS overlay and those in the National Park boundary were extracted as shown in Table 1.

3.4.2 In our view of the fairly limited data provided, the data from the ATH are the most reliable. We expect there are true veterans (ancient trees and veterans with habitat features corresponding with those expected in the ancient age class; see Appendix 5). Until verified, records are not treated as currently valid. It is noted that the HWT survey was carried out some ten years ago and it is also likely that these records will include trees that have been subsequently lost. It is also our view that it will be impossible to locate some of these trees. As the HWT records are neither current nor reliable, it is not considered an effective use of time to attempt to verify these data and therefore, as the dataset is questionable, it is advised that it should be used only as reference.

3.4.3 In summary, the data quality of the three sets of data is shown in Table 1. The order of reliability in these datasets is: ATH (verified) > ATH (unverified) > HWT survey (unreliable/out-of-date).

3.4.4 The map provided in appendix 4 shows the locations of each record. Though some of the records in the HWT survey and the ATH surveys share a similar approximate six figure grid reference, all of these records have been individually checked and as far as we can judge it appears that the records refer to separate trees. Where trees appear close together they have been given the same grid reference. Improved mapping from a new survey could avoid similar ambiguities in the future.

3.4.5 In conclusion, considerable steps have been made in elementary recording efforts since first undertaken a decade ago in Hampshire. Following a decade’s promotion by Natural England (English Nature), the Ancient Tree Forum and the Woodland Trust of veteran tree recording, systems and methodologies have become increasingly reliable, corresponding to increased levels of investment in surveying and raised public awareness and interest in veteran and ancient trees. With perhaps over 50,000 veteran trees on Crown Land, in comparison the relatively small number already recorded illustrates that there is much survey work to be done if a significant proportion of this valuable resource is to be assessed and recorded. Given appropriate organisation and resources and the enthusiasm of stakeholders it should be possible to market the project effectively, trading on the charismatic wildlife symbol that ancient trees represent. Assuming adequate resourcing, it is anticipated that a significant
A proportion of the NFNP population of veteran and ancient trees could be recorded within five years.

Table 1: Veteran tree records for trees within the National Park boundary

<table>
<thead>
<tr>
<th>Type of Record</th>
<th>Number of records</th>
<th>Action</th>
<th>DQA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATH Verified</td>
<td>76</td>
<td>No action</td>
<td>1</td>
</tr>
<tr>
<td>ATH Unverified</td>
<td>28</td>
<td>Verify</td>
<td>2</td>
</tr>
<tr>
<td>HWT unverified</td>
<td>32</td>
<td>No action / discount dataset</td>
<td>2/3</td>
</tr>
</tbody>
</table>

Data Quality Assessment (DQA)

1. **Good:** Data reasonably up to date and capable of being readily verified, information for verification purposes likely to be complete, recording competence and/or accuracy reasonable, fair date compatibility with national system, robust data collection to demonstrably reliable standards (including training and verification)

2. **Moderate:** Data reasonably up to date, reasonably capable of being verified but with some difficulty and/or information for verification purposes may be partial, recording competence and/or accuracy possibly questionable and/or partial compatibility with national system and/or data collection method within demonstrably reliable standards (including training and verification)

3. **Poor:** Data not up to date, not easily capable of being verified, recording competence and/or accuracy questionable and/or incompatible with national system and/or data quality poor and/or survey not current and/or not within demonstrably reliable standards (including training and verification)
4 PROJECT RECOMMENDATIONS

4.1 The veteran tree survey structure

4.1.1 Project aim and structure. Attempting to paraphrase, I would propose that the key aim of the project is to better understand and conserve the veteran and ancient tree population in the New Forest National Park by means of surveying and recording the resource. It is also understood that serving this aim, the project will need to establish a structure for stakeholders to able to engage at a management and operational level with an operational plan for achieving short, medium and long term objectives. The project will require a management structure and a business model with a timeline for delivery determined by capital and budgeted income streams and costs. It is expected that the structure will reflect the project’s ‘philosophy’ - partnership and stakeholder involvement, robust survey and data management, community participation, working in service of national and New Forest conservation, planning, social inclusion and health and well being policy objectives.

4.1.2 Project entity and management structure. At the earliest stage the project aims and stakeholder group will need agreeing in order to define the direction and management priorities. The project identity will need specifically defining, i.e. whether it is to be an independent organisation, ad hoc or formally constituted task-and-finish initiative and/or subsumed within the structure of one or other partner organisations. As discussed in 2.2.5, a management team will need to identify lead and support organisations and agree roles, responsibly, policy, strategy, a project plan including funding and implementation strategy. Stakeholders are likely to participate either at management level, i.e. contributing to the management team as primary lead or subsidiary partners or at a tertiary support level. The management team will, according to agreed objectives, need to obtain resources and oversee the project. The second, support tier, operating on a non-managerial forum basis will contribute special skills, such as communications, and assisting with access and recording, i.e. interest groups, landowners, educational and other supporting organisations (see 1.6.13). An important element will involve reviewing current information on data, comparable initiatives, partnership opportunities, audit of potential contributing organisations, data management requirements and sourcing, staff and human resource allocation, marketing and communications strategy. Clearly, at the early stage it will be necessary to decide which key stakeholders will take responsibility for leading roles. A decision will need to be taken as to recording methods, data storage and management. It will be likely that one person will need to be tasked with responsibility for directing the project for the duration and ensuring accountability. The management team will need to establish whether it is equivalent to a part-time or full-time role and/or whether in whole or part of this will be carried out ‘in-house’ or contracted. The project management will define standing agendas for regular progress meetings between stakeholders and review stages over the life of the project.

4.1.3 Stakeholder recording and data handling. As a primary function of the project is the need to establish responsibility for recording, collating and maintaining data, it will be essential to identify and engage stakeholders who are able to lead these operations.
This is likely to require contractual arrangements including partnerships with organisations capable of piloting the recording system, initiating a tree recording team and clarifying the means to ensure data quality.

4.1.4 Project planning. The business model, based on an agreed project vision and timeframe, will identify a range of requirements; capital, real income sources, contributions in kind, stakeholder financial evaluation, and hidden and real costs and will need to define budgets over the project period together with targets and review stages. The management plan will define stakeholder roles and responsibilities.

4.1.5 Public involvement. There are several ways in which the public can get involved in a project such as the veteran tree hunt and one of the best is as volunteering as a veteran tree recorder, finding veteran trees and submitting the records. The role of the veteran tree survey co-ordinator would include recruitment and support for volunteers. In order for the dataset to be of use it is important that the individual records can be trusted as accurate records of veteran trees. The criteria for identifying a veteran tree in this survey will need to be formally agreed. It will then be necessary to explain the classification system to the recorders. This can be done by a number of means but these should at least include information sheets and training days. It is suggested that all information sheets are made available online.

4.1.6 ATH model for elementary surveying. It is proposed that when operating at the elementary tree recording level each record should be verified by a trained record verifier to ensure that the standard of survey is consistent. This system is used by the ATH and is used on other local veteran tree recording schemes. Assistance from volunteers will be required in record verification and so it will be necessary to train up a team of skilled veteran tree record verifiers. The ATH will be able to help with this training. As the aim of this project is to set up a working system it is expected that this will be possible within a set timeframe.

4.1.7 Targets and comparable initiatives. Since the resource is unknown and veteran trees are transient entities, it is unrealistic to aim to record all the veteran trees within a set timescale but instead to set targets subject to periodic review. It is sensible to liaise with other relevant regional and national organisations working on similar projects in order to optimise opportunities for this project, including National Parks, County Councils, Royal Parks, City of London and Wildlife Trusts. The Lake District National Park Authority and Kent County Council have embarked on a similar procedure with the ATH and it would be useful to discuss opportunities and challenges from the experience of these initiatives.

4.2 Project promotion and launch

4.2.1 Launch and local media. To optimise on public involvement it is advised that the project be formally launched supported by an advertising campaign through e.g. local media and the auspices of the Ancient Tree Hunt system. This would exploit the importance of veteran trees, invite the public to be involved and provide basic points of contact. This might coincide with an event offering an opportunity for volunteer
engagement. ATH could substantially support this process having an existing infrastructure for exactly this purpose and such occasions.

4.2.2 Educational, health and well being opportunities. The NFNP website would be an important point of contact explaining the ambitions of a recording project, also providing tree recording forms and offering certain events where the public could join in searching for ancient trees. Connections which offer synergy with other projects with compatible aims could be drafted at a fairly early stage where mutual benefit might easily be obtained. Opportunities for participation and engagement with other projects might be very broad, for example there would be scope to tie into:

- health and well being policy agenda through ‘Walking in Mind’ (joint Forestry Commission and National Health Service)
- Education policy requirements through:
  - International Baccalaureate Diploma Programme CAS curriculum requirement (creativity, action, service)
  - Hampshire County Council’s ‘green’ approach to IT
  - Hampshire County Council’s ESD curriculum requirements - Education for Sustainable Development

4.2.3 Project website. It will be important that a website is developed well in advance as part of the early-stage strategy to publicise the project and connect through an access point providing the means for involvement across a range of roles on offer. The website could serve to support surveyors providing a reference they can give to landowners legitimising their approach to survey.

4.2.4 Introductory information. An introductory leaflet will be important containing the NFNPA logo. This would assist volunteer surveyors to promote the project when encountered in the field while surveying. It will be necessary to provide a range of evidence demonstrating that the project is officially endorsed. Further information on the value of veteran tree would also assist in educating the general public on the issues involved.

4.2.5 Early stage seminars and training events. It will be both helpful for setting standards and for promoting aspects of the project to explore a range of ways to raise the profile of veteran trees and the benefits of surveying them. Provision of training, workshops, seminars and leaflets would serve to encourage public participation, offer educational value and set standards.

4.3 Setting criteria for identifying veteran trees

4.3.1 Surveying objectives and criteria for identifying veteran and ancient tree status. In section 1.2 and at appendix 5 of this report I have discussed our current understanding of the ageing process and criteria that inform definitions of veteran and ancient status in trees. Experience, however, shows that in spite of there being good guidance available it can be difficult to communicate what a veteran tree is (and what it is not) - not least because different species of tree age in different ways. Further guidance is provided at appendix 2 from the Ancient Tree Hunt, building on a decade’s experience of the Ancient Tree Forum and Treework Environmental Practice. In
addition to the above, guidance has also been provided for different purposes by various bodies of what the terms ‘ancient’ and ‘veteran’ tree mean including the Department for Environment, Food and Rural Affairs (Defra). The ATF has been concerned to ensure that, while definitions are important in setting criteria, the perception of ‘ancientness’ in trees can be understood in terms of the ageing process (Fay, 2002).

4.3.2 **Scope for confusion.** These various approaches to defining the veteran and ancient qualities and properties of trees have been driven by the purposes of various activities; conservation grant aid (Defra; Heritage Lottery Fund appraisals (HLF)), protection (Natural England HAP), and population research (NE, TEP). Criteria for inclusion, i.e. defining what is to be recorded as a veteran tree are not always widely understood or generally accepted, even at a professional level of surveying. While we are moving closer to a wider agreement as to how many features are required for a tree to be classed as veteran, current definitions are not necessarily universally accepted. This can become problematic when the value of some sites is exaggerated based on a loose set of criteria and similarly very important sites may be undervalued if the criteria are particularly stringent and not well understood by the surveyor.

4.3.3 **Elementary standard of veteran tree recording and training.** The Ancient Tree Hunt operates at SSM Level 1 and as such demands no greater knowledge than that required to undertake an elementary veteran tree survey. The ATH has good and consistent guidance but, gaining from experience, has revised and refined some of its criteria for veteran tree identification since starting the initiative. In the interests of conformity and the mutual benefits to be gained from sharing data, it is recommended that Ancient Tree Hunt criteria are understood and applied in the NFNPA project. It is also advised that consistent with the ATH and the VTI some years ago, a series of workshops and / or training events for volunteer surveyors be included in the project strategy.

4.4 **Sites with multiple veteran trees**

4.4.1 **Background context as a factor in surveying.** Sanderson undertook a review of existing data sources on Inclosure habitats in the New Forest (Neil Sanderson, 2007), in which the conversion of areas of pasture woodland to Inclosures between 1700 was described and how original pasture woodland was cleared to be replaced by new woodland (with the exception of Burley Old Inclosure). Despite this history, it is understood that after 1851 some relic areas of original pasture woodland survived intact within Inclosures. Although large areas of the original oak plantings were felled and replanted, significant patches of the original planting survive in both 18th and 19th century Inclosures. It is expected that such areas will contain veteran trees and associated dependant lichens, fungi and invertebrates, many of which may be nationally or internationally rare or threatened. Whilst it is a conservation priority to identify these areas (under the UK Biodiversity Action Plan) it is not likely to be of great value to survey all of the veteran trees in this area individually. However, the identification of veteran trees within the NFNP may help identify areas that were once open pasture woodlands and possibly help direct future management at particular locations.
4.4.2 Surveying individual veterans and groups. Given a gap in value between individual veteran trees and populations of veteran trees it is suggested that the veteran tree recording project establish a protocol for identifying important populations of veteran trees. For example there could be a threshold of 30 veteran trees within an ecological unit above which the recording of individual trees is not requested, rather in the first stage a map of the area and a count of the veteran trees be undertaken. Any such criteria would need to be accompanied with guidance notes to help classify groups of trees as a population and what other information would be useful e.g. the landowner’s details.

4.5 Setting Standards and Training

4.5.1 Data management. The accumulation, storage and management of information may need special consideration in terms of the skills needed to support the collation, storage and processing of data, requiring knowledge of tree recording / mapping processes and facilities, data collection methods / transfer protocols, reliable application of electronic or paper resources, and interaction with other data collecting facilities (including other projects or specialist surveys). As data management for the effective use of software and hardware will be fundamental aspect of creating a reliable tree recording facility, the range of skills needed should be evaluated to inform training requirements, whether for in-house provision or the recruitment of external skills.

4.5.2 Basic survey training. A co-ordinated survey with all recorders meeting basic standards is important for the quality of biological recording. With so many tree species and a variety of forms that veteran trees can take there is ample opportunity for confusion and differences in opinion about qualifying criteria and perceptions of tree value. For this reason training and guidance in the value and identification of veteran trees will be important. This should include criteria for including veteran trees, identifying ancient qualities as explained through printed guides, as well as through a project website and special events. Initial training might focus on the importance of tree identification. Volunteers may need support and practice in recognising trees, both when in leaf and during the winter months.

4.5.3 Verifier training. It would be an advantage to have a trained team of local verifiers. Apart from helping to ensure that submitted records can be rapidly endorsed, from the experience of other projects, verifiers, when formed into a coherent group provide one another with support as well as other volunteers. A verifier group can also significantly contribute in other ways, becoming important advocates for the project with intimate knowledge of important trees within the NFNPA.

4.5.4 Volunteer support events. Discussions with those involved in related projects (such as the volunteer co-ordinator for the Lake District National Park Authority) indicate the value of follow-up events in supporting volunteers and maintaining recording standards. In their experience such events provide a good opportunity to maintain contact with a team of volunteers while addressing individual training requirements through reviewing submitted records. Site-based support events are considered the
best way of training, as this combines reviewing principles and methods of surveying when recording trees in the field.

4.5.5 Survey team coordination/project team support. In the formation stage of developing a tree recording facility, it is anticipated that a project team will be created on which individual roles will be directed to sustaining different project activities, including survey strategy, project planning and coordination, data management, volunteer standards and support and public relations. It will be important to define the appropriate skills for those required to carry out such duties. It may be that specific training for project team members for particular skills will be required. It is advised that the need for this type of assessment is considered in the project plan.

4.6 Access issues

4.6.1 Landowner sensitivity. The NFNP covers an area owned by a variety of different landowners and it is very important for the aims of the project that landowners have a good impression of the project so that they view veteran trees as an asset and are open to learning about how to manage them. Therefore any contact between landowners and project members needs to be carefully considered. With this in mind, it is important that recorders enter sites only once they have appropriate permission. The project management team will need to provide guidance on how permission is obtained. At the LDNPA a dedicated member of staff is responsible for contacting landowners and arranging access.

4.6.2 Formal landowner arrangements. For Crown Land it is expected that access will be achievable as the survey is in accordance with Policy B7-2: ‘We will provide opportunities for local people to become actively involved in the protection, promotion and enhancement of the Forest’. It is suggested that private landowners are contacted via their land agents. Hugh Milner of the Forestry Commission will be able to provide details of which agents represent particular landowners.

4.7 Suggestions for adding value to the records

4.7.1 Holding a record for a veteran tree on a managed database is useful. However there are some additional ways in which these records could conserve the veteran trees and their associated species. Landowners could be informed about the importance of veteran trees and how they can contribute to the project as a whole, the success of which will in large measure be attributable to the quality of participation of those capable of influencing good management of the wildlife resource. The experience of the Woodland Trust and Ancient Tree Forum is that engagement with landowners with responsibility for veteran and ancient trees presents both an opportunity and a challenge; an important opportunity to offer guidance on their protection and management (see the fact sheets in Appendix 3). Whilst there may not be funds available to assist in the costs associated with management to protect veteran trees, guidance on how to reach available funds may be an aspect of this project.
5 VETERAN TREE RECORDING OPTIONS

5.1 Introduction to veteran tree recording and recommended fields

5.1.1 Early origins - the VTI. Before 1996, a broad range of methods were used for the purposes of recording veteran trees. These varied according to the needs and interests of the surveyor, ranging from invertebrate specialists focussing on decaying wood habitat, tree surfaces important for the lichen and bryophyte specialist and arborists observing decay sites to evaluate failure potential. An impetus to systematise veteran tree data recording in the UK arose from an Ancient Tree Forum meeting at Ashton Court, Bristol, in response to a general concern from a broad range of specialists that data was neither easily accessible nor capable of being integrated and compared. The Ancient Tree Forum’s initiative to develop a broad-based approach was endorsed and later funded by then English Nature (now Natural England), resulting in the publication of the VTI Specialist Survey Method (Fay & de Berker, 1996) (see 1.2.1, 2.1.1 - 2.1.3).

5.1.2 Specialist Survey Method data range. The Specialist Survey method (SSM) for veteran trees operated at three levels (Levels 1 - 3). Level 1 is in leaflet form with tick boxes (also applicable to simple spreadsheet or database). SSM Levels 2 and 3 is in booklet form and provides detailed guidance on all the fields required for entry together with data collection sheets for up to 15 trees per page (with capacity fort 300 trees per booklet). The SSM first requires that site details are recorded including grid reference, ownership, site status, access, visibility and information on recorder, date and organisation. As SSM Level 3 has the greatest data field requirement and SSM Level 1 the least, these are reviewed in reverse order below.

SSM Level 2 and Level 3 comprise fields accommodated within five broad categories: Tree Data, Tree Form/Vigour, Tree Habitat, Tree Associates and Tree Management.

SSM Level 3, being the comprehensive version, contains the full suite of fields considered applicable for data input by specialists and / or generalists with sufficient knowledge and concerned with tree habitat assessment and biodiversity (see appendix 6). It is intended to provide capability for tree habitat baseline data collection and to facilitate the means to identify trees for further species specialist investigation. Level 3 permits a total of 36 fields to be collected for any one tree.

SSM Level 2 is designed for use by generalists and non-naturalists with an interest in and reasonable knowledge of veteran qualities of trees. It holds a subset of the fields contained in Level 3. Level 2 excludes certain tree fields, i.e. some measurement fields and the more complex items of tree form, some dead wood habitat fields and certain management fields. Level 2 permits a total of 23 fields to be collected for any one tree.
SSM Level 1, termed Introduction to surveying ancient trees, is designed to facilitate elementary tree recording for non-specialists, including members of the public and schools. This is for people who could be easily trained to collect information on a tick-box basis. The Level 1 form is in two parts, the first relating to general site and recorder information, the second containing thirteen tick-box fields including a list of species, girths, aspects of tree form and dead wood habitat.

5.1.3 Ancient Tree Hunt (ATH). The Woodland Trust / Ancient Tree Hunt have based the ATH data collection system on SSM Level 1. The ATH survey recording form permits data to be entered in three ‘steps’. These are:
- Step 1 being the minimum required includes fields for grid reference (10 figures), species and girth.
- Step 2 contains fields for public access, tree form and setting
- Step 3 contains fields for tree associates (fungi, birds, invertebrates, epiphytes), condition, protection and threats
The ATH has been developed as a web-based digital entry facility following the Level 1 model closely. Being particularly concerned to engage with the public it records trees at an elementary level.

5.1.4 Value of recording at different levels. Data collected at the level of SSM Level 1 or the ATH are valuable in providing easily-accessible core information and for recruiting relatively ‘unskilled’ surveyors. It is, however, anticipated that in scoping the range of fields that may potentially be required, it is important to take account of the fact that SSM Level 1/ATH represents a subset of the full range of data ultimately likely to be required. The design of a NFNP veteran and ancient tree recording database will need to account not only for the elementary survey level but the optimum level of data likely to be required to satisfy the anticipated range of project interests. Therefore the database design as a minimum needs to accommodate all the required fields in SSM Level 3 and an easy facility to exclude desired fields for specific survey purposes.

5.2 Potential applications for compiling and analysing information

5.2.1 Spreadsheet and other IT considerations. The NFNP may wish to consider the less expensive and potentially versatile use of paper-based data collection combined with spreadsheet facility for both working in the field, and on desk analysis and exporting. Spreadsheets require good design and ideally refined construction equal to that of a database, typically using defined fields and drop-down tables combined with text fields. It is not anticipated that a spreadsheet will be used in the field, whether for complex or elementary data collection, the method not lending itself for use on tablet or field computers.

5.2.2 Recommendation for database option. On balance, while the use of spreadsheets should not be discounted as a method of managing data within the project where appropriate, it is advised that their value will best lie in exporting and transferring data from and between databases and in desk inputting. A database system has the clear advantage in the capacity for accessible querying and filtering of data and is expected to better meet the range of requirements for field data collection and for
desk inputting, analysis and reporting. It is also more suitable for the range of data-collection devices likely to be used in the field.

5.2.3 *Database potential.* Assuming a database is adopted as the means for collecting tree survey information such a facility is likely to be most valuable if it has the capacity to store and manage a very wide range of information to meet a variety of purposes. A database would facilitate recording, collation and analysis of information and good report production and presentation. It is anticipated that data so collected will inform future tree assessment, including condition and population trends.

5.2.4 *Data field requirements.* In considering the design of a database, optimally this would take account of future anticipated applications. It should have the capacity to link with other databases or be augmented by additional data from related projects, including the ability to append specialist (e.g. species related) assessments. In considering the range of fields to incorporate in the database, it is important that the number of fields available for recording account for the highest reasonable level of data fields required, rather than in the first instance being pitched at the lower elementary entry level, even if in the early days of its use only selected portions of data or a database are required (6.1.4).

5.3 *Mapping*

5.3.1 *Minimum requirements.* A modern biological recording project needs an accurate mapping system. Therefore it is a fundamental aspect of this project that all trees surveyed are georeferenced. Given the open nature of the New Forest, it is likely that less than eight figure grid references will be insufficient for the purposes of identifying individual trees. In addition to providing the means for data verification, GIS records support the monitoring of individual trees and allow assessment of population distribution and trends. All veteran tree map records would ideally be centrally held on a dedicated project database and mapping system, as this would ensure that records can be maintained and managed in a facility recognised by partners, stake holders and outside organisations. Such a facility would provide the means for future data transfer when required. *It is recommended that each tree has a unique number for database indexing purposes. In addition, each tree requires a unique coordinate, with a minimum of 10 figures (compatible with the ATH) while 12 figures would be optimal, providing sub metre accuracy).*

5.3.2 *Mapping support / other organisations.* An interactive mapping system such as that devised for the Ancient Tree Hunt could be invaluable. Such a system, together with ATH facilities, could benefit the NFNP recording project both in terms of training and recording accuracy, thus providing a means of cost-effective support in obtaining accurate community-derived veteran tree location data and in helping to ensure these are properly recorded and verified. *It is recommended that partnership arrangements be explored with both the Ancient Tree Hunt (verification and training to specifically assist with tree position training) and with Hampshire Biodiversity Information Centre (HBIC) for support with obtaining data and temporary data holding. The latter is likely to become increasingly important as, given that the ATH is a relatively*
short-lived project, a regional role may arise for taking on aspects of data management (hitherto managed by the ATH).

5.3.3 Map-linked spreadsheet option. Were the NFNP Cadcorp GIS system applied and it was desired that this be linked to a spreadsheet, I would have confidence that a suitable spreadsheet for data management could be designed to generate tree positions on plans. Similarly, following the spreadsheet scenario, NFNP could develop viewing forms in-house and database structure using its own expertise or through assistance from TEP.

5.3.4 Data sharing. Data sharing is an important objective, subject to there being satisfactory protocols to guide this (including maintaining copies and back-up data). Data sharing will be a valuable aspect of the partnership and collaborative arrangements with the Forestry Commission, the ATH and HBIC.

5.3.5 Integration with NFNP GIS. The NFNP operate a Cadcorp GIS system. This would be a suitable platform for managing georeferenced data. Whether linked to a spreadsheet or a database, as it is already well tried and accepted in-house, it would be cost effective to utilise this system though possibly requiring some adaptation to accommodate the desired method of tree data collection. Fundamentally, while the Cadcorp GIS system can be considered if made available for this project to be an asset, support and adaptation will be required to ensure compatibility with other systems used.

5.4 Discussion of system options - advantages and disadvantages

5.4.1 Paper recording system. Clearly, the opportunity costs of the above options need to be considered and should budgets be highly constrained and a low survey entry level proposed, one should not discount the possibility of a paper-based data collection system, requiring inputting at a later stage into an appropriately designed funded database. However, our experience and from reviewing former well-intended surveys, including by Wildlife Trusts and some local authorities, is that unless properly funded to account for the true costs of inputting and maintaining data electronically at a later date, paper-based surveys at best end up as exactly that, an un-collated paper-based resource (Fay, & De Berker, 2003). Therefore a paper-based data collection strategy is not recommended as the main platform of any data gathering method, but rather as a support for a digital system, which it is advised should be developed from the outset. Paper-based forms will have a place and can be useful when engaging the public. When doing so, a coherent strategy will be necessary for their design and for procedures for distribution, collation, filing and digital transfer.

5.5 Discussion of advantages / disadvantages / options: data methods & database system

5.5.1 Data recording systems. This section attempts to summarise key considerations in relation to IT options for in-house development, existing external facilities combined with a dedicated project system and commissioning/applying an off-the-shelf dedicated database system. The options considered are:
- NFNP In-house Development of Database System
- Ancient Tree Hunt as the principal basis for tree recording and data management
- Off-the-shelf professional database with full project capability

5.5.2 **NFNP In-house Development of Database System.** I understand from discussion with NFNP information technology staff with database and mapping expertise that there is considerable in-house capability for development of systems capable of incorporating the recommended data fields and lists of values (look-up tables), should this be required. 

*The advantages* of this option are that NFNP would have:
- in-house support
- full ownership of data & intellectual rights
- capacity for further in-house enhancement and development as and if required 

*The disadvantages* of this option are that there would be a need for:
- a defined specification with costs associated with time, consultation and personnel resources at every stage of development and use
- database validation and field trialling with potential for delays; experience of field database applications is that this needs specialist input from experienced users
- in-house support which will rest with individuals who, should they move on, result in support being lost to the Authority if not sufficiently managed 
- Should the development phase be protracted, there will be a likely dependence on paper data collection with attendant costs for filing and inputting
- in-house accountability to stakeholder group for effective IT management

5.5.3 **Ancient Tree Hunt as the principal basis for tree recording and data management.** This option considers the scenario where NFNP obtains a license to use the ATH facility for plotting and data collection as the main platform and facility for recording. This would build on the existing ATH model where members of public interact directly with the web-based facility. Working with the ATH in this way would provide a facility for tree-by-tree gradual accumulation of data. Data so derived would, in common with ATH procedure, need verification. Volume data (e.g., from SSM population studies) are uploaded via spreadsheet export and import. This could also be supported by professionally trained surveyors or specialists carrying out bulk surveys either on paper (later entered into system) or on field computers onto spreadsheets (later bulk-up-loaded in accordance with licence).

*The advantages* of this option are that NFNP would have:
- web-based, compatibility and comparability with similar types of survey/data
- a publicly accessible and interactive database with high public engagement potential
- partnership support for training and verification as well as linkage with other similar ATH associations
- immediate functionality at entry/elementary data-collection level
- a web-based data facility that does not require local IT resources at the elementary level

*The disadvantages* of this option are that it would:
- be restricted to the ATH format, entry-level fields and values for data collection
- require higher levels of data requirements (above ATH elementary level) would require ancillary database or spreadsheet development
• limit the recording system to data collection only, also excluding independent or local means of amending/verifying data
• not provide a database generated facility for tree management or a means of local analysis to aid conservation strategies
• likely depend on an intervening stage between data collection (possibly in part paper-based) and ATH inputting
• likely result in a significant measure of data inputting drawing on in-house resources

5.5.4 Obtaining a ready-to-go off-the-shelf system with full capability for the range of facilities required. This option explores the potential for an off-the-shelf dedicated professional database system. There are various tree survey and management databases that are variously adaptable and would to varying degrees require modification to serve the optimum requirements for recording and managing data on New Forest veteran and ancient trees. All current arboricultural databases have advantages and disadvantages over one another. Most have principally been designed for tree plotting and recording as a means of obtaining tree inventory data, for risk assessment and formulating tree management programmes.

5.5.5 Professional tree survey databases - Arbortrack/Ezytreev. TEP is familiar with all currently used tree inventory and management databases having tested them in the field for a number of years on commissioned tree surveys and have explored their advantages and disadvantages. The leading databases of this kind include Arbortrack and Ezytreev. Facilities of such databases include tree/vegetation recording and management, embedded mapping, and desk-based and in-field platforms including for handheld tablet computers. They have been primarily designed to address risk assessment and reporting and have subsequently evolved to incorporate tree-related planning, contract management and in some cases veteran tree recording. Adequate databases are Ordinance Survey-compatible with GIS and aerial photography capability. They are variably customable to meet specific design requirements.

5.5.6 TEP system. In addition to the two systems mentioned above, Treework Environmental Practice has designed for its own and its clients’ use a veteran tree survey and management database with fully integrated GIS. This has been specifically developed as a result of twenty years’ experience in veteran tree surveying, drawing on the combined experience of colleagues. The MyTrees system has been specifically enhanced for efficient, fast veteran tree field-based data collection, recording and data analysis both for SSM Level 1 to Level 3 integrated with map-based management and analysis while also containing within the standardised version extended facilities, TEP SSM Level 4 to Level 6.

5.5.7 System requirements. Should the NFNP agree that it would be advantageous for this project from the outset that a database facility should used, it is advised that such a facility would require capabilities designed for professional veteran tree survey and management. A key requirement is compatibility with ATH and SSM Level 1 is essential as is full facility for SSM Levels 2 to 3 and for replicating electronic survey forms (e.g., ATH), detailed habitat recording and in-built tree population analysis. It is essential that such a system provides desk-based and in-field ability for easy tree recording and field form design. It requires full mapping capability integrated and
easy to use for digital mapping, geo-referencing and spatial analysis. In-built facilities should include capacity for managing veteran tree issues within the planning process. The appending of media (digital photos, moving images, documents, and voice records) should be regarded as an essential requirement. Additional important database facilities include easy tree population analysis within sites and between sites and quantification of tree viability, habitat and associates. Tree condition and viability assessment is a useful provision for individual and group tree management. The facility for works orders and risk management though possibly useful are not considered essential.

5.5.8 **The main off-the-shelf professional tree survey systems.** Arbortrack, Ezytreev and MyTrees are the main databases with full tree survey capabilities. All with versatile recording and management systems with professional support and training and, while including capacity for modification according to specific needs, there are attendant costs associated with customisation. These databases allow well-tested data capture and management with batch import/export facilities linked also to GPS with variable web access.

5.5.9 **MyTrees dedicated veteran tree system.** This database has all standard components of a recommended system. It includes full SSM Levels 1 to 3 capacity, as well as facility for managing enquiries and responses from and to public and report production which will be important. Web-based facility will be available after March 2009.

The advantages of MyTrees system:
- specifically designed for veteran tree recording and management
- covers all currently-used veteran tree survey levels
- includes a comprehensive range of essential functions (described in 6.5.4.3 - 4)
- provides a biodiversity facility with the means for specialists to populate species tables associated with trees

5.5.10 The disadvantages:
- costs associated with installation and training
- should modification be required, this may have associated costs
- batch export and imports may require developer in-put
- web access only available after April 2009

5.6 **Database system requirements**

5.6.1 **Compatibility requirements.** It is advised that any database intended to serve NFNP’s requirement for veteran and ancient tree surveying should have broad compatibility and be capable of receiving data from other systems. It should be map referenced (compatible with existing map use of key partners/stake holders in the data-gathering initiative) and have a user-friendly interface. It also should have easily-used practical capabilities for uploading and exporting information, data analysis and report production. It is important that the characteristics of a database encourage rather than discourage its use, particularly as the information derived from this survey project will address different policy objectives in different ways. Therefore, both the scope of the data to be collected and the means to draw relevant information from this need to be carefully considered from the outset.
5.6.2 **Basic system requirements.** For all systems reviewed, we would expect the minimum standard system requirements to include Windows EP and Windows Vista, 3.5GB Ram, CPU 2.4 GHz. Storage memory would depend on quantity and type of data envisaged (i.e. text, image, GIS, sound archive etc. files). We would recommend a minimum of 10GB allocated specifically to any system used.

5.6.3 **Protocols.** When defining the method of trees data collection with the intention of database incorporation, consideration will need to be given to the scope of different people in relation to their roles within the project. For example, it is anticipated that guidance will be needed for non-experts involved in data collection up to ATH level. Guidance and even training may be required when more detailed assessment is undertaken, prompted by specialist interests relating to species, habitat and / or arboriculture.

5.6.4 **System capacity indicators.** The underlying purpose and key objectives of a NFNP veteran and ancient tree surveying project should inform the choice of appropriate recording method and the capacity and facilities expected of any technical system. Therefore it is anticipated that any database should be able to provide the means to adequately record both at an elementary and detailed level veteran and ancient trees, understand this tree population, if required provide indicators as to tree viability / sustainability, identify vulnerable component (by species, location etc.) and inform a long-term conservation management strategy.

5.6.5 **System capacity indicators.** The underlying purpose and key objectives of a NFNP veteran and ancient tree surveying project should inform the choice of appropriate recording method and the capacity and facilities expected of any technical system. Therefore it is anticipated that any database should be able to provide the means to adequately record both at an elementary and detailed level veteran and ancient trees, understand this tree population and, if required, provide indicators as to tree viability.

5.6.6 **Data fields.** It is recommended that from basic key site and tree details it should be possible to assess the following information:
- the purpose for which the survey is being carried out
- who is carrying out the survey (name and capacity)
- where the survey is taking place (the site, grid reference [12 figures if possible], ownership, special notes relating to the site, e.g. wood pasture, riverine, church yard, etc.)
- when the survey is took place
- the range of fields necessary to record the minimum amount of data to meet the purpose of the survey.

5.6.7 **General fields and basic data requirements.** The quantity of information will depend on the purpose and level of survey being carried out. However, whether at SSM Level 1 (e.g. Ancient Tree Hunt), SSM Level 2 or Level 3, surveys will to some degree include information on tree data & dimensions, form and vigour, saproxylic habitat & condition, associates, and management & context. It is important that the facility for collecting, holding and analysing information is designed with sufficient capacity to accommodate the required fields for the highest level of survey. Where the public is
involved and for easy data gathering by non-specialists at SSM Level 1 the minimum essential information should include - recorders name, address and email, date of record, grid reference (ideally minimum 8 figure). The ATH interactive map can generate a grid reference. Additionally, basic information includes species, girth and height of girth.

5.6.8 Additional supportive basic information for elementary surveying. Certain additional information would be beneficial in contributing improved understanding of the tree resource:
- Public accessibility (five relevant categories are provided in the ATH recording form)
- Tree form: Category A, B & C (See table A in appendix)
- Standing/fallen (standing, fallen, dead, alive, unsure)
- Growing Conditions: Good, Average & Poor (See table B in appendix)
- Location in landscape: (e.g. field, private park, common/heath, moorland, public park, orchard, garden, churchyard, avenue, river/canal bank, hedgerow, highway/railway, bridal path/ footpath, village park, woodland, other)
- Landowner details (if known)
- Photo (if possible)

5.6.9 Full minimum level of data fields for surveying. It is recommended that the full SSM Level 3 fields are incorporated from the outset as shown at appendix 6.

5.6.10 Defining and using fields according to survey purpose: Fields need to be defined according to criteria considered most appropriate for the agreed purposes of the project and it is important they are compatible with the range of accepted veteran tree recording systems currently in use. Where fields conflict, the hierarchy of acceptance of fields should be based on meeting requirements of e.g. first (a) followed by (c) and then (b). It should be noted that the ATH approach as a means of interactive data collection and viewing is not a management tool. The following broad framework is considered for NFNP to develop and apply to an IT system for data collection and management.

5.7 Information Management

5.7.1 Data management and centrally stored data. If it is resolved to manage data through a central database, it will be important that this facility should store all collected veteran tree records relating to the NFNP project. It is suggested that there will be a main data holder and at least one archive. As it is likely that if the volume data and scale of data analysis and manipulation will be considerable, the role of data manager will be an important one. A data manager will be needed to ensure records and any agreed rules of data communications are appropriately maintained.

5.7.2 Decentralised potential for data holding. ATH involvement in the project will help through identifying good practice based on their experience of data management procedures. The ATH website will be an important aspect of these interactions. It is possible that data for different purposes or levels of survey could be held in more than
one location. Depending on the type of information and the formulation of clear guidelines the following are possible examples as data holding resources:

- Hampshire Biodiversity Information Centre
- The Ancient Tree Hunt
- The Christopher Tower New Forest Reference Library at the New Forest Museum
- The Hampshire and Isle of Wight Wildlife Trust

Table 2

<table>
<thead>
<tr>
<th>Level of Survey</th>
<th>Undertaken by</th>
<th>Trigger for type of survey / information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary ATH SSM1</td>
<td>Non-expert, Lay Non-specialist</td>
<td>General requirement for veteran / ancient tree information. Objective for public/stakeholder engage</td>
</tr>
<tr>
<td>General veteran tree SSM L2</td>
<td>Generalist Some specialist knowledge</td>
<td>Biological, dead wood, habitat Tree management requirements for habitat conservation. HAP, BAP, other policy assessments Conservation strategy</td>
</tr>
<tr>
<td>Specialist veteran tree SSM L3</td>
<td>Specialist arboricultural conservation specialist</td>
<td>Understanding of local, regional, habitat / biodiversity. Biological, dead wood, habitat Tree management requirements for habitat conservation. HAP, BAP, other policy assessments Conservation strategy</td>
</tr>
<tr>
<td>Tree viability, tree population Tree condition assessment and management planning</td>
<td>Arboriculturist</td>
<td>Individual or veteran tree population assessment, sustainability issues</td>
</tr>
<tr>
<td>Species associate assessment Bats Lichens</td>
<td>Species specialist Arboriculturist</td>
<td>Species conservation Threat to tree related bat habitat</td>
</tr>
<tr>
<td>Risk management Planning/Development</td>
<td>Arboriculturist Planning skills</td>
<td>hazard assessment &amp; management TPO issues Planning threat</td>
</tr>
</tbody>
</table>

5.7.3 Data access. All stakeholders will require access to the NFNP project information at some time and it will be a crucial aspect of database management that data is neither lost nor misused. Protocols will need to be agreed concerning data handling and access rules.

5.7.4 Archiving and the case for a NFNP centre for veteran and ancient tree information. It is strongly recommended that all information on veteran trees in the New Forest be archived digitally. This will serve to prevent data loss and enable information exchange where desired. The project might also seek to maximise the digital resource by incorporating existing information on veteran trees in the New Forest. This would add an additional dimension to the project requiring that pre-digital documents are scanned into a digital format for incorporation with other relevant information into a comprehensive archive. A single main data centre could become the focus for such a comprehensive archive with facilities to offer records to other centres of information in the region.
5.8 Using veteran and ancient tree data and use of information

5.8.1 Planning resource. Veteran tree information will be important in its relevance to policy requirements. For example, biological data searches will help to identify the potential impact of proposed building developments, in accordance with PPS 9, serving to inform conservation considerations and the need where further survey requirements are appropriate to support planning applications.

5.8.2 Data value, baseline information, habitat linkage and conservation policy. The full extent of the value of the recording exercise may not be clear at the present time. However the precise nature of the mapping and the other features of the trees may have great benefits for future research with data derived form the survey acting as baseline information and helping to identify where conservation efforts are being effective and best directed. The data have potential to enhance understanding of the veteran and ancient trees in relation to other landscape factors and features. Observing the distribution of veteran trees within the NFNP will assist in understanding the linkage of habitats and areas that could potentially act as barriers for the dispersal of dependent organisms. Knowing where the veteran trees are will help focus efforts to conserve them; whether through education, volunteer effort or grant aid.
6 CONCLUSIONS

6.1 Veteran and ancient trees are a characteristic feature of the New Forest. Indeed many of the species of nature conservation importance depend on veteran features for their survival and in their life cycle - including woodland birds, bats, fungi, lichens and invertebrates. Of the many benefits from recording veteran and ancient trees, one of the most significant lies in improving knowledge about the status of the current resource, an important factor when developing management and conservation strategies. The potential for this survey initiative is very considerable as it can improve understanding of the role of trees in the history of the New Forest, while providing rich educational material of the landscape value of old trees.

6.2 Halting the loss of biodiversity has widespread public support and a great deal of biodiversity conservation can be achieved with help from enthusiastic and passionate volunteers. Partnership arrangements between the NFNPA, Ancient Tree Forum, Ancient Tree Hunt (Woodland Trust), local records centre (Hampshire Biodiversity Information Centre), Forestry Commission and other stakeholders and local volunteers would serve to favour veteran tree conservation. Such partnership and stakeholder arrangements, based on being positive, practical and personal, are consistent with current thinking on raising awareness of and inclusion theories on biodiversity issues (DEFRA, 2007).

6.3 In formulating an effective coalition to implement the survey, the NFNP will be creating a working forum of key stakeholders to manage the project. While this would be operate best based on a broad group of interests, the number of potential organisations and interested individuals is vast. For successful implementation it is suggested that the NFNP will need to lead a core group of primary project lead organisations. Division of labour is likely to accommodate a range of stakeholders including project partners at different levels, and secondary lead and support organisations. One of the stakeholder group’s first actions will necessarily be to clarify the basis for engagement and agree a project plan. It is likely that the lead body will focus on the significant requirement for management necessary to drive the project. The project team needs to determine:

- which organisation will lead the Project and how other stakeholders will become involved
- which organisation will hold the data collected and where it will be held
- the data fields that will be collected for individual trees at the levels of survey proposed
- the method of mapping the trees and who will maintain the GIS data
- the work that will be required to start the project and maintain everyday management once underway
- appropriate level of staff skill required for various project roles (database management, mapping, training, public relations) and where further training will be required
- who will lead the volunteer support and manage recruiting and training of recorders
- selection and development of a team of verifiers to check records submitted by volunteers and members of the public
- how veteran trees can be incorporated into the local planning system
- the project timescale and targets and project review stages

6.4 An important project requirement will be for stakeholders to engage to identify staff or member contributions to the recording scheme to optimise on the potential for veteran tree surveying. As the project will also depend on local volunteer recording, a significant aspect will be volunteer recruitment, training and support; a particularly important requirement due to great variability in people’s understanding of veteran trees.

6.5 It is proposed that all records are verified by trained verifiers and that a team of specialist assessors be recruited for this purpose to maintain high data collection standards for the duration of the project.

6.6 It is understood that, there are some 136 records of veteran trees within the New Forest National Park, of which only 76 records have been verified by trained veteran tree recorders. Several of the consultees have been contacted, whose estimates of the total number of veteran trees in the New Forest vary considerably, ranging from 3,000 to over 50,000. The value of transcribing all historic records from previous surveys into a compatible format with the new survey methodology should be considered. Where feasible historic records should be reviewed by the project verifiers to insure that they currently exist, to maintain data consistency and, if possible, to add value to the resource of past data collection.

6.7 There is no doubt that the mapping of veteran trees in the NFNP will serve to improve the protection that they currently receive. This project will serve to raise the awareness of the value of veteran and ancient trees and will provide an opportunity to explain methods of sensitive veteran tree management to landowners and the local community. As veteran and ancient trees are such impressive and charismatic natural features, it is expected that there will be a strong public response to the project and that through wide public engagement new opportunities will be found to devise and enhance conservation of this nationally important resource.

6.8 The project will require robust management, with a core team differentiated into those partner stakeholders taking a primary project leadership role, secondary partners and those with special (e.g. advisory) role. The distinction will also need to be made between stakeholders involved in driving the project as part of the active management team and those participating on a forum-basis (communication and support).
7 REFERENCES


Fortanier, E.J. & Jonkers, H (1976), Juvenility and Maturity of Plants as Influenced by their Ontogenetical and Physiological Ageing. Acta Horticulturae 56:


Appendix 1: List of consultees

Veteran Trees in the New Forest National Park
Preliminary study into veteran tree data management
List of Consultees

**Natural England**  
Diana Westerhoff  
Diana.westerhoff@naturalengland.org.uk – **02380 286410**  
She says that not much information has been formally recorded. Suggested Neil Sanderson be contacted and mentioned Nicholas Flowers’ study into the Veteran Trees of the New Forest in the 1970s. Contacted Andy Foy at the Hampshire Biodiversity Information Centre who said he would try to find the study. We investigated Southampton University’s Library Catalogue to no avail. A copy was located at NE but would need to be consulted at the office.

**Ancient Tree Hunt**  
**Katherine Owen - Senior Verifier 1/4/08**  
KatherineOwen@woodlandtrust.org.uk – **01544 350563**  
Katherine manages the Ancient Tree Hunt Data and agreed to supply TEP with data for Hampshire for analysis for this study. There are approximately 300 records for Hampshire with many verified. TEP competed a licence agreement with the ATH for this purpose. The ATH are attempting to compile criteria for Veteran Tree ID and at that time completed this for ten species and were working on criteria for a further five species. The ATH are introducing the Growth Conditions Factor (see appendix).

**Forestry Commission**  
Simon Weymouth  
Simon.weymouth@forestry.gsi.gov.uk 02380 283141 Mob 0787 801110  
Preliminary communication without detailed response.

Harry Orum  
Harry.orum@forestry.gsi.gov.uk ; Mob. 07774 822204  
Harry Orum has spoken to Richard Burke, in turn speaking to Paul Hibbert (Invernesshire [photos]). HO considers veteran tees will be generally lumped together in FC management terms as ANO wood (of which there is some 4000Ha), and if so are likely to be scattered throughout the NFNP, noting there are many 18th century plantings and that it would be useful gather together others, including Simon Weymouth, familiar with the NFNP to discuss these issues.

Hugh Milner  
FC Private woodlands officer (covering NFNP region) 02392 200596 or 0142023337.  
There are 9972 ha of ancient woodland in the New Forest. He has passed details of particular trees over to NFNP (Bryan Wilson) in three categories; those in Ancient Woodland, Sites of Interest for Nature Conservation (SINC); category 1A and 1B are likely to hold the most veteran trees. There are large numbers of veteran trees in private ownership and while the Forestry Commission is well respected by landowners, this is not necessarily shared by all statutory authorities. HM can help with contact details for large landowners though often this will more likely be through the land agent and thinks that letters of introduction would be appropriate. Lots of the landowners do not come from the countryside and may not be aware of the value of old trees. The type of trees that are of value will need to be communicated to them. Langley Manor, the Barker-Mill estate, has veteran trees that they are keen to see recognised. [Recommends Ian Stone (forest friendly Farming Advisor, 02380 424205), Michael Boxall (senior warden, Hampshire Wildlife Trust, 01590 622208); Peter Stag (Beauleau - estate trees), Dr. Rue Ekins (Natural England)]
Lichen Expert / British Lichen Society
Neil Sanderson
neilsand@dircon.co.uk 02380 293671 Mob 0776 5648149
Estimates there may be as many as 250,000 veteran trees. He provided three reports carried out for Hampshire and Isle of Wight Wildlife Trust. He works with a definition for a veteran tree based on Harding & Rose work on lichens.

Ancient Yew Group
Russell Cleaver
russell.cleaver@hants.gov.uk
RC referred to Hants Wildlife Trust previous veteran tree survey and suggested that the Wildlife Trust may have more information on others who may have recorded NFNP veteran trees. His records regarding yews are churchyard based, e.g. Brockenhurst, however to date has found the Sloden enclosure best for old yews and hollies. He is of the opinion yews are mostly introduced. The hollies there are of particular interest. Yew Tree Heath in the New Forest is marked on the 1st series OS map as a single yew tree, (with a single conifer drawing). Though, after searching the site he has not found evidence of this ancient yew, considers this is not to say it still is not to be found.

New Forest District Council
Andrew Douglas (Tree Officer)
02380 285329
He explained that the NFDC uses Arbortrack to survey their trees and that they are close to completing a survey of all council owned trees. They manage council owned land within the National Park boundary. He does not think that they have many veteran trees but if a recording system were developed they would use it when they did come across veteran trees. The corporate tree management system devised by BW and MH was for tree risk management and to carry out a tree inventory. Trees are categorised according to six classes based on size & target risk (i.e. Cat1 trees are large and adjacent to highest-use areas; Cat2 trees large and medium-use areas etc). Tree inspection is prioritised by sequence, volume and frequency according to Category. Inspection is also rotated according to season. The system has been audited by Zurich Municipal and NFDC, having completed its tree inventory, is now in a position for reasonable proactive tree management based on their survey data. Though the corporate tree management system is specifically not for recording tree-related habitat, there may be some scope for minor adaptation to reflect veteran status or dead wood habitat value in some way. There will be two people involved in the continuing survey, who could at the least simply record the presence of veteran trees (when suspected to be present). It is confirmed that there is a tick-box field (yes/no) in Arbortrack for identifying veteran trees, which, though not previously used, as a consequence of our discussion has now been activated. He notes that the Defra site gives guidance on veteran tree identification Environmental Stewardship Farm Environment Plan Guidance 009). This suggests that oak, ash Scot’s pine, yew and Elm over 1m diameter at breast height (dbh) would all qualify as veteran. If so AD was concerned that rather than there being very few veteran trees in his jurisdiction this would indicate a higher population than previously suspected; with potentially considerable management implications. Protected species: It was considered that a standard corporate tree survey would need to be able to identify trees where the inspector
considers there to be a risk of occupancy by a protected species (whether high, moderate or low) (see the Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007). It was agreed that this facility could add value to a veteran tree database and also to the corporate tree inventory, as it could provide important information for purposes of contract implementation. Whatever system is employed, veteran trees need to be very easily identified as far as possible within current inspection procedure. This needs to be simple and easy for the tree inspector to record and it is important that relevant data can be easily transferred to a centrally held veteran tree database. It was pointed out that this could be achieved through the Ancient Tree Hunt (ATH). It would require:

- some brief training to ensure consistency for surveying arborists in identifying veteran status
- that trees are simply recorded on the existing database and where noted to be veteran this could then be verified by the ATH

**Lake District National Park Authority**

Tim Duckmanton
Volunteer Co-ordinator (Direct line: 01539 792674 Mobile: 07776274450)

TD is in charge of a veteran tree recording project at the Lake District National Park. He described the experiences that he has had and lessons learnt. The LDNP advertised the project on local TV and radio. This resulted in a significant number of people offering their services as volunteers. Training days were provided by the ATH. As half of the volunteers needed additional support (e.g. tree ID), the LDNP has now developed a system for volunteer assistance; including training days at a veteran tree site and an opportunity for discussion with other individual surveyors about particular recently submitted records; training days are also important for health and safety issues. Another benefit of this is that large sites can be surveyed on these days. Volunteers are requested to survey veteran trees from public land and public rights of way. The project has an LDNPA member of staff dedicated to contacting landowners and acquiring access permission for tree surveys. Three options are available on the ATH website; 1) a clear record of the tree, 2) a record that identifies the tree as being on private land or 3) alternatively for the tree to be recorded but not shown on the website. All of the options require landowner permissions.

**Ancient Tree Hunt**

Nikki Williams
Direct line: 01332 874 970; Mobile: 07760 425 657

Nikki is preparing a briefing note concerning the Cumbrian partnership model for stakeholder involvement for veteran tree recording (Lake District National Park) having used this would see it being similarly applied for the NFNP Authority project. The project model is on the basis of a partnership with volunteer support and training, with the partnership providing the leadership for the range of stakeholders. The partnership model assumes that a working group is formed with the suggested objective of “recording all ancient, veteran and notable trees within the Authority” within a defined span of the project life. As the Ancient Tree Hunt draws to a close in 2011 any partnership with the ATH will need to acknowledge this while operating to provide continuity beyond this date. This model and working document can be adapted and applied to the formation of the similar NFNP initiative (as has occurred with the Kent Favourite Trees Project).
Natural England, Dorset
Sean Cooch -
Previously FC NF Hants (woodland transect work / suggested by Harry Oram that SC will have some good background knowledge) Direct line: 01929 557471

Nine years ago SC, working as ecologist under the auspices of a European LIFE funded project based with the New Forest FC, was involved in setting up and running a baseline study gathering a structured mass of data (a gradsect survey along Peterken lines recording biological data and mapping everything that conceivably of value within a 90m by 2.2KM area). This included dead wood and trees of different ages to provide a framework for long-term monitoring. It covered 8 or 9 ancient woodlands on Crown Land within the National Park. The data was provided the means to scale up estimates of biological value for other areas within the Forestry Commission stewardship including Ancient and Ornamental Woodlands (AOW). The FC will have this comprehensive dataset as should HBIC. It was collated in excel and compiled in a report and contains georeferenced photographs (including veteran trees)! Though veteran trees may not have been categorised as such, SC thinks it should be possible to obtain veteran tree records by various means through different filters and searches. Data recollected included girth, basal area and dead wood (fallen and attached), and other SSM fields (unspecified). The survey took three people three solid months to complete. The New Forest Museum are thought likely have information and data on the veteran/ancient tree resource (librarian, Richard Reeves (The Christopher Tower New Forest Reference Library, New Forest Museum, Lyndhurst, Hants, SO43 7NY)); Email: library@newforestmuseum.org.uk; (023 8028 3444).

Hampshire and Isle of Wight Wildlife Trust
Dave Rumble – Records Officer (01489 774433)
The WLT is more specialised in volunteer management as opposed to HBIC which is specialised in data management.

New Forest Study Group
Alan Hold
Alan.Hold@btinternet.com

BSBI
Martin Rand is senior recorder
Martin.rand@ntlworld.com
Some tree and recording work
John Durnell – Head of conservation West Hampshire - 01489 774425

TROBI
David Alderman –
info@treeregister.org
The Ancient Tree Hunt should have all veteran trees recorded on the Tree Register, although many may not be verified with accurate grid references. Most records are of exotics so do not appear on the ATH.
Verified records are apparently painfully thin for the New Forest. Girths of yews in a number of New Forest churchyards have been recorded with details available on request. Otherwise a note from a single visit in 2005 in the Sloden Inclosure (Grid ref, SU 215125) is provided as follows: “Holly: largest found is a multi-stem tree (8 stems) on a medieval earth bank, girth: 16'9"/5.11m at ground level. Amongst its stems a whitebeam also grows from its centre (4' girth). Yew: the 3 largest found had girths 13'0"/3.96m; 10'8"/3.24m; 10'0"/3.05m. Whilst many yews of up to these sizes grow in the Inclosure few have healthy crowns, some are dead, others are clearly dying. I have read they may have been introduced as a nurse crop possibly in the Middle Ages. The hollies are equally numerous, if not more so, and appear more healthy. Many are veterans”. In his experience, “acid woods such as these have more hollies than yew; whilst calcareous woods are the opposite, bearing more yews than hollies. Lastly beech trees are also impressive in the Sloden Inclosure, the finest I found had a girth of 15'2"".
Appendix 2
ANCIENT TREE HUNT
Identifying Veteran Trees
ANCIENT TREE HUNT

Identifying Veteran Trees
BS5837:2005 (BSI, 2005) defines veteran trees as follows: “Trees that, by recognized criteria, show features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned”

Illustration from ‘Veteran Trees: A Guide to Good Management’ (Read, 2000)

Rot holes
These can develop through limb loss and bark wounds and are expanded by microorganisms and invertebrates, and can become occupied by birds and bats.

Rot sites
Wood may be colonised by decay fungi eventually leading to the creation of rot holes (see above). Such sites can then become valuable for saproxylic species.

Dead wood
Dead wood is often colonised by decay fungi. Fallen and attached dead wood may support different suites of colonising species. Extensive dead wood (larger than 20cm in diameter) whether standing or fallen is of value.

Hollowing
Any hollowing in the trunk or major limbs is noted as this indicates long-term progression of decay within the tree.

Fungal fruit bodies
Fruit bodies of fungi known to cause wood decay are significant as evidence of fungal processes.
Other indicators given by Read are:
• Girth/diameter large for species
• High number of interdependent wildlife species, including invertebrates
• An ‘old look’
• Pollard form or other indications of historic management techniques
• Occupying a prominent position in the landscape, or standing on a boundary
• Have a known cultural or historic value
There is also a helpful guide on the Ancient Tree Hunt website
It is important to note that dieback alone (showing presence of dead wood) should be insufficient grounds for inclusion in the survey as this is often characteristic of a tree that is in rapid decline because it is in poor health and/or growing conditions rather than an old tree that is gradually retrenching.

**ANCIENT TREE HUNT**

**TABLE A: TREE FORM**

Tree form categories are based on those devised by the Tree Register of the British Isles and the Irish Tree Society (1999) as approved by the Irish Tree Society and Ancient Yew Group.

<table>
<thead>
<tr>
<th>Category A</th>
<th>This is a tree with a good clean single trunk such as typically seen in a woodland. The girth can be recorded at 1.5m. Low branches do not appear to exaggerate the girth at this point. Often this will be a maiden tree but some pollards and low branched trees whose narrowest girth is recorded between 1m-1.5m may also be considered as an ‘A’ tree if the girth is of a clean single trunk.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category B</td>
<td>This is a tree whose girth is exaggerated by burrs or low branches. It will usually include all trees whose narrowest girth is recorded between ground level and 1m. Trees arising naturally as two stems that are growing together and fork above 1m may be recorded a ‘B’ tree. Look out for ancient trees that fall into category ‘B’.</td>
</tr>
<tr>
<td>Category C</td>
<td>This is a tree whose girth appears to be made up of two or more stems, either arising from the same root or independently. Category C, Multi-stemmed and coppice trees, are excluded from these guidelines (although not excluded from being ancient) and any considered to be ancient should be discussed with the Senior Verifier.</td>
</tr>
</tbody>
</table>

**Table B: Growing conditions**

<table>
<thead>
<tr>
<th>Site Description</th>
<th>Good growth</th>
<th>Average growth</th>
<th>Poor growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertile ground (many trees appear to have grown well and are big) Sheltered/protected from exposure Includes river valleys Trees not growing in competition with others</td>
<td>Some exposure Garden Churchyards Wood pasture Consider this category for open grown pollards and hedgerow trees.</td>
<td>Poor ground Exposed woodland edge trees Consider this category for open grown trees that originated in woodland For trees growing in woodland, upland and coastal areas please discuss with the Senior Verifier.</td>
<td></td>
</tr>
</tbody>
</table>

Site types Good, Average and Poor relate closely to John White’s site categories “good site, open grown, sheltered”, “Average site, garden, parkland” (open grown pollard) and “poor ground and/or some exposure” as published in *Estimating the Age of Large and Veteran Trees in Britain* (1998) www.forestry.gov.uk
 ANCIENT TREE HUNT

Guidance on marking a tree on the map
Please take the following link and register with your e-mail address and password located on the left hand side of the webpage. http://www.ancient-tree-hunt.org.uk/

Once you have registered, click on the Recording tab at the top of the webpage:

Click on Record a Tree:

Click on the "Find button" at the top of the page and search for your area using a postcode or Grid reference:

To bring more detail on the Map, the scale on the left hand side when set at "street" or "local level" you will notice the Ordnance Survey Map will appear in the layers on the right hand side. click on this to bring up more detail, also remember to click on the layer which is ticked below showing "Ancient, Veteran & Notable Trees", this will show you the trees which have been recorded on the website to date.

To Record your tree using the map to get your grid reference: Click on the button at the top of the map "Record Tree", Cross lines will appear to help you click on the right location where your trees are situated. Once you are happy with the location, click and the grid reference will appear on the form.

Complete the Recording form: The recording form is in 3 steps, starting with the easiest going through the more detailed information, if you would like to continue adding information regarding your trees you have the option, see below. Each detail is relatively straightforward to add but if you are unsure at any point you can click on the [help] icon next to each space.

Recording more than one tree
If you have several trees to record at once: after clicking on the record a tree icon as above, simply click on the Record more than one tree icon:

Then a condensed version of the form for recording one tree will appear. 3 pages in 1! When you have recorded a tree simply click save and add another, then when all the trees have been recorded click save and finish:
**STEP THREE (continued)**

**Bats and birds**
- Evidence of bats
- Tawny Owl
- Barn Owl
- Little Owl
- Green Woodpecker
- Great Spotted Woodpecker
- Lesser Spotted Woodpecker
- Nuthatch
- Treecreeper
- Jackdaw
- Kestrel
- Streak Dove
- Evidence of other birds

**Tree Invertebrates**
- Evidence of tree invertebrates

**Tree Epiphytes**
- Fern
- Lichen
- Moss
- Ivy
- Mistletoe
- Other

**Tree condition**
- Decaying wood in the crown
- Decaying wood on the ground
- Holes or water pockets
- Hollowing branches
- Hollowing trunk

**Tree threats**
- Compaction of root area
- Cultivation close to tree
- Fire damage
- Grazing damage around and to base of tree
- Major tree surgery
- Overshading
- Vandalism

**Tree protection**
- Fencing
- Tree Preservation Order
- Uncultivated land

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**The Ancient Tree Hunt recording form**
downloaded from www.ancient-tree-hunt.org.uk

Please use this form to record as much or as little information about your tree as you are able. Your records should then be entered online at www.ancient-tree-hunt.org.uk

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**Supported by:**

The Woodland Trust, Autumn Park, Grantham, Lincolnshire, NG31 6LL
www.woodland-trust.org.uk Tel: 01476 581111
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**STEP ONE** this is the minimum information that we require

Grid reference __________________________

Don’t worry if you don’t know how to work out grid references. As long as you can find the location on our interactive map (www.ancient-tree-hunt.org.uk), one click will generate a grid reference for you.

Tree species ____________________________

If you have no idea of the species, please leave this blank.

Girth _______ m ________ cm OR number of hugs ______

**STEP TWO** answering any of the following questions is a bonus to us!

Tree’s local or historic name ____________________________

Public accessibility

- **Private** – not visible from public access (owner’s permission required to measure the tree)
  - e.g. a tree that stands on private land and is either not visible or not close enough to record any accurate data without trespassing

- **Public** – open access (i.e. public park)
  - e.g. a tree that stands on ground with full public access 24hrs a day

- **Public** – partial access (i.e. next to footpath or road)
  - e.g. a tree that stands near or close to a footpath, road, garden, park or other publicly accessible land

- **Public** – restricted access (i.e. National Trust property)
  - e.g. a tree that stands on ground with full public access during limited opening times. In many cases there may be a charge to access the site and see the tree

- **Public** – Scottish outdoor access
  - Please see www.outdooraccess-scotland.com if you are not familiar with these regulations

Tree form

- [ ] Coppice
- [ ] Stump
- [ ] Unknown

Is the tree:

- [ ] Standing
- [ ] Fallen
- [ ] Dead
- [ ] Alive
- [ ] Unsure

Location

- [ ] Field
- [ ] Moorland
- [ ] Garden
- [ ] River/canal bank
- [ ] Bridlepath/footpath
- [ ] Village Park
- [ ] Other

- [ ] Private park
- [ ] Public park
- [ ] Char dyrad
- [ ] Hedgerow
- [ ] Highway/railway
- [ ] Woodland

Additional comments on location – for example if this is in a Woodland Trust wood

Are you recording as part of an organisation, and if so, which one?

**STEP THREE**

**Tree fungi**

- [ ] Beefsteak fungus (Fistulina hepatica)
- [ ] Birch polypore / razorstrop fungus (Piptoporus betulinus)
- [ ] Blushing bracket (Daedaleopsis confragosa)
- [ ] Chicken of the woods (Laetiporus sulphureus)
- [ ] Dryad’s saddle (Polyporus squamosus)
- [ ] Dyer’s mazegill (Phaeolus schweinitzii)
- [ ] Giant polypore (Maripilus giganteus)
- [ ] Oak bracket (Hymen Polyporus dryadeus)
- [ ] Shaggy bracket (Inonotus hispidus)
- [ ] Southern bracket (Ganoderma australe)
- [ ] Other

Please continue over the page
Why measure the girth of a tree?

- Measuring a tree gives it an identity and helps highlight its importance as perhaps the largest specimen in the locality.
- Without historical references the girth of a tree is important to help estimate its age.
- Periodic measuring provides information for a more scientific study to assess growth rates and age.
- To experience the excitement of finding that the tree you have just measured is the largest of its species, either locally or nationally!

What you need to measure a tree

- Family metal test — can be attached to the bark.
- Tension (if you have one)
- Tree stick to stand next to the tree for accuracy. Also useful for bearings/letters
- Pencil
- Measuring tape or rope with handy metal hook – can be attached to the bark
- 1.5m stick to stand next to the tree for accuracy. Also useful for brambles/nettles
- Pencil
- Measuring at 1.5m or the Diameter at Breast Height (DBH) is often quoted by foresters and subsequently some local veteran tree registers.
- Historical references allow us to compare measurements more accurately.

Where on the tree do I measure?

For trees with a good single stem (trunk) always measure at 1.5m above ground level.

Historically, 5ft was the height for large timber trees were measured to avoid root buttresses and allows us to compare measurements more accurately.

Measuring at 1.5m or the Diameter at Breast Height (DBH) is often quoted by foresters and subsequently some local veteran tree surveys. However, the DBH arose from the Forestry Commission measuring large numbers of conifers to calculate volume. To maintain consistency with our heritage we wish to record where practically possible at 1.5m.

Always make sure the tape is level.

Never presume the first attempt is correct, slide or walk the tape around the tree a couple of times.

Record the girth in metres and centimetres ie 5.62m.

Please enter your tree records at www.ancient-tree-hunt.org.uk
Measuring trees – frequently asked questions...

How do I measure a tree on sloping ground?
Always measure at 1.5m from the ground on the upper side of any slope or the highest part of ground if uneven.
Make a note if there appears to be unusual ground disturbance which may artificially have raised soil levels or if erosion has taken place. Record all relevant notes in the comments box on the recording form at www.ancient-tree-hunt.org.uk.

What do I do if the tree forks at 1.5m?
If the tree forks or abnormally swells at or below 1.5m, the smallest measurement below 1.5m must be recorded and the height from ground noted.
If multiple stems arise close to the ground and it appears as though the stems may not all be part of the same tree, each stem should be created and recorded as an individual tree. Where stems are close together this may not be possible and you must treat them as though measuring a single stem by finding and recording the smallest girth around all stems between ground and 1.5m. Measure and record the height above ground you have done this. Add comments on the recording form to describe what you have done.

How do I measure a tree on privately owned land?
Always ask permission first if you want to measure trees on privately owned land.

Can I estimate the girth?
Estimating girth from a distance is only gained by experience. Try estimating the diameter (thickness) of the stem and multiply by three.

Are pollarded trees important?
Record all pollards that are clearly of traditional origin, even if the girth is quite small.

How do I measure a burried or knobbly tree?
Where burrs or swellings are evident at 1.5m, put the tape around the stem at various points below 1.5m to find and record the smallest girth measurement.
Keeping the tape level may include abnormally large burrs that exaggerate the girth and notes must be recorded of such a measurement. In this situation, it is acceptable to provide a girth measurement with a tape that is not level, thus enabling you to avoid the burrs and measure the smallest girth. Occasionally, a tree may be completely burried on its main stem exaggerating all measurements. Record all relevant notes in the comments box on the recording form.

How do I measure a multiple stemmed tree?
Trees growing without a clearly defined single stem at ground level may be considered as a multiple stem or arising from a coppice stool. Trees raising either naturally or deliberately planted in this way are not always easy to identify. Trees planted deliberately as a bundle are included here.
Where stems appear to arise from a single tree, rather than from a coppice stool (see top right), treat it as though measuring a single stem by finding and recording the smallest girth around all stems between ground and 1.5m. Measure and record the height above ground you have done this. Add comments on the recording form to describe what you have done.

How do I measure a cut down or coppiced tree?
The tree will be recorded as a multiple stemmed or coppiced (see pictures below).

How do I measure a tree on抄版地?
Always measure at 1.5m from the ground on the upper side of any slope or the highest part of ground if uneven.

What do I do if the tree forks below 1.5m?
With small or very low branches it may be possible to still record at 1.5m, measuring above the branch. Try to record the girth where it would compare best if it had a clean unbranched trunk. Remember to record the height at which you measured.

Can I measure trees on private property?
Always ask permission first if you want to measure trees on privately owned land.

Take care!
Look out for roots, rabbit holes and brambles that might trip you. Beware of low branches, deep water and livestock.

No tree is worth risking future tree hunting!
The Ancient Tree Hunt

The Ancient Tree Hunt is a five year project to find and map all the fat old trees across the UK. This online interactive project is led by the Woodland Trust in partnership with the Ancient Tree Forum and the Tree Register of the British Isles, and is funded by the Heritage Lottery Fund, the Esmée Fairbairn Foundation and Scottish Natural Heritage.

We need your help to discover and measure the forgotten treasures all around us and put them on the map. Every tree you find and measure can be added to our interactive ancient tree map with the click of a mouse. Visit www.ancient-tree-hunt.org.uk for more.

A brief history of tree measuring

One of the first references to tree measuring can be found in parish records of 1630 relating to the ancient churchyard yew at Crowhurst in Surrey. An exceptional elm tree was measured in 1636 after it had been felled in a field in Uttoxter, Staffordshire and in 1664 John Evelyn's diaries appear throughout the volumes of Fruticetum Britanicum (1800-1913) provides us with more than 500 historical tree measurements. Between 1880-1895 Robert Hutchison measured nearly 100,000 trees between 1880-1895 and co-founded the Tree Register of the British Isles.

Between 1880-1895 Robert Hutchison measured nearly 100,000 trees between 1880-1895 and co-founded the Tree Register of the British Isles.

Measuring the girth of a tree

The distance around the outside of a thick or fat object, like a tree or a body: the oak was five metres in girth.

What you need to measure a tree

Where on the tree do I measure?

The girth of a tree is important to help estimate its age. Periodic measuring provides information for a more scientific study to assess growth rates and age.

To experience the excitement of finding that the tree you have just measured is the largest of its species, either locally or nationally!

Measurements are sparse up until the 19th century and the first prolific tree measurer was John Claudius Loudon, whose impressive 8 volume Arboretum et Fruticetum Britannicum (1834-37) provides us with more than 500 historical tree measurements.

Why measure the girth of a tree?

• Measuring a tree gives it an identity and helps us to compare trees as accurately as possible, please follow these guidelines.
• Measuring trees is not an exact science, but to ensure we can compare trees as accurately as possible, please follow these guidelines.
• Without historical references the girth of a tree is important to help estimate its age.
• To experience the excitement of finding that the tree you have just measured is the largest of its species, either locally or nationally!
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Measuring trees is not an exact science, but to ensure we can compare trees as accurately as possible, please follow these guidelines.
Measuring trees – frequently asked questions...

How do I measure a tree on sloping ground?

Always measure at 1.5m from the ground on the upper side of any slope or the highest part of ground if uneven.

Make a note if there appears to be unusual ground disturbance which may artificially have raised soil levels or if erosion has taken place. Record all relevant notes in the comments box on the recording form at www.ancient-tree-hunt.org.uk

How do I measure a leaning tree?

A leaning tree should always be recorded by measuring 1.5m up the underneath side.

How do I measure a burried or knobby tree?

Where burrs or swellings are evident at 1.5m, put the tape around the stem at various points below 1.5m to find and record the smallest girth measurement.

Keeping the tape level may include abnormally large burrs that exaggerate the girth and notes must be recorded of such a measurement. In this situation, it is acceptable to provide a girth measurement with a tape that is not level, thus enabling you to avoid the burrs and measure the smallest girth. Occasionally, a tree may be completely buried on its main stem, exaggerating all measurements. Record all relevant notes in the comments box on the recording form.

TIP
Ensure when measuring the girth that the tape is perpendicular to the trunk and follow all other points as if measuring a standing tree.

What do I do if the tree forks at 1.5m?

If the tree forks or abnormally swells at or below 1.5m, the smallest girth measurement below 1.5m must be recorded and the height from ground noted.

What do I do if the tree forks below 1.5m?

With small or very low branches it may be possible to still record at 1.5m, measuring above the branch. Try to record the girth where it would compare best if it had a clean unbranched trunk. Remember to record the height at which you measured.

How do I measure a burred or multiple stemmed tree?

Trees growing without a clearly defined single stem at ground level may be considered as a multiple stem or arising from a coppice stool. Trees arising either naturally or deliberately planted in this way are not always easy to identify. Trees planted deliberately as a bundle are included here.

Where stems appear to arise from a single tree, rather than from a coppice stool (see top right), treat it as though measuring a single stem by finding and recording the smallest girth around all stems between ground and 1.5m. Measure and record the height above ground you have done this.

If multiple stems arise close to the ground and it appears as though the stems may not all be part of the same tree, each stem should be created and recorded as an individual tree. Where stems are close together this may not be possible and you must treat them as though measuring a single stem by finding and recording the smallest girth around all stems between ground and 1.5m. Measure and record the height above ground where you have done this.

Add comments on the recording form to describe what you have done.

The tree will be recorded as a multiple stemmed or coppice (see pictures below).

TIP
Measure the stems at 1.5m above ground level (or at 1.5m up the underneath side for a tree on private property where permission has not been obtained from the landowner; within a hedge; surrounded by dense undergrowth, or on the opposite side of a ditch or river, will have to be estimated.

Estimating girth from a distance is only gained by experience. Try estimating the diameter (thickness) of the stem and multiply by three.

Enter records at www.ancient-tree-hunt.org.uk making it clear if the tree is on private land.

All estimated measurements must be recorded on the Ancient Tree Hunt recording form in ‘hugs’. One hug is considered to be 1.5m. For example: recording a tree as 3 hugs, would mean an estimated diameter of 4.5m.

Do not record an estimated measurement other than in hugs, otherwise it will be presumed the tree has been accurately measured.

Can I estimate the girth?

A tree that is growing on private property where permission has not been obtained from the landowner, within a hedge; surrounded by dense undergrowth, or on the opposite side of a ditch or river, will have to be estimated.

Are pollarded trees important?

Record all pollards that are clearly of traditional origin, even if the girth is quite small.

Can I estimate the girth?

A tree that is growing on private property where permission has not been obtained from the landowner, within a hedge; surrounded by dense undergrowth, or on the opposite side of a ditch or river, will have to be estimated.

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Do not record an estimated measurement other than in hugs, otherwise it will be presumed the tree has been accurately measured.

How do I measure a coppice stool?

Although coppice stools are not being actively recorded as part of the Ancient Tree Hunt, they do create great interest and the following information can be recorded.

• Measure around the whole stool at the narrowest point.

• Count the number of stems.

• Measure the stems at 1.5m above ground level (or at least the largest two or three).

TIP
Record as with a multiple stemmed tree.

Enter records at www.ancient-tree-hunt.org.uk

The tree will be recorded as a coppice.

How do I measure a pollard?

Where a tree has been regularly cut in the past, record all pollards that are clearly of traditional origin, even if the girth is quite small.

Are pollarded trees important?

Record all pollards that are clearly of traditional origin, even if the girth is quite small.

Can I estimate the girth?

A tree that is growing on private property where permission has not been obtained from the landowner, within a hedge; surrounded by dense undergrowth, or on the opposite side of a ditch or river, will have to be estimated.

Estimating girth from a distance is only gained by experience. Try estimating the diameter (thickness) of the stem and multiply by three.

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Do not record an estimated measurement other than in hugs, otherwise it will be presumed the tree has been accurately measured.

How do I measure a tree on privately owned land?

Always ask permission first if you want to measure trees on privately owned land.

Take care!

Look out for roots, rabbit holes and brambles that might trip you. Beware of low branches, deep water and livestock.

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No tree is worth risking future tree hunting!
Identifying Ancient Trees

*This guidance note provides further details on identifying ancient trees.*

**Definition of an Ancient (or Veteran) Tree**
The FEP handbook describes ancient trees as:
Trees that are or look old relative to others of the same species. Characteristics include:

- Very large girth for the species.
- Hollow or hollowing trunk.
- A large quantity of dead wood in the canopy.

This definition also applies to dead trees and non-native species as they are important habitats for plants and animals and can be reminders of historic landscapes.

*NB: The terms ‘ancient tree’ and ‘veteran tree’ are interchangeable for the purposes of the FEP.*

**What is a ‘very large girth for the species’?**
The following table lists the minimum tree trunk girths and diameters that can be counted as “very large girth for the species” for a selection of tree species.

<table>
<thead>
<tr>
<th>Tree Girth¹ (minimum)</th>
<th>Diameter at Breast Height (dbh)² (minimum)</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>190 cm</td>
<td>60cm</td>
<td>Birch species, Hawthorn.</td>
</tr>
<tr>
<td>240 cm</td>
<td>75cm</td>
<td>Field maple, Rowan, Grey and Goat willow, Hornbeam, Holly, Cherry, Alder.</td>
</tr>
<tr>
<td>310 cm</td>
<td>100cm</td>
<td>Oak species, Ash Scot’s pine, Yew, Elm species.</td>
</tr>
<tr>
<td>470 cm</td>
<td>150cm</td>
<td>Lime species, Sycamore, Horse chestnut, Poplar species, other Pine species, Beech, Sweet chestnut, White and Crack willows.</td>
</tr>
</tbody>
</table>

¹ The data in the table above is based on research carried for English Nature to help understand the relationship between the size of a tree and its ancient status. The data was collected as dbh but we have converted to girth to help non-specialists.

² Diameter at breast height (dbh) is the measurement commonly used by foresters to calculate timber volumes and is most easily recorded with a special girth tape which is calibrated to show dbh.
Identifying Ancient Trees

**How do I measure the girth of a tree?**
The girth or diameter of a tree trunk is normally measured at 1.3 metres above the ground and is known as breast height.

**Drawbacks of using tree girth to identify Ancient Trees**
Tree species grow to different sizes in different situations and conditions. In good growing conditions a tree may have a “very large girth” but not be ancient. Conversely, the girth can be restricted by poor growing conditions or by management, such as pollarding. The girth of some ancient trees (particularly pollarded oaks) may fall below the “very large girth” criteria. Therefore, please do not rely on girth measurements alone, but always make an assessment of whether the tree looks old and whether the other characteristics are present or not.

**Other characteristics of Ancient Trees**
There are other features which are typical of ancient trees and which add to their environmental interest. If these features are present then you can be more confident in identifying a tree as ancient.

- Girth large for the tree species concerned
- Major trunk cavities or progressive hollowing
- Large quantity of dead wood in the canopy
- Naturally forming water pools
- Decay holes
- Physical damage to trunk
- Bark loss
- Sap runs
- Crevices in the bark, under branches, or on the root plate sheltered from direct rainfall
- Fungal fruiting bodies (e.g. from heart rotting species)
- High number of interdependent wildlife species
- Epiphytic plants
- An ‘old’ look
- High aesthetic interest

**In addition the tree may also:**
- Have a pollard form or show indications of past management
- Have a cultural/historic value
- Be in a prominent position in the landscape

One of the difficulties of using these indicators of ancient status is that young trees which have been physically damaged eg by fire, can show these features whilst some ancients may exhibit very few.

**Ancient Trees and Wood Pasture and Parkland**
If the ancient trees are remnants of wood pasture or parkland then they should be recorded as ‘T03 Wood pasture and parkland’ in the FEP data sheet rather than ‘T01 Ancient Trees’ or ‘T02 Mature Trees’. Ancient trees within woods do not need to be recorded in the FEP data sheet.

**Other sources of information**
English Nature have published a Veteran Tree Management Handbook (Read 2000) [www.english-nature.org.uk/pubs/Handbooks](http://www.english-nature.org.uk/pubs/Handbooks) which contains valuable additional information on how to identify veteran (or ancient trees) as well as in-depth information on their management.

Appendix 3
Woodland Trust / Ancient Tree Forum
Veteran Tree Management Guides
At least since Shakespeare, we have loved the beauty and mystery of ancient trees...and have preserved them to give dignity to new parks.

Oliver Rackham
In the 16-19th centuries when most of our historic parks and gardens were designed, the British countryside was far richer in old and ancient trees than it is today. Recent changes in agriculture and the decline of the traditional role of large and medium-sized estates in the economy have led to a loss of woodland and ancient trees, especially in the south and south-east of England. Parks and gardens have undergone much more change than rural landscapes. In the 20th century, changes in ownership, management and land use, especially large-scale commercial forestry, have led to the extensive clearance and replanting of land. However, many ancient trees and woods still exist in parks and gardens, and these are often in better condition than many of their counterparts in the countryside.

As a result, historic parks and gardens have become refuges for some of our oldest and culturally important trees, and they have already lost their crowns. To conserve them and the distinctive character they give our landscapes, we need to:

• Nurture ancient trees, living or dead, to retain the special air of antiquity they provide.
• Establish young trees to provide continuity into the future and revitalise the design concept.
• Perpetuate the lives of specimen and feature trees.
• Foster the growth of new trees that will contribute to the future landscape.
• Protect the trees from future development.
• Record the trees and their history to ensure that the story is told.
• Promote the value of trees and their contribution to our landscapes.

Ancient trees are a beautiful inheritance, and we must ensure that they are protected for the future.

Peter Quelch
2. Re-evaluating the dead and dying tree

There is a prevailing view that designed landscapes, especially the gardens nearest the main house, should not retain any dead standing or fallen trees or limbs for aesthetic reasons. Yet there are many documented instances where leaving ancient trees and decaying wood was encouraged and some landscape designers, such as William Ken, even went so far as to relocate and re-erect whole dead standing trees. By the late 18th and early 19th centuries the works of many artists who painted in the Romantic style featured dead standing trees and fallen wood for their intrinsic beauty and qualities of naturalness.

Some ancient trees are living Noah’s arks: they are host to a precious cargo of rare and vulnerable organisms which rely on a continuity of old trees in our landscape if their future is to be sustainable. For many species it is the natural process of decay, of hollowing and ageing that is important. Where cavities, splits and flaking bark are formed they provide nesting and roost sites for birds and bats.

Ecosystems rely on the recycling of nutrients from fallen wood by micro-organisms. Such wood should be retained as close as possible to where it has fallen. It can then slowly decay back into the soil and the nutrients become readily available for the tree to reuse.

1. Managing the living tree and its surrounds

Recent advances in knowledge of how trees grow, how they age and new tree management techniques mean that we are now better able to take action to safeguard and prolong the lives of trees in the landscape. In many cases there is no need to intervene at all other than to prevent damage to the tree’s roots. However, what we do know is that too much cutting in too short a timescale will often hasten the demise of a tree.

All species of trees, including introduced species, can play a vital part in providing the continuity of habitat that is so special in ancient trees.

How can you help?

• Where possible reduce risk by keeping people away from the tree that is causing concern.
• When cutting a tree, only remove the minimum necessary. Felling to ground level is rarely required.
• Seek specialist arboricultural advice before cutting ancient trees or old pollards that are well out of a pollarding cycle and plan the reduction of canopies in stages over decades rather than a few years.
• Leave torn or broken branches where possible to respond naturally.
• Allowing windthrown trees and low or broken branches that are touching the ground to layer or continue to grow by protecting them from grazing animals.
• If felling is the only option, retain the stump and protect it from grazing if it has potential to regrow.
• Leave cut material on site in as large pieces as possible and ideally close to where it is cut.
• Retain mature trees so they become the next generation of ancient trees.
• Avoid the removal of deadwood for no reason other than tidiness.

Penelope Lively, Writer

"We should do everything we can to prolong the lives of ancient trees. They are witnesses to the past, survivors in historic landscape, each has its own significant story."

Note: This Moccas Park oak was at one time thought the only tree in the country that was host to a particular species of beetle.

Ancient Tree Guides No.2: Trees in historic parks and landscape gardens

Noel Kingsley

Discover the beauty in a tree with decay

Some common management issues in historic parks and gardens that affect ancient trees

1. Managing the living tree and its surrounds

Before:

Visitors, the ‘target’, are too close to this 500 year old oak.

After:

Visitors are no longer at risk, the path and car park have been relocated.

A fallen tree may regenerate if given the chance.

We should do everything we can to prolong the lives of ancient trees. They are witnesses to the past, survivors in historic landscape, each has its own significant story.

Penelope Lively, Writer

"The man of science and of taste will...discover the beauties in a tree which the others would condemn for its decay.

Humphry Repton "Observations on the Theory and Practice of Landscape Gardening" (1803)"
How can you help?

• Retain dead and dying trees as they provide important habitats for wildlife.
• When reducing dead trees, consider ‘coronet’ cutting limbs (leaving jagged ends that look like a limb broken by the wind) or turn retained standing trunks into a feature or sculpture.
• Leave cut or fallen branches as complete as possible. Leave them where they fall or move them closer to the tree to decay naturally and even artistically – decaying wood is too valuable to be burnt.
• Stumps are important reservoirs of biodiversity and provide an historical record of a tree. Leave them to decay naturally.
• Where potential health and safety concerns exist, remember felling is rarely the only option. Encouraging people to follow alternative access routes so they are kept away from the tree or reducing the extent of the tree canopy are often acceptable alternative strategies.

“Ni thyn y dykd... Ei phen o grobenn gobraff...”

Y Dykan

“Ner will she by day withdraw her head from the great hollow tree.”

The Owl, Dafydd ap Gwilym 1320 – c1370

3. Managing the land around important trees

The designers and managers of the original historic landscapes did not have to contend with the damaging effects of 20th-century farming, forestry and game management or development such as new leisure facilities or to cater for the use of cars. They did however often consider the impact of grazing animals. Many individual landscape trees and clumps were originally fenced, often with iron railings. Large numbers of these railings are said to have been removed as a source of scrap metal during the Second World War and at the same time many herb-rich parkland grasslands were cultivated for arable production.

Since the Second World War, root damage from cultivation, compaction from vehicles and modern stock and inappropriate grazing regimes (including deer and horses) have all been major factors in the decline of ancient trees. The use of modern agricultural fertilisers, pesticides and animal veterinary medicines is believed to have compounded these effects.

Grazing animals are an essential and very beneficial part of the sustainable management of parkland, however it is vital that the right mix of grazing and browsing animals are involved and are managed to enhance biodiversity and the landscape.

“On this other side it has been converted to a golf course. A few of the old trees have been incorporated into the design, it is possible to maintain and enhance the continuity of the landscape by caring for the trees and planning for the future.”

Ancient Tree Guides No.2: Trees in historic parks and landscape gardens

On the other side it has been converted to a golf course. A few of the old trees have been incorporated into the design, it is possible to maintain and enhance the continuity of the landscape by caring for the trees and planning for the future.

Ancient Tree Guides No.2: Trees in historic parks and landscape gardens

Y Dylluan

"Ni thyn y dykd... Ei phen o grobenn gobraff..."
5. Perpetuating avenues

Across the UK a large proportion of our great avenues are ageing and there is considerable debate about how to manage them. Oliver Rackham, the eminent landscape historian, has lamented that too often in the past entire avenues have been grubbed up when they became uneven rather than allowed to develop and decay. Over-emphasis on visual uniformity will often lead to conflict with other interest groups who value the importance of the mature and aging trees and believe that a certain amount of unevenness enhances the interest of the avenue.

Circumstances will vary from case to case. However, before the decision to fell a whole avenue and replant a new one is made, the intrinsic historical interest of the original trees needs to be thought about to avoid one tree overtopping the canopy of another. As trees age their canopy retracts – it may be thought of as ‘growing downwards’. The shrinking canopy of the aging tree needs to be free from competition from younger trees or its demise will be hastened.

How can you help?

- Establish more replacement trees and shrubs where there will be a gap in the supply of ancient trees.
- Establish future parkland trees – in line with a carefully researched restoration plan, sufficiently widely spaced so they can develop open crowns which are of great amenity value and also important for wildlife.
- When selecting new trees consider long term influences such as climate change and the suitability of different trees for the site.

4. Keeping the design alive – renewing the trees and shrubs

Conservation and restoration projects in historic landscapes should always retain as many of the existing trees as possible. The ancient trees will enhance the quality of the design and younger trees will be ready to replace them in time. The role of new trees and shrubs is to rejuvenate the original design. Ideally there will be sufficient trees growing and becoming old in the future as part of a well-researched restoration plan.

Planting is often now the only option for establishing new trees whereas in the original parks the trees self-seeded as part of a traditional woodland pasture system. Where trees are regenerating too freely or the planting is too dense they may out compete the old trees or not be able to develop a full canopy. Many large trees at maturity will have at least a 30m diameter canopy. Even at the planting stage the spacing between trees needs to be thought about to avoid one tree overtopping the canopy of another. As trees age their canopy retracts – it may be thought of as ‘growing downwards’. The shrinking canopy of the aging tree needs to be free from competition from younger trees or its demise will be hastened.

How can you help?

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- When selecting new trees consider long term influences such as climate change and the suitability of different trees for the site.

Extending the life of the formal design

How can you help?

- Manage avenues to secure their heritage, design, amenity, landscape and habitat values over the longest possible timescales.
- To give all trees the best possible chance, ensure the roots of existing or replacement avenue trees are looked after with the greatest care.
- Consider the role of ancient avenue trees in relation to the population of trees across the whole site, as it may be possible to replace them or create new avenues with trees that benefit biodiversity as well as the design objectives.
- Plant new avenues to become landscape features of the future and to provide new generations of future ancient trees near to existing aging avenues.
- Plan replacement of trees in avenues with care taking into consideration the choice of species, type and source of stock material and maintenance of the intrinsic proportions and structure of the avenue.

Y oung tree protected by traditional parkland railing.

Ancient Tree Guides No.2: Trees in historic parks and landscape gardens

Ancient Tree Guides No.2: Trees in historic parks and landscape gardens
The Registers

The registers and other inventories of parks and gardens in the UK record designed landscapes of special historic interest and include many different types of sites. Registered designed landscapes are of national significance and as such are a material consideration for local planning authorities in determining planning applications. The oldest surviving parks and gardens are likely to be considered for inclusion on the registers, and later Georgian and Victorian parks if they are representative of an important design and relatively intact. Specimen trees, shrubberies, parkland clumps, shelter belts and woods may all be features of designed landscapes.

Who to contact and where to go for more information

For further information about partner organisations go to their websites:
- www.english-heritage.org.uk/parksandgardens
- www.english-nature.org.uk
- www.forestry.gov.uk
- www.snh.org.uk
- www.historic-scotland.gov.uk
- www.cadw.wales.gov.uk
- www.ehsni.gov.uk
- www.ccw.gov.uk
- www.treecouncil.org.uk
- www.countryside.gov.uk
- www.nationaltrust.org.uk
- www.fwag.org.uk

Further reading


What makes an historic park or garden?

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Ancient Tree Guides No.2: Trees in historic parks and landscape gardens

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This leaflet is available in Welsh as a pdf. Mae’r daflen hon ar gael yn Gymraeg fel pdf o wefan www.ancient-tree-forum.org.uk

Further leaflets are planned including one on trees in relation to construction. This leaflet is available in Welsh as a pdf. Mae’r daflen hon ar gael yn Gymraeg fel pdf o wefan www.ancient-tree-forum.org.uk

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Sources of further information and advice

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This leaflet is the second in a series on the management of ancient trees. The first one in the series is titled: Ancient Tree Guides No.1: Trees and Farming. It is available from the Woodland Trust or can be downloaded as a pdf file in English and Welsh from www.ancient-tree-forum.org.uk. Further leaflets are planned including one on trees in relation to construction.

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Who to contact and where to go for more information

Advice and information on ancient and veteran trees –
www.ancient-tree-forum.org.uk

Tell us about a tree you have found or to find one –
www.AncientTreeHunt.org.uk

Tell us about a wood or tree under threat and get lots more information about fighting a threat –
www.woodsunnderthreat.org.uk

Information on Tree Warden Schemes –
www.treecouncil.org.uk

Further reading


Veteran Trees: A guide to risk and responsibility. Published by English Nature (now Natural England) available as a pdf from their website.

The law of trees, forests and hedgerows (2002) Charles Mynors. Sweet and Maxwell


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An ancient tree is one that is old in comparison with other trees of the same species. The crown may be small as the tree is growing downwards through age but may still be vigorous. It will have a very wide trunk relative to other trees of the same species. It is very likely that the trunk will be hollow. Even in this ancient stage it may stay alive for many decades and often centuries.

A veteran tree may not be as old as an ancient tree but bears the ‘scars’ of age such as decay and hollowing in the trunk, branches or roots and flaking bark, any of which will provide important wildlife habitats.

Pollards and coppice are trees that have had their canopies cut back on a regular cycle. Many are traditional ‘working trees’ cut for a product and in some places they were landmark or boundary trees so they are also very important from a social history perspective.

A tree may be perceived to be in decline when it is merely aging. Hollowing of the trunk as the tree ages is entirely normal. It is also important for the wildlife that either help the heartwood to decay or live in the cavities that arise in the process.

A tree owner has a duty to take reasonable care. In the case of ancient and veteran trees it is appropriate to take into account broader issues of amenity value or habitat for wildlife. Safety obviously takes precedence over amenity in general; but that does not mean that a tree must necessarily be felled after a collision or the death of one of its branches. It is not necessary to fell trees as they age. There may well be other possible actions that will reduce the risk such as managing access around and under the tree.

Ancient and veteran trees are special because of their great size, age or condition. Retaining these trees will enhance the value of any development. They will add a unique quality, giving a sense of place and an air of respectability and dignity, creating character and distinctiveness which will be appreciated by present owners and their families.

Ancient and veteran trees are assets. Recognising ancient and veteran trees

This leaflet is for builders, developers, architects, arborists, landscape designers and conservationists who are involved in designing and constructing developments that will affect ancient and veteran trees.

Designing development around trees and woods with significant amenity, heritage and biodiversity value will foster good relationships with communities and local planning authorities. Time spent identifying and caring for all the trees of importance will pay dividends in increasing the appeal and value of the development, in increasing the appeal and value of the site for clients and home owners.

Ancient and veteran trees may be present as individual trees, as part of old hedgerows or in groups as in parkland or orchards. Woodland, especially ancient woodland, is vitally important as stepping stones between habitats. This will increasingly important as wildlife has to adapt to climate change.

Retaining as many of the important trees as possible and taking care of them is essential for the wildlife and will give an immediate sense of permanence to the new landscapes and bring great pleasure to the community in the decades to come.
To protect a tree during construction, local planning authorities are guided by the recommendations in British Standard 5837: 2005 ‘Trees in relation to construction’.

BS 5837 requires that the values of trees should be assessed initially independently of any layout and design for the development. Trees which have significant cultural, historical, environmental or economic values should be retained provided that the root protection area (RPA) is calculated as a circle with a radius of 12 times the trunk diameter of the tree, measured at 1.5m from ground level. This area is capped at a maximum of 707m² or a circle with a radius of 15m. The overall area is a minimum but it is possible for the shape to vary, provided it gives adequate protection for the root system.

In the case of ancient and other important trees, the RPA may be insufficient to ensure their roots and the rooting environment are properly protected. A minimum root protection area (RPA) of 12 times the trunk diameter of the tree, whichever is the greater, was set out as a standard in the handbook ‘Veteran Trees: A guide to good management’ published by English Nature (now Natural England). A greater RPA will reduce the possibility of damage or disturbance to these very special trees, so they have the best chance to provide a lasting contribution to the development.

The handbook also contains detailed advice on care of and recommendations for tree work appropriate to veteran and ancient trees. These recommendations should be followed in preference to BS 5837, which deals with general tree work and is widely acknowledged to be out of date in a number of important respects.

It is important to check if a tree is already protected. Individual trees, groups of trees or woodlands with amenity value (e.g. visual, historic or nature conservation) may already be protected through Tree Preservation Orders (TPO). Most trees in conservation areas are also protected.

Elsewhere, a licence may be required from the Forestry Commission to fell growing trees.

In some parts of the UK, planning authorities have a duty to make provision for the protection of trees and to conserve biodiversity when deciding on planning applications. They may also be a planning policy instrument by requiring planning authorities to conserve trees as part of development proposals.

A tree may be host to wildlife protected by law such as decaying wood fungi, insects that live on decaying wood, lichens associated with the bark of the tree and roosting or nesting birds and all bat species.

If it is likely that a protected species is present, you may need a licence before any tree work is started and your planning authorities will require evidence that a suitable survey and evaluation has been done as part of the planning application.

Good practice on development sites

Case study 1

Shinfield Park, Wokingham

The developers have made full use of the parkland ancient and veteran trees to enhance their major development. They have used the trees to promote their scheme on billboards and in their marketing.

Substantial fencing has been used according to BS 5837 ‘Trees in relation to construction’, to protect the roots of this old pollard estimated to be 500 years old.

Before carrying out activities which might harm or disturb protected species, such as bats, consult the appropriate Statutory Nature Conservation Organisation.

Is the tree or development site already protected?

It is important to check if a tree is already protected or if a site is already protected. If it is known that a tree is already protected, then the appropriate advice of the relevant body should be sought.

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It is important to make sure the long term use of the area around and under trees is compatible with ancient and veteran trees. It is not ideal to allow parking near these trees or encourage too much access as this may cause compaction of the root system, heightening the risk to people or cause damage to property. Excessive tree surgery is often the consequence, leading to a rapidly escalating spiral of intervention. It is best to encourage communities or visitors to enjoy the benefits of the tree from a distance.

Case study 2

The Big Tree, Orkney

Orkney's oldest tree stands in Kirkwall's Main Street. Although urban development has encroached on this hollow sycamore tree, said to be several centuries old it is still a great survivor and has spread new, healthy growth from its cut stump. Through careful management this tree could continue to be a well loved landmark for shoppers and tourists for many hundreds of years to come.

Case study 4

Veteran elm, Grantham

A new, veteran elm adds colour and character to a neighbourhood throughout the year. Guidance on the care of trees is available for owners, see back page.

Case study 5

Wysham Oak, Monmouth

Local authority housing was designed around the Wysham Oak, which adds value to the diversity of the development. It is important to care for the tree and its roots after construction, so that the tree continues to provide a lasting benefit to the development.

Case study 6

Veteran elm, Grantham

A rare, veteran elm adds colour and character to a neighbourhood throughout the year. Guidance on the care of trees is available for owners, see back page.

Traditional orchard

These old fruit trees add character, biodiversity and local distinctiveness to this housing development. Traditional orchards are now a priority habitat in the UK Biodiversity Action Plan.
Ancient Tree Guides
No.1: Trees and farming
Although they have lived long lives, old trees need our care. This guide looks at how farming may affect the lives of ancient trees and at simple measures that can prevent their untimely death.

**Grants for tree care**

More help to look after trees that are important in the landscape for wildlife, historically or culturally will be available from 2005. The new agri-environment schemes which are due to start in 2005, will include payments for tree management and establishment. In the meantime there are grants available for tree work such as planting and cutting and special management of historic parks and traditional orchards. Recently, the Government has increased the payments for some tree works (e.g. there are additional payments for tree guards). For details of current funding arrangements and to keep up-to-date with grant aid for tree care from 2005, take a look at [www.ancient-tree-forum.org.uk](http://www.ancient-tree-forum.org.uk) or contact your local Defra or FWAG adviser.

There are voluntary groups such as The British Trust for Conservation Volunteers or local community organisations and tree wardens who may be able to help with conservation activities on the farm.

**Disappearing landscapes**

Studies in North Yorkshire, mid Suffolk and Wales have shown that as recently as 150 years ago, our hedgerows were full of trees. Changes in farming practices have meant that now in many parts of the UK only a few farmland ancient trees remain. If the remaining trees disappear we lose history, culture, wildlife and landscape beauty. The rate of loss in some places appears to be far greater than the development of new generations of ancient trees. Therefore every single remaining ancient tree is important and replacement trees are essential.

Changes in farming and forestry in the past 100 years have meant that ancient ‘working’ trees are no longer so important for traditional rural products. However, ancient trees that are gnarled and hollow are historical landmarks and give local character to many of our most cherished landscapes.

Although they are a familiar sight to us, some experts believe these trees survive in such abundance nowhere else in Northern Europe and this makes us the custodians of landscapes of international importance.
Growing old adds value for wildlife

A sustainable population of ancient trees in the landscape is vital for the specialised wildlife dependent on them. It is the old wood and bark and the process of hollowing by fungi which are so important. In areas of low air pollution, rare lichens colonise ageing bark. Inside the tree, specialist fungi start the process of softening up the wood. Once the wood has started to decay, it becomes the habitat of other creatures such as rare insects. A succession of different fungi and insects colonise the changing conditions. They recycle the dead wood and its valuable minerals and nutrients back into the soil for the tree to reuse. It is believed that many of the rare species associated with old trees can only colonise new trees if they are within easy reach and are the right age or in the right condition. Ageing trees need to be nearby to provide the habitat for these species to move across to.

Some of the rare species of fungi, bats, birds, lichens and insects associated with ancient and hollowing trees are protected by law. You may need specialist advice to find out if these species are present and how and when to undertake any tree work. For further information, go to www.ancient-tree-forum.org.uk
It is essential to the health and longevity of trees to protect their root ecosystems. But because roots are out of sight in the soil, the impact of our actions is often overlooked.

The root system of a tree is a very different shape to the outline of a tree above ground, it is not a mirror image. Most of the tree’s roots are typically within the top 600mm of the soil, with perhaps a few penetrating to twice this depth, although there is a lot of variation due to soil type and tree species. Roots typically spread out 1.5 to 2.5 times further than the radius of the canopy.

Depending on local conditions the root system may develop unevenly and grow out more on one side of the tree than the other. Even when root systems decline, as trees age and their canopy reduces, the root system may still extend a great distance from the trunk of the tree.

Cultivation, especially ploughing and ditching, damages roots and also the important mycorrhizal fungi linked to them.

Most plants form mycorrhizal associations with fungi which live in the soil. Mycorrhizal fungi benefit trees by linking directly with tree roots to provide the equivalent of an extended root system. They gather essential nutrients otherwise inaccessible to the tree and act as a barrier to certain disease-causing organisms. These organisms may enter the tree if fertilisers and chemicals encourage the growth of non-mycorrhizal roots. Mycorrhizae help the tree to cope with extremes in growing conditions.

Compaction due to heavy vehicles or stacked materials also damages roots, affects the soil structure and may lead to prolonged periods of waterlogging or drying out in summer.

As we do not know where the roots are, a precautionary approach should be taken even if the area currently allowed for by grants is less than ideal.

Deep cultivation right up to near the trunk and removal of major limbs to allow vehicle access increases the risk of premature death of important trees.

Deep ploughing damages roots and may lead to gradual loss of trees in an historic landscape.

Tree root tips due to colonisation by a mycorrhizal fungus.
How can you help?

- Create a root protection zone around each ancient tree 15 times the diameter of the tree trunk or 5 metres beyond the canopy, whichever is the greater, to avoid undue damage to root systems.

Diagram showing the minimum root protection zone compared with maximum root spread

2. Fertilisers and animal medicines

Mycorrhizal fungi and other micro-organisms may be harmed by chemicals such as fertilisers, pesticides and the excreted residues of veterinary medicines.

Lichens on the bark of ancient trees can be smothered or harmed if sprayed by chemicals or manure.

While lime application can improve soil structure, nitrogen, phosphorus and potassium fertilisers may change soil structure over time especially in clay soils. This may help the spread of soilborne fungal diseases.

How can you help?

- Avoid applying any fertilisers or pesticides near tree roots and trunks of ancient and mature trees.
- Make sure that animals treated with veterinary products are kept away from trees until the medicines have been excreted.

3. Grazing

Many of our ancient trees have grown in grazed, unimproved pastures throughout their lives, but today, high numbers of larger and heavier animals can cause severe compaction and pollution. Where animals congregate under trees or herds of animals move regularly along narrow access routes they cause compaction. High levels of dung and urine can build up creating localised high nutrient levels which can damage beneficial root associations with fungi. Browsing damage to the bark may expose wood to pathogens.

However, it is also important to control the growth of vegetation around trees. Some vegetation e.g. bracken, can create a high fire risk and a single incident may kill many trees. Too much vegetation will compete with the tree for light and nutrients, shade out important lichen communities or affect insects which need sunlit tree trunks.

Stock congregating under tree may damage its roots and speed up its decline.
How can you help?

- Limit the frequency and length of time, stock graze or congregate near ancient trees.
- Fence off trees from stock or provide physical barriers to prevent them congregating under important trees and provide alternative sources of shade.
- Locate supplementary feed, salt licks, drinking troughs and manure heaps away from ancient trees.
- Restrict vegetation that shades tree canopies, trunks or is a high fire risk e.g place slip rails in protective fencing to allow some grazing to control vegetation.

4. Retain mature and ancient trees – alive and dead

Standing dead trees are valuable and may last for many years. The gradual breakdown of decaying wood recycles valuable minerals and other nutrients, some of which are taken up by mycorrhizal fungi.

Retaining existing mature or young trees is important too as they will become the ancient trees of the future well before any new planting can get established.

We have lost so many trees in recent decades that more planting of trees in fields and hedgerows is necessary. We need to establish many new trees to become the open grown trees of tomorrow and the ancients of the future. Open grown trees appear to have more chance of reducing their canopies naturally in old age, so they can survive much longer.

How can you help?

- Before any work takes place check whether the tree is protected by a Tree Preservation Order and that the work complies with protected wildlife legislation.
- Retain trees wherever possible, even dead trees. Consider alternatives such as reducing the canopy before making a decision that may result in a centuries old tree being felled. Felling to ground level is rarely necessary.
- Leave fallen branches and use them to protect trunks and roots from stock.
- Aim for a population of different aged trees to create a sustainable supply of ancient trees into the future.
- Plant more trees, especially oak and other native species suited to the site, taking into account historic features and landscape design.
- Mark and protect new trees in hedgerows, according to the guidance in the Tree Council’s Hedge Tree Campaign.
Follow best practice when cutting mature and ancient trees

Pollards that have not been cut for many years (lapsed pollards) will have large, heavy branches and the trunk or bolling of the tree may not be able to support their weight. The tree may collapse in high winds. Planned reduction over a period of years may help prolong their lives.

The removal of large limbs especially ones lower down may destabilise a tree.

How can you help?

- Seek professional advice when cutting ancient trees or lapsed pollards.
- Reduce trees only as much as is necessary to make them structurally sound.
- Plan reduction of canopies in stages (see diagram opposite).

- Wherever possible leave lower limbs intact but if essential, should be done by skilled workers.
- After cutting, manage the regrowth to ensure the tree does not become top heavy again.
- Leave torn or broken limbs to recover naturally.
- Leave fallen or cut material beside or near as possible to the tree.

Future landscapes need more trees.

Mark and protect young trees to prevent them being cut back when the hedge is trimmed.

5. Follow best practice when cutting mature and ancient trees

The major lower limbs of this tree were removed, weakening the trunk and in a high wind the tree suddenly collapsed.

The Mawley oak – a famous old pollard became top heavy and suddenly collapsed catastrophically.

The reduction of the canopy may need to be phased over many years, depending on the vitality of the tree. The gradual reduction of the canopy allows the tree to slowly adapt and recover.

Diagram showing the stages in reduction of the canopy of a lapsed ancient pollard.
Sources of further information and advice

The handbook *Veteran Trees: a guide to good management* was produced in 2000 as part of the Veteran Trees Initiative. It is available from English Nature priced £15 or can be downloaded for free from the English Nature website.

For general and specific advice on ancient tree management and sources of funding, contact www.ancient-tree-forum.org.uk via the email enquiry link. There is a discussion forum for sharing of information, ideas and concerns. Alternatively phone the Woodland Trust information desk on 01476 581135.

This leaflet is the first in a series on the management of ancient trees. Further leaflets are planned covering the management of trees in historic landscapes, trees in relation to construction and the management of decaying wood habitats including ancient trees in woodland.

This leaflet is available from the website www.ancient-tree-forum.org.uk

For further information about partner organisations go to their websites:

www.nationaltrust.org.uk
www/fwag.org.uk
www.english-heritage.org.uk/parksandgardens
www.english-nature.org.uk
www.forestry.gov.uk

To obtain tree tags for information on tree tagging, or to find a tree warden, contact the Tree Council – www.treecouncil.org.uk
Appendix 4
Map
Locations of recorded veteran trees in the NFNP
Appendix 5

Summary Guidance for Classifying Veteran and Ancient Trees

The Aging Process and Guidance for Tree Recording

Treework Environmental Practice

Neville Fay
DEFINING AND SURVEYING VETERAN AND ANCIENT TREES
Neville Fay, 2008

Factors influencing ancient status and veteran tree quality
Veteran trees and ancient trees are surveyed as individuals for recording their habitat value and as populations to establish their viability, rates of loss and to establish population sustainability. The term ‘ancient tree’ may be understood as an age classification to describe the stage when, after the loss of apical dominance, a tree passes beyond full maturity and the crown begins to shed redundant parts and accumulate dead wood. During this stage, the crown begins to reduce in size (crown retrenchment) and the current growth-ring area of woody tissue annual increment (CAI) eventually reduces, compared to earlier developmental stages in the trees growth (White, 1998).

Varying degrees of trunk hollowing may naturally occur in this ancient stage. The ancient stage is the final stage in the life of the tree (Read, 2000) and, where conditions are favourable, this phase can be the longest. As the ageing process continues, the tree is progressively colonised by fungi that change the nature and condition of wood material and dead and dysfunctional woody tissue accumulate. Natural damage and shedding of tree parts can, through the agency of wood decay fungi, lead to trunk hollowing, branch cavities, live stubs, shattered branch ends, loose bark, sap runs and a range of rot types. These attributes are habitat for many organisms and are known as ‘veteran features’. The organs of saproxylic fungi (fruiting body, mycelia etc) may in turn be colonised, for example, by specialised invertebrates, so that as the tree ages this complex woody substrate held within a living sapwood envelope provides an increasing range of specialised niches for different organisms to colonise with diverse ‘life-styles’. In this sense to the extent that the tree advances through the ageing process and develops extensive colonised saproxylic habitat, in the ancient stage it can, though merely an individual specimen, be regarded to be an ecosystem.

Colonising saproxylic invertebrates with limited powers of dispersal may only take possession of rot sites in very specific favourable circumstances. The greater the length of time a group of trees exists on a site, the greater the possibility for particular specialised and rare species to colonise dead wood substrate, itself a scarce habitat associated with the rarity that is the ancient tree. An extreme example of such specialism is the endangered Moccas Beetle (*Hypebaeus flavipes*), a false soldier beetle, associated with ancient oak trees and only found at one site, Moccas Park in Herefordshire. Its rarity is sufficient for the beetle to be given special protection under Schedule 5 of the Wildlife and Countryside Act 1981 and identified as a priority species for protection in the UK Lowland Wood-pasture and Parkland Habitat UK Biodiversity Action Plan as *Endangered* in Great Britain. Continuity and lack of disturbance is therefore a major factor in biodiversity associated with old trees (Alexander, 1988 & 2004).

The term veteran has come to be virtually synonymous with ancient and tends to be used in a colloquial sense to describe both the age and condition of a tree. From a technical point of view there are significant differences between these terms, particularly from the point of view of the principles involved in veteran tree surveying.

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12 UK Biodiversity Action Plan
A veteran tree has the connotation of a ‘battle-scarred survivor’; a useful term, borrowing from and extending accessible anthropomorphic concepts to communicate an understanding of the condition of trees. English Nature launched the Veteran Trees Initiative\textsuperscript{13} based on a general understanding of this term and its accessibility to both a generalist and specialist audiences. To the specialist however, veteran describes qualities associated with particular habitats in trees, (principally associated with dead wood) and colonising organisms. A veteran tree has veteran features (habitat). The term does not automatically indicate extreme age. From an arboricultural point of view, ancient is an age-class characterised by particular physiological processes and developmental stages. An ancient tree is one that is old for its species and, while all chronologically ancient trees have veteran features sufficient to qualify them as veteran trees, all veteran trees will not necessarily have entered into the ancient age class.

It has been recognised that the assemblages of colonising species that initially develop in association with veteran features, when relatively recently created, differ from those found in an ancient tree context. A key influence on the quality and value of tree related biodiversity is the fungal microbial communities that drive the wood decomposition process (Rayner, 1993). Other factors affecting faunal colonisation relate to tree population characteristics. Age structure, population density and qualities of open and closed growth are significant in this respect.

Site history is a particularly significant factor influencing habitat quality; a specific element of site history is associated with the continuity of the tree population. Studies have shown that there is a positive correlation between species richness of saproxylic fauna and historical continuity. This understanding has led to a system being developed for evaluating ecological continuity that attempts to assess the saproxylic beetle fauna (scored according to rarity and occurrence in old habitats) to inform the conservation value assessment of the site habitat (Alexander, 1988; 2004).

It is uncertain, whether, or over how long a period of time, species assemblages that have been to-date identified only with ancient trees, will colonise newly induced saproxylic habitat in trees. However, it is known from population ecology studies that the fragmentation of the spatial structure of habitats leads to decline in dependant colonising species and further, that when numbers of trees with suitable veteran features decline, dependant colonising populations can ‘go extinct’ (Ranius, 2002 and 2006). When saproxylic tree features form ‘precociously’ from catastrophic events, which endanger the viability of the tree this can lead to confusing conclusions where it is advanced that physiologically compromising a tree positively benefits dead wood ecology. In this respect management to support the longevity of the tree is an important contribution to the continuity of habitat.

Veteran features in trees may be created by intentional arboricultural treatment or they may occur as a consequence of environmental impacts, such as drought, storms and man-made damage, rather than as direct result of the natural ageing process. In traumatic circumstances enhancement of biodiversity value may be expected to be limited in comparison to trees

\textsuperscript{13} The Veteran Trees Initiative was an English Nature project that took place between 1996 and 2000 to raise public and professional awareness about the importance of veteran and ancient trees and to produce publications and advance knowledge for their good management, conservation and protection.
whose veteran features have developed naturally through an extensive, ageing process. The quality of such habitat therefore largely depends on the tree longevity and the stability of the associated context.

From a survey viewpoint a methodology has been developed to take account of these factors. This involves quantifying the number of veteran features according to the Specialist Survey Method (SSM) (Fay & de Berker, 1997), to determine the qualifying criteria for inclusion of what is a true veteran; i.e. a tree that is either ancient or mimics the quality and quantity of naturally developed veteran features typically observed in an ancient tree. Such trees have high saproxylic (veteran) quality. To account for the importance of habitat continuity in the tree population a technical distinction is made between true veterans and those that will in future be recruited into this sector of the tree population (see Figure B). These are transition veterans; i.e. trees that contribute to the veteran resource, show some of the features of a true veteran and, through the ageing process are expected to become true veterans, before which time they offer bridge and continuity habitat. Both these types of veterans have great significance in populations of trees for the continuity of dead wood habitat.

One of the main causes of veteran tree loss is branch, stem or root-plate failure. A key intention of any management strategy for the benefit of biodiversity is to enhance tree longevity where feasible by improving structural and physiological condition. Where failure is found to be a significant risk (to the tree), an element of remedial works is typically aimed at stabilization; often targeted to limited work on heavily loaded limbs. Where trees are considered to show signs of physiological stress or considered likely to be placed under stress, management may focus on promoting vitality; e.g. by reducing competition for light, improving the soil-root environment and/or pruning (where orchard trees are concerned this might be directed to pruning to reduce fruiting. Veteran tree management should be directed to enhancing tree longevity wherever possible to ensure that there is no avoidable loss of veteran and ancient trees (Fay, 2002).

**Fig A: The Tree Ageing Process: From the perspective of developmental stages of a standard growing from seedling to death showing habitat (veteran) features (Fay 1997)**

Survey methods: population studies used to classify age class and veteran status
When attempting to assess and monitor tree population dynamics it is essential that the age class of trees on the site is recorded. The site is walked and units divided, where applicable, according to compartments. However in some circumstances compartments were further divided in order to differentiate between wet woodland, oak woodland and parkland. A walkover survey of age estimations for trees is usually based on diameter at breast height (dbh) using girth measurements (gbh) for controls. Different species have different forms and different rates of development; therefore it is necessary to have criteria for age classification to reflect these differences. Trees are recorded with respect to age class as juvenile, semi-mature, mature, fully-mature and ancient.

For the purposes of population surveys, trees are classified as juvenile if considered to be less than 20 years age. Similarly trees are classed as semi-mature if assessed to be between 20 and 60 years old. For the older age classes girth criteria shown in Table S1 is advocated. There are no guidelines for a satisfactory ratio of young, middle-aged and old trees in parklands, wood-pasture or orchards; however a varied age structure is obviously important for conservation and the continuity of ancient trees.

Table 1: The girth size categories used for age-class classification during both surveys

<table>
<thead>
<tr>
<th>Age Class</th>
<th>Field maple, rowan, yew, birch, holly and other smaller tree species</th>
<th>Oaks, ash, Scot’s pine, alder</th>
<th>Sycamore, lime, horse chestnut, sweet chestnut, elm species, poplar species, beech, willows, other pines and exotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mature</td>
<td>&lt;2.0m</td>
<td>&lt;3.5m</td>
<td>&lt;4.0m</td>
</tr>
<tr>
<td>Fully-mature</td>
<td>2.0&lt; &amp; &lt;2.5m</td>
<td>&gt;3.5 &amp; &lt;4.0m</td>
<td>4.0&lt; &amp; &lt;4.5m</td>
</tr>
<tr>
<td>Ancient</td>
<td>&gt;2.5m</td>
<td>&gt;4.0m</td>
<td>&gt;4.5m</td>
</tr>
</tbody>
</table>

Table 2: Criteria for veteran tree identification: Veteran Tree Features
These are all based on the veteran tree recording methodology (SSM).

<table>
<thead>
<tr>
<th>Veteran Tree Features:</th>
<th>Description</th>
<th>Minimum Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rot sites</td>
<td>Rot sites associated with wounds which are decaying. Following bark loss, wounding or limb loss wood may be colonised by fungi and other microorganisms. Rot is typically visible on the surface of the tree following bark disruption or damage. Rot sites may be apparent within the stem or branches or where a stem or branch has fractured and the wood become colonised by fungi. Such sites can then become important for a range of saproxylic species.</td>
<td>400cm²</td>
</tr>
<tr>
<td>Holes &amp; Water pockets</td>
<td>Holes and Water pockets in the trunk and mature crown. Rot holes can develop through limb loss and bark wounds, and are expanded by digestive activity of microorganisms (particularly wood decay fungi) and invertebrates, and when inundated can form water pools. They can become occupied by invertebrates, mammals, reptiles, birds and bats.</td>
<td>5cm - 15cm</td>
</tr>
<tr>
<td>Dead wood</td>
<td>Dead branches or stems. Dead wood may be fallen or remain attached. It is typically colonised by decay fungi and depending on its hydration, exposure, and elevation may support different suites of species. Extensive (Larger than 20cm in diameter) standing or fallen dead wood is of value.</td>
<td>15 cm diameter</td>
</tr>
<tr>
<td>Hollowing</td>
<td>Any hollowing in the trunk or major limbs.</td>
<td>See SSM</td>
</tr>
<tr>
<td>Fungal fruit bodies</td>
<td>Fruit bodies of fungi known to cause wood decay</td>
<td>See SSM</td>
</tr>
</tbody>
</table>
Table 3: Veteran Classification according girth and habitat attributes

<table>
<thead>
<tr>
<th>VETERAN CLASSIFICATION</th>
<th>Age Class</th>
<th>Qualifying Characteristics</th>
</tr>
</thead>
</table>
| TRUE VETERAN           | Mature / Fully mature / Ancient | - Ancient tree (True Veteran): Identified primarily by qualifying girth size categories used for age-class classification for survey purposes and/or qualifying phoenix properties (see Girth Table S1 & Age class - Veteran Status Fig S2)  
- Non-ancient (True Veteran) Trees of any diameter that show **4 or more veteran features** of the above features have been These trees show the habitat characteristics of veteran trees that are thought to be important in terms of biodiversity. |
| TRANSITION VETERANS    | Mature / Fully mature | Trees of any diameter that show **3 veteran features**.  
- Transition veterans have some habitat characteristics and may become potentially important veteran trees for biodiversity in time. (see Girth Table S1 & Age class - Veteran Status Fig S2)  
- These trees are important as bridge habitat in vulnerable, fragmented or widely scattered True Veteran populations. |

Table 4 Veteran qualifying features (see SSM)

<table>
<thead>
<tr>
<th>Veteran Tree Feature</th>
<th>Description</th>
<th>Min Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hollowing</td>
<td>Hollowing Established trunk hollowing within a complete circumference is a most important indicator of a true veteran and is very closely linked to the ageing process. Any hollowing in the trunk or major limbs is important though extensive trunk hollowing is indicative of a tree of great age for its species. Following the normal ageing process fungal decay may progress through the root system in the heart of the trunk and may form large cavities or become continuous creating an entire or partially enclosed cylinder. Such sites are extremely rare when in an advanced state and the changing quality of the woody substrate amalgamates into ever finer and ‘soil-like’ material (typically in ancient pollards). This latter stage indicates trees of great age and habitat of high conservation significance.</td>
<td>See SSM</td>
</tr>
<tr>
<td>Rot sites</td>
<td>Rot sites associated with wounds which are decaying Following bark loss, wounding or limb loss wood may be colonised by fungi and other microorganisms. Rot is typically visible on the surface of the tree following bark disruption or damage. Rot sites may be apparent within the stem or branches or where a stem or branch has fractured and the wood become colonised by fungi. Such sites can then become important for a range of saproxylic species.</td>
<td>400cm²</td>
</tr>
<tr>
<td>Holes &amp; Water pockets</td>
<td>Holes and Water pockets in the trunk and mature crown Rot holes can develop through limb loss and bark wounds, and are expanded by digestive activity of microorganisms (particularly wood decay fungi) and invertebrates, and when inundated can form water pools. They can become occupied by invertebrates, mammals, reptiles, birds and bats.</td>
<td>5cm - 15cm</td>
</tr>
<tr>
<td>Dead wood</td>
<td>Dead branches or stems Dead wood may be fallen or remain attached. It is typically colonised by decay fungi and depending on its hydration, exposure, and elevation may support different suites of species. Extensive (Larger than 20cm in diameter) standing or fallen dead wood is of value. Note: Dieback alone is not sufficient for inclusion in this survey as an indication of the presence of dead wood.</td>
<td>15 cm diameter</td>
</tr>
<tr>
<td>Tears, Scars, Lightning strikes</td>
<td>Tears, scars, lightning strikes result in exposed woody tissue Exposed woody tissue from bark loss associated with shedding limbs or lightning strikes may be variably compartmentalised. Tissue quality may be variable depending on extent, fungal decay activity, exposure and elevation on the tree.</td>
<td>30cm</td>
</tr>
<tr>
<td>Live stubs</td>
<td>Naturally fractured, truncated live stems or branches Live growth associated with fracture ends and shattered tissue creates a large surface area for microorganism colonisation. Such wound can be very variable in the type of habitat they offer for colonisation and can develop in hollow branches</td>
<td>15 cm diameter</td>
</tr>
<tr>
<td>Fungal fruit bodies</td>
<td>Fruit bodies of fungi typically associated with wood decayy</td>
<td>See SSM</td>
</tr>
</tbody>
</table>
REFERENCES
Appendix 6
SPECIALIST SURVEY METHOD

LEVEL3 (VTI Guidance Book)
LEVEL3 (Summary of Recommended Fields for Database)
LEVEL1 (Introduction to Surveying Veteran Trees)

DEFINING & SURVEYING VETERAN & ANCIENT TREES
Fig B: Age Class:
The relationship between tree age class, ancient trees & indicators of veteran status
Specialist Survey plus Method [SSM+]:

6 TREE FORM
[1] Maiden Tree
[2] Shredded Tree
[5] Shored Stem
[6] Bundle Planting
[7] Natural Pollard
[8] Managed Pollard/Re-pollard
[9] Lapered Pollard
[10] Topped Lapered Pollard
[12] Phoenix Regeneration
[14] Shattered/fractured stump
[15] Other

7 STANDING/FALLEN
[1] Moribund upright
[2] Leaning at an acute angle - firmly rooted
[3] Leaning - loosened root plate
[4] Collapsed - supported
[5] Collapsed - main trunk clear of ground
[6] Collapsed - trunk partially attached to ground
[7] Collapsed - trunk detached from ground
[8] Fractured, collapsed, trunk/crown, attached to parent
[9] Fractured, collapsed, separated, root plate attached to ground
[10] Other

8 LIVE GROWTH
[1] Live, mostly full canopy (>50%)
[2] Live, partial canopy (25-50%)
[3] Live, residual canopy (<25%)
[5] Entire tree is dead - no live growth

9 CROWN LOSS
[1] Full crown outline (<25%)
[2] Nearly full crown outline (25-50%)
[3] Partial crown outline (50-70%)
[4] Remnant crown outline (>75%)

10 EPICORMIC GROWTH
[1] Bare (E)
[2] Trunk (T)
[3] Crown (C)
[4] ET
[5] BC

11 BARK CONDITION
Ares > 300mm x 30mm dead, loosely attached, missing or flaking bark about tree? [present, where?]
[1] Bare (2 m +)
[2] Trunk (above 2 m to base of crown)
[4] Enter appropriate code (see 10)

12 BARK FLUXES (SAP RUNS)

<table>
<thead>
<tr>
<th>Type of bark flux</th>
<th>Dry</th>
<th>Wet</th>
<th>Sticky</th>
<th>Bubbly</th>
<th>Other</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13 SPLIT LIMBS : >150mm diameter, none = [0]

14 TEARS/SCARS/LIGHTNING SCARS
Record number of tear and scar wounds >30mm
e.g. 3 Tears and 2 Scars = [3T, 2S]

14.1.1 & 14.2 Tears & Scars

14.3 Lightning Scar* suffix with [*]

15 LIVE STUBS > 150mm diameter: enter number

16 HOLLOWING:
16.1 Trunk Base
16.2 Trunk Middle
16.3 Trunk Top
[1] Apparently solid trunk: minor cavities (< 150mm diameter)
[3] Partially solid old trunk: Partial circumference, major cavities (150mm) or merging apertures
[4] Remnant trunk: up to 30% of outer circumference missing
[5] Trunk shell: over 30% of outer circumference missing

16.4 Mature crown hollowing
Number of hollows > 6" diameter

17 HOLES: TRUNK & MATURE CROWN
Apertures 50mm – 150mm counted

18 WATER POCKETS
Number of water pockets counted

19 ROT

<table>
<thead>
<tr>
<th>Colour</th>
<th>Cylindrical Rot</th>
<th>Significant</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>[A]</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Brown</td>
<td>[B]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>[C]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rot areas up to 300mm x 150mm
e.g. 2 sites of red/brown, dry cylindrical rot = [2P]

20 DEADWOOD (ATTACHED TO TREE)
No. of units > 150mm (+) and 1m length

21 DEADWOOD (FALLEN)
As 20 above.

22 FUNGI

<table>
<thead>
<tr>
<th>Fungus</th>
<th>Tree</th>
<th>Fallen</th>
<th>Ground</th>
<th>Under</th>
<th>Crown</th>
<th>Other</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket</td>
<td>[A]</td>
<td>[B]</td>
<td>[C]</td>
<td>[X]</td>
<td>[0]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin-like covering</td>
<td>[D]</td>
<td>[E]</td>
<td>[F]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cap and Stalk</td>
<td>[G]</td>
<td>[H]</td>
<td>[I]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shinny Mold</td>
<td>[M]</td>
<td>[N]</td>
<td>[P]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

e.g. 2 types of bracket on tree + 1 type of bracket on fallen
deadwood + 3 types of capital/fungi on ground = [2A/1B/3K]

23 EPIPHYTES AND HEMIPARASITES

<table>
<thead>
<tr>
<th>Score system SSM+</th>
</tr>
</thead>
<tbody>
<tr>
<td>0: None apparent</td>
</tr>
<tr>
<td>1: Occasional presence [1 - 3 species]</td>
</tr>
<tr>
<td>2: Considerable presence [4 - 6 species]</td>
</tr>
<tr>
<td>3: Species rich [6 + species / significant species / extensive]</td>
</tr>
</tbody>
</table>
24 INVERTEBRATES [Score system SSM+]
[0] None apparent
[1] Occasional presence [1 - 3 species]
[2] Considerable presence [4 - 6 species]
[3] Species rich [6 + species / significant species / extensive]

25 BIRDS AND MAMMALS [Score system SSM+]
[0] None apparent
[1] Occasional presence [1 - 3 species]
[2] Considerable presence [4 - 6 species]
[3] Species rich [6 + species / significant species / extensive]

26 CONTEXT
Within 2km of Tree Area
[AR] Arable Field
[AT] Access Track
[AV] Avenue
[BU] Building
[BX] Recent Development (within 20 yrs)
[CH] Churchyard
[CL] Common Land
[CP] Cemetary
[FP] Footpath/results of drain
[GD] Garden, small (domestic)
[GO] Grounds, large (ornamental)
[HE] Health and
[H] Habitats
[H] Hedgerow
[HW] Highway
[MO] Meadow
[OR] Orchard
[PA] Parish Boundary
[P] Field
[PS] Pasture, unsown (low growth)
[WP] Woodland path
[W] Woodland (internal)
[WE] Woodland Edge
[X] Other - recently cleared scrub

One or more may apply

27 MANAGEMENT HISTORY
[A] Pollarding
[E] Other arboricultural work
[C] Weed control (within crown spread)
[D] Management of competitive tree growth
[E] Protective fencing (effective)
[F] Protective fencing (ineffective)
[G] Controlled public access
[H] Planting for veteran continuity
[I] Planting: potentially competitive
[X] Other
[0] None

One or more may apply

28 DAMAGE HISTORY
[A] Excessive browning
[E] Improper tree surgery
[C] Vandalism
[D] Flushing/machinery (impact/damage)
[E] Lightning
[F] Fire damage
[G] Storm
[H] Compaction
[I] Flooding/diking/breaching/erosion
[J] Chemical fertilizer/fertilizer
[K] Virulent disease (eg BBD, Honey fungus)
[X] Other MAJOR damage
[0] None

* Imminent fatal or major structural debilitation threat

29 SHADE
[A] Unshaded
[B] Light shade
[C] Close shade
[D] Heavy shade
[E] Extensive shade

30 PHOTOGRAPH

31 NOTES
Only exceptional comments are included e.g. historic tree tag no., survey information etc.

32 ARBORICULTURAL ASSESSMENT [SSM+]
32.1 Vitality (current) [SSM+]
Score 1 - 10
[1] = dead to 10 = exceptional

32.2 Decline expectation (score within 5 years) [SSM+]
[1] Extremely high
[2] Very high
[3] High
[4] Probable
[6] Moderate
[7] Low to moderate
[8] Low
[9] Very low
[10] Improbable

32.3 Collapse expectation (score within 5 years) [SSM+]
[Score system as for 32.2]

33 ESSENTIAL TREE MANAGEMENT TASKS [SSM+]
[A] Crown reduction / restoration
[B] Release from thin competition
[C] Initiate work to candidate veteran (improve habitat value)
[D] Decompose root / apply wood mulch
[E] Restrict access / restrict path
[F] Further habitat survey work recommended
[G] Plant nectar source
[H] Plant for succession
[I] Promote veteran habitat features (eg NTF, live stakes)
[J] Conduct hazard assessment
[K] Reduce crown to improve stability or promote vigour
[L] Reduce end weight to reduce risk of limb failure
[M] Retain as high canopy specimen
[N] No action at present
[O] Impending reduction or thin
[P] Pollard or re-pollard
[Q] Top prune to promote internal rejuvenation/restoration

34 NECTAR SOURCE DISTANCE (m) [ woody including bramble only ] [SSM+
[A] 0-5
[B] 5-10
[C] 10-20
[D] 20-30
[E] 30-50
[F] 50+

35 TOPOGRAPHY
35.1 SLOPE [SSM+]
[A] slight

35.2 TOPOGRAPHY / ASPECT [SSM+]
N North
S South
E East
W West
NE North East
NW North West
SE South East
SW South West

36 Area / Location [SSM+]
Tree in relation to Area
eg. Compartment number.
What can you do?
By completing this form, you are contributing to vital knowledge about veteran trees. With your help, English Nature, together with its partners in the Veteran Trees Initiative, intends to build a database of ancient trees throughout the country. This will help to retain these most important trees for the future.

What are Veteran Trees?
Veteran or ancient trees are very important for the wildlife which they support. Trees can grow into the oldest of living things and veteran trees are the oldest of their species. A veteran Oak or Sweet Chestnut (long-lived species) is likely to be older and larger than a veteran Cherry or Birch tree (relatively short-lived species). They may possibly have rot holes, fungi growing on them and hollow trunks. Also they may have valuable dead wood and may have been pollarded.

How to use the survey form
To survey an old tree you need this Recording Card, a pencil, paper (to draw a map), a long tape measure and permission from the owner.

Do not climb the tree or use instruments which may disturb the bark, the wood or the plants and creatures living on the tree. Walk lightly and carefully under the tree. Healthy roots need water and air within the soil. Trampling the ground where the roots grow can compact the soil and harm the tree. Above all, look carefully, be sensitive and observant and have fun. Trees can collapse and shed limbs, so be careful. English Nature do not accept liability for any injury or loss sustained in the course of surveying.

Enter on the Recording Card only what you feel sure about. If unsure, leave blank.

When completed, either return the form to your organisation or send it directly to:

The Veteran Tree Initiative (VTI/SVY1)
English Nature
Northminster House
PETERBOROUGH
PE1 1UA

Tel 01733 455101

Designed by Neville Fay and Nigel de Berker of Treework with assistance from the Ancient Tree Forum.

TREESERVICE LONDON, CHESTON COMBE, CHURCH TOWN, BRISTOL BS48 2JQ
Tel 01275 464466 Fax 01275 463078

Designed by
TREESERVICE
ENVIRONMENTAL CONSULTANCY

On behalf of
VETERAN TREES
INITIATIVE
DATE of survey: 
NAME of recorder: 
Address: 
ORGANISATION: 
Address: 
SITE ADDRESS: 
SITE OWNER: 
TREE GRID REF: 

Is there a sketch plan attached? Yes ☐ No ☐

DESCRIPTION: Do you know anything special about the tree eg history, name etc?

SETTING of the TREE
☐ Arable ☐ Church ☐ Common Land ☐ Deer Park ☐ Garden
☐ Hedgerow ☐ Orchard ☐ Parish Boundary ☐ Parkland ☐ Pasture
☐ Urban Tree ☐ Village Green ☐ Woodland ☐ Other

TYPE of TREE
☐ Ash ☐ Beech ☐ Hawthorn ☐ Holly ☐ Horse Chestnut
☐ Hornbeam ☐ Lime ☐ Oak ☐ Poplar ☐ Sweet Chestnut
☐ Sycamore ☐ Willow ☐ Other Broadleaves ☐ Yew ☐ Conifers

TRUNK Girth at 1.3m above ground level:
☐ Under 250cms ☐ 251-300cms ☐ 301-350cms
☐ 351-420cms ☐ 421-600cms ☐ Over 601cms

Girth = Circumference

TREE FORM
☐ Maiden ☐ Pollard ☐ Old Pollard ☐ Coppice ☐ Stump ☐ Other

STANDING / FALLEN
☐ Upright ☐ Leaning ☐ Rootplate lifting ☐ Fallen

LIVE / DEAD: Is the tree alive or dead?
☐ Alive ☐ Dead ☐ Unsure

HOLLOW TRUNK: Does the trunk have large holes?
☐ Unsure

HOLES: Are there any large holes in main branches?
☐ Yes ☐ No

HEAVY DEADWOOD: Is there a lot of heavy deadwood about the crown?
☐ Yes ☐ No

FALLEN DEADWOOD: Is there a lot of fallen deadwood on the ground?
☐ Yes ☐ No

TEARS / SCARS / LIGHTNING STRIKES:
Are there any tears, scars or lightning strikes on the tree?
☐ Yes ☐ No

ROT:
Is there any white rot on the tree?
☐ Yes ☐ No
Is there any brown rot on the tree?
☐ Yes ☐ No

What else is growing on the tree?
☐ Toadstool Fungi ☐ Bracket Fungi ☐ Lichen
☐ Other plants (eg Ferns, Mistletoe, Ivy etc) ☐ Nothing

What signs of animal life are there?
☐ Insect Boring ☐ Bird Nesting (in holes) ☐ Bat Roosts ☐ Nothing
Veteran Trees Initiative
Specialist Survey Method
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**Introduction**

English Nature launched the Veteran Trees Initiative in March 1996 to promote the management and continuity of England’s veteran tree heritage. A key element of the Veteran Trees Initiative is to develop a comprehensive and consistent method of survey as an agreed standard for the recording of veteran trees. Survey information gathered through the Veteran Tree Recording System is to be entered onto a national database of veteran trees which will form a register of recorded sites. It is intended that the database will contribute to a greater understanding of the distribution, biology and ecology of veteran trees. The database should subsequently enable recorders to trace individual trees and assess changes associated with particular veteran specimens.

**Properties of Veteran Trees**

Woody plants have the unique ability to remain healthy and structurally sound by laying down new increments of wood and bark over older wood which may have been weakened through injury, disease or decay. The growth rate of the new wood is influenced by mechanical stress, so that relatively wide increments are laid down over areas where decay of the old wood has led to reduced strength. This adaptive growth sometimes enables trees to attain great mass and longevity, even though they may shed individual limbs.

Tree wounds remove the protective covering of bark, exposing the underlying wood to the atmosphere and to colonisation by decay fungi and other micro-organisms. Partial drying of the wood allows some of these organisms, together with others which are present internally before wounding, to make use of the wood as a food source, thereby degrading it in a variety of ways. As a tree ages, the structure of its bark and wood becomes increasingly complex due to a combination of continued wounding, new growth and the progression of decay through many stages, culminating in cavity formation.

The ability of a tree to continue laying down new annual increments over a partially degraded and complex core is important for biodiversity as well as for its own attainment of great size and age. The resulting structural complexity provides a wide range of internal and external environments which may host many specialised fungi, plants and animals. It is the appreciation of these diverse characteristics which is the focus of the recording process, so that the veteran tree is perceived as a living habitat, rather than as an isolated antique organism.

**The Recognition of Veteran Trees**

Veteran status is associated with late maturity. However, trees of different species approach late maturity at different ages. Although there is no precise definition of veteran status for the purposes of field work, knowledge of species longevity, size typically associated with old age and local conditions affecting tree growth contributes to the recognition of veteran trees in the field. Their special quality in the landscape is reflected in the view that these trees “are of interest biologically, aesthetically, or culturally because of their age” (see ‘Guide to the care of ancient trees’, Veteran Trees Initiative, English Nature 1996).

Apart from obvious veteran candidates of massive scale and known antiquity, the surveyor is often likely to encounter uncertainty in the field as to the veteran status of certain trees. In such instances, reference should be made to the range of veteran attributes indicating habitat and associated flora and fauna addressed on the recording form, rather than tree size alone. If in doubt record the tree.

**Tree Safety**

It should be noted that whilst veteran trees may pose a safety risk, this survey is essentially a habitat assessment. This is not a safety assessment. Where there is suspected safety concern further specialist advice should be sought.

**The Veteran Tree Recording System**

English Nature hopes that the Veteran Tree Recording System will appeal to a wide range of people and will involve many who will not be expert. In order to take account of the different levels of specialist knowledge held by those who want to take part, three levels of survey have been devised.
**Veteran Trees Initiative**

**Specialist Survey Form**

**Level 1** is a simple, introductory level to veteran tree recording, using the *Veteran Trees Introduction* to surveying ancient trees Recording Card. Each card is used to survey a single tree. These Recording Cards are intended for use by schools and the non-specialist enthusiast. The Recording Cards are not contained within the Specialist Survey Booklet but may be obtained separately from English Nature.

**Level 2** is an intermediate *Generic Survey* of veteran trees, using this Specialist Survey Booklet and completing only the essential data sections which are *unshaded* on the Specialist Survey Forms. These are found at the back of the booklet.

**Level 3** is a comprehensive, *Specialist Survey* of veteran trees, using this Specialist Survey Booklet and completing all the sections of the specialist Survey Forms which are found at the back of the booklet.

**Survey Instructions for Levels 2 and 3**

*Use of the recording system*

The *Veteran Tree Recording System* employs a survey method using the forms, which are contained in this booklet together with guidance notes.

Each Survey Form is individually numbered and double sided (Side 1 & 2).

- Side 1 contains Site Details and Tree Details [Sections 1-21].
- Side 2 contains Tree Details and Notes [Sections 22-31].
- Site details are entered in sections A to M at the top of side 1.

*Site Details (A-M) are to be completed for each new site or distinct location upon a site. Guidance notes and instructions for completion of this section are found on pages 5 and 6 of this booklet.*

*Tree Details*

<table>
<thead>
<tr>
<th>Tree Details Side 1:</th>
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<tr>
<td>Tree Data</td>
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<td>Tree Habitat</td>
<td>Notes</td>
</tr>
<tr>
<td>Sections 11 - 21</td>
<td>Section 31</td>
</tr>
</tbody>
</table>

*Guidance notes and instructions for the completion of these sections are found on pages 7 - 17 of this booklet.*

Veteran trees are extremely variable in form and condition. It is important that the method of survey, explained through the Guidance Notes, should be followed as far as possible to ensure reasonable consistency.

**Plotting and Tagging of Trees**

Plotting and tagging of trees may be necessary on larger sites. Where trees are identified with an individual tag-number affixed to the tree, a method should be adopted which causes minimal damage to the tree and allows for tree growth (see *Pollard and Veteran Tree Management II* Corporation of London 1996). In addition to tagging, *wherever feasible all tree positions should be plotted on a plan* and a copy of the plan kept with the recording forms.

**Filing and Documenting**

Upon completion of a survey the recorder or responsible organisation should keep the original documentation and file a separate copy for safe keeping.

English Nature should be kept informed of progress and completion of recording and should be informed where documents are to be held. English Nature will be responsible for the overall co-ordination of survey results and their collation within a national database of veteran trees.

**Survey Precautions**

Surveyors should ensure that:

- Any necessary permissions are obtained from land owners or other relevant bodies prior to surveying.
- Surveyors should take all reasonable precautions to avoid risk of personal injury and if possible should not work alone.
- The survey is to be undertaken from ground level only.
- No damage to the tree or its surroundings should occur in the course of surveying.
- Conventions approved by English Nature associated with collection of sample material should be strictly observed.

*English Nature do not accept liability for any injury or loss sustained in the course of surveying.*
| A SITE | This is the name or address of the estate, farm or wood etc e.g. ‘Ashton Court Estate’. A site may contain one or several identifiable locations (see E) where veteran trees may be found. |
| B COUNTY | Identify the postal county in which the site is located. Where a site spans more than one county, the county is taken to be the area where the majority of veteran tree locations may be found. |
| C POST CODE | Enter the post code of the site address if appropriate. e.g. ‘Ashton Court Estate’. The entry for this item will be B | S | 4 | 1 | 9 | J | N. |
| D GRID REFERENCE | This is the conventional six-figure grid reference derived from reading a current Ordnance Survey map at 1:50,000 scale. Where feasible, the reference should be prefixed with the relevant two letter identifying code which indicates the 100 km square in which the site is found. The grid reference should identify the approximate central point of the site. e.g. ‘Ashton Court Estate’ Enter grid reference of approximate centre of site - (e.g ST 555 722) |
| E LOCATION | Identify the designated area within the SITE wherein the veteran trees may be found. |
| F OWNERSHIP | This is the name of current owners of the land upon which the trees are standing. e.g. Sir John Smith, Bristol City Council, National Trust, MOD. |
| H SITE STATUS | This is a planning or other legal designation indicating the constraints which may apply to the site and therefore affecting the trees which are present. Enter the appropriate two letter code. One or more designations may apply. [AO] Area of Outstanding Natural Beauty [CA] Local Authority Conservation Area |
Site Details

H SITE STATUS cont.
[ES] Environmentally Sensitive Area
[HC] Heritage Coast
[NN] National Nature Reserve
[NP] National Park
[OA] Other Ancient Monument or historic site
[SA] Scheduled Ancient Monument
[SL] Special Landscape Area
[SS] Site of Special Scientific Interest
[TP] Tree Preservation Order
[WH] World Heritage Site
[X] Other/unknown
[O] None

M ORGANISATION
Where relevant enter the names of the organisation on whose behalf the survey is being undertaken.

N MAP
Does a map exist of the site?
[Y] Yes
[N] No
[X] Don’t know

If so, are the trees inspected plotted on the map?
[Y] Yes
[N] No
[X] Don’t know

I ACCESS AND VISIBILITY
Is the site accessible to the public?
[Y] Yes
[N] No
[X] Don’t know

Is/are the tree/s visible from a public route or place?
[0] Not visible
[1] Visible but not prominent
[2] Prominent

J SITE NOTES
Briefly describe site location (eg In open field 200m W of Ashton Court House) and any special features of landscape interest about the site.

K DATE
This is the date of inspection entered as D | M | Y.

L RECORDER
Name of person who is inspecting the trees.
1 TREE NUMBER
This is a numerical designation identifying individual trees by means of a number tag fixed to the trunk (see ‘Pollard & Veteran Tree Management II’ Corporation of London 1996). This is optional.
Number identification should be undertaken to guarantee that no duplication occurs for any site, by plotting numbers on the plan.

2 GRID REFERENCE
Insert grid reference for individual tree. Minimum six figure grid reference as (D) omitting 100km letter code.

3 SPECIES
Identify the type of tree (see TABLE below).
If species unknown, collect sample of shoot or foliage and label with tree number for identification and insert code [XB] or [XC] as appropriate.

SPECIES TABLE (Native and pre 1800 introductions)

<table>
<thead>
<tr>
<th>Broadleaves</th>
<th>CONIFERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>[CAR] Common alder</td>
<td>[CE] Cedar of Lebanon</td>
</tr>
<tr>
<td>[CAP] Crab apple</td>
<td>[NU] Native juniper</td>
</tr>
<tr>
<td>[AH] Ash</td>
<td>[EL] European larch</td>
</tr>
<tr>
<td>[BE] Beech</td>
<td>[SP] Scots pine</td>
</tr>
<tr>
<td>[BEC] Beech cultivar</td>
<td>[NS] Norway spruce</td>
</tr>
<tr>
<td>[PBI] Downy birch</td>
<td>[ST] Common yew</td>
</tr>
<tr>
<td>[SBI] Silver birch</td>
<td>[XC] Other conifers</td>
</tr>
<tr>
<td>[BCH] Bird cherry</td>
<td>(-)</td>
</tr>
<tr>
<td>[WCH] Wild cherry, gean</td>
<td>(-)</td>
</tr>
<tr>
<td>[HCH] Horse chestnut</td>
<td>(-)</td>
</tr>
<tr>
<td>[SC] Sweet chestnut</td>
<td>(-)</td>
</tr>
<tr>
<td>[EM] Elm species</td>
<td>(-)</td>
</tr>
<tr>
<td>[EEM] English elm</td>
<td>(-)</td>
</tr>
<tr>
<td>[WEM] Wych elm</td>
<td>(-)</td>
</tr>
<tr>
<td>[HAZ] Hazel</td>
<td>(-)</td>
</tr>
</tbody>
</table>

[BROADLEAVES]

| [HBM] Hornbeam | [LI] Lime species |
| [CLI] Common lime | [LLI] Large leaved lime |
| [SLI] Small leaved lime | [MA] Maple species |
| [FM] Field maple | [SY] Sycamore |
| [OK] Oak species | [EOK] Evergreen oak |
| [POK] Pedunculate oak | [TOK] Turkey oak |
| [SOK] Sessile oak | [PO] Poplar species |
| [PO] Poplar species | [AP] Aspen |
| [LPL] London plane | [ROW] Rowan |
| [WH] Willow species | [SALI] Salix fragilis |
| [XY] Other broadleaves | (-) |

[CONIFERS]

| [CE] Cedar of Lebanon | [JU] Native juniper |
| [JI] Juniperus communis |
| [EL] European larch | [SP] Scots pine |
| [LS] Larix decidua |
| [SP] Scots pine | [PI] Pinus sylvestris |
| [NS] Norway spruce | [PI] Picea abies |
| [ST] Common yew | [T] Taxus baccata |
| [XC] Other conifers | (-) |

DIMENSIONS

Girth
The girth (circumference) of the tree is measured at 1.3m height above ground level, and is entered as an accurate measurement in metres to two decimal places, eg 10.54m. Where this is possible enter girth in column 4.1 and enter [1.3] in column 4.2.

4.2 MEASUREMENT HEIGHT - IRREGULARITIES
If there are swellings, burrs, branches or other irregular features which occur at 1.3m height, then measure at the nearest point below, where the trunk is more regular.

Where the height of the girth measurement is not taken at 1.3m, this should be noted by recording the measurement in column 4.2, eg if girth is 6.10 metres at a height above ground level of 0.8m, the entry would be: Column 4.1 = [6.10] Column 4.2 = [0.8]

Example
4.2.1 MULTI-STEMMED above 1.3m
If the specimen is multi-stemmed, and the multi-stem formation occurs above 1.3m height, observe conventions as for 4.1 or 4.2.

4.3 BOLE HEIGHT
Refers to pollard trees only, see 6 ‘Tree Form’. The bole is the trunk length from ground level to region where main pollard limbs originate.

5 NUMBER OF TRUNKS
Trees may contain more than one trunk. (See Tree Forms 6.3, 6.4, 6.6 and 6.11). Count the number of stems over 0.3m diameter and arising from below 1.3m height.

6 TREE FORM
There are many forms a veteran tree may have, depending on its growing conditions, past damage and management. The following describe a range of possible tree forms. What does the tree look like?

Select from those below. Enter appropriate bracketed number [-] eg for a maiden tree (see 6.1) enter [1].

Note: More than one description may be applicable to a single tree.

TREES
6.[1] Maiden Tree

6.[2] Shredded Tree

6.[3] Multi-stemmed
[3] Trunk naturally divided into two or more principal stems giving the appearance of an integral crown.

6.[4] Coppice
<table>
<thead>
<tr>
<th>Tree Details</th>
<th>Tree Details</th>
<th>Tree Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Tree Image" /></td>
<td><img src="image2" alt="Tree Image" /></td>
<td><img src="image3" alt="Tree Image" /></td>
</tr>
<tr>
<td>out a single stem to develop in maiden form.</td>
<td>to truncation of crown framework or of main stem.</td>
<td>subsequently cut to form multi-stemmed pollards.</td>
</tr>
<tr>
<td><img src="image4" alt="Tree Image" /></td>
<td><img src="image5" alt="Tree Image" /></td>
<td><img src="image6" alt="Tree Image" /></td>
</tr>
<tr>
<td>developing in maturity with multi-stemmed trunk or</td>
<td>typically multi-stemmed heavy limbed,</td>
<td>Or</td>
</tr>
<tr>
<td>crown form, partially or totally fused about areas of</td>
<td>originating at similar crown level.</td>
<td></td>
</tr>
<tr>
<td>stem contact.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image7" alt="Tree Image" /></td>
<td><img src="image8" alt="Tree Image" /></td>
<td><img src="image9" alt="Tree Image" /></td>
</tr>
<tr>
<td>arising from natural catastrophic damage.</td>
<td>multiple, limb structure as a result of major limb</td>
<td>Or</td>
</tr>
<tr>
<td></td>
<td>removal or natural loss at various levels about the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>crown.</td>
<td></td>
</tr>
<tr>
<td><strong>6.[11] Copand</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image10" alt="Tree Image" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[11] Single tree previously managed as coppice,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>subsequently cut to form multi-stemmed pollards.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6 STUMPS

6.[13]

[13] Felled Stump (< 1m height)

6.[14]

4m

[14] Shattered/fractured Stump (< 4m height)

6.[15]

4m

[15] Shattered/fractured Stump (> 4m height)

[X] OTHER (refers to trees or stumps)

7 STANDING / FALLEN

How upright is the tree? What is the position of the main trunk?

7.[1]

[1] More or less upright?

7.[2]

Leaning at a strong angle though apparently firmly rooted.

7.[3]

Leaning with a loosened rootplate.

7.[4]

Collapsed, supported by an adjacent tree.

7.[5]

Collapsed. Main trunk propped clear of ground.

7.[6]

Collapsed, main trunk lying on ground (rootplate intact - partially attached to ground).

7.[7]

Collapsed, main trunk lying on ground (root plate intact - entirely detached from ground).

7.[8]

Either

Or

[8] Fractured, collapsed trunk or main crown still attached to parent tree.

7.[9]

[9] Fractured, collapsed and separated, rootplate attached to ground.

[X] OTHER
8  **LIVE GROWTH**
This assesses the current proportion of live growth about the tree (this does *not* take account of the shape of the tree, *nor* past crown collapse).

8.[1]  **Live, Mostly Full Canopy**
[1] The crown is mostly covered with live growth. (Live growth occupies over 50% of current canopy outline.)

8.[2]  **Live Partial Canopy**
[2] The crown is fairly well covered with live growth. (Live growth occupies 25%-50% of actual crown outline.)

8.[3]  **Live Residual Canopy**
[3] The crown has some/little live growth. (Less than 25% live crown occupies actual crown outline.)

8.[4]  **Crown is dead.**

8.[5]  **Entire Tree Dead**

9  **CROWN LOSS**
How much of the original crown of the tree has been shed? Crown loss is a comparison between its *current* veteran scale and shape and its likely former *peak crown outline*.

9.[1]  **Full Crown Outline**
[1] The tree has shed less than 25% of its likely peak crown framework.

9.[2]  **Nearly Full Crown Outline**
[2] The tree has shed 25%-50% of likely peak crown framework.

9.[3]  **Partial Crown Outline**
[3] The tree has shed 50%-75% of likely peak crown framework.

9.[4]  **Remnant Crown Outline**
[4] The tree has shed over 75% of likely peak crown framework.
10 EPICORMIC GROWTH
This is twiggy growth apparently developing from the bark surface as a response to stress or environmental changes. In veteran trees strong epicormic presence may indicate vitality about different regions of the tree.
Is there strong, vigorous epicormic growth (twiggy shoots) present about the tree?
If present where is this found? Enter the appropriate number code.
[1] Base (B)  [5] BC
[4] BT  [0] None present

11 BARK CONDITION
Are there large areas greater than 30cm x 30cm (12” x 12”) of dead, loosely attached, missing or flaking bark about the tree?
If present where is this found?
B Base (up to 2m height)
T Trunk (above 2m height to base of crown)
C Crown
Enter the appropriate number code
[4] BT  [0] None present

12 BARK FLUXES (SAP RUNS)
Emissions from within the tree leaking to the bark surface. Exudates include fluxing of liquid often under gas pressure within the tree resulting from bacterial and fungal activity. It may also include the bleeding of wounds and localised reactions to surface colonisation.
These may be seen as wet surface discolourations of varying consistencies or areas of dry and encrusted deposits. Exudations may smell unpleasant or may have a pleasantly fermented smell.
Fluxes may emerge from wounds, cracks or fissures without obvious signs of decay.
This substrate provides a specialised habitat for insects and fungi.
Assess the type of bark flux from the following table. Assess the number of fluxes. Prefix the type with the number.
eg [2B] = 2 wet fluxes
[3A] = 3 dry fluxes
[0] = No fluxes apparent

13 SPLIT LIMBS
The process of gradual limb loss starts typically in a small proportion of upward curving limbs when the end weight transmits stress along the longitudinal axis causing fibres to part, buckle and tear (delamination).
13.1 The limb may not be shed and the condition may remain stable for many years (termed Hazard Beam).
13.2 The limb may be supported within the crown or along the ground or it may further subside, rupturing tissue about the upper surface leaving a torn live limb suspended by the lower fibres.
13 **SPLIT LIMBS cont.**

Count the total number of split limbs (13.1 & 13.2) of greater than 15cm (6") diameter at point of fracture. Enter this total on the recording card. If none present enter [0].

*Note:*

At stage (13.2) the split limb has also resulted in a parent stub (see 15 below). When the suspended limb eventually separates it will result in both a live stub and a tear wound (see 14, Tears/Scars).

14 **TEARS / SCARS / LIGHTNING STRIKES**

14.1 **TEARS [T]:** exposed woody tissue wounds usually elongated in shape, principally torn along (not across) the grain.

14.2 **SCAR [S]:** an aged tear with exposed tissue surrounded with roll of callus.

Record the number of tear and scar wounds in excess of 30cm (12") ie 2 hand lengths.

eg. 3 Tears and 2 Scars = [3T, 2S]

Enter tallies in column. If none present enter [0].

14.3 **LIGHTNING SCAR:** an aggravated and extensive wound from a direct lightning strike to tree. This results in a longitudinal surface trunk wound with internal tissue fragmentation.

15 **LIVE STUBS**

Stubs are naturally fractured and truncated *ends* of live stems or branches. A stub is a result of a natural fracture and may follow the process described under splitting (see 13). It is measured near the point of fracture.

Stubs greater than 15cm (6") diameter are counted and entered on the recording card.

15.1 Stubs are measured from beyond the branch collar (A-A) and are over 15cm (6") diameter. A and B are measured from close to point of fracture.

Lightning scars should be recorded by suffixing the entry tally for scars with [*].

16 **HOLLOWING: TRUNK & MATURE CROWN**

Hollowing occurs through a combination of wounding and progressive decay which may develop into enlarged cavities. Hollowing may become continuous, leading to an entirely hollow stem or partial shell, providing a wide range of habitat.

Hollowing may be readily visible or may be concealed within an apparently intact trunk or limb.

Assess hollowing according to its character and location about the trunk and crown.

This assessment addresses *only clearly visible* hollows and **DOES NOT REQUIRE THE USE OF BORING IMPLEMENTS.**
16 HOLLOWING cont.
Inspect the Base, Mid Section and Top Section of the main trunk. Identify which of the following schematic diagrams best defines the state of each trunk section [1]-[5].

[1] Apparently solid trunk
With minor cavities (less than 15cm / 6” diameter).

[2] Hollow trunk
Entire circumference. Minor holes may be present on one or more sides.

[3] Partially solid trunk
Partial circumference with major cavities, large openings (>15cm) or merging apertures.

[4] Remnant trunk
With incomplete shell up to 30% of outer circumference missing.

[5] Remnant trunk with more than 30% of outer circumference missing.

THE TRUNK
Locate the hollows about the trunk (16.1-16.3) and record its character as [1]-[5]. Combinations may apply.

16 HOLLOWING cont.
16.1 Base of trunk
Lowest third of trunk from ground level.

16.2 Middle section of trunk
Occupies mid third of length of bole.

16.3 Top section of trunk
Occupies upper third of length of bole where it loses its discernible continuity with the crown framework.

THE CROWN
16.4 Mature crown hollowing
Identify the number of hollows greater than 15cm (6”) diameter about the mature branches.

17 HOLES: TRUNK & MATURE CROWN
These are small apertures which may be round or irregular in shape and form entry points to hollows which themselves may be hidden.

Holes may originate through small limb loss or bark wounds. Aperture expansion is facilitated principally by the activity of micro-organisms and invertebrates.

Apertures between 5cm (2”, thumb length) to 15cm (6” hand length) are counted.

Count the number of holes about the trunk and crown separately and enter the tally in appropriate column.

Holes may be occupied by bats or birds. Signs of use are indicated by imported mud or twigs, droppings and urine stains below the aperture (see 25 Birds/Mammals).

18 WATER POCKETS
Water pockets accumulate about the tree where there are hollows or natural depressions with an orientation which allows the collection of organic debris and the retention of water to form localised reservoirs at various heights.

Typically water pockets are found at the union of major stems, at buttress depressions of major stems and may have intact bark.

Internal decay may provide conduits between water pockets within the heart of the tree affording gradual prolonged flow after rainfall. This provides specialised habitats for fungi and insects.

A water pocket containing settled rain water is distinct from a hollow with wet disintegrating rot (see 19 Rot).

Count the number of water pockets and insert the tally in the recording card. If none present enter [0].

18.1
19 ROT
Following wounding and fungal activity wood may be digested to form rot. The broad characteristics of wood degradation may be described by reference to its colour, texture and moisture content. These are presented in Table 19.1 ‘Rot Characteristics’.

### Table 19.1 Rot Characteristics Table

<table>
<thead>
<tr>
<th>Colour</th>
<th>Cubical Dry</th>
<th>Fibrous Dry</th>
<th>Fibrous Moist</th>
<th>Soft / Moist</th>
<th>Wet / Disintegrating</th>
<th>Other</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>[A]</td>
<td>[B]</td>
<td>[C]</td>
<td>[D]</td>
<td>[E]</td>
<td>[X]</td>
<td>[O]</td>
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<tr>
<td>Red / Brown</td>
<td>[F]</td>
<td>[G]</td>
<td>[H]</td>
<td>[K]</td>
<td>[M]</td>
<td></td>
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<tr>
<td>Black</td>
<td>[N]</td>
<td>[P]</td>
<td>[R]</td>
<td>[S]</td>
<td>[T]</td>
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</table>

Assess the presence of predominant major rots about the trunk or main limbs. Rot areas up to 2 hand spans 30cm (12”) x 15cm (6”).

Qualify the predominant characteristics of each identifiable, major rot by reference to Table 19.1.

Identify the number of major rots by prefixing the type designations with the appropriate numbers.

**Example:**
- 2 sites of red/brown, dry cubical rot = [2F]
- 3 sites of white, dry fibrous rot = [3B]

Where a site of rot is considered to be extensive ie greater than 2 hand spans, suffix Rot Characteristic entry with [*].

20 DEADWOOD (ATTACHED TO TREE)
Are there any dead branches or trunk sections attached to the tree greater than the thickness of your leg (15cm / 6” or over)?

Each identified 1m (39”) length (over 6” diameter) is measured as a single unit of deadwood. The number of deadwood units attached to the tree is measured and the tally entered in the recording card.

20.1

Deadwood Units = [3]

Note:
- Diameter is taken beyond collar swelling.
- Treat moribund branch as dead limb.

21 DEADWOOD (FALLEN)
Are there any detached fallen deadwood units i.e. major branches or parts of trunk at least 1m (39”) long and over 15cm (6”) diameter, lying near the tree within its natural height scope?

Each length of 1m = 1 unit of fallen deadwood. Assess the number of fallen deadwood units and enter the tally in the recording card.

22 FUNGI
Assess the type/s of fungi present upon the tree and beneath the drip line of the crown on the ground.

Identify the number of different fungal types and their location from Table 22.1.

22.1 Fungal Type / Location Table

<table>
<thead>
<tr>
<th>Fungi</th>
<th>Tree</th>
<th>Fallen Wood</th>
<th>Ground Under Crown</th>
<th>Other</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket</td>
<td>[A]</td>
<td>[B]</td>
<td>[C]</td>
<td>[X]</td>
<td>[O]</td>
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<tr>
<td>Skin / Like Covering</td>
<td>[D]</td>
<td>[E]</td>
<td>[F]</td>
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<tr>
<td>Cap and Stalk</td>
<td>[G]</td>
<td>[H]</td>
<td>[K]</td>
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<tr>
<td>Slime</td>
<td>[M]</td>
<td>[N]</td>
<td>[P]</td>
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</tbody>
</table>

**Example:**
- 2 types of bracket on tree + 1 type of bracket on fallen deadwood + 3 types of cap/stalk fungi on ground = [2A | 1B | 3K].

23 EPIPHYES AND HEMIPARASITES
Note the presence of epiphytes and hemiparasites upon the tree identified by the following codes.

**TYPE**
- [A] Lichens
- [B] Moss
- [C] Polypody / Fem
- [D] Ivy
- [E] Mistletoe
- [X] Other - trees / shrubs / climber
- [0] None present

If more than one type is present enter appropriate multiple code.

Where more than one species is identified within a category, prefix category with species count.

**Example:**
- 3 Lichen species + 2 Moss + Ivy = [3A | 2B | D]

Where epiphytic growth is exceptional, covering more than 30% of the main trunk, suffix the appropriate category entry/ies with [*].

24 INVERTEBRATES
Evidence of invertebrate activity is indicated by the presence of bore/exit holes and frass (dry, powdery residue from tunnelling) about the wood, bark and sites of decay - such species are adapted to the deadwood habitat (ie saproxylic). Many are only found on veteran trees.

Record indications of invertebrate activity by identifying the presence of burrows/exit holes and frass associated with the following substrates:-
24 INVERTEBRATES cont.

[1] Rot Site: Enter appropriate category from Table 19.1 Rot Characteristic Table.

[2] Deadwood

[3] Bark

[4] Fungi

[X] Other

[0] None

Enter the appropriate code/s on the recording card.

25 BIRDS AND MAMMALS

Veteran trees present particularly valuable sites for bat roosts and bird nests.

Indications of habitation may include modification to apertures of holes or fissures, feeding debris, distinctive droppings and bark urine streaks (dark staining).

Feeding activity may also be observed from the chiselling of bark and wood about the tree.

Observe the following:

Identify signs of occupancy associated in holes about the tree.

Record additional signs associated with feeding.

Refer to the list below, record appropriate code/s.

[1] Opening adapted with mud or twigs

[2] Opening with smoothed lower lip

[3] Bark streaks with blackish staining leading down from aperture or fissure.

Additional signs


[5] Droppings, pellets or other distinctive debris.

[6] Other nests or occupancy sites about the crown.

[X] Other significant signs of bird and mammalian activity.

[0] None observed.

26 CONTEXT

This describes the landscape context within 2x height of the tree and is indicative of the setting and historic land use about the tree:

[AR] Arable Field

[AT] Ancient Track

[AV] Avenue

[BU] Old Buildings

[BX] Recent Development (within 20 years)

[CH] Churchyard

[CL] Common Land

[DP] Deer Park

[FP] Footpath / bridleway

[GD] Garden, small (domestic)

[GO] Grounds, large (ornamental)

[HE] Heathland

[HR] Hedgerow

[HW] Highway

[MO] Moorland

[OR] Orchard

[PB] Parish Boundary

[PL] Parkland

[PO] Pondside

[PS] Pasture unimproved (low intensity grazing)

[PX] High intensity grazing

[RV] Riverside

[UP] Urban Park

[UT] Urban Tree

[VG] Village Green

[WL] Woodland (internal)

[WE] Woodland Edge

[X] Other

The recorder will need to consult the context table for this and enter a code.

One or more designations may apply.

27 MANAGEMENT

This indicates a recent history of tree management over the past ten years.

[1] Pollarding

[2] Other arboricultural work

[3] Weed control (within crown spread)


[5] Protective fencing (effective)

[6] Protective fencing (ineffective)

[7] Controlled public access

[8] Planting: for veteran continuity

[9] Planting: potentially competitive

[X] Other

[0] None known

One or more designations may apply.

28 DAMAGE

Record major damage and/or debilitation which has occurred to the tree or its associated flora and fauna. Only known causal agencies should be recorded.

Select from the following:

[1] Excessive browsing from stock/pests

[2] Inappropriate tree surgery

[3] Vandalism

[4] Plant/machinery (impact/abrasion)

[5] Lightning

[6] Fire damage

[7] Storm

[8] Compaction

[9] Ploughing/ditching/trenching

[10] Chemical toxicity: herbicide or fertiliser application or identifiable pollution.


[X] Other MAJOR damage

[0] None

[*] Imminent fatal or structural debilitation threat
29 SHADE
Is the tree shaded by other trees? Assess the extent of the shade and record from the list below.

[0] Unshaded
Unshaded, at present.

[1] Light Shade
Shaded on one or two sides but not from above.

[2] Close Shade
Shaded on three or four sides, not from above.

[3] Heavy Shade
Shaded from above and one or two sides.

[4] Extensive Shade
Shaded from above and all aspects.

30 PHOTOGRAPHIC NUMBER
Where possible relate photographic identification number to tree number.

eg If tree no. = 00176
    Photo. no. = 00176A
Where
A = 1990  B = 1991
C = 1992  D = 1993
E = 1994  F = 1995
G = 1996  H = 1997
I = 1998  J = 1999
K = 2000  etc
Z = 2015  AA = 2016

If this system is adopted enter appropriate letter code.
If there is no systematic photographic record of the tree/s and none proposed enter:

[0] None
[X] If another record system is being used.

31 NOTES
Where the recorder requires to make additional comments or to register a need for further assessment, limited scope is presented in the Notes Section on the recording card.
<table>
<thead>
<tr>
<th>Tree Number</th>
<th>Grid Reference</th>
<th>Species</th>
<th>Girth</th>
<th>Min. HT</th>
<th>Max. HT</th>
<th>No. of Trunks</th>
<th>Tree Form</th>
<th>Standing/Fallen</th>
<th>Live Crown</th>
<th>Crown Loss</th>
<th>Epiastatic Grth</th>
<th>Back Critical</th>
<th>Back Flare</th>
<th>Spur Limbs</th>
<th>Trunk / Splits</th>
<th>Base</th>
<th>Middle</th>
<th>Top</th>
<th>Crown</th>
<th>Holes</th>
<th>Water Pockets</th>
<th>Rot</th>
<th>Deadwood</th>
<th>Staging / Deadwood / Felled</th>
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Tree Associates

Tree Management
ACKNOWLEDGEMENTS

The Veteran Tree recording system was initiated in 1996 by Neville Fay.
Developed and designed by Neville Fay and Nigel de Berker of Treework, under contract to English Nature.

The authors are grateful to all those who have assisted in the consultative process, particularly:
David Clayden, Mike Edgington, Mike Ellison, Amanda Giles, Ted Green, Roger Key, David Lonsdale, Helen Read, Lawrence Sisitka
and other members of the Ancient Tree Forum and English Nature’s Veteran Tree Initiative.

Layout and design by Christine Kirkley, Enterprise Computer Systems Ltd, 2 Brockway, Nailsea, Bristol BS48 1BZ Tel 01275 851191
When assessing and modelling the age structure of a tree population, distinguishing ‘elementary’ from ‘intermediate’ veteran trees can contribute to understanding the sustainability of the numbers of trees in older age classes. Transition veterans include trees showing veteran habitat features corresponding to / mimicking those of ancient trees (i.e. at a pre-ancient stage). Ancient tree losses may be significant within a site as a whole or vary within a site. The value of transition veterans is that they contribute to ‘bridge habitat’ where there may be an age gap between pre-ancient and ancient trees or where the ancient age class is susceptible to significant losses. Given sufficient time and if such trees are viable, transition veterans contribute to saproxylic habitat and species continuity. The ageing process is sometimes described as ‘tree growth from seed to senescence’: The term senescence presumes that the process of rejuvenation does not interrupt this ageing sequence with senescence describing a natural stage of physiological decline, the end result of which is death. However, many ancient trees display a range of phoenix survival strategies (including adventitious rooting, crown collapse and rooting, and trunk collapse followed by lateral secondary trunk formation etc). Some trees can repeat this process of phoenix regeneration many times giving the opportunity for

<table>
<thead>
<tr>
<th>Age Class</th>
<th>Juvenile</th>
<th>Semi-Mature</th>
<th>Mature</th>
<th>Fully Mature</th>
<th>Early Ancient</th>
<th>Mid-Ancient</th>
<th>Late Ancient</th>
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<tr>
<th>VETERAN STATUS</th>
<th>Non-veteran</th>
<th>Non-veteran</th>
<th>Elementary (Early) Veteran</th>
<th>Non-veteran</th>
<th>Inter-mediate (Early) Veteran</th>
<th>True (Ancient) Veteran</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSITION veteran</td>
<td>For 'veteran features' refer to Specialist Survey Method, EN (1996)</td>
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<td>3 veteran features &amp;/or including Phoenix trees with only regeneration evident</td>
<td></td>
<td>3 veteran features &amp;/or including Phoenix trees with only regeneration evident</td>
<td>Likely to have abundant veteran features: i.e. 4 or more veteran features</td>
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<td>TRUE (-) Veteran</td>
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<td>4 or more veteran features</td>
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<td>4 or more veteran features</td>
<td>- Trunk hollowing is a key veteran feature potentially contributing rare habitat.</td>
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<td>- Ancients include trees of known antiquity and - Phoenix trees: either with significant proportion of ancient remnant parent tree in evidence or with evidence of ancient lineage identifiable through growth form (e.g. traceable layering &amp;/or ancient coppice rings etc.).</td>
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**Fig B:** Age Class - Veteran Status: The relationship between tree age class, ancient trees and indicators of veteran status.

When assessing and modelling the age structure of a tree population, distinguishing ‘elementary’ from ‘intermediate’ veteran trees can contribute to understanding the sustainability of the numbers of trees in older age classes. Transition veterans include trees showing veteran habitat features corresponding to / mimicking those of ancient trees (i.e. at a pre-ancient stage). Ancient tree losses may be significant within a site as a whole or vary within a site. The value of transition veterans is that they contribute to ‘bridge habitat’ where there may be an age gap between pre-ancient and ancient trees or where the ancient age class is susceptible to significant losses. Given sufficient time and if such trees are viable, transition veterans contribute to saproxylic habitat and species continuity. The ageing process is sometimes described as ‘tree growth from seed to senescence’: The term senescence presumes that the process of rejuvenation does not interrupt this ageing sequence with senescence describing a natural stage of physiological decline, the end result of which is death. However, many ancient trees display a range of phoenix survival strategies (including adventitious rooting, crown collapse and rooting, and trunk collapse followed by lateral secondary trunk formation etc). Some trees can repeat this process of phoenix regeneration many times giving the opportunity for
Neville Fay MA (Hons), FLS, MArborA, FRSA
Project Manager
Principal Consultant TEP