

# The Woodland Heritage Manual

*A Guide to Investigating Wooded Landscapes*





# **The Woodland Heritage Manual**

**A Guide to Investigating Wooded Landscapes**



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Front cover photo: Ramsons at Bradfield Woods NNR Suffolk.

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*Gathering wood for fuel engraving by Myles Birket Foster (1825 - 1899)*



# AI: Introduction to the Manual

Lindy Smith and Christine Handley

Ancient woodlands and trees (wooded landscapes) are irreplaceable. Shaped and influenced by human activities for centuries, they are ancient living monuments and of high biodiversity conservation value. To protect ancient woodlands it is crucial that their history is recognised, recorded and used as a basis for management and conservation. A holistic approach to uncovering the history of a wood is needed, which includes archaeology, documentary and oral research, and ecology. The *Woodland Heritage Manual* covers each of these disciplines and guides readers through relevant research and field surveys. Results can then be combined to paint a fuller picture of a wood's past, present and possible future. The manual has been developed through, and is an output from, the **Woodland Heritage Champions Project**. The examples of local projects given in the manual are from volunteers who took part in the **Woodland Heritage Champions Project** and been heavily involved in the development of the manual.

The *Woodland Heritage Manual* is broken down into **six sections**:

1. **Section A**, including this introduction, describes who the manual is aimed at and how it should be used. In the second part (Section **A2**) the background to the manual is described.
2. **Section B** introduces ancient woods and wooded landscapes, their history, past uses, and present status. It also explains each of the disciplines used to gain information about a wood and includes a chapter on conservation management.
3. **Section C** gives guidance on where to find sources of information and how to carry out research using documents, maps, place-names and oral history (Personal Recollections).
4. **Section D** covers field surveys, including those for physical characteristics, archaeological features and remains, ecological features and species. Standard survey forms are provided which can be photocopied and taken into the field.
5. **Section E** explains what to do with the information gathered during the documentary research and field surveys. It includes guidance on collating research findings, conservation management and interpretation work.
6. **Section F** comprises all the Appendices.

Much of the manual is focused on ancient, semi-natural woods. However, as you read the manual, it is clear that many old woods have had periods of non-woodland use. Furthermore, individual trees from an old wood may survive in the present wooded landscape. Modern-day woods include those that have had periods of clearance and of re-planting, often with exotic trees (especially conifers). Today's landscape also includes large areas of recent semi-natural woodlands (such as on former heaths or urban commons), and plantations. Many wooded landscapes have preserved elements of former non-woodland uses. These, along with the archaeology of the semi-natural, ancient woodland, add to the rich tapestry of our heritage. In the manual, any area containing trees which is not a woodland is referred to as a woodland landscape.

## Who is the Manual Aimed at?

The manual is aimed primarily at volunteer groups and individuals who would like to find out more about their local wood or wooded landscape but who have little or no experience in undertaking either documentary research, field based surveys or both.

Volunteers play a vital role in protecting woodlands and wooded landscapes. They are frequently relied on by local councils and other organisations to carry out a wide variety of management, conservation, and interpretation tasks. It is therefore crucial that volunteers have the necessary resources to find out about the history, archaeology, and ecology of their woodlands. However, although there are many good local projects on woodland heritage, it is not easy for volunteers to access the knowledge or skills needed to collect data and information, and to interpret their findings.

It may also be helpful for professionals who work in woodland or a wooded landscape and feel that a more holistic approach taking into account the site's history may benefit their work, management and decision-making processes.

With the *Woodland Heritage Manual* we hope to provide this knowledge for anyone who wants to discover, research, record and use information about ancient trees, woodlands and wooded landscapes.

## How Should the Manual be Used?

The manual is not intended to be read and worked through from start to finish. Instead, it is designed to help groups or individuals to gradually uncover the history of their woodland. It suggests specific questions that need to be answered and what can be achieved by the survey work. Some groups may have a very specific goal in mind, for example, to carry out a parish tree survey or to find out if a wood is ancient or not. Others may simply want to find out more about woodland history and archaeology but have no specific goals in mind.

To aid navigation through the manual and to help decide what to do, the back fold-out cover has a table with a step by step guide to getting started on a general survey of a wood and to find out more about its history, archaeology and ecology. In the three columns there are listed:

- The essential research that you will need to complete.
- The additional research and survey which will help you to form a better and more complete picture.
- The chapters, which are optional, meaning they may be of interest to you, but are not needed for a basic survey.

Below the table, several questions are listed. These are for volunteers who want to research a particular aspect of their wood. You can devise your own question with lists of relevant chapters if yours is not included here.

Each of the survey guides in **Section D** starts by giving you the aim of the chapter and highlights any other chapters you should read or work through before moving on to the survey in question. The individual survey guides also give recommendations on which chapters to refer to or look at if applicable. These may not be needed, but are relevant and can help you decide what survey to carry out next, should you wish to do so.

Throughout the manual you will see cross-referencing to other chapters and sections which will help you to better understand the subject. There are also references and suggestions for further reading at the end of each chapter as the manual only gives brief introductions to many of the topics covered.

## A2: Background to the Woodland Heritage Champions Project

Ian D. Rotherham, Lindy Smith and Christine Handley

The **Woodland Heritage Champions Project** has been funded by the Heritage Lottery Fund, the Forestry Commission, the Woodland Trust, South Yorkshire Biodiversity Research Group (SYBRG), Hallam Environmental Consultants Ltd. and English Heritage and supported by the Tourism and Environmental Change Unit at Sheffield Hallam University, the Biodiversity and Landscape History Research Institute, the Ancient Tree Forum, and English Heritage. It was a one-year long project working with volunteers and voluntary groups across England with the aim of producing a manual for investigating ancient woods and wooded landscapes (the *Woodland Heritage Manual*). Whilst the core funded project applies only to England, much of the work is of far wider relevance. The manual will be of interest to groups and individuals throughout the British Isles.

The **Woodland Heritage Champions Project** was set up in response to the realisation that our understanding of the archaeology and history of the rich and varied wooded landscapes is still fragmentary. During the 1980s, interest in British ancient woodlands was stimulated through research and publications by woodland enthusiasts such as Oliver Rackham and George Peterken. This was paralleled across Europe. It was recognised that woodlands are important living catalogues of landscape history yet there remain deep-seated problems in understanding the culture and nature of these landscapes. In particular, it was felt that these landscapes needed broad, multi-disciplinary approaches, and that engaging and empowering volunteer enthusiasm and passion was the way forward.

Detailed work has been undertaken in many parts of the country including Cumbria, the Wye Valley, Lincolnshire, the Chilterns, South East England and elsewhere. Archaeologists, ecologists and conservationists, both amateur and professional, have been discovering the history and heritage of their local woods, often managing them for the future. Volunteer groups and individuals have played an important part in this work. However, there is still more to do, and many local woods, especially those small in size, have an undiscovered history and lack the management necessary for their effective conservation.



Exploring Roundball Wood, Devon © Lindy Smith

### Timeline of the Project

- 1980s - 1990s: Interest in ancient woodlands grew with new research and key publications by Oliver Rackham, George Peterken, Donald Pigott, Oliver Gilbert, Charles Watkins, Melvyn Jones, Ian Rotherham, Chris Smout, Nicola Bannister, Keith Kirby, Mark Bowden and other professionals and keen amateurs. Local case study work and research was completed in the Weald, Lincolnshire, South Yorkshire, the Chilterns, Wye Valley and Cumbria.
- 1992 - 2003: Work by the above inspired national conferences on ancient woodlands in Sheffield organised by the Landscape Conservation Forum. In 2003, an international woodland conference was also held in Sheffield, organised by the South Yorkshire Biodiversity Research group (SYBRG).
- 1990s- 2005: Workshops held by SYBRG on ancient woodlands, their archaeology, history and ecology, for academics and practitioners to gauge interest and stimulate debate on adopting a holistic approach to woodland research. Meanwhile, local projects and volunteer groups became increasingly responsible for local woodland management. Interest in woodland history grows amongst such groups, several gain funding to establish local initiatives.
- 2005: Delivery of Heritage Lottery Fund (HLF) bid by SYBRG with Forestry Commission and Woodland Trust support to develop the volunteer part of the project. The aim was to deliver workshops to volunteers and to develop a manual with their help. The output of the year-long project would be the Woodland Heritage Manual, a guide for volunteers on how to research and survey ancient woodlands to encourage favourable management.
- 2006/2007: HLF Bid successful, Woodland Heritage Champions Project launched. Groups and volunteers recruited. Workshops organised in nine locations. Volunteers test worksheets, guides, etc.
- 2008: Completion of Woodland Heritage Champions Project and the launch of volunteer version of Woodland Heritage Manual.
- 2008 - ? : Development of professional version of Woodland Heritage manual. Possible further development of volunteer project. Further workshops.

## The Volunteer Groups

Workshops were organised in nine locations across England. In some cases these were for a single woodland group, but more often for several groups and individuals who wanted to participate in the project.

Some of the volunteer groups provided project examples where the work they have carried out is described. Some examples are based on the volunteers testing out survey guides as part of the manual, whereas others describe their own project in more detail.

**North Yorkshire:** Volunteers included members of the Friends of Errington Wood. The group has been carrying out surveying and management work in their local wood for several years with the help of Keith Ferry, the Countryside Officer for Redcar and Cleveland Borough Council. See project example on page 31.

**Devon:** Volunteers including members from the Great Trees of East Devon project, the Farringdon History Society and Roundball Wood Wardens carried out historical research. See project example on page 44.

**Essex:** Volunteers included members from the Epping Forest Tree Warden Scheme. They had already carried out a local ancient tree hunt (Epping Forest District Tree Hunt), but were new to surveying woods for archaeological features. See project examples on page 73 and page 132.

**Chilterns / Oxfordshire:** Volunteers include members from the Chilterns Special Trees and Woods project, the North Wessex Down Archaeology Audit and the Wychwood Forest Project. See project examples on page 83 and page 98.

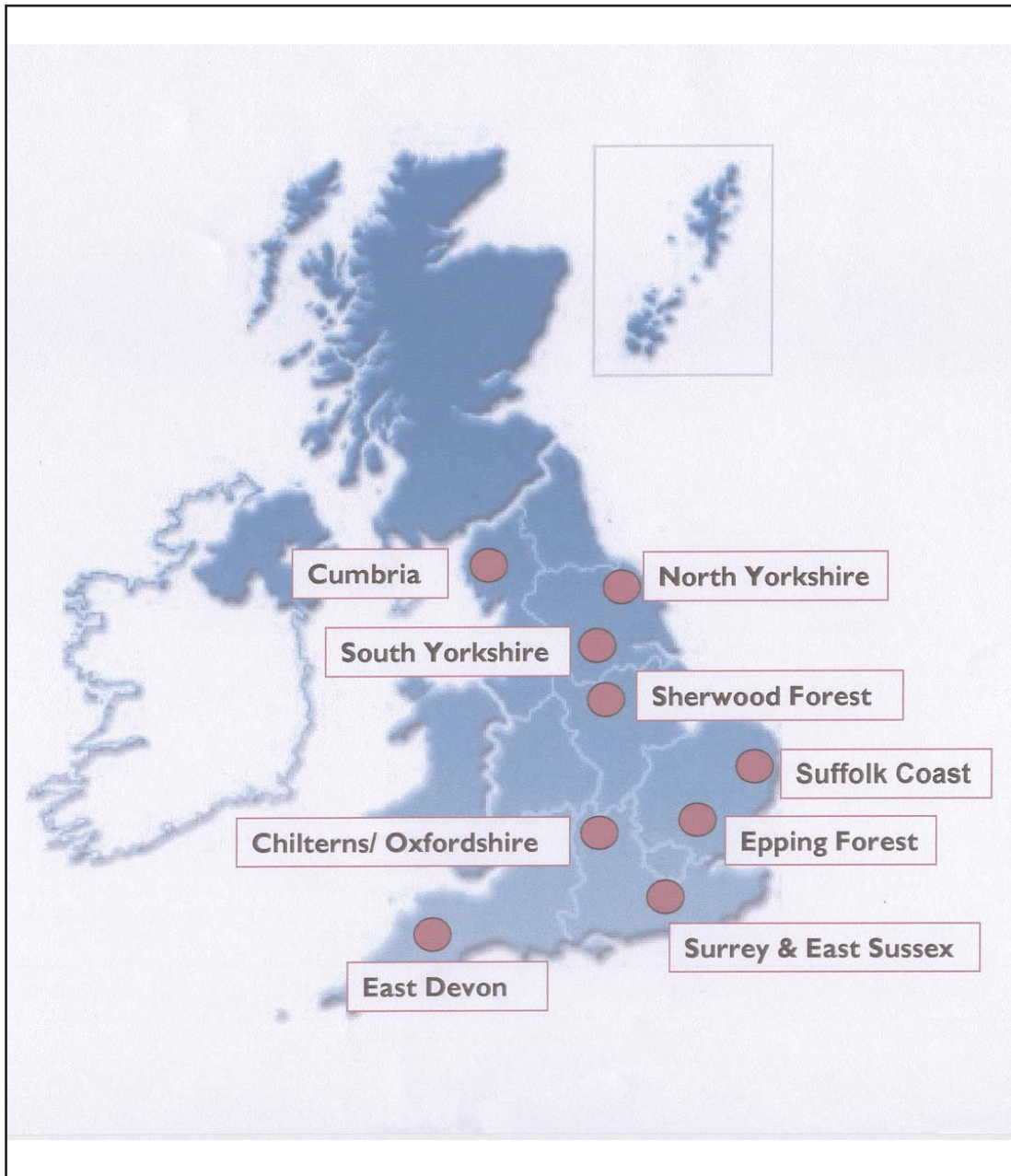
**Cumbria:** Volunteers included members from the Wood Education Programme Trust (WEP Trust), the Friends of the Lake District and the Woodland Trust. The group was not linked to one wood in particular but focused their research on several local woods. See project example on page 120.

**South Yorkshire:** Volunteers included members from three woodland groups: The Gleadless Valley Wildlife Trust, the Friends of Ecclesall Woods and the Steel Valley Project. The first two groups are based in the south of Sheffield, whereas the Steel Valley Project is an initiative based in and around the Stocksbridge area to the north. See project example on page 146.

**Nottinghamshire:** Volunteers included members from the Friends of Thynghowe. The group is trying to discover more about the origins of features within the Forest of Birklands and want to promote the archaeological and ecological interest of their local wood to the wider community. See project example on page 170.

**Suffolk:** Volunteers included members of the Suffolk Coastal Tree Warden Scheme. They helped to test out survey forms for the manual and one member carried out research into a local wood.

**Surrey and East Sussex:** Volunteers, including members from the Surrey and Sussex Tree Warden Scheme, participated in the project by testing survey forms.



*Location of the Woodland Heritage Champions Groups*

## **Section B: The Heritage**

This section provides the background and context for the rest of the manual. It describes the evolution of today's wooded landscapes, explains how their usage has changed over time and why and how they should be protected for the future. Key definitions and concepts relating to wooded landscapes, their archaeology, history and ecology are introduced. These are designed to help you understand the importance of the documentary research and field surveys for your own woodland. The chapters in this section can be read alone without having to undertake any further work or carry out surveys. Chapters give several references for further reading, if you are new to the subject.

This section includes the following chapters:

- 1. Introduction to Woods and Wooded Landscapes**
- 2. Woodland Crafts and Industries**
- 3. Woodland History and Archaeology**
- 4. What is an Ancient Woodland?**
- 5. Woodland Ecology and Biodiversity**
- 6. Woodland Conservation Management**

The section should be seen as a reference section complementing and guiding your documentary research, field surveys, report writing, management and interpretation.

# ***BI: Introduction to Woods and Wooded Landscapes***

**Ian D. Rotherham, Mel Jones and Alastair Oswald**

## **The Wildwood**

The so-called 'Wildwood' was the natural woodland that grew up when the glaciers and ice sheets melted across Britain at the end of the Ice Age, about 12,000 years ago. Frozen ground thawed and climatic conditions improved to the point where trees could move in again from those parts of Europe that had lain beyond the grip of ice. Seeds carried on the wind or spread in the droppings and coats of birds and mammals enabled a wave of colonisation to make its way across Britain from the south. The progress of this colonisation has been reconstructed using the pollen grains and spores preserved in layers of sediment in bogs, lakes and ponds. Where such sites survive, undisturbed to modern times, they provide a fascinating biological archive of former vegetation and climate. Using this evidence it has been possible to show that the first trees to colonise post-glacial Britain were arctic species such as Aspen, Birch and Willow, the latter two are usually still the first trees to colonise waste ground in the twenty-first century. Later came Scots Pine and Hazel, then Alder and Oak, followed by Elm and Lime and finally Ash, Beech, Holly, Hornbeam and Maple. By about 4,000 BC, altered little by human interference, the wildwood was fully developed in a landscape with extensive wetlands in both the lowlands and uplands, and open grass or heath in varying amounts.

Until recently, the established theory was that the wildwood stretched as an almost closed canopy forest without gaps virtually across the whole of Great Britain, and in most of North Western Europe. This long-held theory has now been seriously challenged by the work of Dr Frans Vera (2000). He put forward the theory that the wildwood consisted of a patchwork of woodland and extensive tracts of grassland with open-grown, solitary trees, the clearings maintained by large herbivores such as deer and wild oxen. The *Vera Hypothesis* is the subject of much debate (see, for example, Hodder *et al.*, 2005).



*Does this scene resemble our ancient woodland landscape? Recent research indicates that herbivores maintained large open tracts of land interspersed with solitary open grown trees and patches of woodland (Vera Hypothesis). This opposes the view that England was entirely wooded prior to human activities. Calke Abbey, Derbyshire. © Ian D.Rotherham.*



## The Destruction of the Wildwood

It is still unclear as to the extent to which Mesolithic hunter-gatherers managed the largely wooded environment they inhabited after the retreat of the glaciers (10,000 BC to 4,000 BC). While they are not thought to have carried out any large-scale clearance, it is possible that they created small clearings to encourage deer and other animals to graze in concentrated areas, where they offered easy targets. Trees were certainly felled to build shelters and to manufacture tools, including bows and arrows.

In the early part of the Neolithic (4,000 BC to 2,000 BC), the pace of woodland clearance gradually accelerated as scattered communities adopted agriculture. This did not involve an immediate switch to a sedentary way of life; it is thought that communities moved around extensive territories according to the season, and that they abandoned the relatively small clearings they farmed from time to time, perhaps as agriculture exhausted the fertility of the rich woodland soils. Throughout Europe, the stone axe became both a common tool and a symbol of power. The construction of new kinds of monument - first the communal burial mounds known as 'long barrows' and then the ceremonial meeting places known as 'causewayed enclosures' - required the felling of mature Oaks in sufficient numbers to have a significant effect on the local woodland. At the extreme end of the scale in monumental building it has been estimated that the complex of causewayed enclosures and boundary earthworks on Hambledon Hill in Dorset would have required the felling of at least 10,000 maturing oak trees, all in the course of the thirty-eighth century BC.

The Bronze Age (2,000 - 750 BC) saw the deforestation for agriculture of many areas which today are thought of as classic heath, moor and downland landscapes: Dartmoor, the South Downs, the Peak District and the Cheviots. The growth of farmland at the expense of woodland continued through the Iron Age (750 BC - AD 43), accelerating further towards the end of the first century BC as new agricultural technologies were introduced. Both Julius Caesar, writing after his invasion in 54 BC, and Strabo, the Greek historian and geographer writing around the time of the birth of Christ, inform us that the demand for timber as a building material also continued. Strabo wrote of the Britons that *'Their cities are the forests, for they fell trees and fence in large circular enclosures, within which they build huts and pen their cattle.'* Throughout the Roman occupation of Britain (AD 43 - 410), the smelting of tin, iron, lead, silver and other metals also had an impact on the extent of woodlands and their management in different regions of Britain. It is thought that the Romans who organised the manufacture of iron in the Weald actively managed woods by coppicing rather than clear felling in order to obtain sufficient fuel. Most of the remains of Roman bloomeries are found in ancient coppice woodland, and in the Weald, ancient gill woods.

Initial clearance and subsequent usage of land for settlement was not uniform in space or time. Where settlements were abandoned woodland could regenerate. As a result, Iron Age hillforts and Bronze Age field systems, amongst other prehistoric remains, are found in woodlands, some of which are classified as ancient. In the so-called Dark Ages, the centuries after the collapse of the Roman administration when Anglo-Saxon and Scandinavian colonists encroached deep into much of Eastern England, there seems to have been widespread woodland regeneration, although with local variations. Even so, it has been estimated that by Domesday (1086), only 15% of England was still wooded (Rackham, 2007). Clearance continued throughout the High Medieval period, with industry and urban expansion making increasing demands from the seventeenth century onwards.

By the end of the medieval period, only fragments of the original wildwood remained and these were often much modified in form from their original state (see Pigott, and also Day, in Beswick and Rotherham, 1993). By then much changed by human interference, individual woodlands were often enclosed within boundaries, protected from grazing animals, and often

given specific names. Coppice woods needed to be protected from the flocks and herds driven into the wood pasture, commons or the dens. Some areas of woodland, in both lowlands and uplands, survived as 'wooded commons', and others, perhaps in part linking to the great wildwood and its veteran trees, were protected in Royal Forests or in medieval parks. Rackham (1986) describes this process in a very readable account.

Small-scale regeneration of woodlands also occurred. For example, moats abandoned before the end of the Middle Ages often proved too difficult to plough, leading to the regeneration of small blocks of woodland. In other cases, the well drained enclosures were sometimes deliberately sought out for the plantation of orchards, which eventually returned to nature. In the southeast, there is also increasing evidence that land now occupied by ancient woods was historically covered by woody heaths and pastures (and all grades in between). In short, while there has been a gradual net loss of woodland, the history of an individual wood is seldom one of straightforward evolution.

## The Wood Pasture Tradition

**Wood Pasture**, the *silva pastilis* of the *Domesday Book*, occurred in three forms: **Royal Forests** and their private equivalent **Chases**, on **Wooded Commons** and in **Deer Parks**.

**Royal Forests** and the private forests of the aristocracy (**Chases**) flourished after the Norman Conquest of 1066. In this context, the word 'forest' does not necessarily mean or imply woodland. Forest here is a legal term for land on which 'Forest Law' applied, relating to the hunting of deer, the grazing of animals, the clearing of land and the felling of timber. Forests and chases were not fenced and could include within their boundaries woodland, heath, moorland, fen, farmland, and settlements. Wooded commons, forests, and chases might all contain large numbers of veteran trees.

**Deer Parks**, like forests and chases, also flourished after the Norman Conquest but it is now believed that the *Domesday Book* of 1086, which records only thirty-seven deer parks, massively under-records the number already in existence at the end of the Anglo-Saxon period. By 1300, according to Oliver Rackham, there were about 3,200 deer parks in England (Rackham, 1980). From the beginning of the thirteenth century, a royal licence was generally necessary to create a park. Deer parks were multi-functional, used not just for hunting but also to provide food for the table, timber, and even arable crops, fuel wood from pollards, tree fodder, building stone and more. The deer were often carefully farmed, and in most parks were Fallow deer, not native to Britain but probably introduced by the Normans. Fallow deer were much easier to contain within a park than the native Red and Roe deer. Besides deer, medieval parks contained Hares and Rabbits (both introduced or re-introduced by the Normans), game birds, fish in fishponds, and sometimes wild swine and wild cattle. Domestic cattle and sheep were also grazed.

Although there are records of parks without trees, deer parks usually consisted of large, open-grown trees (mostly Oak), some woodlands protected from grazing, and areas largely cleared of trees (with grass or heath). The park livestock could graze in the open areas and find cover in unenclosed wooded areas. The cleared areas called '**launds**', or '**plains**', had grassland or heath with scattered veteran trees. Many of the trees in the launds would have been pollarded, i.e. trees cut at least six feet from the ground leaving a massive lower trunk called a 'bolling' above which a continuous crop of new growth sprouted out of reach of the grazing deer, sheep and cattle. In the launds, regeneration of trees was restricted because of continual grazing and new trees were only able to grow in the protection of thickets of Hawthorn, Blackthorn, and Holly. Some of the unpollarded trees might reach a great age and size and were much sought-after for major building projects.

There were also special woods in some regions called **Hollings, Hollins** or **Holly Hags** where the Holly was cut on rotation to feed the deer and other livestock in winter. The park was surrounded by a boundary fence, called the **park pale**, either in the form of a cleft oak fence, or a bank surmounted by a cleft Oak fence, or by a wall. If there was a bank, there was normally a ditch on the inside. Park pales often contained deer leaps to entice wild deer into the park, a source of legal disputes with the Crown as the owners of all 'wild' deer. Buildings in parks included manor houses (from Tudor times), keepers' lodges, and banqueting houses. In the sixteenth and seventeenth centuries, many well-wooded deer parks were converted into compartmented coppice woods, or 'improved' for agriculture.

**Wooded Commons** were unfenced areas where commoners (persons who held land in the open fields, or were tenants of the manorial lord, and had certain rights on the common land in the manor) had the right to graze their animals and to take other products such as fuel and building materials. Commoners usually had the rights of cutting underwood, harvesting the wood from pollards, and taking dead wood, but not the right of felling the timber trees. Their common rights were called estovers or botes (e.g. hedgebote wood for making fences; housebote for housebuilding and cartbote for making farm vehicles).



*An example of a medieval deer park with ancient oak pollards, Staverton Park, Suffolk.*

© Lindy Smith

## The Coppicing Tradition

From the Middle Ages until the second part of the nineteenth century ancient woods throughout the country were managed as **coppices**, either as simple coppice or as **coppice-with-standards**. In coppice woods the trees were periodically (generally every 10-30 years, but as often as once a year) cut down to the ground to what is called a 'stool' and from the stool grew multiple stems, called coppice or underwood. The poles of wood were said to 'spring' from the stool, and hence the names of many coppice woods include the word 'spring'. In a coppice-with-standards, some trees were not coppiced but allowed to grow on to become mature single-stemmed trees and these were the **standards**. The standards were of various ages. The coppice provided **wood** and the standard trees provided **timber**. The timber trees, mainly Oak, were for building projects but their 'by-products', bark and lop and top, were also of economic value.



*A diagrammatic representation of a wood managed as coppice with standards. On the left is a part of the wood coppiced recently and in which regrowth is still limited. On the right the underwood is several years old and has sprung from the stool to a height of five or six feet. Among the underwood are five standards of various ages. The wood is bounded by a bank and ditch. The bank has a protective hedge and a pollard. © Mel Jones*

Coppice was long used not only for making hurdles and for house-building, but also for tools, and for ancient trackways such as those crossing prehistoric fenlands. One of the oldest recorded and most important uses of coppice poles was for charcoal making; however, a vast number of other crafts and industries also depended on it. Coppice wood was also essential for domestic purposes as it provided firewood used for heating and cooking (See **B.2** for more details). Before the introduction of Sweet Chestnut coppice, Ash, Hornbeam and Alder poles were used extensively in the hop industry in the Southeast and in Herefordshire for the frameworks up which the hop-bines could be trained.

Coppice woods were valuable and particularly vulnerable to grazing damage in the first few years after they were coppiced. For this reason, they were surrounded by stock-proof fences, either banks with external ditches or with stone walls. These woodland boundary features often survive and are important archaeological remains. The woods had also to be protected against human thieves and trespassers particularly in autumn, when berries and fruits were ripe, and in winter, when firewood supplies were low. For further details of woodland boundaries and features, see **D.3**.

## Recent Woodland History

In recent history, woodland landscapes have been particularly influenced by episodes of tree planting and by abandonment of traditional woodland management. The earliest tree plantings for timber use can be traced to the 1500s. Other plantings of individual trees and whole areas of woodland occurred in abundance from the mid 1500s in landscape gardens and parks. In gardens in the seventeenth and eighteenth centuries planted woodlands were called **wildernesses**, in the nineteenth century **shrubberies** and more recently **woodland gardens**. Often the species used for garden landscapes were non-natives and some such as Buddleia and Rhododendron species have since become a conservation problem due to their invasive and vigorous nature.

At the end of the nineteenth century woods were becoming neglected after centuries of active management (e.g. coppicing). This and the desire for an independent forestry sector not reliant on imported timber, (as a result of shortages during the 1914-18 war) led the government to set up the Forestry Commission in 1919. In addition the creation of widespread forestry schemes also provided much needed employment. The Forestry Commission was charged with the restoration and regeneration of Britain's woodlands which it did by buying up large areas of land and planting fast-growing non-native coniferous trees. Such conifer plantations are poor in terms of biodiversity as they are too dense and dark for most understorey species to establish. Since the 1980s, the focus of the Forestry Commission's work has shifted to include practices more friendly to wildlife and heritage, such as planting conifers in patches amongst broadleaved trees. Today, most trees planted are native broadleaf species and these are replacing conifers to create a woodland landscape which mirrors more 'natural' species assemblages.



*Wilderness Garden with Artificial Waterfall, Hackfall Wood, North Yorkshire. © Christine Handley*

In the 1970s, awareness of the need to protect and restore woodland increased. Planting trees as part of the conservation movement has gained in popularity since then. The Woodland Grant Scheme introduced by the Forestry Commission in 1986 and other incentives to plant commercial woodlands as part of tax and agricultural reforms helped increase the number of trees planted. Rackham estimates that more trees have been planted post-1900 by conservationists and the Forestry Commission than at any other time in Britain's woodland history (Rackham, 2007).

It is interesting to note that many people believe the only way woodland will regenerate is through planting. However, this is not the case and most land will revert back to woodland naturally through succession, due to lack of management (e.g. heathland) or abandonment (e.g. farmland and old industrial sites). For example, Surrey is the most wooded county in the country with a large percentage being secondary woodland on former heaths, commons, downs and farmland.

In present day England, only about 8% of the land surface is wooded (Smith and Gilbert, 2001); this figure is the lowest in Europe with the exception of Ireland. In Germany for example, 31% of the land surface is woodland (Forestry Commission, 2006). Of the 8% in England, about 1% is ancient semi-natural woodland although this does not include wood pasture, parkland and orchards. The present day woodland landscape is the product of a combination of factors, in particular physical, environmental conditions and site management. The combination of these factors has led to regional variations in the woodland that is present today.

## Conclusion

Since the mid-nineteenth century, great changes have occurred to our surviving wood pastures and coppice woods due to a decline in their economic importance. A minority of wooded commons and deer parks still survive and function to an extent as they have done for centuries, but most have gone. They have been converted to a myriad of other uses including farmland, country parks, municipal urban parks, and golf courses, or lost through house building and industry. Relatively few coppice woods still function as such, and these are mostly in the hands of conservation bodies such as the Woodland Trust. Many were converted to high forest through a combination of singling the coppice (selecting one coppice pole to grow into a standard tree), natural regeneration and planting (including conifers). By the late 1980s, it was estimated that of the million and a quarter acres of broadleaved ancient woodland that had survived until 1945, thirty per cent (375,000 acres) had been converted to coniferous plantation and 100,000 acres had been cleared altogether. However, despite this great loss, some gems still survive, in both private and public ownership. They need to be understood and their history, archaeology, and ecology recorded. To be conserved for the future they must be managed sympathetically in the light of this understanding. **They take us back to the roots of our history and are irreplaceable.**



*A modern woodland landscape, Derwent Valley, Peak District National Park, Derbyshire. A recent conifer plantation in the valley and an ancient upland oak wood surviving on the boulder strewn slopes. © Paul Ardron.*

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## Timeline of Woodland Events in Britain

YEAR (approximate)	PERIOD/ EVENT	KEY DEVELOPMENTS
12,000 BC	END OF LAST ICE AGE	British Isles suitable for tree re-growth. Aspen, birch and sallow arrive first followed by pine, hazel, alder and oak. Elm, lime, ash, beech, holly, hornbeam and maple establish subsequently.
4,000 BC	WILDWOOD FULLY ESTABLISHED	Until very recently, the established theory was that the wildwood stretched as a closed canopy forest across virtually the whole of Britain. This has (in 2000) been seriously challenged by Dr Franz Vera who has hypothesised that the wildwood consists of a patchwork of woodland with grassland, heathland and wetlands and open grown solitary trees scattered within clearings. These clearings were, according to Vera, maintained by large herbivores such as deer, aurochs and elk.
10,000 BC - 4,000 BC	MESOLITHIC	Mesolithic hunter gatherers create small clearings, using wood to build shelters and to manufacture tools such as the Bow & Arrow. Great Britain becomes an island 5,500 BC.
4,000 BC - 2,000 BC	NEOLITHIC	Increasing domestication of animals, gradual adoption of agriculture and a more sedentary lifestyle. Communities move according to seasons & when land becomes infertile. The stone axe is now a common tool and a symbol of power. Evidence of coppicing and woodmanship. Construction of monuments such as long barrows and causewayed enclosures require the felling of mature trees (oak).
2,000 BC - 750BC	BRONZE AGE	Deforestation for agriculture continues and becomes more extensive (now including for example Dartmoor & the Peak District). Metal objects are widely in use and are being manufactured. Rods and poles of coppiced wood is an important commodity as building materials for roads, houses, fences and as firewood for cooking, heating and smelting metal.
750 BC - AD 43	IRON AGE.	Conversion of woodland to agriculture continues and about half of England is no longer 'wildwood'. Iron replaces bronze. Tribal society characterised as 'Celtic'.
AD 43 - AD 410	ROMANS	Extensive coppice wood needed for industries such as tin, iron and lead smelting as well as for domestic use. Wood and timber in great demand to build villas, roads, ships etc.
AD 410 - AD 1066	ANGLO SAXON & SCANDINAVIAN COLONISATION	It is in this six century period that most of the country's place-names are given by new settlers. These suggest a long and sustained period of woodland clearance. Woods are owned, managed and had boundaries and names (Anglo- Saxon Charters).



AD 1086	DOMESDAY BOOK	<p>The Domesday Book was the first country-wide (except Northumbria) land survey commissioned by William the Conqueror. It assessed land and resources owned in England at the time, and how much taxes could be generated from landholders and tenants. The Domesday Book includes records of coppice woods and wood pastures giving a good idea of the extent of the wooded landscape and its management at that time. It has been calculated that at the time of the Domesday survey only 15% of England was wooded.</p> <p>By 1350 woodland cover comprises only 10% of England. Deer parks are established in large numbers as status symbols by aristocracy and major landowners (by 1300 3,200 parks are in use) and royal forests for deer are declared. Fallow deer are introduced as are rabbits which are maintained in warrens. Wood and timber are valuable commodities and timber is being imported from Norway, Baltic and Central Europe.</p> <p>Due to high death toll and halt in population growth woods are no longer cleared extensively and secondary woodland establishes itself on abandoned land.</p> <p>The population size increases and mainly oak was used to provide roof timbers for cathedrals and other buildings. Most woods are managed as coppice woods. First evidence of woodland plantations from 1500. Also, trees planted on a large scale in landscaped parks and gardens. Extinction of Wild Boar and Wolf in Britain (c. 1750).</p>
AD 1066 - AD 1540	MIDDLE AGES	
AD 1349	BLACK DEATH	
AD 1540 - c. 1750	POST MEDIEVAL	
c. 1700 - c. 1950	INDUSTRIAL REVOLUTION	<p>The introduction of coke for iron smelting in 1709, and later technological changes in steel making, lead to the gradual decline and, by the late nineteenth century, the almost extinction of large-scale charcoal making. Coppice woods are converted to high forests often accompanied by extensive replanting with broad leaved species, often not native to the site, and conifers.</p> <p>Woodlands suffering from neglect and cessation of coppice management.</p> <p>From 1919 Forestry Commission instigates widespread plantings mainly of conifers for timber. Tree planting for conservation and natural establishment of secondary woodland (through succession) occurs. Shift to include biodiversity value of woodlands especially ancient woods. Conifers replaced by broadleaved trees. Woods are an important recreational resource. Problems of neglect and lack of economic continuity continue.</p>
SINCE 1900	MODERN PERIOD	

## **B2: Woodland Crafts and Industries**

**Mel Jones and Ian D. Rotherham**

### **Introduction**

Woods and wood products were absolutely vital to prehistoric, Roman and medieval societies until the beginning of the twentieth century. These societies were heavily dependent on woodland resources for shelter, food, fuel and industry to an extent which cannot be conceived by society in the twenty-first century.

#### **Typical Woodland and Forest Activities and Products**

##### **Products harvested directly:**

- Timber
- Coppice wood (many uses)
- Fuel wood
- Brash and ramel
- Leaf litter
- Fruit
- Herbs
- Fungi
- Leaf fodder/compost
- Turf
- Pannage for pigs: beech mast/acorns

##### **Indirect use:**

- For grazing cattle, deer, small game (launds/ warrens)

##### **Products Made from Wood:**

- Bark- tanning
- Charcoal
- Whitecoal
- Tar
- Potash
- House building
- Ship building
- Small crafts *e.g.* turnery, coopering, besom making, clog making, basket making, cart and wheel making

##### **Extracted products:**

- Mineral coal
- Ironstone
- Quarried stone

All types of woodland provided materials from building timbers to fuel wood, from brushwood to leaf mould, and from turf to fodder and fruit. Some of these materials were used and processed in the wooded landscape; others were taken away for use or processing elsewhere. The uses and processes varied over time and from region to region.

Today, whilst some woodland timber products are still important, for example paper pulp and furniture, the heavy reliance on local woodland products has been lost.

### **Felling the Timber Trees and the Coppice**

By the Medieval period, most land ownership and use of resources was controlled and regulated. Landowners with small woods on their land and with timber growing in their hedgerows must have used a great deal of their crop themselves. However, larger landowners, besides using wood and timber on their estates for their personal and their tenants' use, also sold large amounts of coppice wood and timber on the open market.

In the post-medieval period when a compartment within a wood was going to be felled and sold on the open market, the sale was preceded by a valuation of the wood. The valuation of the compartment was called "setting out" and included computing an overall value for the underwood if it was a coppice or a coppice-with-standards. 'Top and lop' (branches of the timber trees) were often valued separately. If it was an Oak wood, the value of the Oak bark would also be calculated as it was a valuable resource for the tanning industry. It was not unusual for the timber, the coppice underwood together with the top and lop, and the bark all to be sold separately.



*Valuing timber trees  
from Ian D. Rotherham.*

The next stage was to advertise the sale, and by the nineteenth century this was through handbills. At the sale, normally held at a local inn, the woodward would write the valuation(s) on a ticket and put it folded on the table in front of him. Within a specified time, all those bidding for the timber, underwood, and other products included in the sale had to put their bids on separate tickets on the table. This was usually done three times, on each occasion the woodward announcing the highest bidder(s). The highest bidder(s) on the third occasion became the purchaser(s) provided the bids equalled or exceeded the estate valuation (see page 72 for an example of a handbill). Surviving contracts show that the purchasers were given up to twelve months to fell, saw, and remove the timber, peel the bark, and make products such as charcoal. There were strict rules about making sawpits in the woods and gathering turf to cover charcoal stacks. Once felled

and cut to length or sawn as necessary, the timber and wood and other by-products were dispersed to be put to an amazing number of uses.

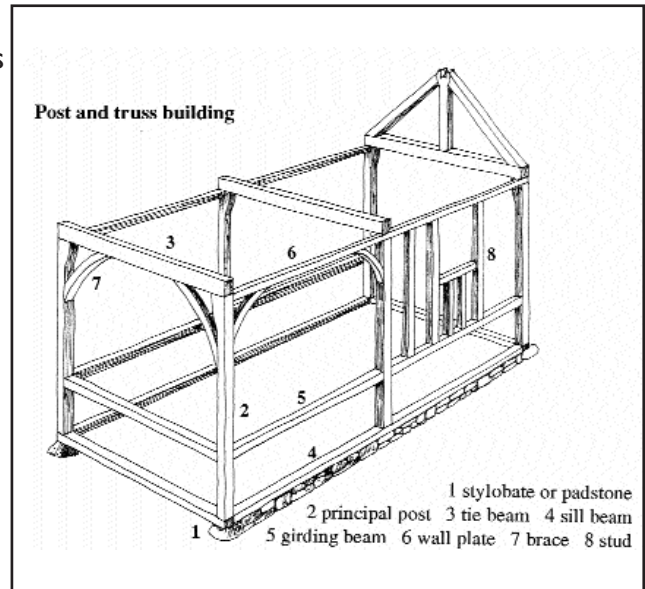
## The Work of the Housewright

It was not until the seventeenth century that stone and brick supplanted timber as the main building materials, timber holding prime place since the first permanent settlements built in Neolithic times. Even castles and parish churches were of timber before being rebuilt in stone. Huge numbers of trees from the country's medieval woods can be seen in surviving timber-framed houses and barns. The builder, called a house carpenter or housewright, did not obtain his timber as ready-sawn or shaped planks and beams. He selected trees in woods and hedges that would roughly square up to the dimensions of the components required with the minimum of shaping, large trees for the beams and smaller trees for materials such as rafters. The timber used was mostly Oak (although Elm and Sweet Chestnut were sometimes used) and it was sawn or shaped with an axe or adze while it was still 'green' for ease of working. Nails were not used to hold the timbers in place because the tannic acid in the unseasoned Oak would corrode them. Instead, Oak pegs sometimes called treenails were used and so were made in their thousands.

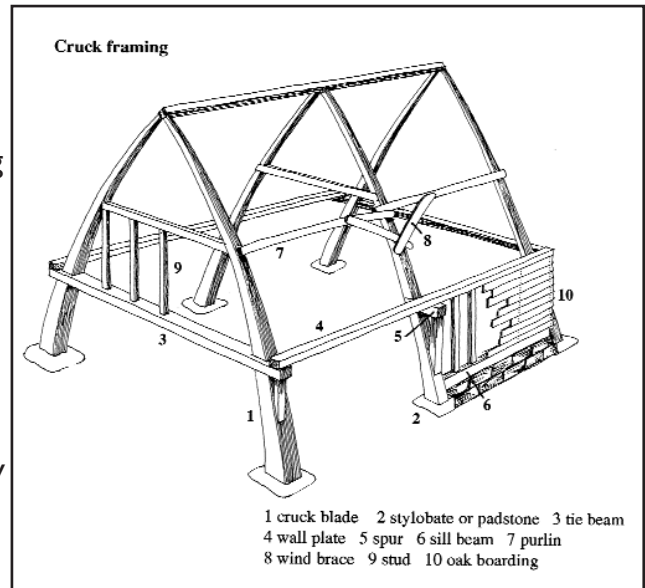
Timber-framed buildings were often constructed in the house carpenter's yard, sometimes called a framing yard. For this reason, when originally assembled, each piece of timber had to be marked (usually with Roman numerals) to ensure that every part was in its correct place when finally re-erected on the house or barn site. Careful examination of the timbers in old buildings will reveal the carpenter's marks cut into the timber components. There are two traditions of timber-framed building that are likely to be seen in England: '**post-and-truss**' (or box frame) and '**cruck building**'.

A **post-and-truss building** consisted of a series of trusses or cross-frames formed by pairs of vertical posts (principal posts) connected by tie beams and standing on large stones (stylobates). Longitudinally, the tops of the principal posts were connected by horizontal timbers called wall plates (at the top of the posts), girding beams (at mid-wall level), and sill beams (at or near floor level). Curved timber braces were added for extra stability.

The roofs of post-and-truss buildings were of either the 'common rafter' or 'principal rafter' type. There were many variations of principal rafter roofs. In the king post type, which was common in the north of England, there was a single vertical post which rose from the tie beam. In East Anglia and the southeast the crown post type, which had a vertical post rising from the tie beam to a collar purlin, was widely distributed.



In a **cruck building**, the weight was carried on pairs of timbers called cruck blades that rise from or near the ground and meet at the apex of the roof. The blades are usually curved, having been selected from naturally bent trees. Often a bent tree was split or sawn lengthways to make two matching blades. The structure was strengthened by tie beams connecting each pair of cruck blades. The roof of the building was stabilised by struts called windbraces. Cruck buildings were common in the upland areas of Britain and parts of the Midlands but are virtually unknown in eastern and southeastern England.



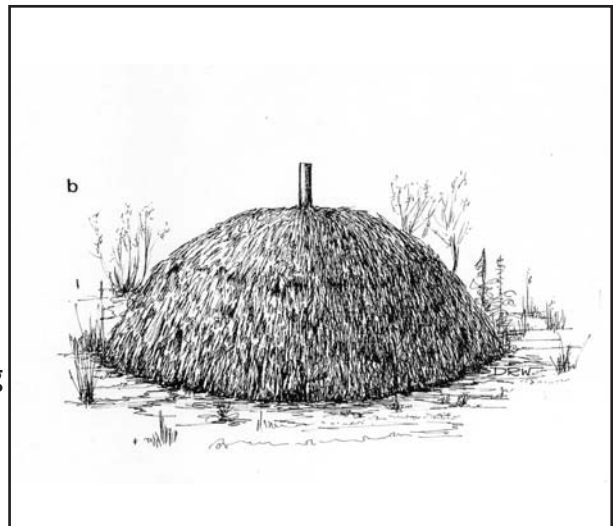
## Ship Building

Woodlands within easy transport reach of the coasts but not confined to these areas (for example The Weald) provided the timber for shipbuilding. So the production of tie beams, principal posts, and king and crown posts was joined in these locations by the manufacture of an array of ship timbers including keels, keelsons, bowsprits, gunwales, and futtocks. The treenails were sometimes known as ship pins when sold to shipbuilders. The Weald in Kent and Sussex although not within easy transport reach of the coast, supplied timber and underwood to construct many ships especially those built at the naval dockyards at Chatham. Timber harvested from these woodlands often took up to two years to reach Chatham due to the appalling state of the roads, many of which were impassable in winter time, turning into ribbons of deep intractable clay and 'pug'. There were no major waterways, although the Medway and Rother were used once the timber reached navigable stretches.

## Charcoal and Whitecoal Making

The preparation of charcoal for use as the fuel for iron smelting is the oldest recorded woodland industry in many parts of the country. This is not surprising, as it would have been taking place since prehistoric times. Although the market for charcoal as the fuel for iron smelting gradually disappeared during the eighteenth century with the introduction and spread of the use of coke, some markets remained and others expanded. Most importantly, charcoal was used in making blister steel in so-called cementation furnaces where successive layers of bar iron inter-bedded with layers of charcoal were heated up to high temperatures for up to eight days. The scale of use can be seen from the example of Sheffield which had over 250 such furnaces with their characteristic conical chimneys in the mid-nineteenth century. Another industry based on charcoal was gunpowder manufacture, which used charcoal from Alder, Willow and Alder buckthorn trees. One of the principal areas of manufacture (for the Royal Armouries) was in the Tillingbourne Valley near Guildford in Surrey where extensive remains of the industry still exist. Charcoal was also used in large quantities as blacking by moulders in iron foundries. It was also an important domestic fuel for both heating and for cooking. Quality charcoal was also in demand by artists and for medicinal use.

During the 'coaling' season, which usually lasted from April to November, charcoal burners or 'wood colliers' as they were earlier known, lived an isolated life, often with their families about them, deep in the woodlands. Their work consisted of burning stacked lengths of coppice poles in the absence of enough air for complete combustion. The moisture was driven off during the early part of the process followed by volatile elements such as tar and creosote. The process left behind a residue of black carbon in solid form with a little ash. Using the traditional method but with many subtle variations in layout a level spot was chosen and the turf removed, or, on a steep site, was dug out from the hillside. This was about fifteen feet in diameter and was called the **pitstead**, **pit**, or **hearth**. There are different traditions of building the stack. One way, which may be a southern tradition, was to lay three short billets on the ground in the form of a triangle and then to build this up to form a central flue. A northern method was to drive in a long central stake that was removed when the stack was ready. Whichever method of flue construction was used, the remainder of the stack was constructed by stacking cordwood (four foot lengths of coppice poles and branch wood) facing inwards to form a stack looking like an upturned pudding basin, fifteen feet in diameter and five feet high (diagram a.). The wood was then covered by straw, grass, Bracken, and turves, which were in their turn covered by dust and ashes. In this way, virtually all air was excluded (diagram b).



*Charcoal stack construction.*  
© Bob Warburton

Red-hot charcoal and a few dry sticks were then dropped down the central flue. Once assured that the stack was alight, the wood collier sealed the flue, and the fire spread throughout the stack. It was important that the stack burned steadily and that the fire did not burn through to the surface. For this reason, the charcoal burner had to be in constant attendance, protecting his charge from sudden wind changes with hurdle fencing and sacking, and closing any gaps in the stack with bracken, turf, and soil. Burns lasted from two to ten days depending on size, weather conditions, and the greenness of the wood. At first, the stack emitted clouds of white smoke, which gradually turned to a blue haze and then died away altogether. When the burn was over, the stack was uncovered with a rake, allowed to cool and then the charcoal packed in sacks or panniers.



*Charcoal maker's hut, Sheffield 1895.  
From Mel Jones*

The same charcoal hearths and the charcoal makers' hut sites were reused repeatedly at the end of each coppice cycle for a particular area of woodland. The huts were conical in shape built on a framework of poles like a wigwam around a low perimeter stone wall. A lintel was lashed in place over a gap that was left as a doorway. Over the framework of poles, sacking or skins were laid, and these were then covered with turves in the manner of tiles. A stake was driven into the ground a few feet from the entrance. The door often consisted of wood battened together, which could be pulled in front of the doorway at night. In the morning when the charcoal maker emerged it was pushed outwards to rest on the stake. The remains of these huts in the form of a circle of stones (the remains of the low perimeter wall with a gap for the doorway), can still be found in some parts of England (north and west).

As well as charcoal making, there was another woodland industry making fuel for smelting ore in woods as far apart as North Wales, the Yorkshire Dales, South Yorkshire, and North Derbyshire, between the last quarter of the sixteenth century and the middle of the eighteenth century. This time the ore was lead and the fuel was called **whitecoal**. In South Yorkshire, the lead was from Derbyshire, brought from the relatively poorly wooded Peak District to water-powered ore-hearths on the fast-flowing rivers near the region's coppice woods. No one now living, as far as is known, has ever seen any whitecoal. It has not been made for over 250 years and is unlikely to have survived or be recognisable if it has. It was small lengths of wood, dried in a kiln until all the moisture was driven out. Linnard (2000) states that charcoal and whitecoal were mixed together to smelt lead, because charcoal gave too high a temperature and wood not high enough; Crossley (1993) says whitecoal was used alone in smelting lead ore with charcoal used to re-smelt the slag.

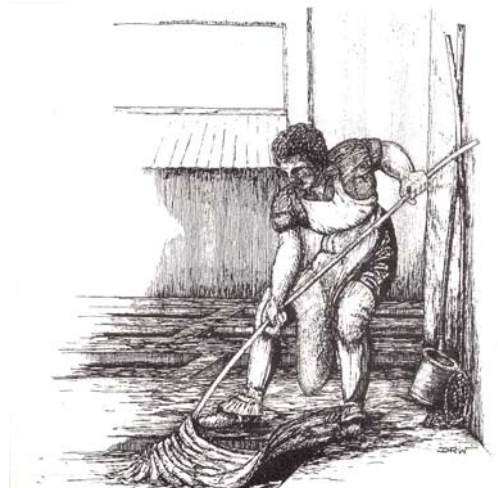


*A Q-Pit in Ecclesall Woods. © Paul A. Ardron*

The former presence of whitecoal making in a wood is confirmed by characteristic depressions anything from three to five metres in diameter with a noticeable flue at one end. The flues generally face downhill and vary in length and construction. These are the remains of **whitecoal kilns** sometimes also known as **Q-pits**. The name Q-pit has been given because the letter 'Q' mirrors the shape of the archaeological remains.

## Oak Bark Leather Tanning

During the 150-year period from 1680 to 1830, the production of leather and leather goods was, by value, the second most important industry in England after textiles. It was one of the largest employers outside agriculture. Woodlands played a major role in supplying tree bark, which before the introduction of chemical substitutes, was the main agent, in the form of a liquor, used in the preparation or 'tanning' of the animal hides. This was prior to their conversion into such everyday articles as boots, shoes, clogs, harnesses, saddles, breeches, aprons, gloves, bags, cases and bottles, and for use in industry for bellows and belting. Bookbinders were also important customers for fine leather. The tannic acid from ground bark seeps slowly through the pores of the hide, draws out the water, and coats each fibre with a preservative. The tannin content of Oak bark made it the most efficient and therefore the most important tanning agent.



*Leather tanning.* © Bob Warburton



*Peeling the Bark.*  
From Ian Rotherham.

When a compartment of woodland was coppiced the wood might be de-barked. The bark was peeled in large pieces from both the timber trees and the underwood poles. This was done by scoring a tree round its trunk at about two feet intervals, and then making a longitudinal slit along the trunk. The bark could then be levered off in large plates with a bark peeler called a **spud**. It was often the practice to remove as much of the bark as possible while the tree was standing, then felling it to strip the rest. The peeled bark was stacked to dry and then, as tannin is soluble in water, it was protected from rain in thatched stacks until sold to tanners. The woodland historian and archaeologist should also be on the lookout for the remains of tanneries in well-wooded areas, which contained **bark mills** worked with horse or water-power, where the bark was ground up and **tanpits**,

through which the hides were successively passed. These tanpits would have contained increasingly strong tannin solutions.

Today, there are very few tanneries in England which still use Oak tannins for leather production.

## Potash Manufacture

In a pre-petrochemical age, alkali made from the ash of green plant material was hugely important. This was used in the preparation of textiles and in various dyeing processes. Potash as it was known was also used with other ashes for domestic soap, and was an important fertiliser.

The manufacturing process is poorly documented but certainly involved two stages: firstly, burning the vegetation to ash and secondly, boiling down or 'elying' a solution of water and ash in a large metal cauldron. The main surviving evidence of this industry is in the form of stone built structures where the vegetation was burnt and the ash collected. Some of these are to be seen in south Cumbrian woods, along with the bases of the potash makers' huts. Other evidence can be seen in variable and often shallow depressions and pits which may have been where the 'elying' took place or could be the sites of less industrial ash burning.



*A stone clad pit possibly a potash kiln, Haverthwaite, Cumbria. © Ian D. Rotherham.*

## The Small Crafts

Less well-known but once widespread, are a number of specialist, often outdoor woodland crafts which have now almost disappeared either because the product is no longer required, and other materials are used, or because the products now are made in factories. Such crafts include: turnery, coopering, chair bodging and the manufacture of wheels, clogs, baskets, hurdles, thatch spars, rakes, besoms, hazel hoops (to put around barrels), and brush handles. Another dozen crafts could be added to the list.

Turners made not only wooden dishes and plates but also a wide range of kitchen and dairy implements. Now they are more likely to be making decorative objects and toys. Until forty years ago, turners also made wooden clothes pegs and clothes wringer rollers. Like turners, coopers also made vessels for food: dry coopers made casks to hold non-liquid goods, white coopers made articles for domestic use and wet coopers produced casks for storing liquids. The wet cooper made a whole range of specialised vessels including pails and piggins, for carrying water and milk, churns for making butter, tubs called keelers for cooling liquids, tubs called kinnels for general use, lidded kits for holding milk, and hogsheds for storing ale.

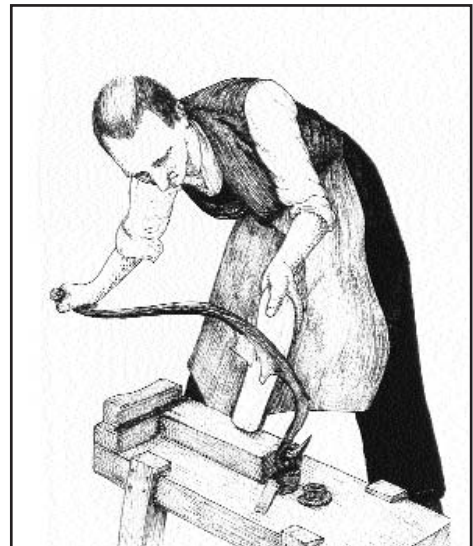


Clog makers used Alder, Willow, Birch, Sycamore and Beech trees. Alder was preferred because it was water proof and easy to work. Short lengths of tree trunk were riven (split) into sole blocks by the clog sole maker and shaped with a special tool called a stock knife.

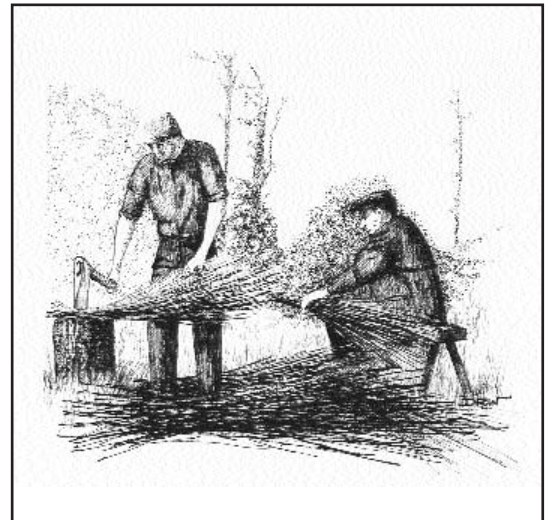
Besom making was also a widespread local craft until the beginning of the twentieth century. Besoms were indispensable for sweeping flagged cottage floors and factory floors. The besom handles made from young Ash, Birch or Hazel poles and the brooms from bundles of Birch or Hazel twigs, or from Heather or Broom. These were tied together originally with strips of Willow, riven Oak, or even Bramble.

Basket making was also a widespread craft with great regional variation in the type of basket made, from swill baskets made of thin strips of boiled Oak to fish 'kiddles', made of Willow and used for trapping fish.

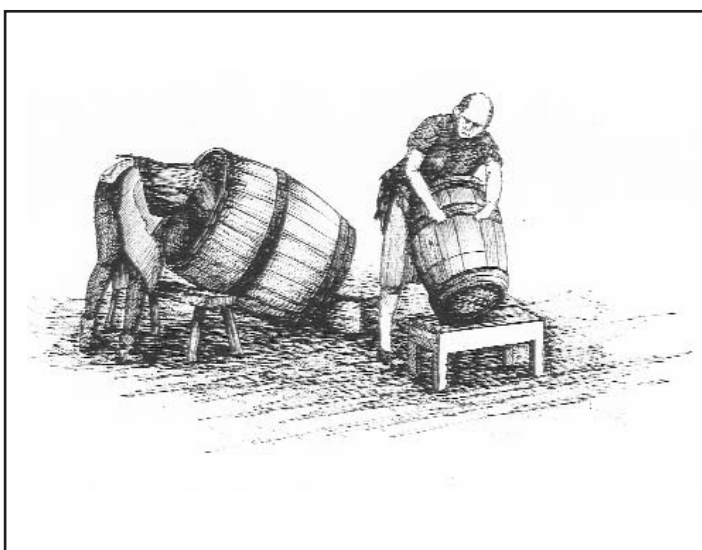
Many of the crafts occurred over wide areas of the countryside but varying in time and intensity. Some industries and crafts such as potash manufacture in south Cumbria, chair leg bodging in the Chilterns and whitecoal production in or near lead mining areas were important regional specialisms. These regional and local variations should be reflected in the documentary record and in the archaeological features discovered in your local woods.



Clog Making © Bob Warburton



Besom Making © Bob Warburton



Coopers making barrels. © Bob Warburton



Basket maker making a swill basket.  
© Bob Warburton

## Other Manufacturing

Other industrial remains can be found within ancient semi-natural and secondary woodlands alongside industrial processes which directly used woodland resources. Examples of these other industries include glass manufacture which was a large industry in the Weald centred around Chiddingfold in Surrey. Quarrying and brickworks are found extensively in woods and also on wooded heaths. There is evidence of ironworking in Shropshire and adjacent areas as well as in Yorkshire and Derbyshire, and mining for tin, lead and copper in the West Country.



*Brickworks pond in Wharncliffe Wood, Stocksbridge, South Yorkshire. © Lindy Smith*

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## B.3: Woodland History and Archaeology

Mel Jones, Ian D. Rotherham and Paul A. Ardron

### What is Woodland History?

What is meant here is either **documented** or **oral** woodland history. The documentary or oral record may describe past conditions, past events and past management practices. Most ancient woods and other wooded landscapes such as deer parks and wooded commons have some form of documented histories. Such sites were of economic importance to their owners, the management histories of woods have therefore often survived in great detail over long periods of time.

Documentary evidence can, for example, provide accurate details about the tree composition of a wood at particular dates, about when planting was done and what tree species were planted, about when a wood was extended or reduced in size, about how coppicing was organised and when coppice management ceased, and about the markets for the wood and timber (see Example 1, below). Details are also often provided about grazing regimes, the construction and maintenance of boundary banks and walls, the preparation of charcoal hearths, the digging and filling in of saw pits, quarrying and mining activity. (See Example 2).

For most woods, the documentary evidence will not be continuous and will be more plentiful for the post-medieval period. Nevertheless, using ecological and archaeological evidence alone can make it much harder to be sure of past conditions, events and the management practices which were carried out, exactly when and for how long.

#### Example 1: Tree Planting

In all of the surviving woods that once belonged to the Duke of Norfolk (the largest landowner in Sheffield and Rotherham), scattered among the native Oak, Birch, Rowan and Alder are Beech, Common Lime, Sweet Chestnut and Sycamore. Survey work including girth measurements of these non-native trees suggest that they are about hundred years old and presumably have been planted for a purpose. The more precise origin for these century-old trees was found through searching the Duke of Norfolk's archive (the Arundel Castle Manuscripts).

By the end of the nineteenth century the Duke of Norfolk's coppice woods were near the end of their economic life and were being converted into 'high forests', made up entirely of single-stemmed trees. The reason for this was the replacement of wood and timber by iron and steel and a great drop in the demand for charcoal. Planting took place on a large scale with hundreds of acres being cleared of coppice stools and replaced by hardwoods not native to South Yorkshire. In a document dated October 1898 (*Arundel Castle Manuscripts S308 in Sheffield Archives*) the Duke's Sheffield wood agent recommended the planting of Sycamore, Beech, Ash, Sweet Chestnut, English Elm and Lime to be planted at eight feet intervals. In many woods Larch, a fast growing conifer, was suggested for planting between the introduced hardwoods. The document also gave the number of acres in the woods to be planted : for example, 120 acres in Greno Wood and 70 acres in Canklow Wood. An order was sent in November 1898 to Dicksons, seed merchants and nurserymen of Chester for 20,000 Larch, 10,000 Sycamore, 5,000 Beech, and 2,000 each of Birch and Spanish Chestnut seedlings (1½ - 2 feet tall) to be delivered at Wadsley Bridge station.

### Example 2: Mining Evidence

In a recent archaeological survey of a local wood numerous bell-pits were recorded. The field evidence and preliminary research suggested that they *'were associated with the local iron industry, which thrived from the seventeenth century onwards'* and *'the subsequent expansion of coal mining during the eighteenth and nineteenth centuries'*. The bell pits were broadly dated as 'post-medieval'.

Documentary research reveals the precise nature of the bell pits. The pits had been dug by men working for the local iron foundry to obtain ironstone rather than mineral coal as was initially thought. A number of detailed agreements between the firm and their workmen have survived in the local archives and give very detailed information about exactly who, when and why the pits were dug and worked. For example, on 5 July 1805 John Shelton and John Parkin agreed to work two bell pits in the Black Ironstone Mine. They agreed to 'get' the ironstone (mine it with a pick), hurry it (take it to the pit bottom), 'hang it on' and draw it up the shaft. They had to find their own tools, except ropes, corves (small coal wagons) and gins (hand-worked pulley systems). Before they started work they were paid five shillings 'Ernest money', i.e. an advance to seal their work contract.

In another contract, between the woodland's owner and the iron foundry, it was stated that trees had to be felled by the owner's woodmen before any mining could commence in the wood, and that after mining had finished the pits had to be filled in, the pit hills levelled and the ground prepared for the planting of young trees. This probably explains why the field survey found that a number of the bell pits had been in-filled and lacked the central hollow that many old bell pits have.

## What is Woodland Archaeology?

Woodland archaeology is the study of any physical remains of past human activity within and / or relating to woodland. This includes the woodland and individual trees themselves. It is most effective when undertaken in conjunction with the study of woodland history and ecology.

All woodland archaeological remains present clues and evidence of past human use of woodland sites. Remember too, that there may be a lot of evidence such as banks (wood banks, park banks, and internal boundaries) and even working trees (pollards, stubs, coppices, standard trees, etc.), or fragments of woodland vegetation, outside the present boundaries of the woodland.



Archaeology of the wood: A medieval park bank.

© Paul A. Ardron.

### Woodland Archaeological Remains

Woodland archaeological remains incorporate and survive as:

- soils, sediments, and buried deposits including seeds and other organic material preserved in waterlogged ground;
- living and dead trees and their remnants;
- stones, structures and ruins;
- material scattered on site - such as flints, cast off tools and equipment, domestic materials from settlements, *etc.*;
- earthworks such as banks and ditches, and platforms and pits; and,
- the vegetation itself.

Archaeological remains you may find are related to:

- land ownership and management;
- woodland processes and products (pits, platforms, ponds, sawpits, storage and processing sites, access routes and trackways, settlements of woodland workers, *etc.*);
- industrial extraction (stone, coal and other minerals) and industrial processes (smelting, tanning, *etc.*);
- agricultural phases of land use (field systems, boundaries, buildings, soil downwash, plough-marked stones, *etc.*);
- recreational activities now (such as war-gaming or dens) and in the past (such as deer parks, or Victorian and earlier leisure landscapes);
- settlement sites (from prehistoric to modern); and
- military training (rifle butts and trenches).

### Archaeology of and Archaeology in Woodland

In a wooded landscape you will find evidence of human activity that relates to the woods and the trees, **the archaeology of the woods**. You will also find evidence of human activity that is either to do with other uses not specifically relating to the trees or wood but which now happens to be within woodland, **the archaeology in the woods**. Our main focus in this manual is on the archaeology of woods, but the archaeology in woods can be hugely important too, and together they give a picture of our cultural landscape. Of course some archaeology of the woods, such as charcoal hearths may not always be found within woods. Where woodland has been cleared charcoal hearths can be found in open situations. This is commonly the case in Cumbria, for example, where with a trained eye you can spot charcoal hearths on many grassy hillsides without a single tree nearby. In other areas, making charcoal may have always been carried out outside of the wood itself. There are regional and international variations in the sites of manufacture of charcoal and other woodland products and often finding an archaeological feature can throw up new questions about the historic landscape.

The type of woodland, for example upland Oak-Birch wood, or lowland Alder carr, also affects the uses it was put to, its likelihood of being cleared or maintained in the past, and so the types of archaeological evidence to be found today. For example, in Surrey and Cumbria, the centres for gunpowder manufacture, Alder was a key species managed specifically due to its importance to the industry. In the Tillingbourne Valley, Surrey, the archaeological remains of the gunpowder factory complex is situated close to an area of Alder carr wood.



*Archaeology in the Woods. Remains of the Chilworth Gunpowder Factory near Guildford, Surrey. © Lindy Smith*

The range and type of archaeological remains and features vary with the continuity of woodland cover, whether it is ancient, or secondary, re-grown or replanted. Disturbance in ancient woods and wooded landscapes has generally been less destructive than that in other landscapes. Where land has been converted for arable agriculture for example, archaeological features have often been destroyed through ploughing and levelling of the land. This is not the case in areas that have been wooded for centuries. Here features are much more likely to survive, both those caused by activities directly associated with the woodland and those that happen to be in the woodland, possibly originating from earlier land-use. For example, the survival of the extensive late prehistoric field system within the ancient woods of the Slindon Estate, West Sussex. This must have originated from when the land was not yet wooded but has since been preserved within it.

In some cases, features may also survive in secondary or more recent woods, but this will depend on past management and levels of disturbance. (See Friends of Errington Wood's Project Example below.)

Understanding this complexity is important if a woodland site is to be appreciated in its totality and to be conserved effectively for the future. Recognition of the evidence and awareness of its potential vulnerability is vital.

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## Example of Local Project: Uncovering a Woodland's History

### The Friends of Errington Wood, New Marske, North Yorkshire

The Friends of Errington Wood was started when a group of like-minded people got together in 2004 to help manage, preserve and enhance the woodland. Redcar and Cleveland Council own Errington Wood and Keith Ferry their Countryside Officer, works closely with us giving us guidance and help. Errington Wood itself is situated on a North facing slope overlooking the North Sea between the villages of Upleatham and New Marske, in Cleveland.

From looking at historical documents, we know that the Errington family had planted the woodland as a cash crop, in 1773. It is possible that this crop was planted over existing woodland however the exact status of the wood remains uncertain.

The trees situated towards the top of the slope are older than those at the lower end, the latter having been planted by redundant miners when the ironstone mines which were created below the wood closed in 1923.



*The Friends of Errington Woods setting off on their field trip, December 2006.*

© Lindy Smith

Over the years, there have been a number of surveys and research looking into the mining history at Errington Wood, which is well documented. The Friends have verified these surveys by searching out the known locations of mine artefacts, a lot of which have now been reclaimed by nature. In this way, we have been able to build up our knowledge of some of the woodland's history from 1851, when the mining rights were granted.

Since then and through our participation in the Woodland Heritage Champions Project the surveys have been concentrated on the upper part of the woodland, which we know to be substantially older. There are a number of Bronze Age burial mounds, one of which is prominent and with two cup marked stones. One of these cup stones we re-discovered during our archaeological survey of the site as part of our testing out survey guides for the Woodland Heritage Manual.

Also in the upper part of the wood, the remains of an old parish boundary wall and the ruins of the Zetland Hall enclosure wall were discovered. Associated with these are a number of quarrying sites. We tried to identify earthworks and link them to past activities which may have been carried out in the wood. For example, we found features resembling charcoal hearths and discovered stone piles which were likely to have been part of a hut or other structure. In addition, some of the depressions, it is thought, could be the remains

of sawpits. Later in the year, our local archaeology group working for the council will assist us with the excavation work of one of the features which may have been a processing platform.

During our surveys we also looked at topographical features, ground vegetation and tree variety. When looking at trees, the larger ones created interest, but we need to look further to establish their approximate age and whether they were part of the woodland or the remnants of boundaries. There were certainly lots of examples of coppicing to be found.

Recently, we have also looked at ancient woodland indicator species to try and determine if they give further insight into the origin of the wood. Thus far only a few have been recorded although the initial survey was carried out late in the survey season. Another survey is scheduled for Spring 2008 by several members of our group. Through these surveys we are building up a good database of the flora found at Errington Wood.

The question we have initially set out to ask is if our wood is ancient or not? At present it is really too soon to tell. The *Ancient Woodland Inventory* lists parts of Errington Wood as replanted Ancient Semi-natural woodland. However, we feel the plantation area may have also been created on once wooded ground. Due to the high level of disturbance of the wood, it is difficult to reach conclusions based on field surveys. We therefore plan to carry out further archive work and map research. With the help of other interested bodies such as the local archaeology group we hope that we will be able to shed further light on the rich history of Errington Wood. In addition, the information we have discovered will help to preserve and manage Errington Wood, its wildlife and its history (in the form of archaeological features).



Stone with cup marks re-discovered by volunteers.

© Lindy Smith



## B.4: What is Ancient Woodland?

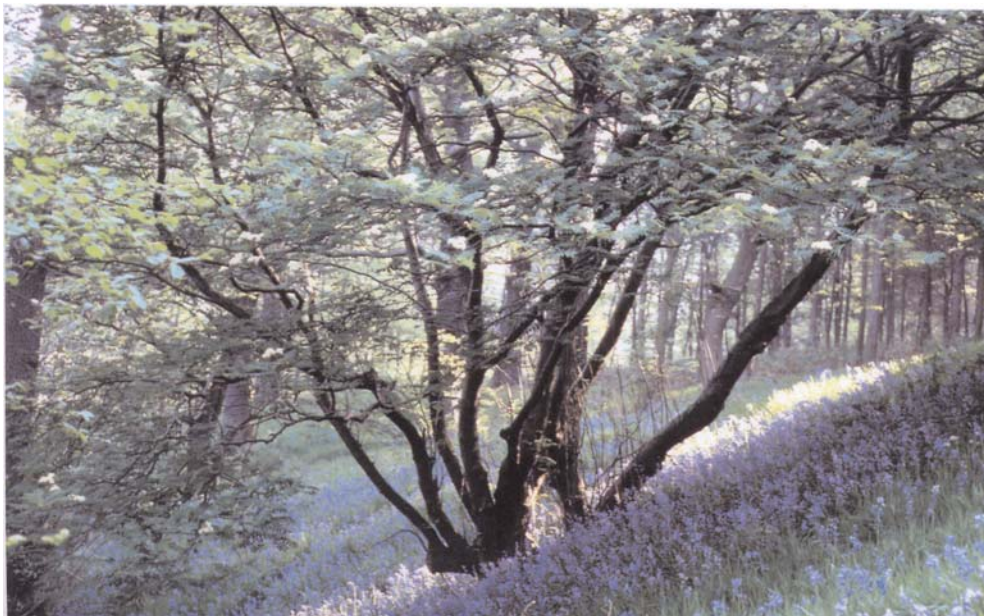
Ian D. Rotherham, Mel Jones, Lawrence Bee,  
Barry Wright and Paul A. Ardron

### Introduction

The age of a woodland is important in influencing both its ecology and its history, and so its archaeology. There has therefore been a lot of interest in defining the age of a wood and in particular to define if a site is 'ancient'. An ancient wood is generally defined as one that is known from documentary evidence or from a combination of archaeological, botanical and geographical clues to have already been in existence at some critical threshold date in the past. The Ancient Woodland Inventory (AWI) and some writers such as George Peterken (1994) use a threshold of AD 1600. Others such as Oliver Rackham use a threshold of AD 1700 (Rackham, 1980). The significance of these dates is that in Britain, it was only after this time that trees were planted on a large scale to form woods. What this means is that any wood already in existence by 1600 or 1700 would have been the descendant of a medieval working wood, an area of woodland conserved, named and managed. This was not wildwood, nor 'natural' woodland, but 'semi-natural woodland', influenced by human activity over hundreds and in some cases thousands of years. Many ancient woodland fragments exist in the landscape, however they are often overlooked. These are a fascinating resource for investigation by local enthusiasts as landscape detectives.

### So what are Ancient Woodlands?

An ancient wood can be either a primary wood or an ancient secondary wood. A primary wood is a direct descendant of the wildwood that grew up after the last Ice Age and was never cleared. Much more common are ancient secondary woods that were cleared at some point before AD 1600 / AD 1700 for settlement or farming, then abandoned but then reverted back to woodland before this date. Because of their age they may share some characteristics of primary



*An ancient coppice wood with a carpet of bluebells, South Yorkshire*  
© Joan Jones

woodland. It is the inherited characteristics of ancient woods that make them so special: their sites, locations, shapes, the variety of plant life, a diversity of animals, their archaeology, and an often long documented history.

This means that all primary woodlands are ancient, but they are very rare. Many secondary woodlands are recent in origin, however others are ancient and can be shown to have been created or to have developed before 1600AD. These woods are generally termed ancient semi-natural woodlands because although they have established through 'natural' succession processes they have been managed by people over centuries.

### Suggested Definitions

#### Primary Woodland

This is regarded as woodland that has been woodland, or has been under continuous tree cover back into prehistory and the post-glacial period (the time of the so-called 'wildwood'). These are incredibly rare, almost to the point of non-existence in Britain.

#### Secondary Woodland

Secondary woodland grows on land that, at some time in the past, was cleared of trees and used as pasture, meadow, arable, heath *etc.* The time when it developed back into woodland could range from the so-called Dark Ages or earlier, even pre-Roman, up to the present day.

These two definitions (primary / secondary) relate only to whether or not the ground on which the wood currently stands has ever been cleared of trees and subsequently replanted.

#### Ancient Woodland

This is an area of woodland that has been under continuous tree cover from before 1600AD. This date is used because there is evidence from documents and archives showing that prior to this time, very few woods were deliberately planted on ground that was previously not wooded. In the centuries that followed, planting became much the norm. Ancient woods can be primary or secondary (ancient semi-natural).

#### Recent Woodland

These are woodlands established after 1600AD on sites previously not wooded.

These two definitions (ancient / recent) relate only to the cut-off date when it can be asserted that the woodland was in existence.

Based on Peterken (1993).

## Characteristics of Ancient Woods

Ancient woods are often found in the farthest corners of parishes and townships, often right on their boundary. These are the remnants of more extensive woodlands that have been attacked by axe, drainage spade, and grazing livestock. Their history of piecemeal management means ancient woodland boundaries often tend to be sinuous or zigzagged. Either that or they can occur throughout parishes where they survive on steeply sloping stream valleys which may link coppices and larger areas of woodlands. In south-east England, these are known locally as

gills and may contain many rare species. Our ancient, medieval coppice woods are characterised by carpets of wild flowers, many being species only found in such habitats. One of the greatest pleasures of visiting an ancient wood is to see the shafts of sunlight on the carpets of wild flowers in spring and early summer. Many of these ancient woodland botanical indicators are rarely found outside ancient woods or other historic landscapes. This is because they are generally slow colonisers. Widely distributed wild flowers largely restricted to ancient woodland sites include Wood Anemone, Wild Garlic (Ramsons), Wood Sorrel, Yellow Archangel, Yellow Pimpernel and the attractive grasses, Wood Melick and Wood Millet. The Bluebell is also known as an ancient woodland indicator and is often a sign of past management of woodland for charcoal production.

## Non-ancient Woods

Whilst this manual concentrates primarily on ancient woodland, many woods originating after AD1600 / AD1700 are also very interesting and have significant heritage value. Some, such as those planted in post-medieval parks and gardens are of importance in their own right, contributing to our understanding of individual landowners and landscape designers. Woods such as those planted to commemorate famous battles such as Trafalgar contribute to the rich tapestry of the historic environment. Woods planted in the twentieth century, for example to diminish blasts from gunpowder factories, contribute to our knowledge of how such industrial complexes functioned. Many of these woods of more recent vintage also contain historic remains equally diverse, or more so, as those in older woodlands.

Another, often forgotten point is that many 'natural' woodlands develop through ecological successions on post-industrial sites and on abandoned heaths and moors. These are often a neglected area of interest.

## Wooded Landscapes

Current thinking and approaches are now moving away from the simple recognition of ancient woods to the wider concept of 'wooded landscapes'. This acknowledges the presence of pseudo- or linear woods such as ancient hedges, woodland fragments, and ancient trees from parks and chases. It also reflects the dynamic nature of landscape through time. Many of the ancient woods in your patch will be either parts of old parklands, or most likely, relict medieval coppices. Along with these and the various types of planted or re-planted woods there will be naturally re-grown woods of various sorts and ages. Some of these are of considerable interest but often generally neglected. On old heaths and moors, where abandonment of management allows you may find young or medium aged Birch woodlands.

There is a further complication concerning hedgerows and other ancient linear 'woodlands' and other plant communities that are sufficiently shady to allow the persistence of a typical 'ancient woodland' ground flora e.g. areas of continuous shrub cover, limestone pavements, upland cloughs, and even bracken stands. The late Oliver Gilbert famously pointed out the 'ancient woodland' plants that grow under riverine invasive Japanese Knotweed in northern cities. Similarly sites which were once woodland but have since been cleared may still harbour evidence such as archaeological features or ancient woodland plants that they were once wooded.

## How to Identify Ancient Woodland

It is exciting and informative to identify the various forms of ancient woodland in your landscape. Furthermore, it is useful to be able to make judgements as to their history and their current state of management. Set out below is an overall approach to woodland identification.

### STEP 1: Ancient Woodland Inventory

English Nature (now Natural England) produced maps and inventories on a county basis which shows records of known ancient woods of 2ha or more in extent; wood pasture sites may not be included at present. If your wood is small you can skip Step 1.

Note: There are similar inventories for Scotland, Wales and Northern Ireland.

Using the Ancient Woodland Inventory:

- Visit [http://www.english-nature.org.uk/pubs/gis/tech\\_aw.htm](http://www.english-nature.org.uk/pubs/gis/tech_aw.htm) for more information on the Ancient Woodland Inventory. From here you can access the interactive map at [www.magic.gov.uk](http://www.magic.gov.uk).
- Click on the interactive map icon and select *Habitat Inventories* from the drop down menu and tick *place*. Type in a nearby town to your woodland (you can also use the other options provided).
- You can now zoom in by selecting the location where your wood is found. A panel to the right of the map will tell you what your wood has been classified as.

A note of caution: This was a desk-based exercise. The data collected as part of the Inventory is as accurate as possible however, if your wood is not noted here as ancient semi-natural woodland but you suspect otherwise then continue your research.

### STEP 2: Documentary Sources, Maps and Woodland names (See Section C)

- Maps: Studying maps is useful in several ways. They can give you a date when your wood was first recorded on a map and show subsequent changes in its extent and sometimes composition (eg. coniferous or broadleaf).
- Woodland names: Does your wood have a name with coppice, spring, greave or a tree species name in it, e.g. Oaken Cliff? Or does it reflect the name of a nearby settlement e.g. Bradfield Wood?

### STEP 3: Woodland Shape and Location

- Is your wood situated on the edge of a parish? Woods were normally cleared from the centre of the settlement outwards thus ancient woods often remain on the edge of the boundary.
- Is your wood on a steep slope? Steep slopes were not useful for agriculture and so woods survive more often on them.
- Is the woodland boundary irregular? This may be the result of piecemeal clearance. Plantations generally have straight boundaries. Note: Former deer parks and gardens may also have straight boundaries but may be classified as ancient.

### STEP 4: Field investigations

- Is your woodland enclosed by a boundary bank, hedge, wall and / or ditch? This could reflect former management or division of ownership of the wood.
- Are there ancient and / or working trees within your wood? Old trees can give insight into the history and longevity of the management of your wood.
- Do you have several Botanical Woodland Indicator species growing in your wood? Certain species depend on the conditions which are present in ancient woodlands. The exact composition of these will vary across regions.

## An Introduction to Woodland Indicators and their Use

### What are Ancient Woodland Botanical Indicators?

Over the last thirty years or so, a number of authors have published lists of so-called 'ancient woodland indicator species' that have been used to help interpret which of our current blocks of woodland can be regarded as ancient using the definition above. These lists can include both shade-casting and shade-bearing species i.e. trees and shrubs as well as the ground-flora. However, in many cases the more general usage of the term "ancient woodland indicator species" relates primarily to the ground-flora component of the vegetation, and often only to vascular plants. In recent years there has been work done on the use of mosses and liverworts, fungi, and lichens as indicators of ancient woodlands. It should be noted that some trees can act as very good and easily identifiable indicators, e.g. Small-leaved Lime.

The most complete list of ancient woodland vascular plant species has recently been published in Rose (2006) derived from work by Keith Kirby. This provides a total list of higher plant species that have been recorded from thirteen different regions in England, Scotland and Wales. Other regionally-based lists have been produced for different parts of the country. It must be emphasised at the outset that indicators are useful but can be highly regional. Interpreting other historic information and the regional and environmental context are the keys to their successful application.

### What are the Critical Attributes of a Botanical Indicator Species?

To be an ancient woodland indicator the species must first of all be a potential woodland plant. Shade-bearing or shade-tolerance is **often an important** factor in determining whether a species can be regarded as an ancient woodland indicator. Some species that are normally found in more open situations may also occur in woodlands. These are often as a coincidence of past management and are not regarded as being indicative or diagnostic of ancient woodland or woodland continuity. They can be used to provide information about past management conditions within a woodland that may have had a more open period in its history. However, depending on habitat type, on aspect, and on geographic location, many woodland plants can also survive in the absence of a tree canopy. This is especially the case on north-facing slopes, on western Atlantic sites, and where there is abundant water and shade such as rocky cloughs in upland areas. However, many woodland plants cannot tolerate long periods of stock grazing or other damaging management. They can easily be eliminated from a site, never to return.

Along with this, it is important to bear in mind that many plants have other specific growing requirements in terms of pH, moisture, slope, aspect. Their presence is also determined by their interaction with other species. They may compete well, or poorly, depending on the local conditions. Also, it is important to realise that woodland conditions can change over time. This is particularly so, historically, in coppice woodland where the canopy is regularly and systematically removed during the harvesting and returns during the growth phase of the coppice compartments. All of these factors combine to create difficulties in deriving simple lists of species that can be reliably used in different parts of the country to identify which woodlands are ancient and which are more recently established on previously non-wooded sites.

### How are Ancient Woodland Botanical Indicator Species Determined?

The generally accepted method of determining which species are 'ancient woodland indicators' has been to analyse species lists from documented woodlands of known historic origins. These are then compared with lists from woodlands known to have more recent origins. The lists may then be refined by 'expert opinion' and in some cases have been derived solely in this way. Ideally ancient woodland indicator species should be those that are restricted to recorded ancient woodland sites and be absent from recently wooded sites. Unfortunately, this is an overly

simplistic view and the many attempts at producing robust lists are not able to provide an infallible system of identifying ancient woodlands. Any lists produced are often accompanied by caveats that they should only be used as 'tools' to assist in the determination of ancient woodland status.

## How are Ancient Woodland Botanical Indicator Species Used?

When trying to identify ancient woodlands it is useful to add up the number of ancient woodland indicators as a means of increasing the level of confidence. There is a general increase in confidence with an increase in the number of ancient woodland indicators (Rose, 1999). However, this approach has been shown by a number of authors to potentially give a false impression of antiquity. This is for a number of reasons and does not necessarily take account of a number of factors. These include:

- **The size of the woodland.** A small ancient wood may contain for example fifteen ancient woodland indicator species, and a larger but younger recent woodland might in some situations contain the same number. Site history and complexity are therefore important. In particular a larger woodland may have 'acquired' fragments of older woodland now incorporated into a generally younger wooded site.
- **The internal environmental variations** (habitat diversity) in woodlands. Ancient woodlands without significant internal habitat variation may contain the same number of ancient woodland indicator species as recent woodland with a higher degree of internal habitat variation. But in the latter case the key indicator species of ancient woodland continuity will be absent.
- **Regional variations** in species presence, distribution, and abundance that may influence potential species lists. The potential range of species within a woodland can vary across the country due to a mix of environmental and historical factors. Because of this, relatively fewer species are necessary to confidently assign 'ancient' status to a woodland on the eastern side of the country. For a site further west or in a coastal location a larger number and 'higher quality' would be required.

## Invertebrates and Other Groups as Ancient Woodland Indicators

Just as the botanical ground flora can inform our assessment of a woodland, so can the presence or absence of key invertebrates. However, there is a word of caution here in that many of these, unlike the plant indicators, are for the specialist to catch and identify. The beginner may find this very difficult. Many invertebrate indicators have been studied in great detail and the occurrence of most species is closely linked to the presence and form of dead wood. The importance of ancient or old wood, living and dead or dying, standing or fallen, has been recognised over the previous two decades. Key publications (Read, 1999; Speight, 1989; Kirby & Drake, 1993) have highlighted the role of wood for saproxylic invertebrates that depend on dead or decaying wood, especially insects. Others (Rose, 1974, 1976; Harding & Rose, 1986) have noted the habitat value for epiphytic plants, lichens, and fungi.

A characteristic of most, but not all parkland landscapes are large, often very old, trees. In most cases, these provide good quality saproxylic habitats and important continuity of resource over many centuries.

Of all the ecological features of ancient parks, conservationists regard the veteran trees and their dead wood as the priority resource. EU regulations have targeted dead wood because of its associated unique and diverse fauna and flora and because habitat loss and modification has resulted in critically low levels across Europe. Dead and dying wood provide unique

opportunities for specialist fungi, invertebrates, slime moulds, and birds such as woodpeckers, while hole-nesting species such as owls and bats benefit from veteran trees. The latter are specially protected under EU and UK legislation following dramatic declines over the last fifty years. Parkland, especially if it includes rivers and lakes, provide some of their best habitats.

It is important to differentiate between species requiring dead wood habitats, and those that need continuity. This is because, as indicators, they tell different stories. Interpretation depends on assumptions about behavioural changes with climate fluctuations, many invertebrates dispersing more effectively during periods of hot weather. Such dispersal may be infrequent, but once every fifty years for instance, could facilitate colonisation of a new site, provided the habitat is suitable. Entomologists have meticulously compiled species lists for contemporary sites, and have produced lists for sites in the prehistoric landscape. These are powerful tools in assessing park landscapes, though palaeo-ecological information is limited by the preservation of suitable remains for analysis. Invertebrate taxa associated with veteran or over-mature trees in lowland England include beetles (Coleoptera), flies (Diptera), spiders (Aranaea), and pseudoscorpions (Pseudoscorpiones), with species dependant on specific stages of decaying wood or bark, and particular humidities and temperatures. Not all the taxa are specific to old trees, some such as the Furniture Beetle, the larvae of which are the woodworm, have adapted to old buildings, and even seasoned timber in the open air. A few species such as the Death-watch Beetle have their only records away from old buildings, in the timbers of ancient park trees (Buckland 1975, 1979). Harding and Rose (1986) provided a very useful overview and, although lists have since been updated, the principles remain very useful. They presented taxa in three categories:

**Group 1:** Species known to have occurred in recent times only in areas believed to be ancient woodland, mainly pasture-woodland.

**Group 2:** Species which occur mainly in areas believed to be ancient woodland with abundant dead-wood habitats, but which have been recorded from areas that may not be ancient or for which the locality data are imprecise.

**Group 3:** Species which occur widely in wooded land, but which are collectively characteristic of ancient woodland with dead-wood habitats.

## Site Assessment and the Use of Indicator Species

Ecological complexity combined with limited resources for survey and assessment, often leads to sites being difficult to fully assess or evaluate. Time, resources and indeed competence are often restricted. Ecologists therefore often rely on so-called '*indicator species*' to provide information on the nature and quality of a particular site. This information may in turn be used to help inform an assessment for nature conservation evaluation. Indicators can help identify priority areas for management or protection, and can be used for the purposes of site monitoring also. The general idea is that some animals and plants have their occurrence (distribution and abundance) restricted or facilitated by particular environmental factors or variables. Analysis of their occurrence or their absence may therefore provide information about not only the individual species, but of a more general nature, about the communities of animals and plants, or about the environment.

## Attributes of Indicator Species used in Site Assessment

Lists of indicator species are an attempt to draw together particular ideas and information into a relatively usable and coherent form. They should not be considered definite or necessarily reliable.

### The ideal indicator should be:

1. Relatively conspicuous and easily identifiable.
2. Widespread and relatively abundant in suitable environments.
3. Some degree of tolerance of adverse conditions over a range of intensities of environmental pressures.
4. Relatively long-lived (as individuals or as a colony/population).
5. Not too mobile: must tolerate adverse conditions or die. For indicators of antiquity, minimal mobility is preferred. For indicators of pollution, organisms should be able to re-colonise reasonably quickly, should conditions improve.

### They need to be carefully assessed in terms of:

1. Local context and distribution.
2. Other indicators. A range of species or taxa is more reliable than a one-off.
3. Status at a site. Expert ecological opinion may be necessary to ascertain the validity of a particular assessment or potential status. This especially applies if identification or genuine 'wild' occurrence is in question.
4. Other historical / ecological information available.
5. Caution in interpretation.

### Species occurrence and status at a site need to be viewed in the context of:

- Associated species.
- Known environmental factors - geography, geology, soil, topography, aspect *etc.*
- Known history of the site and its management.
- The understood status of the particular species in the district and in sites with similar environmental factors and constraints.

### Indicators can mainly provide informative about:

1. Long-term habitat continuity on site.
2. Environmental quality e.g. soil-, water- or air-pollution and fragmentation or isolation.
3. Environmental conditions on site e.g. soil type, wetness, micro-climate / aspect.
4. Human impacts and management history.

### Indicators for Site Selection

The occurrence of rare or unusual 'native' species at a site is usually taken to indicate nature conservation importance. This is often the approach taken in site selection for protection or conservation management. Remember, the validity of indicators varies from region to region, and perhaps with long-term environmental change (e.g. climate). They must be considered in context and preferably as part of a broad assessment of a range of taxa judged against a sound knowledge of status at local, regional, and national levels.



## Project Example: An Ancient Woodland Indicator Species List for the Peak District Gritstone Area

The following list of Ancient Woodland Botanical Indicators is based on one developed for the Peak District National Park firstly by Penny Anderson, and then by subsequent Peak Park Ecologists. It has been applied in the South Pennines / South Yorkshire / North Derbyshire region by Ian Rotherham and colleagues and modified accordingly. It can be used in a wider range of situations but subject to the provisos as given. To be applied with caution and in the context of the attached notes on regional and other variations.

<i>Acer campestre</i> *	<i>Orchis mascula</i>
<i>Adoxa moschatellina</i>	<i>Oxalis acetosella</i>
<i>Agropyron caninum</i>	<i>Paris quadrifolia</i>
<i>Allium ursinum</i>	<i>Phyllitis scolopendrium</i> *
<i>Anemone nemorosa</i>	<i>Polygonatum multiflorum</i>
<i>Aquilegia vulgaris</i> *	<i>Polygonatum odoratum</i>
<i>Brachypodium sylvaticum</i>	<i>Polypodium vulgare (s. lato)</i>
<i>Bromus ramosus</i>	<i>Polystichum aculeatum</i>
<i>Campanula latifolia</i>	<i>Polystichum setiferum</i>
<i>Campanula trachelium</i>	<i>Potentilla sterilis</i>
<i>Cardamine amara</i>	<i>Primula vulgaris</i> *
<i>Cardamine impatiens</i>	<i>Prunus padus</i>
<i>Carex laevigata</i>	<i>Prunus avium</i>
<i>Carex pallescens</i>	<i>Pyrola minor</i>
<i>Carex digitata</i>	<i>Ranunculus auricomus</i>
<i>Carex remota</i>	<i>Rhamnus catharticus</i>
<i>Carex strigosa</i>	<i>Rosa arvensis</i>
<i>Carex sylvatica</i>	<i>Rubus caesius</i>
<i>Chrysosplenium alternifolium</i>	<i>Rubus saxatilis</i>
<i>Chrysosplenium oppositifolium</i>	<i>Sanicula europaea</i>
<i>Circaea x intermedia</i>	<i>Scirpus sylvaticus</i>
<i>Cirsium heterophyllum</i>	<i>Solidago virgaurea</i>
<i>Conopodium majus</i>	<i>Sorbus torminalis</i>
<i>Convallaria majalis</i> *	<i>Stachys officinalis</i>
<i>Corydalis claviculata</i>	<i>Stellaria holostea</i>
<i>Daphne laureola</i>	<i>Stellaria neglecta</i>
<i>Daphne mezereum</i>	<i>Stellaria nemorum</i>
<i>Dipsacus pilosus</i>	<i>Tamus communis</i>
<i>Dryopteris carthusiana</i>	<i>Taxus baccata (where native)</i>
<i>Dryopteris pseudomas</i>	<i>Thelypteris oreopteris</i>
<i>Epipactis helleborine</i>	<i>Tilia cordata or platyphyllos</i>
<i>Equisetum sylvaticum</i>	<i>Trollius europaeus</i>
<i>Equisetum telmateia</i>	<i>Ulmus glabra</i>
<i>Festuca altissima</i>	<i>Veronica montana</i>
<i>Frangula alnus</i>	<i>Viburnum opulus</i> *
<i>Gagea lutea</i>	<i>Vicia sepium</i>
<i>Galium odoratum</i>	<i>Vicia sylvatica</i>
<i>Geranium sanguineum</i>	<i>Viola palustris</i>
<i>Geum rivale</i>	<i>Viola reichenbachiana</i>
<i>Helleborus viridis</i>	nw <i>Calamagrostis epigejos</i>
<i>Hordelymus europaeus</i>	⊕ <i>Carex pendula</i>
<i>Hyacinthoides non-scripta</i>	⊕ <i>Carpinus betulus</i>
<i>Hypericum pulchrum</i>	⊕ <i>Malus sylvestris</i>
<i>Ilex aquifolium</i>	⊕ <i>Poa nemoralis</i>
<i>Lamium galeobdolon</i>	nw <i>Platanthera chlorantha</i>
<i>Lathraea squamaria</i>	x <i>Moehringia trinerva</i>
<i>Lathraea squamaria</i>	nw <i>Sedum telephium</i>
<i>Lathyrus montanus</i>	nw <i>Serratula tinctoria</i>
<i>Lithospermum officinale</i>	

x .appears in plantations; nw not typically woodland; ⊕ not native or often introduced;  
\* only include these species if they occur well within the wood and do not appear to have been planted.

N.B. *Rhododendron ponticum*, *Prunus laurocerasus*, *Castanea sativa*, *Fagus sylvatica*, *Mahonia aquifolium*, *Hedera sp.*, *Ilex sp.*, *Pinus sylvestris*, *Larix decidua* are often indicative of Victorian high forest plantings.

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*Dead wood and invertebrates.*

© Ian D. Rotherham

## **Example of a Local Project: The Discovery of a Small but Precious Ancient Woodland**

### **Roundball Wood, Honiton, Devon**

*Volunteers working with the Great Trees of East Devon project took part in the Woodland Heritage Champions Project in the South West focusing on Roundball Wood which is managed by Honiton Town Council.*

Honiton is an ancient market town of 10,000 to 12,000 population about 16 miles east of Exeter, East Devon. About a mile south of the town centre is Roundball Hill, an elongated mound reaching 207 metres above sea level and visible for miles around. On the northerly slope of Roundball Hill, overlooking the town, is Roundball Wood, about 2 hectares of woodland within clearly defined boundaries set amid arable and pasture land. The southern (upper) part of the wood is impassably wet and the water runs downhill from the boggy area across the sloping northern part, forming streams which merge into deep goyles running down the fields. Along the northern margin of the wood is an extensive badger sett.

Roundball Wood has been in the care of Honiton Town Council since 1997 and was opened to the public in 2001. Until recently not much attention was paid to Roundball Wood by the town council, partly due to lack of funding and partly as the wood was not considered to be of conservation priority. However, due to our involvement with the Great Trees of East Devon Project and the Woodland Heritage Champions project, interest in the site has grown.

Recent research encouraged during the workshops has demonstrated the uniqueness and value of this small woodland and has helped to classify it as ancient, even though it is not marked on the Ancient Woodland Inventory due to its small size.

**Archaeology:** A prominent woodbank is present surrounding the entire wood. No other earthworks could be found so far, as the wood is very wet and thus features may be obscured.

**Documentary Research:** The wood's history was traced back to the Tithe map of the 1840s.

**Ecology:** At least ten Ancient Woodland Botanical Indicator species are present, a significant number for such a small wood. Additionally the wood is very rich in biodiversity for wildlife such as birds and invertebrates.

### **Encouraged by these initial findings our group has:**

1. Initiated moves to include in the lease two small grassland areas of considerable botanical interest. These were cut off by the boundary fence but are part of the landscape surrounding Roundball Wood.
2. Started to map the wood highlighting archaeological, ecological and physical features of interest (no discernible features within its boundaries appear on the Ordnance Survey map).
3. Started to record significant trees within the wood and as a result realised that the wood is much older than we initially thought.
4. Engaged the aid of naturalists interested in ferns, fungi and flora, and plan to get other specialists on board with a view to building up species lists and a data bank for Roundball Wood.

5. Started to look at past human uses of the wood. There are a number of features that speak of past human activity such as old coppiced trees.
6. Settled on a grass-cutting regime for the associated meadow that will encourage wild flowers such as orchids.

**Other initiatives, which have yet to be started, include**

1. Upgrading the footpaths by selective diversion and, in places, creating causeways or walkways over boggy ground without interfering with the natural flow of groundwater.
2. Applying for maintenance grants from the Forestry Commission and other bodies.
3. Designing information boards and improving way marking.

Most important to us is the awareness, supported by research and growing knowledge of the wood's natural and human history, that we hold a small but precious ancient wet woodland on trust for the public and our descendants.

Ron Webb, Richard Howe, and Liz Tirard, Honiton Town Council.



*Volunteers returning from their field visit to Roundball Wood during the first workshop of the Woodland Heritage Champions Project. © Ron Webb*

## B5: Woodland Ecology and Biodiversity

Ian D Rotherham, Lindy Smith, Peter Glaves and Lawrence Bee

### What is Woodland Ecology and Biodiversity?

Woodland ecology is the study of species living within a wood, their interactions and the factors which determine their distribution, abundance and survival. For example, much research on woodland ecology has focused on how plants deal with the limited light conditions encountered in woodlands. Findings show that there are a number of strategies that plants use: some have adapted to shade, others compete fiercely to gain access to light, and many simply 'wait as seeds' for a gap to open up in the canopy.

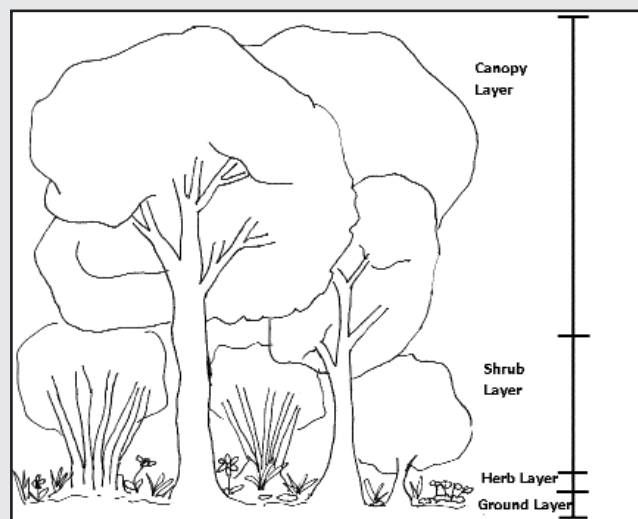
Woodlands are complex ecosystems and not only include obvious organisms such as trees and shrubs but also those living in the soil such as mycorrhizae (root fungi) which cannot easily be seen. Many species, depend on the specialised conditions found in woodland (for example, shade, deadwood, dampness) and are therefore unlikely to be found outside this habitat. Others, including some specialist insects like butterflies are adapted to woodland but favour the sunny micro-climates of glades and rides. Some have evolved close relationships with organisms around them and now depend on these for their survival. Many plants and animals such as woodland butterflies have become reliant upon specific management regimes associated with human use of the woods. Because these species are adapted to semi-natural habitats (for example woodland rides or coppice), as a side effect of human activities, abandoning management can lead to their decline or even extinction.

Linked closely to the ecology of the wood is its **biodiversity** which can be defined as '*the variety of life in all its forms, levels and combinations*'. In its broadest sense, biodiversity encompasses the number of species and the diversity of their genetic material within a woodland ecosystem. Some key factors which influence biodiversity within woodlands are noted in the box overleaf.

#### Woodland Structure and Biodiversity

The more structural diversity that exists in woodland the more habitat types there will be. Habitats can be broad, such as the shrub layer, or specialised (so called micro-habitats) such as the rotting trunk of an ancient tree. The more habitats the wood contains, the more species it can support.

Woodland structure is made up of four vegetation layers: the **canopy** (trees), the **shrub layer** (e.g. Hazel, Blackthorn, Bramble and Hawthorn), the **herb layer** (e.g. Bracken, Bluebells and Ramsons) and the **ground layer** (e.g. mosses and lichens). Not every wood has all four vegetation layers and some will be more obvious than others. An old, well-established woodland is likely to be more diverse unless management has adversely affected this. Many woods in Britain have had their structural diversity dramatically reduced through management or lack thereof during the twentieth century.



### Woodland Structure and Biodiversity continued.

Woodland structure may also be influenced by the amount of **sunlight** penetrating the canopy as influenced by site topography and aspect. The structure itself also affects light penetration. A heavily shaded woodland environment, such as a conifer plantation or beech wood, is not conducive to a diverse shrub and ground layer and so has effects on other species. You should be aware that this is a part of the wider diversity and some types of woodland are naturally this way. However, without the flowering plants for example, the variety of invertebrates is diminished and in turn the range of small mammals and birds found in such woodland is restricted.

Woodland structure is **dynamic** and will vary through **space** (so called lateral diversity) and through **time** (temporal diversity). Sometimes this may simply be the result of environmental conditions (for example, soil pH, moisture) and physical characteristics (for example, topography, geology). In waterlogged areas different tree and shrub species will dominate compared to the drier areas. This will in turn have an effect on the other vegetation layers. Similarly, the herb layer is more striking as the vernal (spring) flora comes through before the canopy trees close off the light and dry up the ground.

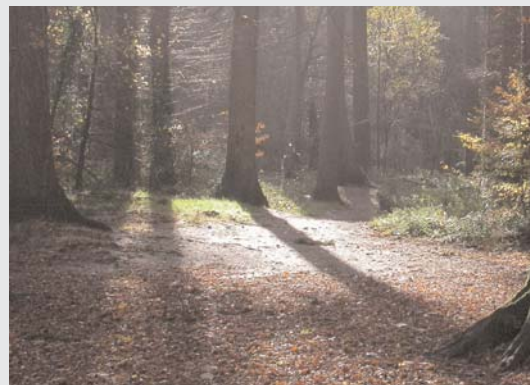
**Events** that change the light regime within a wood, such as tree fall, will cause different layers and species to dominate. In gaps, the species composition will generally vary significantly from that found underneath a closed canopy. When a gap opens, many herbs and grasses will initially seize this opportunity to establish. **Succession** will then cause woody plants to take over once more and eventually another tree will grow to close the canopy gap. Depending on the type of wood though, it may be a different species of tree and so the mosaic of diversity continues.

**Traditional woodland management** techniques such as coppicing alter woodland structure directly by removing certain woodland layers (mainly the canopy) and indirectly by creating a variety of light conditions. Recently coppiced compartments will be completely open to sunlight whereas maturing sections will be considerably darker. If coppicing is carried out as part of a long-term management programme there is the opportunity to create a complete range of light conditions within a single wood.

**Other habitat types** which may occur within or close to a wood such as glades, rides or patches of heathland, ponds, streams and so forth will further increase the structure and thus biodiversity value. The majority of woodland birds for example inhabit the woodland edge as they require open areas such as recently felled woodland or heathland for breeding and feeding.

Woodland structure and biodiversity also include the roots of trees, mycorrhizae, and often overlooked, insects and other organisms that live **below ground** in the **soil and litter / humus layers**. The type of soils and the diversity of species living below the woodland surface are important features that set ancient woodlands apart most distinctly from more recent ones.

*The amount of sunlight reaching through the canopy onto the floor is one of the main factors influencing woodland structure. Woodland in Devon. © Daniel Arkle.*



## Regional Variation in Tree Cover and Woodland Types

The combination of management and environmental factors in different parts of Britain has led to regional variations in woods. There is some disagreement over the number of different types of woodland present in Britain and how these can be classified. The **National Vegetation Classification** (see box below) identifies fifty-eight woodland types. Peterken (1981) refers to fifty-eight types but only including ancient semi-natural woodland. Whilst most recently, Rackham (2007) has combined several classification systems and has now identified over eighty types of semi-natural woodland within Britain. This does not include any of the much rarer types which would increase the number considerably.

Woodland types can be determined by looking at the dominant trees, shrubs and ground flora species and their distribution. These can then be linked to, or explained by, environmental factors such as climate, soil types or topography (slope, aspect). For example, Sessile oak woods in the Highland zone are associated with acidic and infertile soils where they can be the dominating species. Alder prefers wet areas and so grows along river banks, and in flushes and springs. Hornbeam is primarily found in the southern counties of England and has never established itself naturally in the colder areas of Britain, but where it has been planted it survives well. There are many other examples.

Most tree species have particular requirements for type of soil (pH and texture), water levels, and climate (particularly exposure). Changes in such physical factors mean that particular species tend to be found within particular parts of England. Lane and Tait (1990) provide details of the ideal growing conditions needed for a number of native species which can be used as a simple guide to indicate which species are native to your study area.

It should be noted that trees which have been deliberately planted often thrive outside their preferred range. Furthermore, it is not always clear why tree assemblages sometimes differ in some localities and between regions where habitat conditions are seemingly the same. One school of thought is that silvicultural practices, especially tree planting, have made it impossible to

### National Vegetation Classification

The National Vegetation Classification or NVC is a system for classifying habitats in terms of their structure and component species. This type of classification is called 'phytosociology' and is common across mainland Europe. In this type of classification individual habitats can be placed into particular groups or types in a similar way as an animal or plant can be classified into a species, family, genus *etc.*

The NVC system was created by collecting survey data from different habitats and sites across Britain. Computer programmes were then used to determine the different NVC communities present, to organise the communities into broader groups, and to identify characteristic species.

In the case of woodlands, NVC communities tend to be classified on the basis of the species present within the tree or canopy layer and those growing at ground level, for example NVC type W10 is an Oak, Bracken and Bramble woodland.

The NVC communities have been published in a series of texts called *British Plant Communities*, including *Volume 1: Woodland and Scrub* (Rodwell, 1991). The NVC is a very powerful tool for conservationists and land managers. Classifying woodland into an NVC type can give insight into its history, ecology and dynamics. A field guide to woodland NVCs is available on line at [www.jncc.gov.uk/PDF/fieldguidetowoodland.pdf](http://www.jncc.gov.uk/PDF/fieldguidetowoodland.pdf).



determine which tree species distributions are natural or the result of human intervention. However, many ecologists argue that there are still underlying conditions and processes that determine distribution patterns and are not overruled by human activity.

Despite the debate over woodland classification and distribution, identifying the dominant trees, shrubs and ground flora in your woodland can provide useful information about the underlying environmental conditions, and potentially about historic management and future trends. Remember that even the history of planting and management over recent centuries as shown in the trees and shrubs present, can be hugely informative about your particular site. This may range from medieval coppice working to Victorian high forest planting. All these help to unravel and tell a fascinating story.

## The Ecological Importance of Ancient Woods and Wooded Landscapes

Frequently it is thought that 'leaving nature alone' and not undertaking management is the best measure for conservation. Although this may be the case for some countries where human impacts in the past have been less prominent, leaving any habitat 'alone' that has been managed continuously by our ancestors will mean the loss of many vulnerable species. There may be considerable benefits in not managing some parts of an ancient woodland, and invertebrates including many rare species in particular will do well with increased amounts of dead wood and brash piles etc. Conservation management of a woodland is a careful and gentle balance between intervention and long-term areas of 'non-intervention'. It is worth considering both the merits of long-term traditional management of some areas, but along with this, the use of non-intervention as positive management.

Many surviving woods suffer the consequences of abandonment of their long-term traditional management (e.g. coppice-with-standards) and its replacement by a subsequent high forest system. High forest plantations (especially mid-to-late Victorian) were often of locally-alien species such as Beech, Sweet Chestnut or Sycamore causing suppression of ground-flora and in some cases erosion of soils (especially on steep slopes). These are often left when neglected, as prematurely-senescent (ageing), closely-planted, standard trees.

Ancient woods and wooded landscapes harbour an array of species that cannot survive many other environments; they need the woodland habitat. Many of these species have evolved to create close relationships with organisms around them and now depend on these for their survival. Similarly, many plants and animals such as woodland butterflies may be largely reliant on certain management regimes associated with human usage over centuries. Even though these species have adapted to a particular habitat as a side-effect of human activities, if we want them to survive, we need to ensure they are not lost through neglect.

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## B.6: Woodland Conservation Management

Ian D. Rotherham, Peter Glaves and Paul A. Ardron

### Why Conserve Ancient Woodland?

Ancient woodlands and wooded landscapes are irreplaceable. Their longevity not only means they are ancient living monuments giving us insight into our history, but are also of high wildlife value. Ecologically they could be described as our rainforests. Many ancient woods harbour rich communities and contain a high number of rare and vulnerable species. They provide shelter and habitat continuity acting as a refuge for and as a reservoir of wildlife from which the wider countryside benefits (after Peterken, 1983).

Ancient trees are not generally found in ancient coppice woodlands as here the trees were harvested on a regular basis (although ancient coppice stools and to a lesser extent boundary trees may be frequent in coppice woods). More frequently old trees are encountered in parks, gardens and on wooded commons. Ancient trees are havens for wildlife especially birds, bats, insects and lichen.

The value of ancient wooded landscapes also resides in our emotional response, especially to 'ancient' woods, as fragments of a perceived primeval 'wildwood', although this is largely misconceived. Perhaps the special importance of an ancient wood is the feeling of walking in the footsteps of the ghosts of people that lived and worked our woods over thousands of years. These 'ghosts' have left their mark on the wooded landscape and even on the vegetation itself.

**As stewards of the environment we have a responsibility to protect ancient semi-natural woodlands for future generations.**

#### Legal and Planning Issues Relating to Woodland Conservation (archaeology and ecology)

The value of woodland is reflected in the fact that many sites have been given legal protection as **conservation areas** or contain **archaeological sites**. Woodlands may also have plants and animals which are **legally protected** including trees (under designations such as Tree Protection Orders). Woodlands may also be given designations within the planning system.

The designations protect the woodland and / or its component species and archaeological remains from potentially harmful activities. They can also protect the woodland from development. If you are using your local wood for recreation, or are undertaking a simple non-destructive archaeology or ecology survey then it is likely that most of the legal issues will not apply. However, it is important that you know what protection has been given to your woodland. This will raise your awareness to ensure you do not disturb vulnerable species and / or archaeological features such as earthworks. Understanding why your wood is legally protected can also give a first insight into the significance of the site and can assist you with your surveys by highlighting archaeological features or species you may want to look out for.

**C.2** describes where you can find out about the current designations (if any) that apply to your wood. In **Appendix F.2** the ecological and archaeological site designations are explained in more detail and we recommend you consider this prior to carrying out any surveys.

## Introduction to Management

The first essential step for managing and conserving any woodland site is to know what is there. Without generating base-line information, conservation measures cannot be targeted towards important ecological and archaeological features. This may seem obvious but it is surprising how few ancient woodlands have been researched in terms of their history and surveyed for either their archaeological or ecological importance.

One of the challenges with ancient woods and wooded landscapes is that a holistic and multi-disciplinary approach is needed to fully understand and appreciate what a wood harbours within it. Looking at any single factor in isolation will not generate the full story that is needed to understand what is there today and why. This in turn will not allow you to identify what is important and how best to manage it in future. For example, in one of Sheffield's ancient woodlands, Ecclesall Woods, the typical ground flora of an old established wood is mostly present along the edges, and almost absent from the centre. The reason for this, we now know, is that charcoal making in Ecclesall Woods brought with it the large-scale removal of turf and topsoil. This resulted in much of the vegetation, soil and seed bank being removed which explains the relative lack of woodland flora in parts of the woods. Ecclesall Woods harbours a wealth of earthworks and a rich documented history which makes it a significant site in terms of its archaeology and cultural heritage.

You have the chance to gather information in all the relevant disciplines (archaeology, ecology and history) with relative ease, providing an excellent foundation for the future conservation of your wood. Maybe the most important outcome generated by the surveys in this manual are maps highlighting areas of archaeological and ecological importance. Such maps can then be used to generate more specific management plans (generally with the help of professionals) with clearly defined aims and objectives. If you carry out surveys and documentary research you may be able to use the findings to put forward suggestions for the management that is needed. This may be as a list of priorities or a more formal management plan which may attract funding or raise awareness of the value and importance of the woodland. (See **E.2** for guidance on putting together a management plan.) Note: management should only be carried out with the landowner's permission.

## Integrated Management

A fundamental problem in the long-term management of many woods is that they no longer serve their traditional function. Recent woodland management, since the cessation of traditional management in the late 1800s, may have been on a more modern 'Forestry' basis followed by abandonment or minimal intervention. This has huge implications for a site and its care. Understanding how the woodland has evolved perhaps from an intensively managed coppice or wood pasture to one of minimal intervention or benign neglect will put current management into context. Problems due to lack of management can be exacerbated in urban areas and some urban-fringe sites by the processes of urbanisation, disruption, vandalism, neglect, pollution and theft of water catchment. Such woods, in poor condition and often visibly neglected, suffer an increasingly poor image in the eyes of local people. Ironically, even though management is key to a woodland's ecological conservation, it can also be the main threat to the archaeology within it. Woods of old were managed by men with oxen and horses, and with hand tools; nowadays we use vehicles and power tools. Significant earthworks can be destroyed in an instant by woodland managers with mechanised equipment, and who do not recognise such features. This is when sites are most vulnerable and it is important that care is taken and that awareness is raised when management is carried out.

### General Recommendations for Management

- Note features of ecological and archaeological importance on a map. Ensure forestry workers have a copy of this map (preferably in advance) so they can plan their work around such features. This is especially important for access and extraction routes and areas for storage (e.g. logs).
- Mark any features during management operations or cordon off important sites using hazard tape. Ensure you remove markers after management has been completed.
- Offer to be present on site whilst the work is being carried out, however ensure you do not hinder workers and check you comply with Health and Safety regulations.
- Any vehicular activity should avoid crossing known archaeological and other landscape features. It is vital that access routes and other work areas are chosen in advance to minimize possible damage. Where a feature cannot be avoided, try to reduce the damage by creating a make-shift path using branches and brash. Do not dig up rocks and stones or use deposits to construct a path as this may damage archaeological remains. Avoid crossing any features when the ground conditions are wet.
- Only burn brash away from known or suspected archaeological and ecological features as this can damage them.
- Do not plant trees or construct paths close to archaeological features. Should you need to carry out tree planting, use only native, local trees or seeds.
- Open areas within your wood are likely to enhance biodiversity and may also help to protect archaeological remains. Open areas will also encourage natural tree regeneration (unless grazed heavily).
- Avoid draining areas within your wood. Wet areas can enhance the biodiversity of your wood and drainage works can damage archaeological remains and deposits.
- Do not remove any remains and finds if discovered during your surveys or during management; contact your county archaeologist for further advice. Do not use metal detectors to try and find out more about archaeological features.
- Remove young trees and shrubs near to ancient trees. However, do this gradually so the ancient tree does not get shocked. Reducing competition for resources can help ancient trees to survive longer. Seek further advice from professionals should you need to carry out management on ancient trees directly. Where branches are lopped, create dead wood piles and leave dead trees *in situ* to increase biodiversity conservation value of your wood.
- Re-instate traditional management practices within your wood such as coppicing, pollarding of young trees, hedge laying and grazing (if appropriate).
- Record any management carried out by creating a photographic record and making notes. Monitor the effects of management on the wood.
- Seek expert advice if it is thought that management work may damage known or suspected archaeological or ecological features. If in doubt, use the precautionary principle. Remember, modern management can remove irreplaceable historic features in an instant!
- Compile a management plan for your wood using the baseline data from your surveys and historic research. In this way you will be able to keep track of the management which has been carried out, the associated costs and the effects it is having. Seek the help of professionals to do this and ensure the management plan has been approved by the woodland owner.

After Avison and Rotherham (1997) and Bannister (1996, 2007)

Traditional management of woods involved long-term commitment and continuity of both process and people. Very often in woods today, both are sadly lacking. It is neither possible nor desirable to 'fossilise' our woodlands, but the broad benefits they offer can be enhanced by management which reflects woodland history and ecology and sensitivity to the legacy of past usage. In many cases, former woodland use (often over many centuries) has left sites with a rich tapestry of both archaeological and ecological features. Unfortunately, the evidence is often not recognised and the relationship between present-day ecological interest, and former use as reflected in the archaeology, is poorly perceived. As a result, people often see renewed management as harmful. You may have to work hard to convince people that this is not the case.

The main threat to surviving woodland archaeology and heritage landscapes is through insensitive site management which often arises because of a lack of understanding of the resource. The loss of an individual feature of historical or ecological importance may be inevitable under some circumstances. However, the loss of a feature must be a decision taken with caution. It needs to be based on an understanding of its value and significance in a local, regional, national and international context. A feature which may be common in your wood may be rare in a national context or vice versa. Each feature should ideally have its own management prescription in a plan and there are some general rules that can be applied. A list of general management guidelines is given in the box above. See Appendix F.6 for more detailed management prescriptions for specific features. **Essentially we advocate a cautious approach. If you are unsure, then don't do it!**

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## **Section C: Documentary Research**

This section looks at the sources for and types of documentary material that you can use to complement your woodland fieldwork surveys. Uncovering this material may involve some detective work but will be invaluable in providing a context for what you are seeing on the ground and help with interpreting your survey results. If time and resources permit, the research work may also gather information over a wider area or about the management of a large estate which contains your woodland.

Documentary research will reveal details about the history of your wood which aren't available purely from fieldwork. There is a wide range of types of information and sources that can be used to answer questions about your woodland's history. By looking at and using maps, place-names, old documents, photographs and gathering personal recollections you can often find out a great deal about the age of your wood, who owned it, why it was managed and how it changed through time. However, it is also worth bearing in mind that not every activity and change of land use will be documented. There will be gaps in the documentary record which will lead you to some 'dead ends'. Thus, be careful that the documentary research informs but does not 'drive' your fieldwork by steering you to look for or value only those features identified from documentary material.

This section also gives you background information on other sources such as the biodiversity of the woodland.

The chapters included in this section are:

- 1. Introduction to Documentary Research**
- 2. Where to Look for Information**
- 3. Types of Documents Used for Constructing the History of the Wood**
- 4. Using Maps for Historical Research**
- 5. Woodland Place-names**
- 6. Personal Recollections**

It is up to you how much time you want to spend researching your wood. A basic search and comparison of old and recent maps will give enough information to inform your initial field investigations. Further documentary work can be added at a later stage.

## ***C.1: Introduction to Documentary Research***

**Mel Jones, Christine Handley and Elaine Gathercole**

*“Historical information enables us to look beyond the neglect or destruction of much English woodland in the last few decades to the often more conservative management of past centuries. Without such information it is impossible adequately to assess the importance of individual woods and woodland types, or to draw up rational management schemes...”* Oliver Rackham (1979)

### **Why Documentary Sources are Important**

Documentary sources can provide specific evidence of past conditions, past events and past management practices which are often impossible to detect through site surveys alone. Moreover they can confirm or overturn inferences from field surveys.

Arguments about the ecological and heritage value of sites are greatly strengthened by combining field and documentary evidence. Sites with a well-documented history can be more readily understood than those where such information is scarce or entirely lacking. Sites where documentary and landscape evidence can be combined have still more added value.

#### **The specific kinds of information that can emerge from a documentary study of a wood are:**

1. The status of a woodland: if it is ancient (in existence by 1600AD) or long established (in existence by the production of the 1st edition Ordnance Survey maps).
2. Past management practices: wood pasture; simple coppice; coppice-with-standards; high forest; game reserve; length of coppice cycles; compartmentation; long-term and short-term changes of management.
3. Markets for wood, timber and other woodland products (e.g. poles, bark, besoms), including changing markets leading to changes of management.
4. Other past uses of parts of the site, e.g. mining and quarrying, lime kilns, charcoal platforms, potash production.
5. Biological species present and clarification of the status of different tree species: native to the site or planted; number contracting or expanding.
6. Significance and in some cases the dating of boundary and internal earthworks.
7. Woodland clearances and woodland extensions.

### **Planning Your Research**

The sources and types of information that you could potentially use to investigate the history of your woodland are wide ranging. So, before you start it is important to follow a few basic steps which will provide a focus for your research and give some structure to how you will carry it out. These are outlined below.



- Decide on how much time you can allocate to your documentary research; what your budget might be; and if you are part of a group, allocate tasks. This will help you to plan any visits or make a decision about using internet sources. Some collection of material, especially where copies are needed, has a cost attached and there may be travel costs depending on the location of the relevant record offices.
- If you know who currently owns your woodland, ask if they have any information about its history and who owned it before them. If you don't know who the current owners are you will need to find this out to gain permission to carry out your survey and can ask about its history then.
- If you are not already familiar with the woodland - make a visit, note down any obvious physical features such as wood banks, ancient trees, pits and earthworks in the woodland and nearby. See **D.3** on how to carry out your preliminary survey. This will help in identifying relevant sources of information and the questions you need to ask.
- If you know of any protected or interesting flora and fauna species in your wood it is worth noting these down when you begin your research. The ecology and biodiversity of woodland is covered in **B.4** and **D.4** of the manual. The species recorded may be indicators of the presence of historical features or indicate past management. Some species may be mentioned in the documentary record: lists of planting schemes appear in account books, records were made by previous generations of naturalists and local people may recollect seeing the species or even collecting them as a child.
- Look on a modern map at the area around the woodland - make a note of the nearest village, any place names or prominent features. This will help with your search enabling you to target your questions to the right area but remember that names and features may have changed historically so you may need to try different spellings.
- Look in the local library for any publications that may cover your area and ask around to see if there are any local groups or individuals that may have useful information.
- Decide on the questions you need to ask and where you are most likely to find the information. The key questions that you will need to focus on are:
  - who owns or owned the wood?
  - what is or was it used for?
  - how is or was it managed?
  - how long has it been there? and
  - how has it changed?

You may have an idea of the answers to some of these questions so can start to look for the historical record or at a specific event. Otherwise, it is perhaps easiest to start by comparing maps from the present day back through time, or try to find out its ownership in the nineteenth century and work backwards and forwards from there. Sometimes there was far greater stability of ownership up to the nineteenth century than there was in the twentieth century.

- Choose a couple of types of information to focus on initially. These will probably provide further pointers to other types and sources whilst providing some useful information for your research. If an initial search finds very little, it is worth asking about the wider area, perhaps the parish or local village not just your woodland.
- An essential source of information and the first which should be consulted is maps (see **C.3**). The first edition Ordnance Survey map series goes back into the mid-nineteenth century and will give essential information about the shape and extent of the woodland and the

surrounding area at this time. Subsequent editions of these maps will allow you to track the changes to your woodland boundaries to the present day. The large-scale maps (25 inches to 1 mile) also give an indication of the overall composition of a wood.

- Decide on your filing system for the information you collect - use keywords and a referencing system. This will help to keep your research relevant to your woodland. It will also enable you to refer back to your information once you have carried out your fieldwork surveys.
- Plan your visit to a library, record centre or to the internet.
  - In some cases, all or part of the library or archive record centre's catalogue (list of books in the library or items contained in each archive collection) may be available online, either on their own website or via the Access to Archives website (see **C.2**). Spending time in advance on keyword searches for local place, family or personal names to find relevant items prior to your visit may make the visit more productive. However, it is always worth finding out from staff whether the on-line catalogues are comprehensive as some have only been partially completed.
  - You can find contact and other basic details such as opening times for county and other archives and local libraries via the internet. Always try to contact them in advance of your visit. In some archive record centres it will be necessary to make an appointment to visit or to book facilities such as microfilm or fiche readers, desks, map tables or PC connection points (if available).
  - Archive record centres will usually require you to become a registered member. This often requires you to bring two forms of identification on your first visit. Alternatively, some archives are members of the County Archive Research Network (CARN) scheme which accepts a CARN ticket issued by another archive. It is important to check with the staff or the archive website before you go to find out what will be needed or you may find you have wasted your visit.
  - Archives and Local Studies Reference Libraries have restrictions on what you can take into the room; they will have rules that you must follow such as only writing in pencil. The centres will have set times for getting documents from their storage area; they will also restrict the number of items you can request at any one time. It is advisable to check the details with them before your visit.
  - Ask to be shown any referencing system and any keywords that may be in use; often there are separate indexes for people, places and activities; and you may need to search all of these to find information for your woodland. For any document you find referenced and wish to consult you will then have to fill in an order form with the reference number and brief details. This is then handed to a member of staff and the document retrieved at the next visit to the storage area.
  - You are likely to need to pay to get copies of information and this may also apply to searching on the internet. In some cases it may not be possible to copy documents because of their size, copyright status or condition and you will have to take notes, make a sketch or possibly a tracing (if allowed) instead.
- Try to stay focused on answering your first set of questions but make a note of anything (including any library/archive reference) which you would like to follow up if time permits. It is easy to become side-tracked if unexpected information comes to light so assess its relevance to the particular question that you are addressing.

It is always a good idea to try getting information from more than one source to substantiate your records - some types and sources may not be as robust as others. The original information will probably have been recorded for a different purpose or to answer a different question to your current one. Also remember that mistakes can be made in handwriting or spelling and people's memories are not perfect.

As a minimum, a basic search and comparison of old and more recent maps will yield enough information to inform your initial field investigation. Further searches of archival information can be added at a later stage. These will be important to provide a fuller picture.

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Guides from the British Association of Local History website [www.balh.co.uk](http://www.balh.co.uk).

*The Local Studies Library: A Handbook for Local Historians*.

*Directing the Past: Directories and the Local Historian*.



An example of documentary evidence: *The Luttrell Psalter* circa 1325. Even if you cannot read the text, note the oak tree on the left of the page and the man in the oak shaking down acorns for the pigs to eat. Information like this can show how our woods were once used and managed. Photo. © Ted Green.

## Example of a Local Project: Experiences of a Novice Woodland Researcher

Elaine Gathercole, Woodland Trust Volunteer

I retired early in April 2004 and was looking for some useful things to do with my time. I always had a background interest in history but received no formal 'training' in the subject beyond 'O' level. My other interest is in nature conservation although I am fairly hopeless at practical tasks. When I heard that the Woodland Trust was looking for volunteers to undertake desktop historical research on their woodlands I jumped at the chance to get involved.

The Trust provided a short guide on how to get started and put me in touch with another volunteer who had done this sort of work before. They then gave me Hannah Park near Worksop to get my teeth into. Since then, I've completed projects for the Trust on Hannah Park, Owlet and Skellingthorpe Old Wood in Lincolnshire and a group of woods in Derbyshire. I've also produced histories of Wellow and Bevercotes woods in Nottinghamshire for the Forestry Commission and am now working on Nidd Gorge for the Woodland Trust.

So what have I learnt about doing this sort of work, given that I had done little like this before?

I'm finding that my histories fall naturally into three sections: **who has owned the wood, how has it changed in extent** (including its age) and **how it has been managed** (including its species).

One of the first lessons is to get familiar with the area you are researching by looking at OS maps from the first edition onward as well as enclosure and tithe maps. These give a quick insight into what has changed in the last century or two. Most of the woods I've researched were only little changed from the first OS maps to today, although there have been substantial changes in the areas around them.

You need to get an idea fairly soon of who owned the wood in the past. You might be able to get some information from the legal conveyance to the current owner. Another very good source for clues is the National Archives website and the linked A2A website which contain a lot of information about archive catalogues in England and Wales. Searches using the name of nearby places often leads to finding out who the major landowners in the area were who may have owned the wood. What appears as one wood today, such as Skellingthorpe and Wellow, have often been in multiple ownerships in the past. Some woods such as Hannah Park and Bevercotes were owned by major landowners such as the Dukes of Norfolk or Newcastle while others such as Owler Carr in Derbyshire were owned by early industrialists connected with the lead industry.

In many cases you will be lucky enough to find references to archived estate papers and especially maps and surveys. Visits to view these documents are often very fruitful. For example I was able to establish the coppicing cycle over 120 years of the woods owned by the Bagshawe family in Derbyshire.

However, before visiting archives, it is a good idea not to ignore the work of earlier researchers. This might require getting in touch with local history societies or searching library catalogues for relevant books. The Victorians had a passion for producing histories of areas and families.

Over the past three years I have had great fun delving into the past, learning new skills such as how to read old handwriting and knowing that the work is also helping the future conservation and understanding of our woodlands. Why not have a go too?

## C.2: Where to Look for Information

Christine Handley, Mel Jones and Elaine Gathercole

The following list gives the most common sources for accessing information to help you piece together the history of your woodland and identifying any legal designations (see **B.6** and **F.2**). A very brief description is given; more detailed information is available on individual websites and from guides which organisations such as the National Archives (formerly the Public Records Office) have produced. More detailed descriptions of the different types of records are given in **C.3** which should be read in conjunction with this chapter.

### a) Websites

The interest in and availability of websites relating to historical research has increased enormously in the last five to ten years. The resource is being added to all the time with new collections being made available, new local area projects and societies' information being added as well as directories of organisations, local and central government.

The internet is a good place to start when planning your research as it will enable you to find out more about a wide range of sources. Websites are available which give lists of archive centres, local history groups and libraries where specific collections are held. There are also many individual websites that provide access to different types of information. Some of the main websites to get you started are as follows:

- 'Access to Archives' catalogues material held at English record offices (excluding the National Archives, formerly the Public Record Office, London), libraries, museums and heritage centres: [www.a2a.org.uk](http://www.a2a.org.uk). Simply searching the website for relevant keywords such as place and person names can also point to individual archive collections which could have a lot of material on a particular area or person. Note, however, that not all centres have put their catalogues on this website and some have only done so for part of their collections.
- The National Register of Archives (NRA) is useful for finding possible record offices and archive record centres which may have collections concerning a given place, family or person: [www.nationalarchives.gov.uk/nra](http://www.nationalarchives.gov.uk/nra). The National Archives catalogue lists the material held at the National Archives at Kew in London: [www.nationalarchives.gov.uk/catalogue](http://www.nationalarchives.gov.uk/catalogue). A directory of archive and record centres can be found at [www.nationalarchives.gov.uk/archon](http://www.nationalarchives.gov.uk/archon) this gives their location, opening times and other basic information. Helpful research guides including a palaeography tutorial (to help you read old handwriting) and latin tutorials can be found on the National Archives website.
- English Heritage's national record of archaeological sites can be found on the PastScape website. [www.pastscape.org.uk](http://www.pastscape.org.uk).
- A directory of local history groups which gives basic information on groups around the country can be found at [www.local-history.co.uk/groups](http://www.local-history.co.uk/groups).
- Old maps can be found on a number of websites, one of the most useful is [www.old-maps.co.uk](http://www.old-maps.co.uk) but you can also try [www.cartography.org.uk](http://www.cartography.org.uk) which tells you where collections of maps are held. Note, there is a charge for copies of maps on the old-maps website.
- Collections of pictures are available to view on several websites although many are commercial and you have to pay for copies. One site that may be useful is English Heritage's site [www.viewfinder.english-heritage.org.uk](http://www.viewfinder.english-heritage.org.uk) which has a collection of photographs related to local

history. Another site worth looking at is the Museum of English Rural Life at the University of Reading which has a collection that includes examples of many industries and crafts related to woodlands: [www.merl.org.uk](http://www.merl.org.uk).

- The *Victoria County History* series can be found at [www.victoriacountyhistory.ac.uk](http://www.victoriacountyhistory.ac.uk). This is a project started in 1889 to record all aspects of local history county by county across England from the earliest records. It is written by local historians within each county. Some of the volumes were published many years ago whilst others are still in the process of being written. They are good starting points for looking at earlier records of ownership and settlements around your woodland.
- Other general websites that are likely to give you access to extracts of published information, maps and illustrations from your local area include [www.british-history.ac.uk](http://www.british-history.ac.uk) and [www.Englandpast.net](http://www.Englandpast.net).

If you don't have access to the internet at home or within your group, many local libraries and community centres now have computer facilities that you can use and people to help you get started.

## **b) Local Historic Environment Records (previously SMRs) and Biological Records Centres**

The local Historic Environment Records (H.E.R. - previously called Sites and Monuments Records S.M.R.) at your County Council or Local Authority is a useful contact for your research. They should hold any archaeological information already known for your woodland. Contact your Local Authority archaeologist to find out about these records for your area. The archaeologists will also be interested in any new information that you may find and may have produced their own sets of guidelines that they would like you to work with. English Heritage also holds a public archive, the National Monuments Record (NMR) which can be consulted via their Public Search Room or through the English Heritage website.

Biological Records Centres hold information about the wildlife and biodiversity within your area. Coverage is however patchy across England; some centres are run by local Wildlife Trusts, some as partnerships and some by either County or Local Councils. They will know whether there are any legal designations and be able to give you an idea of what records may exist for your woodland. They may also be able to provide other support or recommend local experts who could help you. It is also worth looking at the Natural England website [www.natural-England.org.uk](http://www.natural-England.org.uk) to see if your woodland area has any statutory designations such as a Site of Special Scientific Interest and at the National Biodiversity Network's website [www.nbn.org.uk](http://www.nbn.org.uk) for information about the biodiversity and Biodiversity Action Plans in the local area.

## **c) Local Studies/Reference Section Libraries**

Most large towns, cities and counties have local studies library collections and many local libraries have some material of local history interest. These contain collections of printed material such as books, pamphlets and trade directories. They also have collections of maps, photographs, posters, leaflets and records such as the population census. Some of the material may be previously published local histories of an area or specific industry. These collections are made up of historical material which is deemed to be of interest to the local area so can be very wide-ranging. Present-day material is collected and the library may be interested in a copy of the completed research about your woodland.

## d) Archives and Record Centres

These centres are the official repositories of administrative and legal records for counties or large administrative districts such as metropolitan areas. It should be noted that records may not follow recent administrative boundary changes as the historic boundary may be maintained for record purposes. The information collected includes church and parish records and these too may have been allocated to a specific records office depending on nineteenth century or earlier boundaries. Most importantly for woodland historians, they may contain the estate archives of local landowners which include detailed records of the past management of their woodlands.

As these centres are the official sites for storing records they are governed by specific rules about what can be kept, how it can be used, who is allowed to see it and for what purpose. Whilst the centres are very helpful and make a wide range of information available there may be restrictions on what you can see and use.

Many of the centres have written guides on preparing for a visit and how to use the archives they contain. These may be available through a website or from the centre itself. It is advisable to check on opening times, registering and search times etc. before your first visit.

## e) Landowners

The present landowner may know of previous owners. These are often mentioned in the legal conveyance by which they acquired the property. If the previous owners are not known it is worth considering who the main land owners in the area were or still are (these are often Earls, Dukes or other high status people). Finding out who used to own your wood will help you track down relevant information on the internet as well as in the archives. Documents created as part of land surveys (e.g. estate surveys, *Domesday Book*), charters, deeds, manorial records or landowners' accounts can all hold relevant information. Some of these documents and records, especially if the land is owned by ecclesiastical or aristocratic landowners, may be in defined collections which have been donated to specific organisations, not necessarily the county archive. You should be able to find out where the collections are held nowadays via the internet or the county archives. Some may still be held in private archives but access can often be arranged by writing to the owner of the archives.

## f) Local History, Archaeology, Natural History Societies and Groups

An active local group in the area may already have undertaken some research which is relevant for your woodland. It will be worth contacting them to ask if they know of anything relevant or if they may be willing to help with your research. It may also be worth joining the group. You may be able to find out if there is a local group via the internet or by enquiring at your local library/community centre. There are also national organisations for local history groups, family history groups, wildlife groups etc. which may be able to put you in touch with people in your local area and again may be worth investigating if time is available. An internet search will bring up lists of these as a starting point. A useful handbook is *The Family and Local History Handbook* issued annually by Robert Blatchford Publishing Ltd. or try [www.local-history.co.uk/groups](http://www.local-history.co.uk/groups).

## g) Local People

As with local history groups, local people who have lived or worked in the area may be able to shed light on some of the recent history of your woodland especially if they remember it from their childhood or have family photographs. Advertising for information via your local library / community centre or a letter to the local paper may prove useful. Contacting other local groups / lunch clubs etc. may also put you into contact with people who have some relevant information. However, gathering and writing up the information can be time-consuming (See **C.6**).

## ***C.3: Types of Documents Used for Constructing the History of a Wood***

**Mel Jones, Christine Handley and Elaine Gathercole**

### **Introduction**

Undertaking some documentary research is important to underpin and support the fieldwork and help with the interpretation and understanding of the findings. Separate chapters in this section consider maps and place names; themselves part of the documentary resource. Maps especially are crucial for starting to understand your woodland but you should also make time to look through some other more easily accessible sources as part of your initial project work. This chapter focuses on the wide range of other documentary sources that may exist for your local woodland area.

It must be said that documentary research is very time-consuming, but it is also very rewarding. By using documentary sources, together with an intimate knowledge of a particular wood, it is possible to put together a detailed historical biography of the site. This is not something that you will need to do straight away but you may be guided by the findings from your field work surveys to explore documentary sources further.

Sources of documents for historical research are covered in **C.2** which should be read in conjunction with this chapter. The following points highlight key sources.

1. Some documentary sources have been **published** either by individual researchers or by local historical / archaeological societies either in special publications or in the society's journal. These can be consulted in a **Local Studies Library**.
2. **Primary sources** (handwritten, original documents) are usually to be found and must be read in a **Record Office** or other archive location. A key starting point for research is to find out who the past owners of the wood were. The bigger the landowner, the more likely it is that their records have survived. Some of the internet sources mentioned in **C.2** can be useful for finding their locations or might have other useful information.
3. A particular category of primary sources are those held in the **National Archives (formerly Public Record Office)** at Kew. These can often contain references to woods from very early surveys and perambulations. However, this is quite a specialist area and requires some knowledge of how the country was administered in various eras. Items of possible relevance can be searched online using keywords at [www.nationalarchives.gov.uk/catalogue](http://www.nationalarchives.gov.uk/catalogue) and requests for an estimate of the cost of copying a document can also be made online (fee payable for the estimate which is offset against the cost of the item if ordered). Many items are also listed in **Lists and Indices** published by HMSO and also by the List and Index Society. Some are also fully transcribed in **Calendars** also published by HMSO. These volumes can often be found in local studies libraries, university libraries or on the shelves in record offices.

### **Types of Document of Interest to the Woodland Historian**

#### **Anglo-Saxon Perambulations**

More than 800 perambulations (descriptions of the boundaries of land being sold and bought) have survived from the Anglo-Saxon period. It has been estimated that about a quarter of the woods named in them still exist. The problem is that they survive in larger numbers in some regions than in others. They are very scarce for the north of England.



## Early Surveys

The earliest and best-known survey of woods for most areas is the **Domesday Book** compiled in 1086. It does not often mention individual woods but does distinguish between wood pasture (*silva pastilis*) and coppice wood (*silva minuta*) in individual vills (manors or villages). The data allow for crude calculations to be made of woodland cover in individual manors. The names of the manors themselves were, in most cases, being recorded for the first time and include many woodland settlement names with their earliest known spellings. The *Domesday Book* has been published in translation by county by Phillimore & Co. Ltd. Note: coverage is variable with some areas such as the North of England being poorly represented.

Useful later surveys include monastic **cartularies** (records of monastic acquisitions) and the **Valor Ecclesiasticus**, an inventory of church property compiled at the Dissolution of the Monasteries. Both contain references to woodlands. The owners of many private estates employed specialist surveyors to undertake surveys and these sometimes contain woodland names, locations, acreages and how woods were being managed. It is particularly useful to find an accompanying map, often catalogued separately, as it can show the location of numbered plots in the survey.

## Manorial Records

These are the records of the proceedings of manorial courts and date from the thirteenth to the twentieth century. Such records though often brief or imprecise about location or extent, enable named woods to be placed unequivocally in the ancient wood category. Many have been published by local antiquarian and archaeological societies and they are also often available online. For example, the indexes for the whole of Wales and eleven English counties can be searched on line at [www.nationalarchives.gov.uk/mdr](http://www.nationalarchives.gov.uk/mdr) and the records of individual manors are sometimes available on-line.

## Title Deeds

These are documents drawn up to prove ownership of property. They mention woods, deer parks and commons and list purchases, sales and inheritances. They are found in the archives of the great landowners.

## Accounts

Accounts are not as dull as most people imagine and because they deal with money transactions they are minutely detailed and run for long periods. They are full of fascinating detail and are **probably the most informative of all documentary records**. Woodland accounts for a particular owner may often be found in a series of 'wood books' or a special section in the general accounts. For some estates they are in the account books under the heading 'Spring Woods and Plantations' and may run for hundreds of years.

## Leases and sales

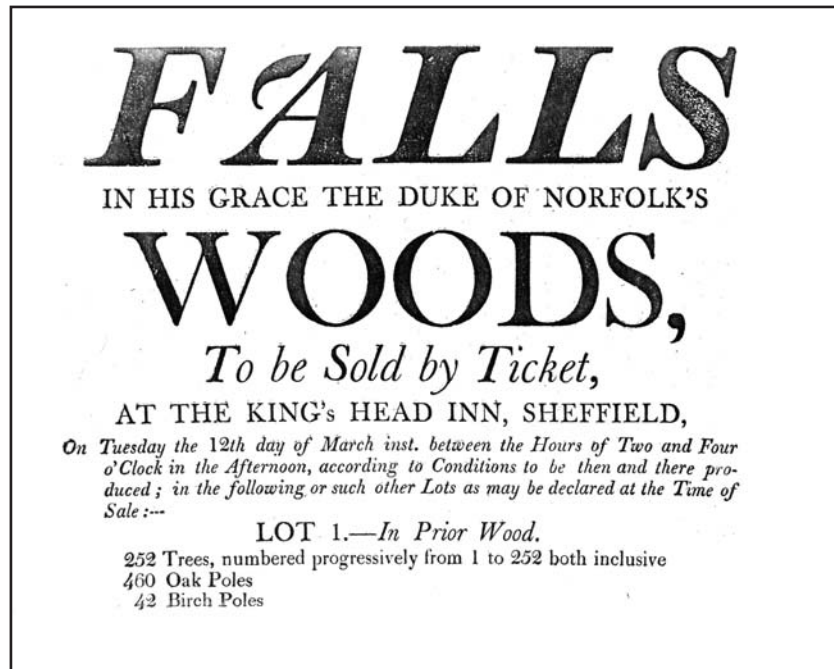
Instead of having their woods felled by their own staff, landowners often leased large woods or groups of woods and they were felled in rotation by tenants. Alternatively a single wood would be sold standing and the coppice and timber trees sold (but not the land on which it grew) to a woodman or wood and timber user. They would then be given a period of time in which to fell the wood and process it (e.g. remove bark or make charcoal) and cart it away. Such leases usually involved the drawing up of elaborate agreements that not only named the woods concerned but also gave acreages, details of management conditions, tree species, compartmentation details and conditions surrounding grazing in the woods or restoration of the land at the end of the agreement. Such agreements extend from the medieval period to the nineteenth century.

## Advertisements

Handbills were used from at least the second half of the eighteenth century to advertise wood sales. These handbills are valuable because they show how woods were being managed (e.g., simple coppice or coppice-with-standards) and often give the names and numbers of tree species being felled. If cross-referenced with the account books the buyer(s) of particular sales can be ascertained.

## Rentals

Although lacking in detail, these documents indicate which properties were tenanted and by whom and which were being worked directly by the owner. They give the names of woodlands, their acreages and sometimes details of management practices.



An example of an advertisement, Sheffield, South Yorkshire. From Mel Jones.

## Census Returns

Detailed census enumerators' returns can be consulted in local record offices, local studies libraries and online (e.g., [www.1901Census.nationalarchives.gov.uk](http://www.1901Census.nationalarchives.gov.uk) and [www.ancestry.co.uk](http://www.ancestry.co.uk)). They are available for all the national censuses carried out at ten year intervals from 1841 to 1901. These give information on names, ages, marital status, occupation and place of birth for each member of every household including lodgers and visitors. Use of these returns helps the researcher to identify workers named in woodland accounts and can help to answer questions such as the age structure of a local woodland workforce, whether sons were following fathers into the same crafts and whether the woodmen and woodland craftsmen were locally born or migrants from other areas.

## Photographs

Photographs, often going back into the nineteenth century, of woodland crafts and craftsmen such as charcoal makers, basket makers and bark peelers should also be searched for. Local studies libraries have large collections of photographs that can be perused on screen, in the libraries themselves and often online. Local historical societies may also have interesting collections. (see **C.2**) A national collection of photographs that includes woodland crafts and industries is held at the Museum of Rural Life at the University of Reading ([www.merl.org.uk](http://www.merl.org.uk)). People willing to record or write their personal recollections of working in woodlands may also be able to provide photographs.

Oblique and vertical **aerial** photographs which date from the 1920s in the case of obliques, and the 1940s in the case of verticals, are useful records of more recent changes in woodland shape and structure. English Heritage's Public Archive National Monuments Record holds the largest collection of historic aerial photographs in England and should be consulted first. Other sources of aerial photographs are the local county or borough / city planning department and important collections are held by Hunting Aerofilms of Borehamwood and Cambridge University. Up-to-date aerial photographs can easily be viewed online at [www.earth.google.com](http://www.earth.google.com).

## Modern Records and Surveys

Modern surveys should not be overlooked. The Nature Conservancy Council's (now Natural England) county by county **Inventory of Ancient Woodland** carried out in the 1980s should certainly be consulted (see **B.4** for more information). An earlier, but very important, national survey was the Forestry Commission's Census of Woodlands in 1947-49 of all woods over 2ha (5 acres). The record sheets and maps for England and Wales are in the Public Record Office at Kew (see reference F22 in the National Archives online catalogue [www.nationalarchives.gov.uk/catalogue](http://www.nationalarchives.gov.uk/catalogue)).

Local museums and local natural history societies may hold important ecological records relating to local woods in addition to those in the Biological Records Centre. Such records and older surveys are often useful in charting the effects of different kinds of management (including total neglect) and other changes in woodland habitat (for example the impact of Dutch elm disease and climate change) on flora and fauna.

Historic Environment Records (HER) (see **C.2** for more information) may only contain information on archaeological features that survive in woodlands (e.g. a prehistoric linear earthwork or an Iron Age camp) rather than features associated with woodland management (e.g. a woodland boundary bank or charcoal hearths). Some local authorities and other woodland owners have, however, had specialist archaeological surveys of their woodlands undertaken and these may be available to consult.

## Miscellaneous Records

Such records include diaries, private and estate correspondence, game books, trespass books, watercolour and oil paintings, engravings, poems, county Board of Agriculture reports from around 1800 (which contain useful woodland management information), and newspaper items (including newspaper advertisements).

Eighteenth and nineteenth century antiquarians often wrote local histories which can still be found in local studies libraries. These can give a useful history of the area. However, more importantly they often contain full transcripts of medieval documents or at least useful references to such material in source lists and footnotes.

## Selected Reading and References

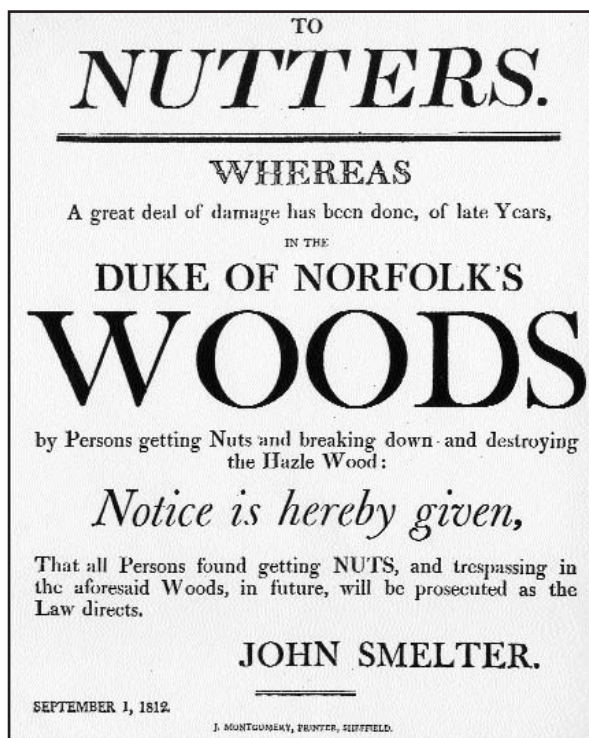
JONES, M. (1993) South Yorkshire's Ancient Woodlands: the Historical Evidence. In: Beswick, P. Rotherham, I.D. and Parsons, J. (Eds.) *Ancient Woodlands, their Archaeology and Ecology, a coincidence of interest*. Landscape Conservation Forum, pp. 26-48.

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WATKINS, C. (1990) *Woodland Management and Conservation*. David & Charles, Chapter 2, *Published and Recent Records* and Chapter 3, *Unpublished Historical Records and Field Evidence*.



*Handbill produced to stop people trespassing in the local woods collecting nuts. From Mel Jones*

## Example of a Local Project: Putting together an outline chronological history of a wood using documentary evidence.

### BEELEY WOOD

Beeley wood is a 80-acre broadleaved woodland in the northern suburbs of Sheffield, formerly in the parish of Ecclesfield. It occupies a long slope down to the River Don, which formed the ancient Ecclesfield parish boundary.

Below is an outline history of the wood from the twelfth century to the end of the nineteenth century. The value of attempting to put together a chronological history is that if it is attempted before carrying out detailed field surveys it will alert surveyors about what archaeological features and ecological indicators are likely to be present in the wood and make sense of woodland structure and composition. If it is attempted after the detailed field surveys it should explain the meaning of the features found and indicators listed.

For example, the fact that it was a coppice wood for at least 300 years suggests that it will be surrounded by a woodbank or stone wall. It is also likely to contain old coppice stools or singled coppice stools now with elephant feet or grown into multi-trunks. A search may also reveal charcoal pitsteads or the foundations of workmen's huts. The fact that it has been compartmented in the past may be reflected in the remains of internal boundary banks or walls. And there may still be signs of the late Victorian planting that took place in the wood. In ecological terms, because we know for certain that it is an ancient wood (in existence since at least 1600) it is a good test bed for an ancient woodland botanical indicators survey. In addition two other questions arise about woodland composition. If bark was once peeled from the oak trees in the wood, is it still basically an oak wood? And is the name for the northern part of the wood, once called *Great Hollin*, still reflected in the wide distribution of holly?

A walk-over survey of the wood reveals a great coincidence between the archaeological features of the wood, its composition and its ground flora AND its known documented history.

1. The first documented mention of Beeley Wood, although not by name, is in **1161**. At that date there was a boundary agreement between Richard de Louvetot, lord of the manor of Hallamshire, and the monks of the abbey of St Wandrille in Normandy who had been granted land in Ecclesfield and founded Ecclesfield Priory. The agreement describes a **great wood** that covered the eastern valley side of the Doun (Don) from Wereldsend (Wardsend) to Uhtibrigg (Oughtibridge). This would have included an area now covered by Beeley Wood and and its neighbour Wilson Spring. The monks were permitted to pasture their swine on the fallen acorns in this wood in autumn (this is called **pannage** or **pannagio porcorum** in medieval documents.). The great wood would have been wood pasture. A translation of the document appears in David Hey's book *The Village of Ecclesfield* (1968, Advertiser Press, Huddersfield).
2. It was still a **wood pasture** in **1332** when it was mentioned by name in the Inquisition post mortem following the death of Thomas de Furnival, lord of the manor of Hallamshire. In the document it is in a list of 'pastures in woods and moors including Greno Wood and Bowden Housteads Wood, which both survive today, and the Rivelin valley which was the private forest (chase) of the lords of the manor. The source is '*Sheffield in the Fourteenth Century: Two Furnival Inquisitions*' by Edmund Curtis in the *Transactions of the Hunter Archaeological Society*, Volume 1, 1918, pp. 31-53. An inquisition post mortem is a document drawn up to establish the size of an estate and who should be the rightful heir.

3. In the document the name is spelt BYLLHAUWODE and this together with other early spellings means that the name Beeley is derived from the two elements **Billa** and **haga** which mean **Billa's enclosure** which suggests that when the name was given (many centuries before 1332) the wood was attached to an Anglo-Saxon farm belonging to Billa (A.H. Smith, *Place-names of the West Riding of Yorkshire, Part I*, Cambridge University Press, 1961, p. 245).
4. By **about 1600** we know that it had, like most of the other woods belonging to the 7th Earl of Shrewsbury in South Yorkshire, become a **spring wood**, which in South Yorkshire means a **coppice-with-standards**. The record is in an undated document addressed to the 7th Earl who became earl in 1592 and died in 1616. It says 'Billey Wood Spring 23 years old - 40 ac'. The source is The Shrewsbury Papers at Lambeth Palace Library, Manuscript 698, Fol 3.
5. In the **eighteenth century** Beeley Wood continued to be managed as a **coppice-with-standards**. The wood is mentioned in a remarkable series of surviving woodland accounts covering the period 1709 to 1724 (Arundel Castle Manuscripts S283 in Sheffield Archives) that were subject of an chapter called 'Woodland Management on the Duke of Norfolk's Sheffield Estate in the Early Eighteenth Century', pp. 48-69 in M. Jones (ed) *Aspects of Sheffield 1: Discovering Local History*, Wharncliffe Publishing Ltd, 1997. In 1710, for example, there is a record of the sale of bark from Beeley Wood. This would have been oak bark for making the liquor used by tanners to make leather hides pliable. In 1712 two woodmen were paid 2/6 for 'fencing 3 days about Billywood'. It was important to fence coppice woods securely to prevent grazing animals entering the woods and eating the young coppice. In 1716 timber was taken from 'Billey Wood' for repairs at Kellam wheele (a water powered site near the present-day Kelham Island Museum in the centre of Sheffield). And in 1717 'wood rents' were collected for eight woods including 'Billy Wood'. These rents were for local farmers grazing animals in the well-grown coppice, a practice called 'agistment' or 'herbage'.
6. Coppicing continued into the **nineteenth century** in most Sheffield woods. For example, an early nineteenth century map (Arundel Castle Manuscripts, S301) shows Beeley Wood divided into 12 **coppicing compartments**, with dates when they were last coppiced. This ranges from 1789 to 1813. The northern part of the wood was in three parts called Priest Wood, Prior Wood and Great Hollin.
7. By the **end of the nineteenth century coppice management was at an end**. The **coppice woods were converted to high forests**, which is what we see today. They were converted by destroying the coppice stools, leaving maiden trees to develop and by planting. In 1898 the Duke's forester drew up plans to plant heavily in Sheffield's coppice woods. (Arundel Castle Manuscripts, S308). In Beeley Wood he planned to replant 60 acres with beech, birch and sycamore 10 feet apart, with larch in the gaps 3 feet apart, with the idea of thinning the fast-growing larch as required and leaving the broadleaves as 'a permanent crop', i.e. a long-term investment. The forester ordered thousands of young trees from a Cheshire nurseryman on 16 November 1898 to be delivered at Wadsley Bridge Station.

## C.4: Using Maps for Historical Research

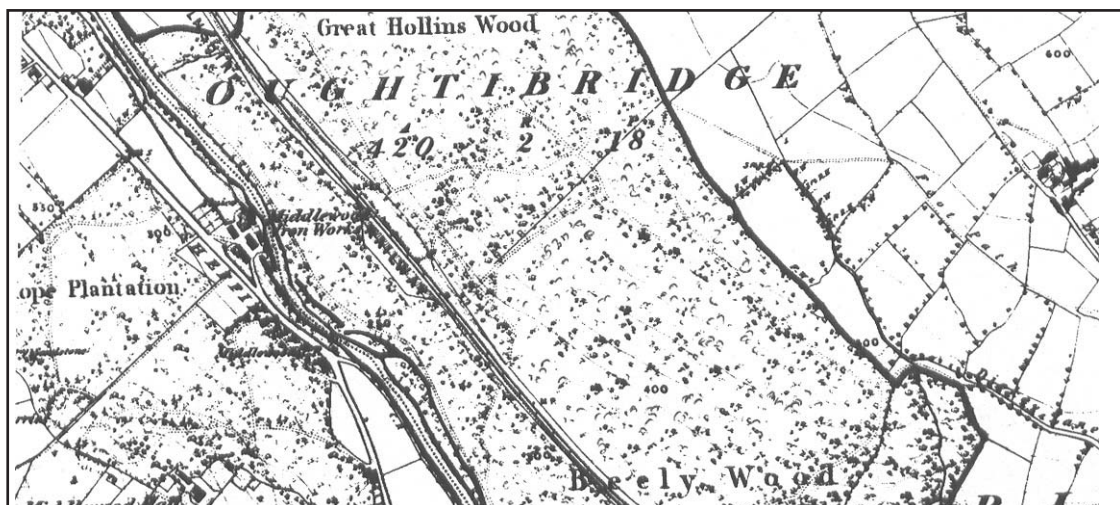
Mel Jones, Frank Spode and Christine Handley

### Introduction

Maps can be a very useful source of information to track changes in the shape and extent of your woodland. You can find out for example, if the woodland boundary has changed, if your wood has decreased or increased in size or remained more or less the same. Maps can also be a source for place-names and old maps can give information on former management practices within woodlands.

### Ordnance Survey Maps

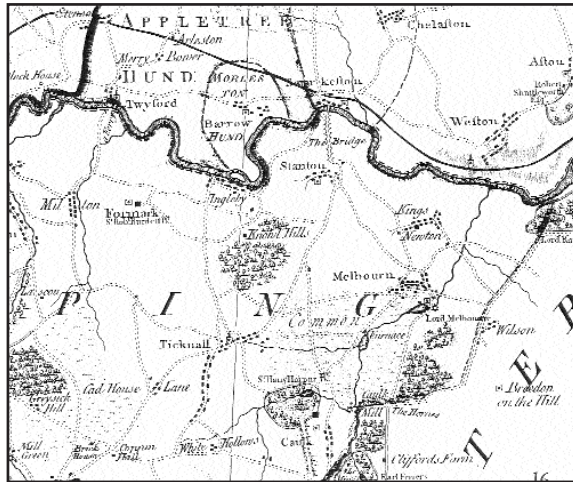
One of the easiest ways to start is by looking at the most recent Ordnance Survey map (preferably the 1:2,500 scale) and then work backwards through all the available editions to the first which was produced around the middle of the nineteenth century. Dates of the earliest editions of the maps vary across England as the surveys were carried out over a period of time. The earliest surveys were also carried out on a county by county basis and mapped areas correspond to old county boundaries. The most useful old Ordnance Survey maps are the six-inch to the mile (1:10,560) series, which started in 1840, and the more detailed 25-inch to the mile (1:2,500) series, the first edition of which was produced between 1853 and 1896. These maps which are printed can be found in Local Studies Libraries along with the modern 1:2,500 maps dating to the 1970s and 1980s.



*Beeley Wood as shown on the 1896 Six-Inch OS Map. The Manchester - Sheffield Railway was constructed through the wood in 1845.*

### Early Maps

Prior to the Ordnance Survey series, maps were commissioned privately or produced commercially by individuals or companies, especially in the eighteenth century. The former were maps of specific land holdings and estates produced as part of estate records. The latter may be of specific areas which were thought to be of interest. They may provide useful information but as they were designed for specific purposes often only include what was seen as important for the purpose of the map. As such, some parts may be very detailed and give pictorial representations of features which may include woodland whilst others may leave out settlements or features which do not fit. So, if your woodland does not appear on an early map you need to check another documentary source to see if it is mentioned elsewhere before concluding that it did not exist at that date. These maps will be found in Local Records Offices and a catalogue for a specific estate will usually have a separate section listing maps.



Extract from Burdett's Map of Derbyshire 1797

Each estate archive is also likely to contain some pre-Ordnance Survey maps. Some may be of whole parishes, others of smaller areas and even of individual woods. These may show how they were compartmented, when they were last felled, even giving the number of timber trees of varying ages that remained after felling ('reserves').

### Parliamentary Enclosure Awards and Tithe Commutation Act Maps

Often found in Record Offices are collections of maps and field books made by firms of local surveyors. These surveyors often carried out the surveys for the Parliamentary Enclosure awards (1750-1830) and the *Tithe Commutation Act* of 1836. These enclosure and tithe maps with their accompanying awards (as manuscripts) are full of accurate detail on the ownership, size of holdings and the names of individual fields and woods. In the case of the enclosure awards there are sometimes two maps for a parish - one before enclosure and one after enclosure.

### Finding Maps

A first easy step to finding old maps is by visiting [www.old-maps.co.uk](http://www.old-maps.co.uk). The website will show you at least one old map of the area you are searching for and you can then purchase a copy from them. Search for the closest village or town then scroll to where your wood is located today. You can find a series of historical maps in your local studies library and/or local archives. You can also search for your most up-to-date local map at the Ordnance Survey website. [www.ordnancesurvey.co.uk/oswebsite/getamap](http://www.ordnancesurvey.co.uk/oswebsite/getamap).

#### Useful Maps

- Recent maps such as those from the Ordnance Survey.
- Old / historic Ordnance Survey maps - some of these date back to the early 1800s depending on the area of the country you are looking for. They can be found in Local Studies Libraries.
- Also look out for the Godfrey Edition Old Ordnance Survey Maps. Virtually the whole country is covered. They are 25-inch maps, reduced to 17-inch to the mile and they have an historical essay on the map area written by a local expert. Another source of old county maps is the Greenwood Collection.
- Any other old maps you can find such as deed maps, estate maps, enclosure and tithe maps. If the estate is still in private hands consult the land agent who may have a series of reference maps. If not, the Record Office will be the most likely source.



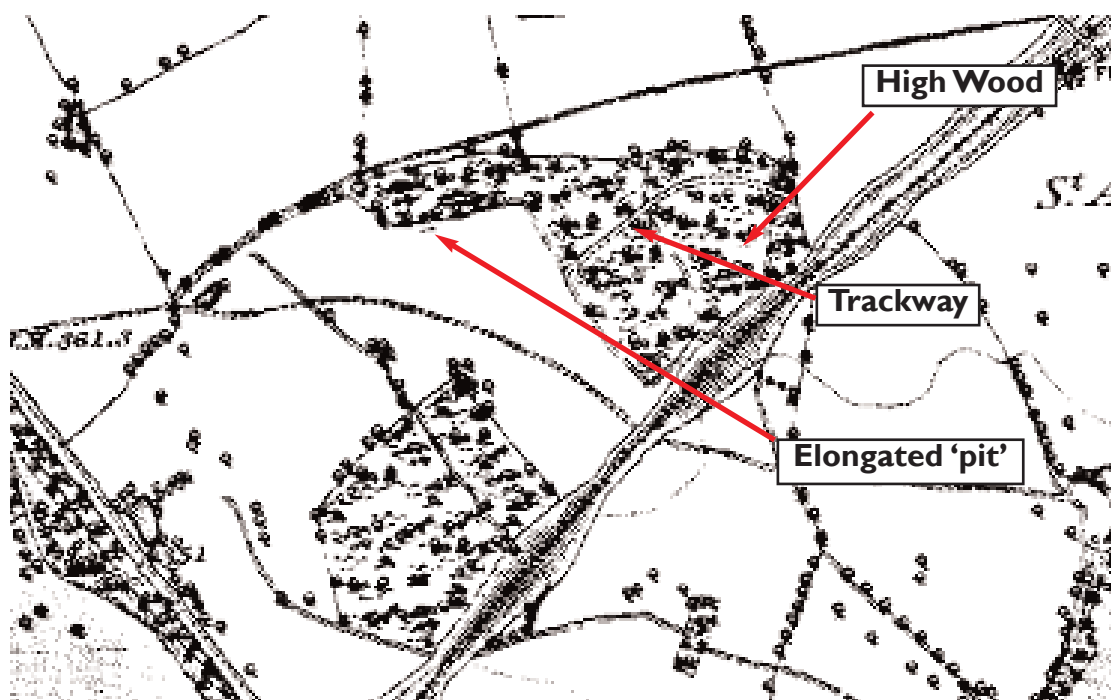
## Example of Local Project: Researching Maps and Documents

### High Wood, off Stonards Hill, Epping

*Four volunteers of the Epping Forest group helped to test our survey guides by researching maps and documents and by carrying out a field visit to their local wood.*

Prior to our first visit we were able to establish the following information from looking at aerial photographs and old maps (available through the internet).

- The site covers approx. 5½ acres and is protected by a Tree Preservation Order placed on the woodland by Essex County Council in 1950.
- The old maps from 1881 clearly show the woodland and a track through it. On other maps of a similar date an elongated feature in the north west part of the wood is visible.
- Chapman and Andre map of 1777 is inconclusive and does not show the woodland, although a curved boundary bank is visible.
- The local geology is glacial deposits of Boulder Clay and Head but as the land slopes to the south east the underlying Claygate Beds are exposed.



Map dated 1881 showing the location of High Wood

### Site Visit

An initial site visit was carried out to re-locate the trackway, pit and boundary bank and to note any other features present in the wood. The following was found:

- The perimeter of the woodland is marked by a substantial ditch and wood bank (Width 3.6m, Depth 1m) (see photo). On top of the wood bank some large Ash (girth 2.95m), Hornbeam and Oak trees are present, these are mainly old coppice.
- The track on the 1881 map was still well used.
- The elongated pit was also still present in form of an oblong shaped depression (approx. 5m wide, 20m long and 3-4m deep).

- The main tree species within High Wood is Hornbeam which appears to have been coppiced many times over the centuries.
- The wood contains several ancient woodland indicator plant species including Wood Anemone, Bluebell, Goldilocks and Wood Melick. Along the internal boundary bank, Dogwood, Elder, Hazel, Hawthorn and Spindle were recorded.

#### Post visit research

After our initial field visit, we decided to delve further into the history of High Wood by researching archives, maps and documents held in the Essex Records Office. This enabled us to obtain a copy of the tithe award map from 1838 which illustrates a snapshot of the land use at that time:

- In 1838 the wood was owned by the Houblon family who also owned the nearby Coopersale House in Houblon Hill. High Wood is recorded as Ash woodland with the majority of the surrounding land being grassland.
- The oblong shaped depression within the wood could be a clay extraction pit for brick making. 'Epping : Economic history and local government ', *A History of the County of Essex* , **Volume 5** (1966) comments that by 1848 four brickmakers were established within Epping, and that a brickfield at Epping Plain (to the north of the wood) was worked for most of the nineteenth century by Robert Harvey and Charles Foster. It is possible that this may have been one of their extraction pits although more research is required to verify this.
- When studying the maps it can be seen that the northern wood bank boundary forms part of a much larger feature in the form of a circular boundary. Other field boundaries within the area are predominantly straight lines. At present our thoughts are that this may have been a small deer park, however, further research would be required before any conclusions are made.

Ian White, Elizabeth Haines, Melinda Barham and Tricia Moxey.

(Epping Forest District Council)



Wood bank marking edge of the wood © Epping Forest District Council

## C.5: Woodland Place-names

Mel Jones

### Introduction

Landscape historians are interested in two types of woodland place-name:

- **The names of settlements.** These can tell us much about the former distribution of woodland and the amount of woodland cover from the fifth century onwards.
- **The names of individual woods.** These can tell us about former owners, former tenants, tree composition, why the site remained wooded, woodland industries and crafts and, perhaps most importantly, because of the language used in the name and the date when it was first recorded in a document, the earliest period when the wood is known to have been in existence.

Old place-names in the modern English landscape are derived from four old languages,

- Celtic,
- Old English (Anglo-Saxon),
- Old Norse (Danish and Norwegian Viking) and
- Norman-French.

Their distribution across England varies depending on settlement patterns of successive waves of migrants between the fifth and eleventh centuries AD.

Three words of warning are required when studying woodland place names.

- It is wrong to try to come to conclusions based on the modern spelling of a place-name. It is necessary to study old maps and surveys and to consult place-name dictionaries in order to ascertain early spellings and meanings.
- It is also important to ensure that what appears to be an old name is not a modern invention. Two South Yorkshire examples can illustrate the name substitution problem. The name Buck Wood for a wood in the Gleadless Valley in Sheffield is relatively new. In a survey of 1637 it was called Berrystorth, an ancient name of Old Norse origin and this continued to be used until the last quarter of the nineteenth century when the name Buck Wood was substituted. The name Treeton Wood (in Rotherham) is a late eighteenth century successor to the much older name Oaken Cliff, which tells us not only about the composition of the wood but also about its site.
- Lastly, some woodland place-names have been used indiscriminately. For example the name 'copse' originally signified a coppice wood, but more recently it is a name that has been given to new plantings, especially on country estates where field sports have been important.

### Woodland Settlement Names

The following settlement names give an indication of the type and range you may encounter. They may or may not indicate whether woodland is still present but will help show whether woodland was present in the past. Looking at a map of your local area will enable you to pick out the most common types of names which may indicate to some extent when the area was settled and the settlements were given names. Having several woodland settlement names in close proximity may suggest a formerly heavily wooded landscape.

### **Celtic**

**ced** or **coid** (modern Welsh *coed*) means 'wood' and occurs only rarely in England. Examples include Culcheth (Lancs), Chetwode (Bucks) and Chatham (Kent).

### **Old English**

**denn**: a woodland pasture for swine. This place-name is restricted to the Weald of Kent and Sussex. Examples include Tenterden (pasture of the people of Thanet) and Benenden (the swine pasture of Bionna's people). **Denn** should not be confused with **denu** which means a long curving narrow valley as in the South Yorkshire names of Dearden (deer valley) and Swinden (swine valley). **Denu** names are often associated with woodland as in Agden (Oak valley) and Ewden (Yew-tree valley) and Ramsden (valley full of Ramsons).

**leah** (ley): a woodland clearing as in Akeley (Bucks), Beverley (E.Yks) and Woolley (W.Yks). This is the most widespread woodland settlement name. For example, there are more than 70 **leah** place-names in the Chilterns, 43 in South Yorkshire and 33 in Essex.

**feld** (field): a treeless area in a well wooded landscape as in Sheffield (S.Yks), Rotherfield Peppard (Oxf) and Wakefield (W.Yks and Nhants). The element occurs in every English county with the exception of Cornwall.

**fyrth** (firth): as in Holmfirth (W.Yks), Chapel-en-le-Frith (Derbys) and simply Firth (in 13 counties). But see below for a problem with the word firth.

**graefe** (grove or coppiced wood): as in Bromsgrove (Worc), Palgrave (Suff) and Grafton (10 counties).

**bearu** (grove): as in Barrow-upon-Soar (Leics), Hazelbarrow (S.Yks) and Beer (Dev).

**hyrst** (a wooded hill): as in Ashurst (Kent), Kilnhurst (S.Yks) and Lyndhurst (Hants).

**holt** (wood): as in Holt (10 counties), Buckold (Berks) and Esholt (W.Yks) (ash wood).

**ryd** and **rydding** (clearing): as in Herdings (S.Yks, high clearing). This is the word that has given us the modern word for a wide track through a wood - a ride.

**rod** (a clearing): as in Ackroyd (W.Yks), Ormeroyd (Lincs) and Roddam (Nthmb).

**sceaga** (shaw): a wood, sometimes a narrow wood as in Shaw (Berks), Bagshaw (Derbys) and Birkenshaw (W.Yks).

**wald** (high wooded country): as in the names wold (Yorkshire Wolds, Lincolnshire Wolds, the Cotswolds, now bare of woodland) and most famously the Weald in Kent and Sussex, still heavily wooded. Also Waltham (Berks and Ssx) and Southwold (Suff).

**wudu** (wood): as in Eastwood and Norwood (S.Yks), Woodhall (Lincs) and Wooton (15 counties including Oxon and Berks).

### **Old Norse**

**tveit** (thwaite): a woodland clearing as in Thwaite (Norf), Butterthwaite (S.Yks) and Ullthwaite (Westm). But also look out for disguised forms as in Croswick (Nf) which was originally *Crosthweyt* (clearing by a cross).

**lundr** (wood): as in Lound (Notts, Lincs, S.Yks), Oulands (N.Yks) and Hasland (Derbys).

**storth** (wood): as in Storrs (S.Yks) and the farm Rainstorth (S.Yks, boundary wood).

**skogr** (a wood): as in Thurnscoe (S.Yks), Askew (N.Yks) and Hesselshew (E.Yks).

**kjarr** (carr, a wooded marsh): as in Elsecar (S.Yks), Byker (Nthmb) and Redcar (N.Yks).

**vithr** (wood): as in Askwith (W.Yks, ash wood, which has given us the personal name Asquith), Blawith (Lincs) and Skirwith (Cumb).

## The Names of Individual Woods

Looking at the names of individual woods and the fields or places immediately around them may help you to find out the type of woodland that was there historically or who owned the woodland. The names may also be descriptive of the situation or location of the 'original' woodland and show how its boundaries have changed over time. Consulting a series of Ordnance Survey maps and other documents may show how names have either changed over time or have remained fixed. The following examples give the most common types of woodland names you may encounter.

### Old English

**bearu** (grove): as in Ogbear Wood (Dev) and Bear Wood (Oxf).

**clif** (cliff or steep slope): as many ancient woods are on steep slopes this name occurs widely as in Hutcliff Wood, Thorncliffe Wood and Oaken Cliff (all SYks) and Duncliffe Wood (Dors).

**fyrth** (firth or frith): as in Frith Wood (Worcs) and Frithsden Beeches (Herts).

**graefe** (greave): as in Gibbon Greave (SYks) and Hazel Grove (Oxf). It has been suggested that *graefe* means a coppice wood.

**haeg** or **haga** (enclosure or enclosed wood): as in West Haigh Wood (SYks) and Hartshill Hayes (Warw). In the Pennines a Holly wood that was coppiced or pollarded to provide winter feed for animals was a 'Holly hag'.

**hangr** (a wood on a slope): as in Hang Bank Wood (SYks), Birchanger (Essex) and Selborne Hanger (Hants).

**hyrst** (wooded hill): as in Bracken Hurst (Staffs), Staffhurst Wood (Surr) and Hurst Mon Den (Kent).

**platt** (a Hazel orchard): as in St Mary's Platt (Kent) - a regional term still in use.

**rod** (royd): which usually refers to a clearing whose name is transferred to an associated wood as in Birken Royd and Prior Royd (both SYks).

**sceaga** (shaw): as in Longshaw (Derbys), Hazelshaw (SYks) and Neal's Shaw (Oxf).

**spring** (a coppice wood): in some regions this word specifically meant a coppice-with-standards. The name survives widely as in Ladies' Spring and Snaithing Spring (SYks).

**wudu** (a wood). Care needs to be taken that this is not a substitute for an older name.

### Old Norse

**storth** (a wood): as in High Storrs and Duxter Wood (lost) which was originally Duckstorth and Berrystorth (see above) (all SYks).

**kjarr** (carr, a wooded marsh): as in Owler Car Wood (Derbys). Owler is the SYks / NDerbys. dialect word for an Alder tree.

**lundr** (wood): as in Birkland(s) (Notts).

### Norman-French

**coppeiz** (coppice/copse): which is very widespread, but care needs to be taken to distinguish between ancient woods of that name and modern plantings.

Old woods also often have the names of nearby **settlements** or of the **parish** in which they lie (eg, Bradfield Woods (Suff) and Hayley Wood (Cambs)). They are also often named after an **owner** (King's Wood (Nants), Earl's Wood (Oxf), Prior's Copse (Leics)), a **wood agent** (Wilson Spring, SYks) or a **tenant** or **user** (Gates Wood, N.Yks).

## Forest, Firth and Chase

It should be noted the word **forest** as used in pre-modern England did not mean woodland and in some forests there was little or no woodland (as in the Peak Forest). A forest as in the New Forest or Sherwood Forest was a legal term meaning that the king held the rights to hunt there. Similarly a **firth** was sometimes used to denote a tract of land in which a private landowner held the hunting rights (more usually called a chase) as in Duffield Firth in Derbyshire. Grenofirth and Hawkesworth Firth in South Yorkshire were parts of Rivelin Chase, the private hunting forest of the medieval lords of the manor of Sheffield. Grenofirth was largely wooded but Hawkesworth Firth was mainly moorland.

## Selected Reading and References

County surveys of place-names exist for every English county. The most important of these are the English Place-Name Society's county volumes published by Cambridge University Press. This is a massive work still unfinished. Virtually every place-name in a county (cities, towns, villages, hamlets, farmsteads, woodlands, moorlands and heaths, fields, rivers, brooks and ancient streets and lanes) is covered in the EPNS volumes.

### Three very good general sources are:

CAMERON, K. (1996) *English Place-Names*. Batsford, London.

EKWALL, E. (1960) (first published by the Clarendon Press in 1936) *The Concise Oxford Dictionary of English Place-Names*.

GELLING, M. and COLE, A. (2000) *Landscape of Place-Names*. Martin Tyas.

### Woodland historians who deal with woodland names are:

JAMES, N.D.G. (1991) *An Historical Dictionary of Forestry & Woodland Terms*, Blackwell.

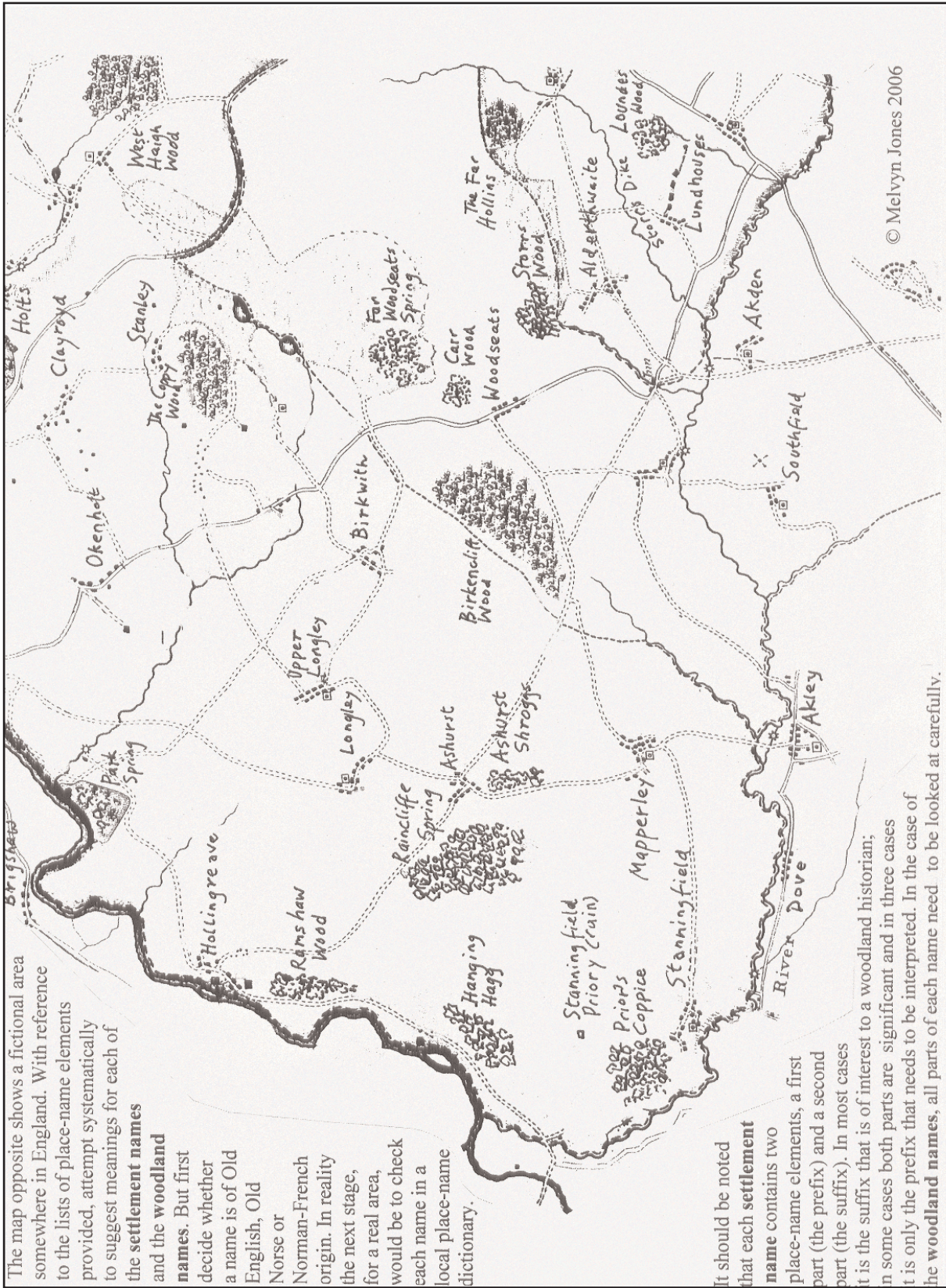
JONES, M. (2003) *Sheffield's Woodland Heritage*, (3rd edition), Green Tree Publications / Wildtrack Publishing, Part 4, 'Sheffield's Woodlands Today: What They Can Tell Us About Their Past'.

RACKHAM, O. (2006) *Woodlands*. Collins (New Naturalist), Chapter 7 'Archives of Woodland and How to Study Them'.

## Exercise: Uncovering Place-names

The following four steps are designed to help you look at the place-names for your area to build up an understanding of the importance of woodland names locally. The first is an exercise to familiarise yourself with the detective work needed when looking at the origins of place-names. The others take you through the process of finding out about your local woodland names.

1. **Complete the woodland place-name map exercise (see next page).** This will further familiarise you with the main woodland place-name elements that are found throughout England. Simply list the woodland settlement names and the names of individual woods and enter beside each name the language from which it is derived and the meaning of the prefix, suffix or the whole name as appropriate. See Appendix 3 for the answers.
2. For an area of approximately 16 km X 16 km (10 miles X 10 miles) around your local wood or woods, **map and interpret the name of every settlement (towns, villages, hamlets and single farmsteads) which contains a woodland place-name element.** Use a place-name dictionary as appropriate.
3. **Interpret the meaning of the name of your local wood or woods.** Use a place-name dictionary to confirm the meaning of the name. Documentary research (including consulting old maps) may reveal earlier spellings and name changes.
4. Using appropriate map sources (enclosure maps, tithe maps or estate maps) **investigate the names of fields immediately surrounding your local wood or woods to discover evidence of earlier woodland clearance.** Where fields were created through clearing woodland the process may be reflected in field names: names such as the Old English *intake* (land reclaimed from the waste); *riding* and *royd* (land cleared of trees); *stubbing* (land cleared of trees but with the stumps remaining) and *ley*, *lee* or *lees* or the Old Norse *thveit* (*thwaite*) (meaning a woodland clearing). Small fields carrying names meaning wood such as *spring* and *storth* (the Old English and Old Norse names respectively for a coppice wood) together with *close* (enclosure) also point to the removal of part of a wood or even a whole wood in the past.



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The map opposite shows a fictional area somewhere in England. With reference to the lists of place-name elements provided, attempt systematically to suggest meanings for each of the **settlement names** and the **woodland names**. But first decide whether a name is of Old English, Old Norse or Norman-French origin. In reality the next stage, for a real area, would be to check each name in a local place-name dictionary.

It should be noted that each **settlement name** contains two place-name elements, a first part (the prefix) and a second part (the suffix). In most cases it is the suffix that is of interest to a woodland historian; in some cases both parts are significant and in three cases it is only the prefix that needs to be interpreted. In the case of the **woodland names**, all parts of each name need to be looked at carefully.

**WOODLAND PLACE-NAME EXERCISE**



## C.6: Personal Recollections

Mel Jones

### Introduction

Personal recollections are sometimes criticised as being unreliable as the memory may fade or play tricks or there may be a tendency to romanticise. It is obviously necessary to treat the evidence rigorously and fully evaluate and corroborate it where possible. It is surprising how meticulously accurate personal recollections can be.

### Personal, Human Detail

The uniqueness of personal recollections, as opposed to fieldwork mapping and measurement or documentary research, is the personal, human detail that can be recorded, the sort of information that cannot be deduced from looking at the physical evidence or has been thought too trivial or unimportant to record in documents. In the context of woodland heritage the types of information that can be collected include:

- the recollections of retired woodmen and woodland craftsmen;
- the recollections of the children (now in old age) of fathers who worked in woods or were woodland craftsmen;
- the recollections of 'lumberjills' who worked in Forestry Commission woods in World War 2;
- the recollections of local naturalists; and
- the recollections of woodland owners.

Personal recollections come in two forms: **written recollections** and **oral recollections (oral history)**.

### Written Recollections

Written recollections are often more considered, better structured, more reflective and have a 'tighter weave'. These may be contemporary accounts from diaries or letters that were written recording everyday occurrences. With contemporary accounts there will be some 'sifting' to do to find relevant information and you may not find all your questions answered but they often give a much richer account of contemporary life full of detail. Diaries and letters may be found as part of the personal papers in archive collections or extracts may have been published and available in libraries. These recollections may also be written sometime after the events as biographies or in response to specific requests for information from yourself.

Some people prefer to write down their thoughts and present their recollections in that way. If you are asking people to do this then it will be useful from your point of view to provide some guidance and questions to answer.

### Oral Recollections

The advantage of oral recollections on tape or as digital recordings is the use of local dialect and a good turn of phrase. Taped or digitally recorded interviews can be gathered by two different means. Some people may prefer to speak into a tape / digital recorder in private having made notes first and given a great deal of thought to how they want to present their recollections. More commonly an interview is conducted by the local historian who asks a series of relevant questions. As with written recollections and those taped in private it is usually necessary to provide a set of questions/topics prior to the interview so that the interviewee can

give some thought to what they want to say. You will need to give some thought to your questions and make sure that they are relevant to their experiences so that you get people to talk rather than answer yes or no. Also ask if they have any photographs to illustrate their story. Information about the type of questions to ask and how to interview people can be found on the Oral History Society's website. See below for details.

It is necessary to go through four stages of preparation before audio taped or digitally recorded recollections are in a finished state. This can be very time consuming unless you have audio typing equipment. As a general rule you should allow three times as long to transcribe an interview as it took to record it in the first place.

1. Transcribe the taped recollection or interview.
2. Re-structure it if necessary to make it more comprehensible.
3. Return a copy of the (re-structured) transcription to the volunteer / interviewee and
4. Ask them to check it for accuracy, to add or to delete anything they wish to.

If you decide to publish or use information from the interviews in a report you should let people know and ask permission from them to use the material. The tapes or digital recordings and transcriptions will form part of your archive and you may also wish to ask permission for copies to be passed to your local records centres.

## Contacting People

Most people will be delighted to contribute to a project and feel valued. There may be a local history group in your area whose members would be happy to help. Local people who have lived or worked in the area may be able to shed light on some of the recent history of your woodland especially if they remember it from their childhood or have family photos. Advertising for information via your library, community centre or a letter to the local paper may prove useful in tracing people. Contacting other local groups, lunch clubs etc. may also put you into contact with people who have some relevant information. You may also consider having a display at a local event and being on hand to talk to the people who come to view it. Sometimes seeing a display triggers other memories that may add valuable 'snippets' of information.

The Oral History Society has a very useful website which not only tells you about how to carry out interviews but also tells you how to look after the information afterwards. The website is at [www.ohs.org.uk](http://www.ohs.org.uk).

## Selected Reading and References

CAUNCE, S. (1994) *Oral History and the Local Historian*. Longman.

PORTER, V. (1994) *Tales of the Old Woodlanders*. David & Charles. The author records in their own words the memories of a wide variety of woodlanders including naturalists, lumberjills, hurdle-makers and fence-makers.

THOMPSON, P. (1978) *The Voice of the Past: Oral History*. Oxford University Press.

## Example of a Local Project: The Special Trees and Woods Project

### Recording stories about trees and woods in the Chilterns

Throughout the Chilterns people are being asked to record their special trees in order that they can be celebrated and managed sensitively and sustainably. The Special Trees and Woods Project is funded by the Heritage Lottery Fund and managed by the Chiltern Woodlands Project team who are coordinating this huge task. This three-and-a-half year project started in January 2006 and has already generated some great results.

### Volunteers

The success of the project so far really has been down to the support, enthusiasm and hard work of the forty strong team of volunteers. Their interests and time commitment to the project vary a great deal, but all make a valuable contribution.

### Here we hear from two volunteers:

*"I 'smoked' acorn cup pipes when I was a little girl - but not until I became a volunteer with the Special Trees and Woods Project did I realise that some acorns don't have stems at all (Sessile) and that some sit in a whiskery cup (Turkey)".*

*"I have loved seeing, photographing and measuring wonderful veteran trees; gnarled, hollow and hundreds of years old, with so many stories to tell".*

*"As a volunteer I am learning a lot - and realise how little I really know!" **Chris Read***



Chris with the elephant tree. © Russell Read



The Ibstone Yew. © Hilary Beck-Burridge

*"I started by recording the special trees in my own village on the simple project recording form. The largest girth I found was that of a magnificent Turkey Oak at 7.40 metres".*

*"I have since recorded more than 100 special trees and have enjoyed it immensely".*

*"The oldest tree I have found so far is the magnificent 1,000 year old Yew at Ibstone Church." **Hilary Beck-Burridge***

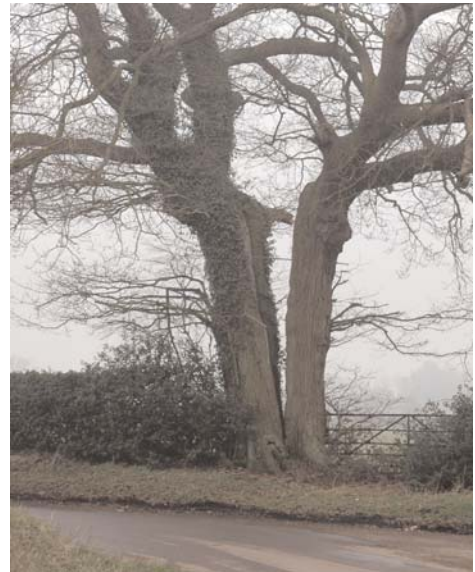
## Example of a Local Project: Special Trees

There are special trees on village greens, in local parks, road verges, churchyards, gardens, the towns and the wider Chiltern countryside. They may be old, a rare species, be an odd shape or a landscape feature, have a name or be associated with a famous person. Special trees all have one thing in common - a story to tell!

### Blasted Oak

Michael Dady remembers that it was a very foggy morning on Friday, 30th October, 1942 when a plane crashed near Wendover, Bucks.

He says "*Some days after the crash, I saw the local farmer with a tractor trying to lift a piece of wreckage to allow a RAF trailer to back underneath it using a rope over the sturdy roadside Oak. The tractor was struggling and over the engine I heard a mighty crack as the tree trunk split.*"



The blasted Oak. © John Morris, Chiltern Woodlands Project

### Jimmy's Tree

In Henley-on-Thames, Oxon. stands a Red Oak, which was planted in 1937 to commemorate Jimmy, a tiny marmoset, who was a much loved pet of a Miss Jekyll. Janet Pullen, project volunteer, concludes that

Jimmy was a Pygmy Marmoset, *Callithrix pygmae*. Despite being cute and receiving much attention, Jimmy was inclined to bite those who came too close. There is little wonder that he was grumpy at times - he was a long way from his home in the Amazon!

### War wounds

American troops were based during the Second World War on Ashridge Estate, Berkhamsted, Herts. A month before D-Day some young soldiers recorded their stay in England by carving the date and their home states in a mature beech tree.

Bob Davis, the Head Forester for the National Trust, said "*It is quite humbling to think these frightened young men, a long way from home, would soon be facing the horrors of the Normandy landings.*"

### Special Woods

A special wood might contain a particular species, be it a local landscape feature or contain archaeological features such as sawpits, boundary banks and hollow ways.

### Spring Wood, Oxon.

Sedgehill Spring in the wood is protected by an ornate brick structure featuring a stone carving of an elephant. It was built by the Knollys family who bought the Blount's Court estate in 1841. The spring is still a prominent feature after restoration in the 1960s.

### Angling Spring Wood, Bucks

Roald Dahl, the famous children's author used to walk in Angling Spring Wood. It probably inspired the woods featured in *Danny the Champion of the World*. It is also home to the rare Slender Slug - *Limax tenellus*.

To find out more about this special project go to [www.chilternsaonb.org/special](http://www.chilternsaonb.org/special).

## **Section D: Field-based Surveys**

The chapters in this section deal with the practical aspects of surveying woodland. The first chapter gives an overview of surveying techniques and includes information about getting permission from landowners and health and safety. It is essential that you should read this chapter and carry out the steps it outlines before undertaking any fieldwork.

The other chapters give information about surveying for physical, archaeological and ecological aspects of your woodland. These three chapters are complementary and together with Section C: Documentary Research form the core guidance for your research. Each of the chapters gives some basic concepts and definitions and a general survey (Level 1) which you should carry out before undertaking the more detailed surveys (Level 2). These general surveys will allow you to build up an overall picture of your wood and pinpoint any areas within the wood which will need further surveys. The more detailed surveys about specific aspects of your woodland can be carried out straight after the initial surveys or left to a later date and another phase of your project. The questions which you want to answer about your woodland will help to determine which surveys are undertaken, but your general survey may identify other issues which were not apparent at first. The documentary research will also inform the surveys you wish to undertake.

It is important to note that you do not need to carry out all the surveys in this section in order to start to tell the story of your woodland. However, to build up a more complete picture you will need to undertake surveys from each section, as they are all interlinked. The amount of time you want to, or are able to, spend on survey work will also limit your research so again it is important to concentrate on the general surveys first. Section E looks at the follow-on work that is needed to make use of the findings from your surveys and to ensure that they are accessible to wider audiences wherever possible.

# ***D.1: Introduction to Surveys and Survey Techniques***

**Alastair Oswald, Lindy Smith and Christine Handley**

## **Introduction**

Surveying relies on the ability to make observations and to analyse those observations using a logical approach. It can be relatively easy, quick and inexpensive to undertake. There are many different kinds of survey equipment, from low-tech and cheap to hi-tech and expensive, and many different techniques, which will be appropriate in different circumstances. In terms of understanding the historic or ecological environment, carrying out a survey almost always offers a high return for whatever effort you invest. For you personally, the process of discovery, and of developing a more profound understanding of your surroundings, should be exciting and rewarding. Above all, you should remember to keep asking **why** a certain feature is found in a particular position in the first place. We cannot fully understand any individual historic feature, be it a Neolithic burial mound, a medieval pollarded Oak or a Second World War pillbox, unless we understand its landscape context - all the factors that led to its existence and current condition.

Surveying in woodland and wooded landscapes is not fundamentally different from that in any other environment, but it can be seriously complicated by four factors.

- Undergrowth can conceal features of interest even at close range.
- Tree trunks and undergrowth often limit lines of sight over long distances.
- Uneven ground and undergrowth can make it difficult to pace distances accurately, but also difficult to stretch tapes over long distances.
- Tree canopies can make it much more difficult for hand-held GPS (Global Positioning System) to accurately fix your position in places where there are no mapped landmarks.

These factors usually make it easiest to carry out **topographical (physical) and archaeological surveys** in woodland and wooded landscapes during the winter and early spring, when vegetation obstructs and obscures least. The right weather conditions can also help to identify less obvious features. Clear winter days, when the sun angle is low, are often ideal for identifying humps and bumps. Light coverings of snow usually maximise the light under the canopy and may also help to highlight remains.

For **ecological surveys**, spring and early summer is the best time for fieldwork, especially if you are recording Ancient Woodland Botanical Indicators (See **D.4.3**). However, if you are looking for fungi or lower plants e.g. mosses, late summer and autumn are ideal.

The best survey results are generally gained from re-visiting your wood throughout the year. This is where you, as a volunteer, have the chance to do your site justice, as not even an expert will be able to discover all archaeological or ecological features during a single field visit.

## **Planning Your Survey**

### **Initial Visit and Setting Objectives**

To begin with, even if you already know the woodland well, you should carry out a rapid but thorough **reconnaissance visit** to your study area. You may do this even before you carry out documentary research, but if previous records have been made within your study area, it is a good idea to take a copy of these, especially if you have obtained a map from the Historic Environment Record Centre (H.E.R) (See **C.2**). The aim of this initial reconnaissance is to acquire an overview of your study area: its geology, topography, ecology and historic features, so do not spend too long examining any individual tree or other historic feature. You can take

photographs or make a few sketches on your map or in your notebook. All this will help you to structure your more detailed surveys. If you are part of a larger team, it will be helpful for everybody to take part in this reconnaissance, so that everyone understands the nature and scale of the project from the outset.

Once you have done this it will be easier to plan and structure the individual surveys by **setting objectives** and **deciding roles** and **timetables**.

A **group discussion** immediately after your reconnaissance visit will help you decide on the appropriate survey methodology at the outset. A survey of a large wood can seem like a daunting task. However, breaking the area down systematically into smaller, more manageable chunks, and agreeing a suitable timetable, will hopefully give you the confidence and determination to see the project through to its conclusion.

You may, for example, decide that you will, at first, only focus on one area of your wood that seemed particularly interesting on your reconnaissance visit. This is perfectly acceptable, as many woodlands have received little attention, especially as far as archaeological surveying goes. Thus any data you collect is a step forward even if it does not cover your entire woodland. However, you should be careful that you have an adequate understanding of the bigger picture before you focus in on a smaller area. It is better to carry out a general survey (Level 1) of the whole woodland than a very detailed survey of a small area possibly overlooking a unique feature. Check that the wood has not already been divided into compartments which is often the case with forestry operations. Your survey will be much more meaningful to the landowner if your surveys match existing compartments. Always remember that you can return to the woodland and expand the surveys at a later date.

It is useful to **select one or two group members** who are happy to be in charge of overseeing and organising the field surveys. He / she should be responsible for keeping the landowner(s) informed of your work, for updating other group members (especially those focusing on archival research), and for keeping and compiling the survey data.

## Getting Permission

You will need to get permission to go on to private land and this is almost always best done face to face initially. Most landowners and tenants will assume that as a form of archaeology, you are determined to dig up their land; once they understand that you do not intend to, most will be reassured. By your third visit, you may find that you have to persuade *them* not to start digging! Talking to people who know the land well will often reward you with unexpected information, such as personal recollections or privately held documents. While face to face contact is very important to begin with, you should also write formally to the landowner, setting out your intentions, the proposed duration of your project, the names and contact details of those involved, and offering a copy of your eventual records or report. You should not deviate from this agreement without discussing matters further with the landowner, who may have other important commitments of which you are unaware, such as pheasant shoots or forestry operations. If possible, you should obtain written permission to gain access, in case your relationship turns sour at a later date. When dealing with larger landowners, such as the Forestry Commission, Woodland Trust, County Councils, National Trust or the Ministry of Defence, the majority of your contact may be by means of formal correspondence, but face to face contact can still be helpful.

## Health and Safety Advice

Before you start your surveys, **please read the points below carefully** as they will give you important information. You should also consult the BTCV guidance on Health and Safety at <http://handbooks.btcv.org.uk/handbooks/index/book/139>

1. If you are part of a voluntary / community group you **may** be insured; however, you need to check this prior to carrying out any survey. If your group **does** have insurance you need to fill out a **RISK ASSESSMENT** prior to your survey work and check what guidelines apply. A risk assessment is essential for insurance purposes and is sensible practice.
2. If your group **does not** have insurance or you do not belong to a woodland group please be aware that you are carrying out all survey work **AT YOUR OWN RISK**. Affiliation to organisations such as BTCV allows many groups to take out their own insurance and this is essential especially if you are undertaking fieldwork, practical management or are running events.
3. Carry out all survey work with other members from your group or with a friend, do not work alone. Make sure you carry a **mobile phone and emergency numbers** and leave details of your mobile phone number, your route/location and expected return time with a friend or family member. Mobile phones do not always work in remote areas, so make sure that someone knows where you are and leave a note on your car if you have driven to the site.
4. Carry a first aid kit, sufficient drink and food, and any personal medication that you require. It is recommended that at least one of your group has up-to-date first aid training. This is now a requirement for insurance purposes.
5. Ensure you have **permission** to carry out a survey (see previous section). Check who the wood belongs to and ask if you may conduct surveys. Always let the landowner(s) know a few days beforehand when you will be on site and whereabouts you will be carrying out the survey. They may be undertaking work or other activities in their woodland which will mean you have to alter your plans.
6. The **ground** in woodlands can be **uneven** and there are **trip hazards** such as fallen branches, ditches and exposed roots. It may also be cold and wet. Wear sturdy footwear and suitable clothing for the weather conditions.
7. Do not carry out surveys during **adverse weather conditions** such as storms, high winds and heavy snow fall.
8. You are likely to **meet other people** during your surveys. These may include forest workers, dog walkers and recreational visitors. Be aware of other people, obey any safety signs and instructions and do not enter any restricted access areas.

Conditions in woodlands and forests can change unexpectedly and rapidly. Please make sure that you are properly prepared for your visit. It is your responsibility to take care of your own safety and that you follow the up-to-date health and safety guidelines for your group.



## Maps and Basic Mapping Techniques

An appropriate map and the skills to locate and record features onto a base map, is key to undertaking survey work. There are a number of maps you can use for your survey and the main ones are described below.

### Types of Maps

**Ordnance Survey Landranger and Explorer maps** are excellent for carrying out an initial reconnaissance visit and giving a basis for your survey. The Ordnance Survey's basic scale maps, from which *Explorer*, *Landranger* and road maps were later derived, was usually at **1:2,500** scale (1mm on the map = 2.5m on the ground). In remote, sparsely populated areas, however, the Ordnance Survey's basic scale of survey was 1:10,000 (1mm on the map = 10m on the ground). This smaller scale may eventually prove a more convenient size for depicting your findings, depending on the size of the area you are dealing with and the amount of detail you want to show, but you should work with 1:2,500 scale maps if these are available for your study area.

It is costly to purchase up-to-date digital or paper copies of the 1:2,500 maps, but you will probably find that you can use photocopies of the most recently published sheet maps (usually surveyed in the 1970s). **These are available in major local libraries, and extracts up to A4 size in area can be photocopied without infringing the Ordnance Survey's copyright.** Although generally at least thirty years out of date, it is usually the case that the main features - most buildings, boundaries and topographic features - have remained unchanged.

It is worth noting that it is never acceptable to enlarge a map to use as a working document, for example enlarging a 1:10,000 scale map by 400% to create what appears to be a 1:2,500 map. The depictions are correct and accurate at the scale at which they were published, and enlarging a map on a photocopier magnifies tiny errors that were acceptable at the original scale. It is, however, acceptable to reduce a 1:2,500 map to 25% of its original size to produce a 1:10,000 scale version that will fit conveniently onto a page, because this does not magnify any survey errors.

In some areas, **Orienteering maps** of your woodland may have been produced with a high level of detail on the physical characteristics of the woodland including slope, watercourses and density of vegetation / tree cover. You should not use these as your base map but looking at them may give further details which you may be able to add to your OS map. For more details on orienteering maps look at British Orienteering's website [www.britishorienteering.org.uk](http://www.britishorienteering.org.uk).

For basic information about the **geology** of your woodland, begin by looking at the poster-size map showing the Solid Geology of the British Isles (1:1584000) which can be found in your local reference library. This will indicate the period in the geological history of the region to which your deposits belong. The distribution of the deposits is closely linked to the '**Natural Areas**' map produced by Natural England which can be viewed at [www.naturalengland.org](http://www.naturalengland.org).

For England and Wales, **soil** maps at the national scale (1:1,000,000 & 1:625,000) have been produced illustrating the very broad brush approach to the distribution of soil series. There are regional scale maps, with 6 sheets covering England and Wales (1:250,000) along with Regional Bulletins which gives more detail of the soils of a region. These can be found in local reference libraries or information can be obtained from the National Soils Research Institute's website [www.silsoe.cranfield.ac.uk/nsri/services/](http://www.silsoe.cranfield.ac.uk/nsri/services/).

## **How to Record Features onto a Background Map (Level 1 Survey)**

The following two sections on *How to record features* and *How to make and plot grid references* will introduce you to the techniques needed to map archaeological and other features.

One of the first decisions you will have to make, probably when you are carrying out the initial reconnaissance visit, is how to record what you encounter. Throughout the survey chapters, records are divided into three categories: **points**, **lines** and **polygons**. This distinction will make it straightforward for you to draw features onto your map and for the information to be transferred to computerised mapping databases (Geographical Information Systems) such as *Mapmaker*, *Mapinfo* and *Arcview* (see **E.1**).

**Point features** are those whose extents are too small to warrant defining their perimeters and which can be depicted as a single point on a map. Examples of point features are a single tree, boundary stone or small hollow or pit. In practice it will be up to you to decide when it is worth recording a feature's extent in more detail and when it will suffice to **indicate its centre-point with a single Grid Reference**. As a general rule, it is appropriate to record any feature smaller than 10m by 10m as a point feature. Larger features or areas, such as coppice compartments, should be recorded as polygons (see below).

**Linear features** are those which are long and narrow, so that their course can be defined by a line. Boundaries and tracks should always be recorded as linear features, even if only short lengths survive intermittently, in order to give a clear indication of their direction. A linear feature is recorded by using a **sequence of Grid References with a minimum of two points** if it is a straight line. For other lines more points are needed, with one at each major angle change, creating a 'dot-to-dot' effect. Curving lines are depicted as a series of short straight segments. Some linear features such as watercourses, major tracks, hedges and boundaries around the edge of your wood may already have been mapped by the Ordnance Survey and will be shown on modern maps. Straight linear features such as fences and tracks are very useful as 'fixed points' for pin-pointing newly discovered features (see overleaf).

**Polygon features** are used to depict large features or clusters of similar features that you can group together. They require a **sequence of Grid References to define the perimeter of the area they cover**. They are recorded in a similar way to linear features except that the last Grid Reference point is identical to the first. Many features which can be recorded as polygons, such as blocks of woodland, large ponds, quarries and so on, may already have been surveyed by the Ordnance Survey and will appear on modern maps.

## **How to Work Out and Plot Grid References**

The current National Grid system for mapping buildings, boundaries, roads and other features was established by the Ordnance Survey in the 1930s. It enabled features throughout Britain to be pinpointed using a grid defined by letters and numbers that is still in use today.

For each feature that you find, you will need to work out a Grid Reference. Knowing the location of any individual component of our environment, whether an ecological or a historic feature, is of fundamental importance. Without knowing where a certain earthwork or area of coppice wood is located, it cannot be managed and preserved.

Grid references can be derived in several ways.

- Directly from an Ordnance Survey map if the feature has already been mapped.
- From an Ordnance Survey map if you can plot new features onto it using other details shown on the existing map.
- Using a hand-held Global Positioning System (GPS).

### Working Out Grid References Directly from an Ordnance Survey Map

Where features have already been recorded on the Ordnance Survey map, it is quite straightforward to work out accurate **8-figure Grid References** for point features, and for angle changes in linear features and polygons.

Each grid square on a 1:2,500 scale map measures 4cms by 4cms, which equates to 100m by 100m on the ground (= 1 hectare). In the margin of the map, three figures accompany each of the horizontal and vertical grid lines that define the grid squares. The distance between the grid lines is divided into 4mm long segments, each equivalent to 10m on the ground.

To work out an **8-figure Grid Reference** (for example SE 4563 8214), with an implied accuracy of  $\pm 10\text{m}$ , use the following procedure.

1. Firstly, record the two letters which apply to the section of the map sheet you are using (these are a shorthand for defining the 100km square, and the grid numbers they represent are shown in superscript in the corners of the map margin) e.g. **SE** 4563 8214.
2. Record the three figures shown in the margin for the vertical grid line to the left of the point you want to work out e.g. SE **4563** 8214.
3. Count or measure the number of 4mm divisions (between 0 and 9) to the right of the vertical grid line to get as close as possible to the point you want to work out, and append this number to your three existing digits. These first four digits are your **Easting** e.g. SE **4563** 8214.
4. Record the three figures shown in the margin for the horizontal grid line below the point you want to work out e.g. SE 4563 **8214**.
5. Finally, count the number of 4mm divisions (between 0 and 9) above the horizontal grid line to get as close as possible to the point you want to work out, and append this number to your three existing digits. These second four digits are your **Northing** eg. SE 4563 **8214**.

You should normally aim for an 8-figure Grid Reference as it is difficult to reliably achieve accuracy of  $\pm 1\text{m}$  (a 10-figure Grid Reference) from the map alone. For this you would need a 'total station' theodolite specialist surveying equipment, and even if you use hand-held GPS (see below), you should normally only aim to provide an 8-figure Grid Reference wherever possible.

### Grid References for Historical Maps

1:2,500 is closely equivalent to the scale of 25 inches to the mile historically used by the Ordnance Survey for their basic scale maps. As a result, you can trace off features from an historic map and work out the Grid Reference in the same way as if they were shown on the 1:2,500 modern map. This exercise may also show where features such as boundaries have been moved or buildings demolished. In some cases, historic earthworks recorded in the nineteenth century are not shown on subsequent map editions. Almost unbelievably, the exact positions of many trees were accurately recorded on First Edition 25-inch scale Ordnance Survey maps. You will therefore be able to work out the Grid Reference of an individual tree which may still be thriving 150 years later, or may long since have rotted away. You may find that you can match other historic maps, such as eighteenth-century estate surveys, to the 1:2,500 maps you are using. It may help to use different coloured pens and line-types to distinguish different types and dates of features. Putting all this information onto the same sheet will help you make sense of any changes.

### Working out Grid References Using Hand-held GPS

Hand-held GPS (Global Positioning System) receivers are relatively easy and quick to use. They are now widely and cheaply available. Using a global network of satellites, GPS allows a grid references for a point to be recorded at the press of a button. Until recently, basic GPS systems were not sensitive enough to be used under tree canopies but now there are 'High Sensitivity'

receivers that can take readings in woodland. Even so, the accuracy that can be achieved is poorer than in open country. All GPS receivers vary in their level of accuracy given the position of the satellites overhead and cannot be relied upon totally for any individual reading. We therefore recommend that you always average several readings (five or more) and only rely on your grid reference to be accurate to  $\pm 10\text{m}$ . To do this record the long Grid Reference displayed, but round it up or down to an 8-figure reference for your final records. English Heritage's free publication *Where on earth are we?* (2006), also downloadable from the English Heritage website, gives detailed guidance on the use of GPS for recording the historic environment.

When using a GPS make sure that you know which Grid Reference or set of references belongs to which feature. Also make sure that you transcribe the Grid References carefully as experience shows that this is where most errors creep in.

If the predicted level of accuracy is  $\pm 15\text{m}$  or worse (in reality, potentially more than 30m out), it is probably worth discarding the GPS reading altogether and using a different survey technique to work out the Grid Reference. Low-tech survey techniques will usually be more time-consuming, but, contrary to popular opinion, may ultimately achieve a better level of accuracy, sometimes as good as  $\pm 4\text{m}$ .

## Working Out Grid References Using Taped Survey Techniques.

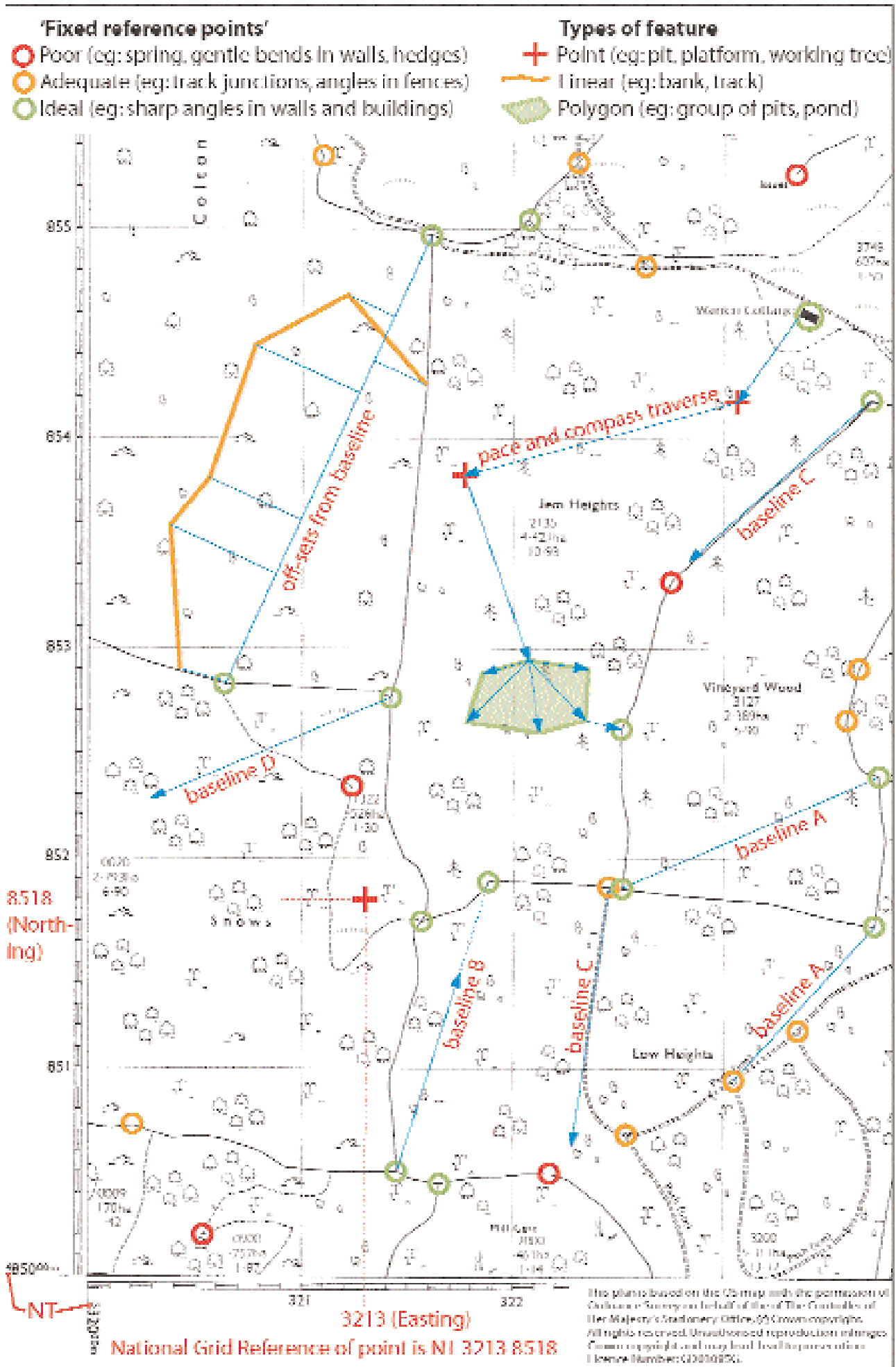
There are several low-tech survey techniques, which require only a few cheap items of equipment. Even if you have a GPS or other high-tech survey equipment, these more basic techniques may all prove useful in different circumstances. These can be used to pin-point individual point features, or to plot angle changes in linear features or polygons. Two of the more useful and straightforward techniques, '**baseline and off-set survey**' and '**tape (or pace) and compass survey**', are described below. For other techniques, and more details of the two techniques described here, please refer to English Heritage's free guidance publications *With alidade and tape* (2004) and *Understanding archaeological landscapes: a guide to good recording practice* (2007), which are both downloadable from the English Heritage website at [www.english-heritage.org.uk](http://www.english-heritage.org.uk).

### Baseline and Off-set Survey Technique

With this technique, you can establish straight 'baselines' in relation to features shown on your Ordnance Survey base map. You can then tape off from the baseline at right angles, or 'off-set', to survey new points, whether individual point features or angle changes in linear or polygon features. If you are surveying a boundary earthwork or other linear feature, it is easiest to establish a baseline that runs approximately parallel to the feature you want to survey. The same technique can be used to carry out larger-scale surveys (at 1:1,000, 1:500 or even 1:50) of individual features of interest, such as pitsteads or ruined buildings, if you decide to do so at a later stage in your research.

### Stage 1: Identifying Fixed Reference Points

Your copy of the Ordnance Survey 1:2,500 scale map will (hopefully) show various features within the wood or around its edges, which you can identify on the ground: buildings, tracks, or boundaries, for example. Corners of buildings, angle changes in field walls, and boundary stones are unlikely to have moved since the map was surveyed and are therefore very reliable **Fixed Reference Points**. Other mapped features, such as hedges, fences, tracks and especially watercourses may have wandered slightly over time and are therefore less reliable as reference points, but can be used if nothing better is available. Identifying as many Fixed Reference Points as possible within and around the woodland will provide you with a network of sight-lines which you can then use to create **baselines**.



Section D  
Field-based  
Surveys

## Stage 2: Creating a Baseline

A baseline is simply a straight line related to at least one Fixed Reference Point. There are several different ways of creating a baseline.

- A:** Link two Fixed Reference Points by extending a tape between them in a straight line. In this case, the distance you measure on the ground can be checked against the map.
- B:** If the two Fixed Reference Points are a long way apart but you can still see between them, you can start your baseline at one of the points and extend it directly towards the other, without actually reaching it. It is easiest to do this as a team, with one person remaining at the start-point to ensure the other person has extended the tape straight towards the other point.
- C:** Start your baseline at a Fixed Reference Point such as a field corner and extend your tape along the field boundary itself, so that it is effectively parallel to the one that represents the wall, fence, or hedge on the map.
- D:** Standing at a Fixed Reference Point, take a compass bearing and extend a tape along the line of the bearing; again, this will be easier with two people. This is, in effect, the first step of a 'tape and compass survey' (see below). To find out how to use a compass and take a bearing see for example [www.learnorienteeing.org](http://www.learnorienteeing.org).

## Stage 3: Off-set from the Baseline

Using a second tape measure, you can then measure at right angles away from your baseline, as many times as required, to establish new points. For each point, you should first record the distance along the baseline from the start-point and, second, the distance along the offset tape, measuring to the nearest 0.5m in both cases. It is important to make sure the right angle of your off-set tape is reasonably accurate. If the off-set distance is less than 5m, you should be able to judge the right angle by eye, but for longer distances (ideally no more than 30m), there are several ways of making sure you have a good right angle. The simplest technique is to fix the zero end of the off-set tape at the new point you want to record, extend it back to the baseline and swing the taut tape from side to side until the shortest distance is achieved: you then have a right angle.

## Stage 4: Plotting the New Point onto your Base Map

Start by drawing the baseline onto your copy of the Ordnance Survey 1:2,500 map, faintly, but using a sharp pencil (so that others can see how you carried out the survey). Scale rulers for technical drawing are available from good art shops, but if you only have a normal ruler, remember that at 1:2,500 scale, 1m on the ground = 0.4mm on the map. (This is why it is only worth recording taped distances to the nearest 0.5m: anything less than a fifth of millimetre is impossible to plot accurately). Use the ruler to measure the distance you recorded along the baseline from the start-point and, using a set-square to make sure you plot a perfect right angle, mark the distance you recorded along the off-set tape. You will probably find it easier to plot new points in the field one by one as they are surveyed, rather than writing down lots of measurements and trying to make sense of them back at home, and to do this it is again easiest to work as a team of two or three. By joining the dots with the appropriate symbol (see page 113), your plan will grow in front of your eyes.

## Tape (or Pace) and Compass Survey Technique

This technique may be the only way of penetrating into the heart of your woodland if there are no Fixed Reference Points in its interior (see page 93). Using a tape measure is obviously more accurate than pacing, especially on uneven ground or in undergrowth, but it is always slower and sometimes impossible. Tape and Compass Survey can be combined with Tape and Off-set, as described above.

**Stage 1: Identify your start point**

Your start-point should be the nearest and best Fixed Reference Point (see Stage 1, above) to the new points you want to record.

**Stage 2: Take a compass bearing**

Take a bearing in degrees towards the new point you want to record, and pace out the distance to the new point, keeping your pace length as close as possible to 1m. Write down the bearing and distance and use a 360-degree protractor and scale ruler to plot it onto your Ordnance Survey 1:2,500 background map, ideally straight away. Remember that Magnetic North and Map North (or Grid North) are not exactly the same: the angle of **Magnetic North** will be shown in the margin of the map sheet (so make a separate photocopy of this part of the sheet if you are planning to use a compass). Repeat this process, either from your original start-point, or starting again at the new point you have established. In this way, you will end up with a zig-zag line (called a 'traverse'), possibly with several side branches.

**Stage 3: Finish at a Fixed Reference Point**

If you repeat Stage 2 many times, your traverse may lead you a long way from where you started, perhaps across uneven ground and through dense vegetation. If so, whenever possible you should record a final compass bearing and distance to another Fixed Reference Point. This will allow you, when you eventually plot the angles and distances onto the background map (see Stage 4, of the Baseline and Offset Technique), to tell whether your survey has any major errors. The shorter the distances you traverse across between Fixed Reference Points, the more accurate your survey is likely to be.

**Establishing Grid References for the New Features**

Once you have plotted the new point onto your 1:2,500 background map, you can work out its 8-figure Grid Reference, using the method described above. You should do your best to ensure that your points are plotted as accurately as possible, but do not be too worried if they are not perfect at the scale you are working at (1:2,500). Any future surveyor will be able to spot your feature even if it is several metres out. Remember, for linear and polygon features you should have worked out several grid references at angle changes and to map your feature you will need to join these together.

**Accuracy and Grid References**

If you are not confident that you have achieved sufficient accuracy to be able to fix your new points as 8-figure Grid References, for example because you are working in the centre of a large wood with few reliable landmarks, you should give a 6-figure Grid Reference. This will indicate that you have achieved accuracy of  $\pm 100\text{m}$ . Again, there is no reason to be dissatisfied with this: you have made the all-important first step.

## Recording Individual Features (Level 2 Survey)

As well as recording the location of your feature on a 1:2,500 Ordnance Survey base map you should also measure its dimensions and produce a sketch for your records on the worksheets provided. This will then help to build up a picture of the feature which can be supplemented by photographs (see below) and be included in your survey report. It is easiest to work in a team of two or three people to measure your feature.

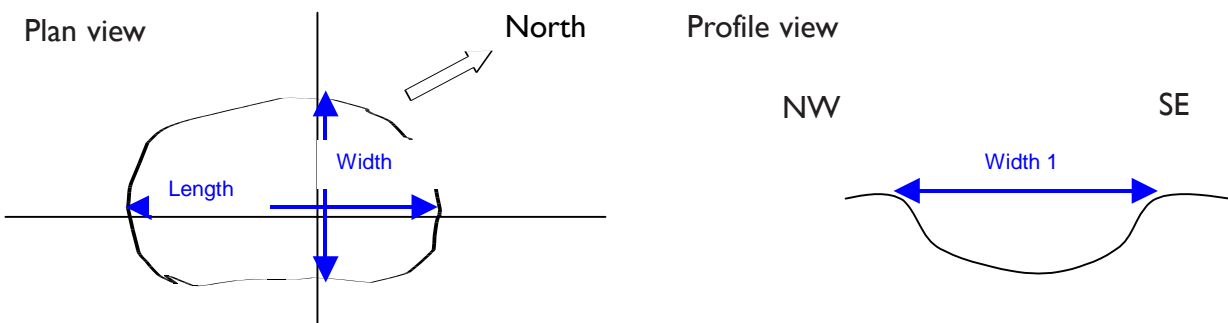
For features such as charcoal hearths, small building platforms and other small mounds and depressions try to measure their maximum length and width, starting and finishing at its outer limits (see diagram below). Note: very few apparently circular features turn out to be precisely circular, so it is worth taking two measurements even for these.

To measure the depth of a depression lay your ranging pole or a taut measuring tape horizontally across the feature, crossing the deepest point. Then use another measuring tape or pole to measure down from this line to the deepest point of the depression (see diagram below).

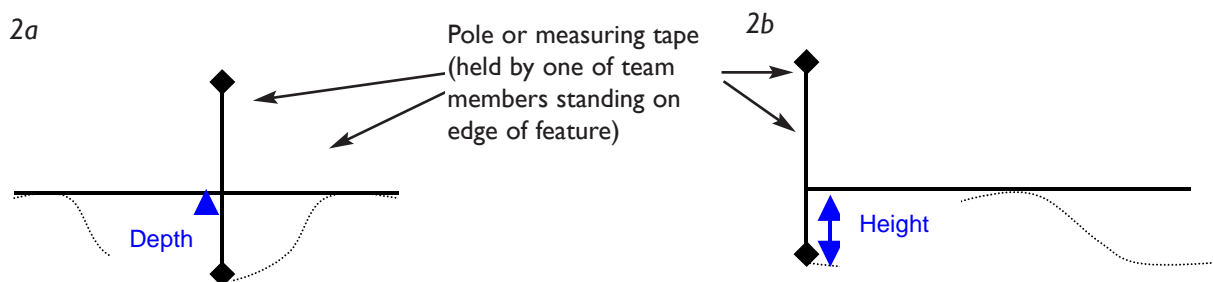
Only measure the depth of a feature if it is safe to do so. If you cannot measure the depth from the edge please be extremely cautious when stepping into any depression. Many, such as bell pits, can easily cave in. You should never enter depressions filled with water: simply estimate the depth instead.

To measure the height of a mound, hold the measuring tape horizontally across the highest tip of the mound and take the measurement from where you are standing (see diagram below).

Where linear features and polygons are large or very long it may be faster to estimate their measurements through pacing. By knowing the approximate length of your stride you can work out the length of your feature. Pacing may seem like a crude method but as long as you know the approximate length of your pacing stride it will suffice for an initial survey.



*Measuring the length and width of an earthwork*



*Figures 2a and 2b. Measuring the depth and height of an earthwork.*



## Basic Field Equipment

Items you will require to carry out field-based surveys are listed below. Some are optional and you will not need all of these for each survey.

- **Maps:** We recommend that you carry out all your field surveys at a **scale of 1:2,500** (1mm on your plan = 2.5m on the ground). This scale will correspond to the largest scale maps produced by the Ordnance Survey, allowing you to use these excellent maps as a basis for your own survey, as described above.
- **Notebook and pencil:** Waterproof notebooks can be bought in many outdoor shops and pencils are more effective in damp conditions than pens. Make sure you also take a pencil sharpener and eraser.
- **Ruler** for measuring distances on the map (preferably with mapping scales including 1:2,500). A set-square may also be useful for plotting points on a map.
- **Tape Measure:** at least one but preferably three: 30m or 50m.
- **Compass** and 360-degree protractor.
- **Camera:** digital cameras are useful, but not essential.
- **Sticks (Bamboo Canes) and Hazard Tape:** to mark features to return to.
- **Torch:** useful for examining hollow trees and building interiors.
- **Identification Guides:** for tree, wildlife and vegetation surveys.
- **Hand-held GPS:** not essential.
- **Mobile phones or Two-way Radios:** for communication if your group splits up, as well as for emergencies (but check if you have reception).
- **Small First Aid Kit.**

## Making a Photographic Record

It is important that you make a photographic record during your fieldwork. Where appropriate take several views to show different aspects of your feature or the landscape context. Ensure that you devise a reference system so that you can identify each photograph later. The 'Photographs' box on the survey forms should be used for this purpose, for example 'Frame 147: view from west.

Where appropriate, use a scale bar in your photograph, or more than one, if necessary. Place it as close as possible to the feature without obscuring it. If you use a vertical ranging pole, this should be perfectly vertical and placed in a way that will not obscure the feature.

## Selected Reading and References

ANON, (2004) *With alidade and tape* English Heritage free guidance publication.

ANON, (2007) *Understanding Archaeological Landscapes: a Guide to Good Recording Practice* English Heritage free guidance publication.

STOKES, A. Health and Safety Overview. BTCV. Last accessed 7th December 1997 at URL: <http://handbooks.btcv.org.uk/handbooks/index/book/139>.

## **Example of Local Project: Carrying out a Woodland Archaeology Audit**

### **North Wessex Downs Area of Outstanding Natural Beauty**

**Who we are.** The North Wessex Downs AONB (NWD) lies across central southern England. It comprises 1,730 square kilometres and is bounded by Reading, Swindon, Devizes, Andover and Basingstoke. In general terms 10% of the area is woodland. Most of the woodland is in the central area around Savernake and in the east around the Pang Valley where woodland density can reach 22%.

In 2005, a study was commissioned to inform a Woodland Strategy. This noted that, although the open country contained internationally important archaeological sites such as Avebury, Silbury Hill and Lambourn Seven Barrows, almost nothing was known about the archaeological content of the woods. To remedy this a Steering Group was set up comprising the relevant County Archaeological Officers, a Forestry Commission Research Officer, a professional surveyor and the North Wessex Downs Development Officer. It was decided to launch a project to recruit and train volunteer surveyors to carry out an audit of the woodland to establish the presence, density and character of the archaeology present in the woodland. The Forestry Commission agreed to fully fund the development of the project.

The project was launched in May 2006. Seventy people attended the launch including potential volunteers, interested individuals and woodland owners.

**What we do.** In the first year we recruited sixty potential surveyors and held training courses in November 2006 and January 2007. The courses comprise two consecutive Saturdays and are structured with half the day spent indoors on lectures and the other half in an adjacent wood. We realised at the concept stage that we could not hope to do full, closely controlled, surveys. There are simply too many woods. However, we wanted to do more than just a 'walk through'. We therefore trained surveyors to explore and map their wood using a network of compass and pacing traverses starting and finishing at points which can be identified on the OS 1:2500 map. Features found along the traverses are measured in from known points on the traverse. We have found this system to be repeatable and accurate when carefully carried out.

The local County Archaeologists are closely involved. They supply the mapping and any known data from the Historic Environment Record and they receive the final maps and reports and the project archive of field documents, field maps, photographic negatives and any other documentation. A copy of the final report is presented to the woodland owner to aid planning for woodland management and forestry operations and to help the planning of conservation activities.

To complement the training a detailed handbook was compiled to guide our surveyors on project protocols and to help them with practical aspects of the work. This is issued free of charge during the training courses. It is also published on our web site so that surveyors can download record forms and receive updates as the project progresses.

([www.northwessexdowns.org.uk](http://www.northwessexdowns.org.uk))

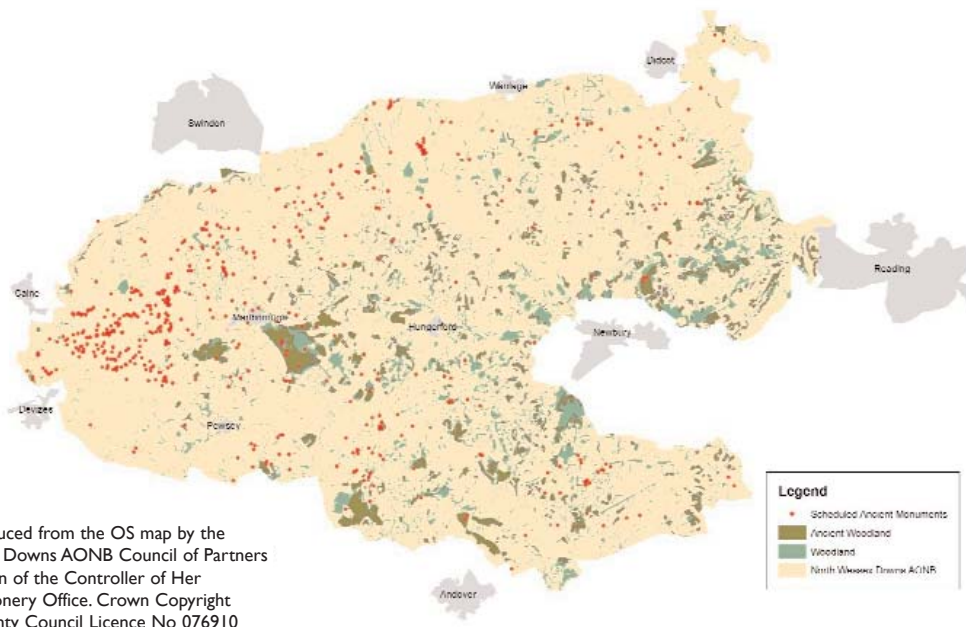
From the beginning the Steering Group was convinced that the flora of a wood provides excellent supporting evidence of its history. We held an Ecological Training Day on 28 April 2007, for our existing surveyors and for anyone specifically interested in botanical surveying who may not have been drawn into the project via the archaeological or surveying route. The day attracted 35 potential surveyors. We taught species recognition and a simple technique of species mapping. A botanist from one of our local Environmental

Records Centres taught the recognition and value of Ancient Woodland Indicator Species. The results of the ecological surveys will be shared with the local Environmental Records Centres.

**Progress so far.** Teams started work in January 2007 and are now working in six general locations, most of them on more than one wood. Landowners were generally receptive and we have only experienced one case of adamant refusal. The NWD has many influential supporters and the network is being used to effect a change of heart! The key to obtaining this degree of cooperation has been a documented procedure for gaining landowner consent. The procedure contains a Code of Conduct which we have given to the owner and a requirement for formal Risk Assessment and Safety Planning. Access constraints and timetables were established well in advance and teams were required to liaise closely with the woodland owner before and during the survey.

**Plans for the future.** We intend to hold a seminar in the summer to share experience and to recruit new surveyors followed by another training course in November if there is sufficient interest. We are also organising group visits to local Record Offices and to the National Monuments Record in Swindon. These visits will demonstrate the evidence available from primary written and photographic documents and the procedures for accessing them. We hope that some volunteers will continue to work on the project using these resources throughout the summer and autumn when ground cover precludes field work.

Our project has no defined end date and will evolve as our surveyors become more experienced. We intend to work closely with the Woodland Champions Project to share information and experience and to help ensure that the target of a national network for Woodland Archaeology is achieved.



## **D.2: Surveying Physical Characteristics**

**Frank Spode and Lindy Smith**

### **Aims of the Survey Guide**

To record physical characteristics about your woodland and generate a map which highlights topographical features such as streams, ponds, slopes and soils.

### **What the Guide can be used for**

- This should be the first survey you carry out within your wood after your original reconnaissance visit. It will give you the background information you need for any archaeological or ecological surveys you carry out subsequently. Initially concentrate on recording the topography of your site.
- The map that you produce from this survey using the 1:2,500 series maps will form the base-map for other surveys. It is therefore essential that you are as accurate as you can be with the location of any recorded features.
- You will not necessarily need to carry out this survey if you are only recording ancient and working trees although it can help to put your survey area into context.

### **Prior surveys**

No prior surveys necessary.

### **Background Information**

B.3 - Woodland History and Archaeology

B.5 - Woodland Ecology and Biodiversity

C.4 - Using Maps for Historical Research

D.1 - Introduction to Surveys and Surveying Techniques

## **Introduction**

Variations in woodland vegetation can be attributed to three factors.

1. Environmental conditions (e.g. climate/micro-climate, weather, proximity to urban areas)
2. Physical characteristics (e.g. geology, topography and soils)
3. Human intervention (e.g. additions or removal of woodland)

In this chapter the physical characteristics of a wood will be addressed. The following physical characteristics are of particular importance in a woodland setting are.

- Geology (rock types and attitude).
- Topography (landforms elevation and aspect).
- Soils (characteristics and pH).

As a first step, look in detail at the Ordnance Survey map you will be using to produce your base map. This will help answer some of the questions on the survey form and guide your fieldwork. You should concentrate on gathering basic information on the topography of your site in your initial survey. If time and resources permit, you can then do additional geology and soil investigations.

## Planning Your Field Visit

**Chapter D.1** gives details on general survey techniques including carrying out a preliminary walkover survey, maps, plotting features, taking grid references and gives a list of the basic field equipment that you will need. It also gives **Health & Safety information** and guidelines on obtaining **permission from the landowner** before any survey is carried out. Please read **D.1** before carrying out this survey.

Before undertaking this survey:

- Make sure that you have permission from the landowner and they know of your plans.
- Understand the Health and Safety implications for the site.
- Have a supply of survey sheets and base maps (1:2,500 scale).
- Have, in addition to the basic field equipment, a hand-lens and a soil auger or spade if you are carrying out the detailed soils survey.

## Filling out the Survey Worksheet

Please read this section whilst looking at your survey worksheet.

### Detailed Topography

Examine the various slopes present in your site in detail. Indicate the angle of the slope ie steep (over 40 degrees) or gentle (10 to 40 degrees) or flat.

Describe the form of a slope as to whether they are planar (straight), concave (u-shaped) or convex (dome-shaped).

Use your Ordnance Survey map to get elevation information at the top and bottom of slopes. Use a compass to determine their aspect. (The direction they are facing).

Aspect is important as it affects the micro-climate, e.g. south-facing slopes are much warmer than north-facing slopes which therefore influences the vegetation growing on them.

### Geology

Walk over the area to find any evidence of rock types present as outcrop. Look in the channels of small streams, (ie stream bed, channel sides); look for rock fragments in mole hills if present or any site where digging has taken place.

If there is no field evidence wait until you investigate the soils then you may dig up some fragments of rock to identify.

If you find any rock material then you need to verify that what you have found is '*in situ*' ie that it has not been brought into your site from somewhere else. If it is *in situ* then you can relate it to the information you have gleaned from the map. The rock types (Lithologies) will give you an indication of the possible '*parent materials*' from which your soils have formed. In general soft rocks like shales/mudstones form poor draining, heavy soils while hard rocks like granites and sandstones form free draining soils with low pH values (acidic). Limestones and some basic volcanic rocks produce soils which have higher pH values ( $>7$ ) neutral or alkaline). These features have a strong influence on which plants grow best on such soils and hence their distribution in the woodland.

Rock types will also help you to understand how they have reacted during the denudation history of your site. Harder rocks tend to form convex slopes while softer rocks form concave slopes.

If larger outcrops are present (craggs) then close examination of the exposed rocks will help you to fit your outcrop into the local picture and obtain a clear description of the lithologies involved. You can determine which way the beds are dipping and hence their control on the local landforms, the position of the stream / river channel, the aspect of any slopes present.

## Soils

It is not necessary to carry out this part of the survey prior to carrying out other surveys. It is included here as it forms part of the overall physical characteristics of your woodland and can be carried out later if wished. The variation in the distribution of the vegetation may give you a guide as to the amount of variation there is in the soils. You may want simply to seek information about soils from the top to the bottom of a long slope, along a transect. This type of investigation provides an illustration of the *soil catena*.

To investigate the soils present you will need to obtain permission from the owner of the land. Once obtained, you can use a spade to dig 'Soil pits' at selected locations. This will require you to dig a rectangular hole, making sure that one face (not in shadow) can be cleaned and photographed and then measured for the thickness of each horizon (change in soil type). Once measured a scale diagram can be drawn, at a later date, to represent that soil pit. Small samples of soil could be collected from each horizon to help with the descriptions in terms of colours, clayey or sandy, stoniness, and pH. Once all the information has been recorded the hole will have to be filled in again to make it safe.

If you are looking for less detail then a *soil auger* can be used whereby smaller samples are brought to the surface for examination, recording and testing for pH. (Use a garden test kit or take to a school or college to get them measured) This technique allows more holes to be drilled thereby covering a wider area. Once the soil has been examined and the information recorded then the hole can be filled in again.

All recorded data, sketches, notes can either be kept in a Field Notebook or you can use the Soil Survey Worksheets for each record.

### 1. General Information

Enter your name, the name of the wood and location details, the date of your survey and the name of the person / organisation which own(s) the woodland.

**Grid reference:** Use a 1:2,500 map to find out the centre grid reference number for your site. If your wood is irregular in shape you should collect several grid reference points along the boundary to create a polygon feature. Mark the position of the grid references that you have taken onto your map. See **D.1.** to find out how to create a grid reference to add to your map.

**Woodland size:** The next step is to note the approximate size of your wood. The landowner may have this information. If not, you can work out the size of your wood by looking at a 1:2,500 OS map. One square represents 100 hectares (1 km x 1 km), thus if your woodland occupies one quarter of the square it is approximately 25 hectares. Even though this method is very crude, it does give a very general idea about the size of your wood. Your initial reconnaissance visit should have helped you to identify the compartments that you will be working in (see **D.1.**).

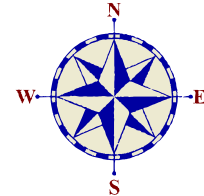
### 2. Site Location, Situation and the Surrounding Topography

**Landscape Topography:** Note the landscape setting in which your woodland is situated. For example, is it located on a hillside, in a valley or on a plateau? If your wood is found in a landscape setting not listed on the form, please note this and specify its location.

**Slope:** Note if your wood is found on generally flat or sloping ground - the different options listed on your worksheet describe the type of slope you may encounter. If your wood has two distinct areas within it (e.g. one part is on a steep slope and one on flat ground) tick both boxes and make a note of this on the back of the worksheet. The contour marks on your map can help you with this but it may be easiest to decide which box(es) best describe your wood in the field.

**Slope Angle** (optional): You can also note the angle of your slope(s) by making a clinometer. Instructions on how to make a clinometer can be found at [www.wikihow.com/make-a-clinometer](http://www.wikihow.com/make-a-clinometer).

**Aspect:** If your wood is located on a slope you can determine the aspect of your wood by looking at your map. OS maps are oriented northwards (thus 'up' is north). From this you can determine which way the slope faces. Use the contours marked on the map to determine which is the highest point in your wood. Where your wood is found on a hilltop you can tick several (or all) direction boxes! Make a note on the back of your worksheet to explain why you have done this.



**Topography within the wood:** Many of the topographical features you want to record are likely to already be depicted on your OS map (and particularly on orienteering maps) for example streams, ponds and rock outcrops. Highlight those features noted on the OS map and ensure they are correct by re-visiting them in the field. You can also highlight any archaeological features already shown on your OS map such as burial mounds.

At this stage, focus on obvious features related to the topography: Streams, ponds, waterlogged areas, rock outcrops and so forth. Most other earthworks will be of archaeological origin and you can record these onto your map through the other surveys when carrying out the archaeological assessment.

### 3. Notes

In this field you can describe any physical feature of interest in more detail.

### 4. Photographs

Taking landscape photographs of your wood (i.e. from the surrounding area) is very useful. This will help picture your wood much more easily when looking at the results at a later stage. Looking at aerial photographs is also a good way to do this (especially if your wood is on flat ground). You can view aerial photographs at [www.multimap.com](http://www.multimap.com) or [www.google-earth](http://www.google-earth).



*Frequently ancient woodlands occur on steep slopes and this will have an impact on the species composition and distribution.  
Ladyspring Wood, Sheffield. © Lindy Smith*

**SECTION D, CHAPTER 2: PHYSICAL CHARACTERISTICS****1. GENERAL INFORMATION**

Woodland name		Surveyor's name(s)	
Woodland location		Date of survey	

**2. WOODLAND LOCATION AND SITUATION**

Grid reference (Centre of polygon)			Approx. size of woodland (in ha)			
<b>Topography of the landscape.</b> Where is your wood situated?	Plain	<input type="checkbox"/>	Hill	<input type="checkbox"/>		
	Lowland	<input type="checkbox"/>	Crag/ cliff	<input type="checkbox"/>		
	Plateau	<input type="checkbox"/>	Mountain	<input type="checkbox"/>		
	Broad valley	<input type="checkbox"/>	Narrow valley	<input type="checkbox"/>		
	Gorge	<input type="checkbox"/>	Coastal	<input type="checkbox"/>		
	Other (please specify)					
<b>Slope.</b> Please note if your wood is located on a slope. If the slope is generally uniform throughout your wood.	Vertical (cliff)	<input type="checkbox"/>	Undulating	<input type="checkbox"/>		
	Steep	<input type="checkbox"/>	Gently sloping	<input type="checkbox"/>		
	Flat	<input type="checkbox"/>				
	Other (please specify)					
Please note the aspect of your wood if it is situated on a slope.	NORTH	<input type="checkbox"/>	NORTH WEST	<input type="checkbox"/>	Angle: _____°	
	EAST	<input type="checkbox"/>	NORTH EAST	<input type="checkbox"/>		
	SOUTH	<input type="checkbox"/>	SOUTH WEST	<input type="checkbox"/>		
	WEST	<input type="checkbox"/>	SOUTH EAST	<input type="checkbox"/>		
<b>Topography within your wood.</b> Please tick any features found in your wood and mark these on your map (if not already recorded).	Stream	<input type="checkbox"/>	Lake	<input type="checkbox"/>		
	Canal	<input type="checkbox"/>	Pond	<input type="checkbox"/>		
	Ditch	<input type="checkbox"/>	River	<input type="checkbox"/>		
	Rock outcrops	<input type="checkbox"/>	Boulders	<input type="checkbox"/>		
	Other (please specify)					



**SECTION D, CHAPTER 2: PHYSICAL CHARACTERISTICS**

**3. NOTES**

Section D  
Field-based  
Surveys

**4. PHOTOGRAPHS**

Photo frames linked to this survey form and notes on content.	Photo frame	Content

# Soil Description Sheet

Date:	Grid Ref:	Weather:	Sample No.
<b>Topography</b> (Elevation)	Aspect:	Slope form:	Slope angle:
<b>Evidence of</b>	soil erosion	Or deposition	
<b>Geology</b>	Outcrops	Lithologies	Structures
<b>Soil Pit:</b> Consistence	Notes	<b>Sketch + measurements</b>	<b>Stones</b>
Gritty			Sizes
Plastic			Shape
Sticky			Abundance
			Lithologies
<b>Organic</b>	<b>Material</b>	(nature & abundance)	
<b>Surface</b> Canopy	<b>Vegetation</b> Shrub layer	Herb layer	Ground layer

**Comments:**

## D.3.1: Finding and Mapping Archaeological Features - Carrying out an Initial Survey (Level 1)

Alastair Oswald, Ian D. Rotherham, Paul A. Ardron and Lindy Smith

### Aims of the Survey Guide

To find and map possible archaeological and other interesting features in your woodland or wooded landscape.

### What the Guide can be used for

- To complete an initial archaeological survey by mapping important features as points, lines and polygons onto your OS 1:2,500 base map. The aim by the end of the survey is to create a map of archaeological features which can then be used to highlight areas in need of further research, investigation or to inform management.
- As a pre-requisite to carrying out detailed archaeological surveys. After producing a map locating features such as pits, platforms, ancient trees and boundaries you can then return to any feature and record them in more detail using the specific survey guides in this manual.

### Prior surveys

D1: Initial Reconnaissance Visit

D2: Physical Characteristics

### Background Information

B.2: Woodland Crafts and Industries

B.3: Woodland History and Archaeology

C.2: Where to Look for Information

C.4: Using Maps for Historical Research

D.1: Introduction to Surveys and Survey Techniques

D.2: Surveying Physical Characteristics of Woodlands

Appendix 4: Interpreting Archaeological Features

## Introduction

Before you carry out this survey, you should have undertaken an initial reconnaissance visit and completed the physical characteristics survey sheet. By this stage you should already have identified the area that you will be surveying, if not your entire wood, and recorded this area on a base map (see **D.1**). We also recommend that you carry out some basic documentary research such as looking at old maps, if you have not already done so. **Section C** gives information on how to carry out some background research to complement your fieldwork.

Having a detailed map with features marked clearly and accurately, will be one of the most important documents produced as it will highlight potential areas of archaeological and ecological importance.

## Planning Your Field Visit

**Chapter D.1** gives details on general survey techniques including carrying out an initial reconnaissance survey, maps, plotting features, taking grid references and gives a list of the basic field equipment that you will need. It also gives **Health & Safety information** and guidelines on obtaining **permission from the landowner** before any survey is carried out. Please read **D.1** before carrying out this survey.

Before undertaking this survey:

- Make sure that you have permission from the landowner and they know of your plans.
- Understand the Health and Safety implications for the site.
- Have a supply of your annotated base maps (Ordnance Survey 1:2,500 scale).
- Have, in addition to the basic field equipment, a photocopy of the standard archaeology symbol sheet (see p118).

## Undertaking the Survey

### *Finding features*

The first stage in the survey is to start by re-examining any features of interest **already marked on the 1:2,500 map** or shown on historic maps. Linear features in particular are quite likely to be depicted, either partly or wholly, on modern 1:2,500 or historic 25-inch Ordnance Survey maps. Park pales were one of the categories of historic earthwork recorded accurately by the Ordnance Survey's Archaeology Division wherever they came across them. This may well reduce the effort needed to survey a boundary, but you should always check to see if there is more that could be added, because the Ordnance Survey's depiction was necessarily schematic. Make sure that you note down the grid reference(s) for each feature (see **DI**).

To **find new features** it is best to carry out a systematic walk-over survey of your wood or survey area. You can do this by covering the ground evenly and entirely (total cover) by 'criss-crossing' the site. If you do not have the time to carry out a 'total cover' walk-over survey, then you can use transects crossing the wood instead. A transect is a more or less straight line between two points. The aim of the transect survey is to pick lines through your wood (or survey area) that will give you a good representation of what features are found within it. Distances between transects will depend on the visibility within your woodland and the time you have available. Ideally they should be evenly spaced and as a general rule the more transects you are able to do the better.

It is best to visit the wood in winter / early spring when the vegetation is at its lowest and thus does not mask any humps and bumps. Archaeological features are often highlighted by particular types of vegetation growing on or within them. Moss and lichen for example often colonise mounds, ditches, walls and so forth making them easier to recognise. It also pays to revisit the wood several times in different light and weather conditions, for example snow will highlight features previously overlooked. You should also record trees that are of interest (See **D.3.3** - Ancient and Working Trees). Do not worry if you note features which turn out to be very recent, some of these will be part of the wood's archaeology in the future and it may be worth recording them especially if they could be a management concern.

### *Recognising features*

#### **Linear Features**

The first place to look for **boundary features** when you are surveying an area of woodland is the edge of the wood. Look for a boundary bank (known as a '**wood bank**'), or perhaps a wall or ditch, or a combination of both. A bank may be topped by a line of trees and/or

accompanied by a ditch, the remains of an old stone wall or a hedge. Within woodlands, boundaries were also used to divide different management areas or compartments. Trackways and modern drainage ditches may follow and perhaps mask ancient boundaries. In a more open setting, such as parkland, old boundaries are often marked today by a line of ancient standard or pollarded trees. A row of ancient trees may often be all that now survives of an ancient, or 'relict', hedgerow.

In the nineteenth century, one of the Ordnance Survey's major responsibilities was to identify and accurately record land boundaries so that long-running legal disputes could finally be settled. They therefore carefully surveyed any intermittent lines of trees they came across, recognising them as ancient boundaries which might one day be the cause of a dispute. If trees have died or been removed since the map was made, the depictions may be the only reliable evidence that a boundary once existed.

Boundaries were actively maintained and you will sometimes be able to observe evidence that this has taken place. For example, the size of a bank may abruptly increase, or a ditch may show signs of having been re-cut relatively recently, or an ancient boundary bank may support a hedge that seems to have been cut and laid within the last few decades. Maintenance is always carried out for a good reason, so any evidence you can detect may tell you something about changing patterns of exploitation. Stone might be scavenged from a wall for other purposes, and worked stone or materials such as slag from industrial uses may be re-used to build walls. All these provide fascinating insights into landscape use and history.

Other linear features include drainage channels, ditches, tracks, hollow-ways and rides. These sometimes have ditches or mounds running along them and were often associated with woodland industries and routeways. In many cases linear features that were once substantial may not be easily recognised today.

More details on linear features are given in **Appendix F.4**.

### Point Features

There is a vast variety of point features present in woodlands and some of the more common ones are listed below. Any mounds, depressions, platforms, stone piles or significant trees (large girth, coppice or pollard) should be recorded as point features. These are also described in more detail in **Appendix F.4** and you should look at this appendix to help you identify your features.

- **Significant trees** are those that have a large girth for their species, have an unusual shape (e.g. coppice, pollard) or are in any other way interesting or noteworthy.
- In some cases it can be difficult to distinguish between features created through **natural processes** and man-made ones. Natural features include tree throw pits (where the root plate of a fallen tree leaves a shallow pit in the



*A linear feature of unknown origin, Wharncliffe Woods, Stocksbridge, South Yorkshire. © Lindy Smith.*



*Second World War Archaeology, Staverton Park, Suffolk. © Lindy Smith.*

ground even after the tree has rotted away), water features, animal burrows, tree stumps, glacial deposits and landslips. If you are uncertain whether a feature is natural or artificial, record it.

- Features **created by woodland industries** include charcoal hearths, Q-pits (Whitecoal kilns), saw pits, potash kilns, processing and storage platforms. To find out more about the manufacture of charcoal, whitecoal, and potash please see **B.4**.
- Features **related to woodland industries** include those which are not directly part of an industrial process but are part of the infrastructure which enabled the industry to take place. These include settlement sites such as huts, ponds, evidence of turf cutting and so forth.
- **Designed woodland landscapes** often include point features such as individual trees (often exotic species), shady grottos, monuments and ruins (built as eye-catchers), ice houses, fish ponds and pet cemeteries.
- You are likely to encounter features that are **not directly related to woodland industries** or management and apparently just happen to be within your wood. These include prehistoric and Roman remains, late medieval and post-medieval industrial remains (for example limekilns, mineral coal mines and bell pits), military remains, stone getting pits and quarries, ponds, dams and channels (leats, races and goits), buildings and other structures.

### Polygon features

These features are large in extent and thus recording them as just one grid reference is insufficient. Features which you may want to record as polygons in woodland include quarries, large ponds and management compartments and clusters of similar point features where surveying each individual feature would be too time-consuming. All except the last of these may have been mapped by the Ordnance Survey, so you can just check and record these quite easily.



*A charcoal hearth highlighted by Honeysuckle, Ecclesall Woods, Sheffield. © Paul A. Ardron*

### Other features

Other features that you may come across and need to record as linear, points or polygons include:

- Agricultural land use - Ridge and furrow field systems; where the ground looks 'wavy' this may indicate ridge & furrow. This indicates that the land was previously used for agriculture thus was not wooded.
- Old settlement sites - These are generally larger platform-like areas and often pieces of pottery or other artefacts can be found. Old settlement sites are often hard to recognise.

**CAUTION** should be exercised when surveying features such as old buildings, quarries, ponds, mine shafts and tunnels. **DO NOT ENTER** but only record their presence. Avoid standing in depressions as they may be old mine shafts or other deep holes covered up by leaves and other debris.

### Mapping features

Try to record as much as you can but do not worry if you think you have not recorded everything. Remember, you can always re-visit your wood and add to your findings. It is useful at this stage to highlight features of particular interest and those you think may be significant. You can use canes or preferably sticks and hazard tape to mark the location and / or the extent of

the feature during your survey. This will allow you to relocate the feature later to carry out more detailed measurements. If necessary you can leave these in place for several days but remember to remove them when you have finished your work.

A number of standard archaeological symbols you can use to mark different features on your map (adapted from Rackham, 1980) is given in the table overleaf. If you find features that do not have a standard symbol listed here please devise your own symbols and add them to your map key. Using different coloured pencils may also help you differentiate between features. It is advisable to take at least one photograph per feature (more is better) and use a photo scale where appropriate (see **D.I**). Also take photographs that might help you remember the location of the different features you have found.

If you need to write down details that will allow you to find out a location later, record these in your notebook (for example, '12m SSW of the footpath leading from the Stannington Road gate, from a point 240m along the path where it kinks to cross a drainage ditch'). Recording this information clearly may help others to sort out problems at a later date.

### Linear features

Walk along each linear feature you find and mark it on your map as accurately as possible recording grid references at major angle changes.

You may find it easiest to work out the length of a linear feature by scaling it off the map, especially if it has already been mapped by the Ordnance Survey. Clearly, some boundaries may extend well beyond your study area. It is perfectly acceptable to decide that you are not going to follow a boundary indefinitely, but you may well find that you gain a much better understanding by examining at least some of its course beyond your study area.

One of the most useful aspects of linear features is that they often help to weave together isolated point features into a relative chronological sequence and you should pay close attention to this aspect of boundaries. For example, a boundary bank with an oak approximately 400 years old standing on top of it may run across and block a trackway that gives access to a quarry. We can infer that the trackway is likely to be contemporary with the quarry. Though we cannot infer by how much the trackway is earlier than the boundary bank, we know that the trackway was certainly disused by the time the oak was planted 400 years ago, so the quarry must be at least 400 years old. By using such evidence and any known dates, we can begin to assemble a tentative time-line for the site.

In some cases, it may not be easy to determine where a linear feature starts and ends. Boundaries, for example, may have gaps or cross or join other boundaries, or coincide with streams or natural outcrops of rock for some distance. As a general rule, if the course of a boundary follows a smooth line (even if this line has gaps), or clearly encloses a single, separate block of land, then this is one boundary. Similarly, if a track splits into several branches but all the branches continue to head approximately in the same direction, then this can be treated as a single trackway. It does not really matter if you record the same feature twice, because you can always cross-reference or edit your records later with the benefit of hindsight.

### Point and Polygon features

**Point features** are the easiest to record as they only require you to record one grid reference, as close to their central point as possible. Features up to ten metres in extent can generally be surveyed as point features. Remember trees are also point features.

**Polygon features** differ from linear and point features as they often incorporate boundaries or point features within them. A polygon can, for example, be defined by a boundary. This may especially be the case where you are recording management compartments such as an area of lapsed coppice in woodland. Similarly you may decide to record several point features in close proximity to each other as a polygon.



*Charcoal Hearth with stone retaining wall.*  
© Paul A. Ardron.



*Bark Hut, Roudsea NNR, Cumbria.*  
© Ian D. Rotherham



**Standard symbols to use during sketch -plotting for initial archaeological assessment (includes symbols after Rackham 1980)**

**1. Linear features**

<i>SYMBOL</i>		<i>PROFILE</i>
	Ditch with broad high bank	
	Ditch with broad low bank	
	Ditch with narrow acute bank	
	Ditch with narrow low bank	
	Bank without ditch	
	Ditch without bank	
	Ditch with double bank	
	Ditched track	
	Track (no ditch)	n/a
Path		
Stream or other water course (not drainage ditch)		
Parish boundary		
Boundary stones		*
Fence		
Wall		*
Boundary trees		*

**2. Point features**

Depression/pit/quarry		
Significant tree		*
Stones		*
Mound		
Platform		*
Pond		

**3. Other**

Built structure		
Profile		Symbol

Those marked with a \* indicate symbols devised by SYBRG.

## **D.3.2: Detailed Recording of Individual Archaeological Features (Level 2 Survey)**

**Alastair Oswald, Lindy Smith, Ian D. Rotherham and Christine Handley**

### **Aims of the Survey Guide**

To record details of linear, point and polygon features in and around your woodland or wooded landscape.

### **What the Guide can be used for**

- Once you have mapped your features and recorded their grid reference(s) you can use the survey sheets provided in this chapter to collect more detailed information and measurements on each point, linear and polygon feature. Significant trees are covered in a separate chapter (D3.3) however you may complete these surveys at the same time as this one.
- You can, if you prefer, use this survey guide in conjunction with D3.1. Thus you can record features in more detail as you go along and map them. As the detailed recording takes more time we recommend that you map all the features first and then return to them to take measurements. This is also a good way to check you can re-locate them and have marked them correctly on your map.
- It may be best to concentrate on those features which looked of particular interest during your mapping exercise first. Collecting information on each feature is desirable, however if there are too many for you to cover try to prioritise features.

### **Prior Surveys**

D1: Initial Reconnaissance Visit

D2: Physical Characteristics

D3.1: Finding and Mapping Archaeological Features

### **Background Information**

B.1: Introduction to Woods and Wooded Landscapes

B.2: Woodland Crafts and Industries

D.1: Introduction to Surveys and Survey Techniques

D.3.1: Finding and Mapping Archaeological Features

Appendix F.4: Interpreting Archaeological Features

## Introduction

This guide is designed to enable you to gain more information about the features you have initially found by taking more detailed measurements and descriptions. It also asks you to start interpreting your finds and their possible origin thus piecing together the bigger picture of your woodland's history. Detailed descriptions of linear, point and boundary features as well as their origins are covered in **Appendix F.4**. Please read in conjunction with this survey guide.

## Planning Your Field Visit

**Chapter D.I** gives details on general survey techniques including carrying out a preliminary walkover survey, maps, plotting features, taking grid references and gives a list of the basic field equipment that you will need. It also gives **Health & Safety information** and guidelines on obtaining **permission from the landowner** before any survey is carried out. Please read **D.I** before carrying out this survey.

Before undertaking this survey:

- Make sure that you have permission from the landowner and they know of your plans.
- Understand the Health and Safety implications for the site.
- Have a supply of the survey sheets and your annotated base maps (Ordnance Survey 1:2,500 scale).
- Have with you the basic field equipment plus a protractor / set square and compass.

## How to Use the Survey Guide

Usually, you should use a separate recording form for each feature, but you will need to apply this rule intelligently. For example, it might be easier to identify and survey the main artery of a network of drainage channels, rather than spend too long recording each channel individually. However, you might treat two banks that run alongside each other as two separate linear features if you suspect them to be of different dates or functions. Similarly, you should treat two point features where one stands precisely on top of another, for example where a medieval boundary marker stands on top of a prehistoric burial mound, as two separate entities. (Yet this does not mean that you should neglect to ask yourself why one stands on top of the other!)

If you find point features, trees or a boundary stone, for example, on the line of a boundary, or a bridge on the line of a track, then you should record these individually as well as recording them as part of the boundary feature.

Where there are numerous similar point features concentrated within a few metres of each other, such as small quarry pits where each pit is less than three metres in diameter, it may be appropriate to treat the cluster / group / scatter as a survey polygon. Therefore define an area that includes them all, rather than recording each individual pit.

In all your recording, you should aim to produce clear, unambiguous text, measurements and drawings which will be easy for another person to understand.

## BASIC INFORMATION

### Survey location, Name and Date

Record the name of the wood and county where you are working, your name and the date of the survey. Circle the type of feature you are surveying that is a point, linear or polygon feature.

### **Feature Number and National Grid Reference**

Each feature within your wood should have a unique number, and you should have given such a number to each feature during your mapping exercise (**D3.I**). Note this number on your survey sheet. Record the grid reference(s) for your feature and the method which you used to determine it. Remember linear and polygon features have more than one grid reference.

## **CONTEXT INFORMATION**

Look around you and describe, in a few phrases, the context of your feature.

### **Woodland Character**

What is the general character of the area - are you in dense woodland or open parkland? What are the main species of trees and other plants in the immediate vicinity?

### **Topography / Geology**

What is the nature of the natural topography - is your feature situated on a slope or on even ground? Is the ground boggy, rocky, sandy, or distinctive in any other way?

### **Relationships**

Record whether there are other features that come into contact with your feature by listing their numbers; it may help to draw a separate sketch plan of the whole area on the reverse of the recording form, labelling each feature with its unique number. If you have seen similar features further afield within your study area, list their numbers. Your text should highlight any chronological relationships which may give clues as to the date of your feature or other features. For example 'This sunken trackway cuts through and therefore postdates the bank of a woodland boundary (LINEAR 3), but has a large chestnut coppice stool (F28) growing at its base.'

## **DESCRIPTION AND INTERPRETATION**

If you think you understand what you are looking at, note in the 'Interpretation' box that it is a 'Trackway', or 'Medieval boundary of Nut Wood', for example. In the next box, indicate whether your feature is an earthwork, a wall, a charcoal hearth, a drainage channel or a quarry, standing building, or a ruin, a bridge, a boundary marker or other. You can ring several options if necessary, but usually you should select the single most obvious component of the feature.

Once you have thoroughly examined and thought about the feature, you should write a succinct, clear description, recording key dimensions. In doing so, put yourself in the position of a researcher attempting to use your record a century from now, and make sure that you have produced a description that is as clear and specific as you can make it. You should be careful to distinguish between the evidence and your interpretation, and try to concentrate on giving a factual record rather than speculation. You should also sketch a profile across your feature or more than one if its profile varies greatly along its extent. A sketch plan will help to show where these profiles were taken. You should record the orientation of all the cross sections and annotate your sketches with maximum dimensions and any other information you think useful.

## **KEY DIMENSIONS**

The information in these boxes may duplicate the notes on your sketches, but may allow you to get at the key information more easily. See **D.I** on how to measure the depth, height and width of features. You will not be able to measure all dimensions for each feature so ignore those which are not applicable (e.g. depth for a mound).

## LINKED PHOTOGRAPHS

Note which photographs belong to the feature you are recording and note what each photograph is showing.

## RESEARCH PROGRESS

Once the survey of the physical remains in your wood is complete, you may, depending on how your team is working, intend to pass the recording form to someone else to carry out further research indoors. Alternatively, you may be doing this work yourself. In either event, this section of the form is intended to allow you to keep a record of how your research is progressing.



*Boundary marker stone in Birklands Forest,  
Nottinghamshire.  
© Stuart Reddish*

## SECTION D: ARCHAEOLOGICAL SURVEYS

### CHAPTER 3.2: POINT, LINEAR, POLYGON FEATURES

<b>Name of wood &amp; County</b>		<b>Surveyor's name &amp; date</b>	
<b>Grid Reference Survey technique</b> (e.g. GPS)		<b>Feature number</b>	
<b>Grid Reference(s)</b> (One for Point, one for each major angle change for Linear and Polygon features)			
<b>I. CONTEXT INFORMATION FOR ENVIRONS OF FEATURE</b>			
Woodland character close to feature (tick as many boxes as apply & add extra detail if needed)	Woodland – general		Native species (specify if possible)
	Coppiced woodland		Exotic tree species (specify if possible)
	Parkland (open or wooded?)		Working trees nearby
	Cleared woodland		Other habitat (please specify)
Topography & geology close to feature (tick as many boxes as apply & add extra detail if needed)	Level ground (more or less)		Stream nearby
	Sloping ground (orientation?)		Geological evidence (please specify)
	Well drained / boggy ground		Other information
Relationships (sketch on reverse of sheet if necessary)	Nearby features (give numbers or leave blank)		Similar features within study area (give numbers or leave blank)
Chronological evidence observed			
<b>2. DESCRIPTION &amp; INTERPRETATION OF FEATURE</b>			
Interpretation e.g. Charcoal hearth, wood bank, quarry	<b>Please circle as appropriate:</b> Small earthwork (point feature), Standing building / Ruined building/ Other structure, Boundary marker, Tree stump. Linear earthwork, boundary (ditch / hedge / wall / line of trees), trackway, drainage channel. Polygon feature (quarry, pond, management compartment). Other (specify below)		
Description of feature and inferences:			

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## SECTION D: ARCHAEOLOGICAL SURVEYS

### CHAPTER 3.2: POINT, LINEAR, POLYGON FEATURES

Sketch plan of feature (indicate North approximately and indicate maximum widths and lengths)

Sketch profile of feature (indicate orientation of profile line and indicate maximum heights and depths)

#### 3. KEY DIMENSIONS OF FEATURE

If any measurement is uncertain, please indicate with a '?' and state why.	Maximum length		Maximum depth	
	Maximum width		Maximum height	

#### 4. LINKED PHOTOGRAPHS

Photo frames linked to this feature, and notes on content	Photo frame	Content

#### 5. RESEARCH PROGRESS (please describe)

PRODUCED AS PART OF THE WOODLAND HERITAGE CHAMPIONS PROJECT. THIS PAGE CAN BE PHOTOCOPIED FOR YOUR FIELD SURVEY WORK BUT IT SHOULD NOT BE REPRODUCED FOR ANY OTHER PURPOSE.

## Example of a Local Project: Exploring Point Features in South Lakeland

### The Cumbrian Group

Volunteers from the Wood Education Programme Trust, the Friends of the Lake District and the Woodland Trust took part in the Woodland Heritage Champions Project and tested out survey guides and worksheets on point features.

### What we did

The Cumbrian group are a diverse bunch with a wide range of woodland-related knowledge and experiences. The group made a special study of point features in woods in South Lakeland. Many of these are semi-natural ancient woods, which have been worked for centuries to provide resources for a variety of local industries such as:

- Charcoal for iron smelting and gunpowder production.
- Potash for soap and lye.
- Oak bark for tanning.
- Timber and wood for bobbins, tool handles, swill baskets, besoms, hurdles, clogs *etc.*

Some of the group are still involved in these crafts.



*Cumbria volunteers standing in an old stone structure, Roudsea Wood, Cumbria.  
© Lindy Smith*

### How we worked

Initially, we used the project guides to look for and record finds. The materials helped us to become aware of the variety of features within the woods and between us we discovered - pitsteads, potash pits, woodworkers' huts, other ruined buildings, quarries, water tanks, a viaduct, a bridge, enclosures and walls.

Our interest drew us to seek further insights into what we were seeing. Between us we found we had made use of:

- Local historians and other experts.
- The national park archaeologists who provided local maps and advice.
- Local people with knowledge of the woods/area - farmers, wood workers.
- The internet ( for example, the Old Maps website, the County Records, the Ancient Tree Hunt and Google).
- Estate agents' sale details.
- Orienteering maps.



### What we learned

- An exercise such as this improves our awareness of the fascinating variety of features that may be found in a wood.
- Once we had developed an 'eye' for a feature, other examples became easier to spot. For example, the main characteristic of a woodworker's hut is the high heap of stones that was once the chimney and pitsteads on slopes often have curved retaining walls.
- Some of the features (such as huts, pitsteads and potash pits) often cluster in close proximity.
- There also seems to be a relationship between these features and other aspects of the wood such as tracks, entrances, walls, boundaries, streams.
- These associations can extend beyond the wood. For example, a track leading to the wood edge could be seen to continue into fields beyond or towards a settlement.
- The presence of the features caused us to look again at the wood itself - the tree types and forms, where they were growing, plant associations, evidence of felling and so forth.
- Winter is the best time to look. Without undergrowth, structures are more obvious.
- Interpreting the evidence can be challenging. Some features are obvious but the help of professionals is needed to interpret more obscure finds.
- In some cases, we felt a little disappointed about failure to find any significant records or documents. Maybe it's important to set out without expectations raised too high!

### Outcomes

Many Lakeland woods have not been surveyed for their archaeology or ecology. The recording process made us pay closer attention to the details of the features and we all agreed on the value of keeping such records for informing others and monitoring any changes which may occur over time. Our records have been passed onto the Lake District National Park Authority where they are stored on a database. Surveying will help to gain insight into the history of a woodland site and can help to protect earthworks and other features (for example, ancient coppice trees) during management.

We are thinking of setting up a more permanent group to survey for archaeological features in woods in the Lake District.



Woodworker's Hut at Roudsea NNR. © Lindy Smith

## **D.3.3: How to Identify and Survey Ancient and Working Trees**

**Ian D. Rotherham, Paul A. Ardron, Lindy Smith and Christine Handley**

### **Aim of the Survey Guide**

To record the details of notable veteran or working trees in and around your woodland or wooded landscape.

### **What the Guide can be used for**

- To undertake an Ancient Tree survey in your local area or simply to record one or more ancient trees (for example, so you can highlight which trees are important for management or to set up a local database of ancient trees) **NO PRIOR SURVEY NECESSARY**
- To revisit and survey significant trees which you have noted on your map produced from the initial archaeological survey (D3.1). If you prefer, you can also use this survey guide in conjunction with D3.1 to complete a detailed archaeological survey for notable trees within your survey area.
- As a supplement to or in conjunction with carrying out the D4.1 Basic Woodland Structure and Diversity survey. This survey can also be combined with D4.2 Ancient Trees as Invertebrate Habitats.

**Note:** it may be best to concentrate on those trees which looked of particular interest during your initial mapping exercise. This will ensure that you do not run out of time by trying to record everything.

### **Prior Surveys (where relevant)**

D2: Surveying Physical Characteristics

D3.1: Finding and Mapping Archaeological Features

D.4.1: Woodland Structure and Diversity

### **Background Information**

B.1: Introduction to Woods and Wooded Landscapes

B.2: Woodland Crafts and Industries

B.4: What is Ancient Woodland?

B.5: Woodland Ecology and Biodiversity

D.1: Introduction to Surveys and Survey Techniques

## Introduction

When you visit your woodland or parkland, take a closer look at the trees found there. You will notice that in most cases there is a great variety in species, age of trees and growth forms. It is the older, mature trees which are of particular interest as they can tell you a great deal about the history and past management practices carried out. For example, if all the old trees you can see are pollards this may indicate that you are standing in a former deer park. Ancient trees are also often found in non-wooded situations, for example on village greens, along boundaries and in cemeteries. It is worth remembering that some ancient trees such as coppiced Rowan and Hawthorn may be quite small and can easily be overlooked.

### What is an Ancient Tree?

The term '**ancient tree**' encompasses:

- Trees of interest biologically, aesthetically or culturally because of their great age.
- Trees in the ancient or third and final stage of their life.
- Trees that are old relative to others of the same species.

The term '**ancient**' is often used interchangeably with '**veteran**'; however, veteran can describe a tree which is not particularly old but shows signs of old age such as hollowing.

#### 1. Trees with a large girth

Ancient trees usually have a large girth for their species and look old. An ancient tree does not have to be tall; often they are in fact relatively short in relation to the size of their trunk. This is because the crowns of old trees start dying back when they are in their final life stage. Note that girth size will depend on the tree species, thus an ancient birch tree will have a much smaller girth than an ancient oak tree. See Appendix 5 for a guide to tree size and age. Some tree species, such as hybrid Black Poplar for example, can achieve great size at a young age, so again beware.

#### 2. Other ancient trees

Those ancient trees with a large girth are easy to recognize; however, not all ancient trees have a large girth. Their trunk size will depend on the tree species, the environmental conditions in which the tree is growing and if and how it has been managed. Therefore if you record notable trees it is useful also to include ones which have been for example, coppiced or pollarded and those that look old and gnarled but are small in size.

#### 3. Ancient tree features

Ancient trees often show certain features including trunk cavities, hollowing, sap runs, dead wood, fungi and epiphytic plants *etc.*. The more of these characteristics a tree has, the more likely it is to be ancient.

### What is a Working Tree?

A tree which at some stage in its life was managed by people to generate wood, tree fodder, or bark, for a particular usage e.g. charcoal making, for firewood and / or building materials. Thus the tree had to 'work' for a living, and often only survived because it generated a valuable product. Working trees still survive (although many of them are no longer managed) and can give a good insight into the history of the landscape they are growing in.



*Would you recognise this as an ancient tree? Even though the shoots are young, the actual coppice stool itself is hundreds of years old and shows characteristics of an ancient tree. Coppice stool of an ancient & working tree, Bradfield Woods, Suffolk. © Lindy Smith*

Ancient working trees have often been managed for centuries before being abandoned. This was usually because wood and wood produce was more easily obtained from elsewhere or no longer required. A coppice stool for example, can be extremely old but the stems arising from it can be relatively young.

Note that few ancient maiden trees and pollards are found in ancient woodland in comparison with coppice stools. They are more frequently found in parkland and wood pasture landscapes.

## Planning Your Field Visit

**Chapter D.1** gives details on general survey techniques including carrying out a preliminary walkover survey, maps, plotting features, taking grid references and gives a list of the basic field equipment that you will need. It also gives **Health & Safety information** and guidelines on obtaining **permission from the landowner** before any survey is carried out. Please read **D.1** before carrying out this survey.

Before undertaking this survey:

- Make sure that you have permission from the landowner and they know of your plans.
- Understand the Health and Safety implications for the site.
- Have a supply of the survey sheets and your annotated base maps (Ordnance Survey 1:2,500 scale).
- Have with you the basic field equipment and a Tree Identification book or Field Studies Council guide.

## Filling in the Survey Form

### Basic Details

Please include:

- The survey location and county (e.g. Sheringham Park, Norfolk).
- Your name.
- The date of the survey.
- An identification (ID) number / name of your tree. The ID number / name should match the one you have used to identify your tree on the initial archaeological survey map (See **D3.1**). It should also be noted on any photos you take. In this way you will not get confused if you are recording several trees at a time.

## Tree Information

### Grid Reference

Please see **D.I** on how to determine the grid reference for your tree if you have not already done so.

### Tree Species

Note down the species of your tree. If you are unsure you can try to identify it by using a tree guide. If you are recording a dead standing tree please also note this.

### Tree Types

Ancient woodlands typically contain a diverse range of tree forms. These are often the product of various types of human interference and management, but a proportion may have resulted from completely natural processes. The major forms are classified below, but there is considerable variation and some integration of the types. If in doubt about its form, take a photograph, sketch your tree and make some notes. You can then record and describe the tree and refer it to local experts.

#### 1. MAIDEN TREE

This is a tree that has never been cut and thus has a single main stem. Depending on the species and habitat this tree can have a tall stem and a high crown (e.g. in a woodland setting where not much light is available) or it can have a relatively short stem with a big wide crown (e.g. in a parkland with lots of light). Boughs occur at irregular intervals along the main stem. Maiden trees are often found in parkland, along boundaries, in old hedges and gardens/parks/estates/stately homes.



*Maiden Oak at Roundball Wood, Devon.*  
© Kate Tobin

#### 2. POLLARD

A tree which has branches growing from a 'burl' atop a relatively short, un-branched trunk. This shape results from the tree being cut back repeatedly to encourage new growth, above the height of grazing animals. In young pollards the burl will be less prominent. Abandoned pollards may appear 'natural', but should be suspected if there are a significant number of major boughs arising together from the top of the main trunk.

A short-pollard 'stub', possibly characteristic of upland areas was produced to prevent sheep rather than cattle or deer from reaching the tree foliage. These are now rare in many areas, largely restricted to relatively inaccessible woods, located on boulder-strewn slopes. Documentary evidence suggests that this type might have been the norm in certain valley-side situations. In such locations, they would have been easier to manage than conventional high pollards.



*Young Pollards at Staverton Park, Suffolk.*  
© Lindy Smith

### 3. COPPICE

A tree that has a stumpy base (the 'stool'), as a result of it being cut back repeatedly at a low level; this to encourage new easily accessible growth. These are the trees that typically produced the raw material for charcoal. They are thus potential indicators of woodland industries and may be found in close association with charcoal-hearths. Note that some species such as Hazel and Alder can coppice naturally.

If a tree is repeatedly coppiced over centuries the centre of the growth may die, because the new shoots tend to grow outwards. This process eventually results in the tree developing a ring-like growth form, a so called coppice-ring. After the coppice management has ceased parts of the ring may die and rot away, leaving only fragments of the original coppice.



*Coppice Ring in Whitwell Wood, Nottinghamshire*  
© Paul A. Ardron

In many ancient woods coppice-management was abandoned about 100 years ago. Abandoned coppice-stools may appear 'natural', but should be suspected if there are a significant number of major trunks arising together. The coppiced growths were often removed (grubbed-out) in favour of trees grown for timber. However, in some situations such as the Oak woods around Sheffield, the stools were re-managed and shaped as single-trunked timber trees ('singled'). As a result, there are now many 'mature' Oaks which have vestigial remains of their original coppice stools preserved at the base. In some cases, these vestiges may have been part over-grown by the foot of the tree ('elephant's foot standard').

#### **Recognising re-growths resulting from coppice abandonment and felling**

- Typically, there are still pieces of dead wood between the trunks (dead oak wood can be very long lasting), although these may be disguised by litter or humus.
- There may be a hollow between the trunks where some or all, of the old stump has rotted away.
- The related trunks may be raised together on a low 'mound'; the result of past soil build-up around the ancient centre (the raised area would typically be just a few centimetres high but can be highlighted by mossy growth).
- The bases of the related re-grown trunks are often modified in a characteristic way: the base may be swollen and flared because it has over-grown old wood; there may be triangular-shaped 'slits' in the bark on the inside of the re-growth, at the base of one or more of the component trunks (the result of a lack of bark growth against the central core).
- There may be regular root-props on the outer perimeter of the trunks, but not on the side abutting the central core (typically that side of the trunk base will be somewhat 'concave' with widely divergent root-props).

#### 4. MULTI-TRUNKS

Multi-trunks, where several trunks have merged into one, may appear 'natural' but most forest trees would normally be single trunked. Human influence should be suspected if there are a significant number of major trunks arising together. This may be the result of bundle planting where several tree seeds were planted in the same hole to increase the chance that a tree would establish. It was also used as a form of ornamental planting in parks and gardens. Bundle planting may also occur naturally where animals such as Jays stash several acorns or seeds together. Sometimes abandoned coppice or untended re-growth from felled timber can result in multi-trunk trees. Abandoned coppice-stools may appear 'natural', but should be suspected if several major trunks are merged together. Another way of recognising bundle planting is where the base of the trunks appear oval rather than round.



*Bundle Planting.*  
© Ted Green

#### 5. MEDUSOID TREES

These are irregularly shaped multi-trunked / multi-boughed trees, characterised by their sprawling growth-forms. They appear to have resulted from the intermittent harvesting of branches from trees growing on boulder-strewn slopes, where conventional cutting was difficult. They may have resulted from natural seeding amongst the boulders but due to harsh environmental conditions their growth would have been stunted. Grazing by herbivores and intermittent harvesting would have resulted in them being malformed. These trees may grow together and intertwine and are therefore difficult to identify individually. They are noteworthy because they are rare and because they are probably much older than they look; effectively becoming "bonsaid".



*Medusoid Tree, Upper Derwent Valley, Derbyshire.*  
© Paul A. Ardon

#### 6. LAYERED TREE AND HEDGE RE-GROWTH

When a tree falls over the side branches can turn into trunks forming 'standard' trees. This may also occur where trees have been laid as hedges and subsequently abandoned. These may appear as trunks arising from horizontal growths. These may be of great historic interest.

There are many other tree forms often linked to regional variations in management. These include Shreds, Phoenix regeneration and others. You can find out about these on the Ancient Tree Hunt website at <http://www.ancient-tree-hunt.org.uk/ancienttrees/index/recognising.htm> and follow the link to the Ancient Tree Initiative.



*Layered Hornbeam, Great Wood, Epping, Essex.*  
© Lindy Smith

## Tree data

### Measuring the Girth of your tree

If your tree has a main single stem it should be measured at 1.5m above the ground level. Make sure your tape is level around the tree. It is advisable to measure your tree at least twice to check your reading. Note the girth in metres or centimetres (e.g. 3.24m or 324 cm).

If your tree has a single stem but is burred or knobbly at 1.5m then you can shift the tape down the stem to get a more accurate reading. The same is true if your tree forks at or below 1.5m.

If your tree is a coppice you will have to carry out some extra measurements. Please note these on your recording form in the further data box.

1. Measure around the coppice stool at the narrowest point (or around the stems at the narrowest point if no stool is present). Note at which height you have taken the measurement (below 1.5m).
2. Count the number of stems.
3. Measure the largest two or three stems at 1.5m above ground level.

If you want to measure a multi-trunk, each trunk should be measured separately as you would a coppice. If this is not possible as the trees have merged too high up the stem, measure them as one tree but note that the tree is a multi-trunk.

For further information on how to measure the girth of a tree please visit [www.ancient-tree-hunt.org.uk](http://www.ancient-tree-hunt.org.uk).

Guides for working out the approximate age from the girth of your tree can be found at the Royal Forestry Society and Forestry Commission websites.

### Tree Features

Please note if your tree has any of the features listed. You can simply tick the box or use a numerical value for each feature. Please specify any other features you notice that are not on the list.

Please list any other organisms growing or living on your tree including fungi, epiphytic plants and other wildlife. Note the species or type of organism (e.g. Invertebrate: Spider). If there are several species present you can note these on a separate sheet and attach it.

This topic is covered in more detail in **D.4.3** which gives a separate survey guide for invertebrate habitats within trees.

### Tree Location

Please tick the relevant box or several boxes where applicable. Please specify if your tree is found in a location not listed on the survey sheet.

### Tree Notes / Sketch

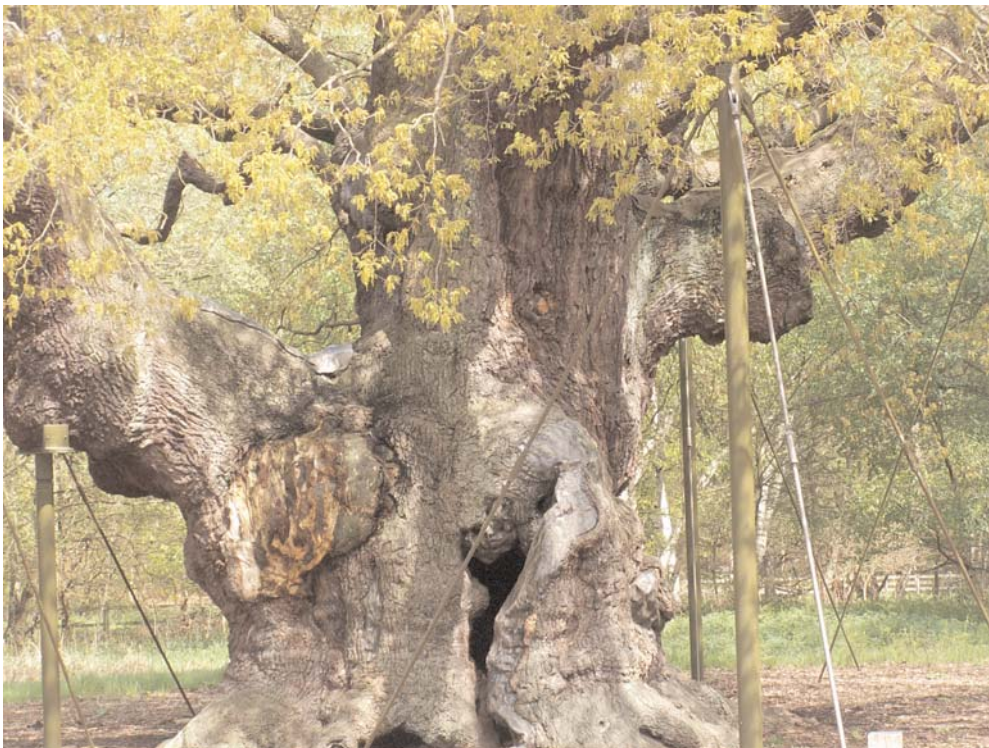
You can add any other details about your tree which are not covered by the form. For example, if there is a story linked to your tree. You can also sketch your tree and note down whether you have marked it on a map and/ or if you have photographed it. Photographs are a very good way to record your tree and any features on it. If possible you should take at least one photograph for each tree you record (note: taking photos of trees in woodlands can be difficult.



Here sketching your tree, especially its growth form, is equally beneficial.) Remember to write the Tree ID number or name on each photograph so you can recognise which survey sheet belongs to which tree photograph.

## Entering Your Tree onto the Ancient Tree Hunt Database

If you have found an ancient tree please help by entering this data onto the Ancient Tree Hunt database. This is a national project which aims to record and map all ancient trees and clusters of ancient trees in Britain. Entering your tree is easy and you will already have recorded the necessary information for your own survey. By passing on your information on ancient trees in your local area to the Ancient Tree Hunt you will help to conserve our natural heritage and your local trees. Visit [www.ancient-tree-hunt.org.uk](http://www.ancient-tree-hunt.org.uk) and register your ancient trees!



*One of the most famous heritage trees, the Major Oak, Sherwood Forest. Trees and woods give us an insight into our history. They inspire people and are the focal point of stories. Last but not least they are invaluable as a habitat for wildlife. It is our responsibility to protect them for now and for the future.  
© Ian D.Rotherham.*

## SECTION D: ARCHAEOLOGICAL SURVEYS

### CHAPTER 3.4: ANCIENT AND WORKING TREES

<b>Survey location</b>		<b>Surveyor's name</b>	
<b>Tree ID number/ Name</b>		<b>Date of survey</b>	

#### 2. TREE INFORMATION

<b>Tree species</b>		<b>Grid reference</b>	
<b>Tree Form</b>			
Maiden	<input type="checkbox"/>	Coppice	<input type="checkbox"/>
Recent Pollard	<input type="checkbox"/>	Multi trunk	<input type="checkbox"/>
Lapsed Pollard	<input type="checkbox"/>	Layered tree	<input type="checkbox"/>
			Other (please specify) <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
<b>Tree data</b>			
Girth	<div style="border: 1px solid black; width: 100px; height: 20px;"></div>	Girth measured at height	<div style="border: 1px solid black; width: 100px; height: 20px;"></div>
			Further data <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
<b>Tree features (you can either tick the relevant boxes or note the number of each tree feature)</b>			
Trunk cavities/ hollowing	<input type="checkbox"/>	Water pools	<input type="checkbox"/>
Bark loss	<input type="checkbox"/>	'Old', gnarled look	<input type="checkbox"/>
Large amount of dead wood in canopy	<input type="checkbox"/>	Dead wood on ground (e.g. fallen branch)	<input type="checkbox"/>
		Sap runs	<input type="checkbox"/>
		Crevice/ decay holes	<input type="checkbox"/>
		Burls on trunk	<input type="checkbox"/>
Other features (please specify)	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>		
<b>Other species associated with tree (if possible note where there are several different species present)</b>			
Fungi growing on tree:	Bracket fungi	<input type="checkbox"/>	Species/ type:
	Polypore	<input type="checkbox"/>	Species/ type:
	Other	<input type="checkbox"/>	Species/ type:
Epiphytic plants	Ferns	<input type="checkbox"/>	Species/ type:
	Lichen/ Moss	<input type="checkbox"/>	Species/ type:
	Mistletoe	<input type="checkbox"/>	Species/ type:
Wildlife associated with tree	Invertebrates	<input type="checkbox"/>	Species/ type:
	Mammals	<input type="checkbox"/>	Species/ type:
	Birds	<input type="checkbox"/>	Species/ type:

**SECTION D: ARCHAEOLOGICAL SURVEYS**  
**CHAPTER 3.4: ANCIENT AND WORKING TREES**

**3. TREE LOCATION** (you can tick several boxes if applicable)

In woodland	<input type="checkbox"/>	Adjacent to road/ rail/ path	<input type="checkbox"/>	Orchard	<input type="checkbox"/>
Parkland	<input type="checkbox"/>	Garden	<input type="checkbox"/>	Parish boundary	<input type="checkbox"/>
Cemetery	<input type="checkbox"/>	Village green	<input type="checkbox"/>	Urban area	<input type="checkbox"/>
Churchyard	<input type="checkbox"/>	In a hedgerow	<input type="checkbox"/>	River/ canal	<input type="checkbox"/>
Common/ Heath	<input type="checkbox"/>	In a Field	<input type="checkbox"/>	On boulders	<input type="checkbox"/>
On a slope	<input type="checkbox"/>	In a valley	<input type="checkbox"/>	On even ground	<input type="checkbox"/>
Other (please specify)					

**4. TREE NOTES/ SKETCH** (If relevant)

<p>Please note any other information that is important about your tree (e.g. other features not covered by the form, stories associated with your tree, its cultural significance etc)</p>	<p>Please sketch your tree (tree form/ shape etc.)</p>
--	--

Have you marked your tree on a map? YES  NO  Map reference number\*

\*please give each map you use for your surveys a reference number (e.g. map 1) and indicate which map your tree is marked on.

Have you taken any photos of your tree? YES  NO  Number of photos

Please remember to mark any photos you take of your tree with the tree ID number or name noted at the top of this form.

**IF YOUR TREE IS BIG AND OLD PLEASE HELP TO PROTECT IT BY ENTERING THE DATA YOU HAVE COLLECTED ONTO THE ANCIENT TREE HUNT DATABASE AT**

[www.ancient-tree-hunt.org](http://www.ancient-tree-hunt.org)

PRODUCED AS PART OF THE WOODLAND HERITAGE CHAMPIONS PROJECT. THIS PAGE CAN BE PHOTOCOPIED FOR YOUR FIELD SURVEY WORK BUT IT SHOULD NOT BE REPRODUCED FOR ANY OTHER PURPOSE.

## Example of Local Project: The Favourite Trees Project and the Epping Forest Veteran Tree Hunt

*Tree wardens of the Epping Forest Tree Hunt took part in the Woodland Heritage Champions Project to learn more about ancient woods and trees in the landscape. They themselves are working on a project aimed at preserving ancient and veteran trees in the Epping Forest District.*



Field visit to Hainault Forest, Epping, Essex. © Lindy Smith

### Background

Across the Epping Forest district there is a strong sense of identity with trees. The remnants of the great forest of Essex, which now survives as Epping and Hainault Forests, are on people's doorsteps and the district itself is named after the Forest. However, generally people's knowledge of our tree heritage is limited. Being surrounded by ancient trees it is very easy to take them for granted, when in fact together Hainault and Epping form a collection of veteran and ancient trees of European importance.

We knew that these ancient and veteran trees were by no means confined to the 'forest' areas. The widespread practice of pollarding (the successive cutting of trees above the browsing height of deer and cattle) has left a legacy of many veteran trees across the whole of the district. This includes many trees that centuries later find themselves surrounded by urban development or arable farmland. Because of its location close to London and the M11 corridor, the district is facing increasing pressures for development. The Council has strong and specific planning policies, but these alone are not sufficient to protect our invaluable tree heritage. So how could we protect these trees more effectively? And just how many trees were there out there? It is these two questions that inspired the Favourite Tree Web site and with it the Epping Forest Veteran Tree Hunt.

### Favourite Trees

In March 2006, the district council was successful with a bid to the Local Heritage Initiative for £24,700. This enabled us to launch the "50 Favourite Trees Project" and with it the establishment of a web based video and pictorial database to record trees [www.favouritetrees.com](http://www.favouritetrees.com)

Members of the public were asked to nominate their favourite tree, which they did in their hundreds and from all the nominations 50 have been chosen to represent the favourite trees of the district. We received great media attention both locally, but also nationally through the BBC2 "Trees that made Britain" team who heard about the project and were involved as judges. A major exhibition of the project followed in Autumn 2007.

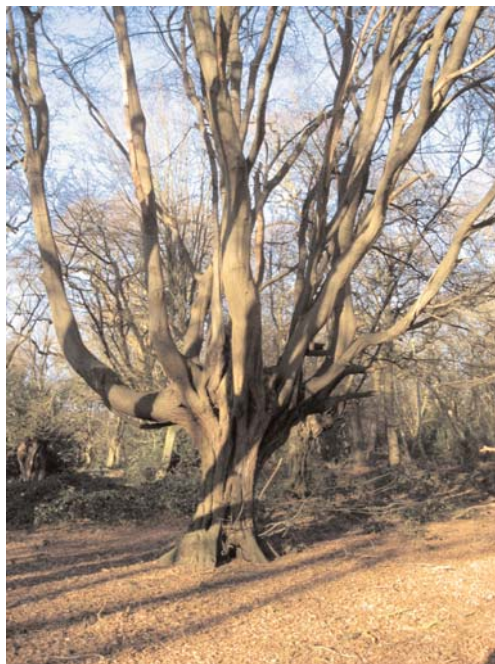
### **Veteran Tree Hunt**

It was always the intention that on completion of the 50 favourite trees our attention would then focus on the veteran tree hunt. We now know this will be a huge task, but hopefully it is one that we can inspire the community to help us with. Throughout the summer of 2007, we ran numerous training and tree hunt days so that people could learn how to record trees and get involved themselves. To date over 500 veteran trees have been recorded and photographed, but we know this is a tiny percentage of what is probably out there. As the database grows a clearer picture is emerging of the number and of veteran and ancient trees in our district which is very inspiring.

### **So what have we achieved?**

The project already has the lasting legacy of a web-based video and pictorial database, which the general public can access and add to. We have managed to engage and involve many members of the public, tree warden and community groups and very importantly landowners. All this has helped to raise the profile of trees and their heritage across the district. Our long term aim is to be able to protect individual or groups of veteran trees that often fall outside statutory protection. By knowing how many trees we have, their form and size, we will be much better placed to argue the case for individual threatened trees. Having created the technology we would now love other Councils or groups to take it on too. Hopefully, in this way we can protect this unique tree heritage for future generations.

Paul Hewitt, Countryside Manager, Epping Forest District Council, August 2007.



*A Hornbeam pollard in Hainault Forest, Epping, Essex. © Lindy Smith*

# **D.4.1: Woodland Structure and Diversity - a Survey Guide**

**Ian D. Rotherham and Lindy Smith**

## **Aim of the Survey Guide**

To record ecological information about your woodland and generate a map with habitats and vegetation types providing the basis for more specialist surveys.

## **What the Guide can be used for**

- To undertake a basic ecological survey that will help you form a picture of your woodland's heritage and biodiversity value. It may highlight areas of particular biodiversity value or ones which are poor.
- This survey guide can be used in conjunction with the other ecological survey guides (D4.2 and D4.3) and can also be used with D3.3 How to Identify and Survey Veteran and Working Trees.
- After completing this survey guide you can then revisit certain areas or features to carry out a more detailed survey, for example, to look for indicator species (see D4.2 and D4.3).

## **Prior Surveys**

D2: Surveying Physical Characteristics

## **Background Information**

B.1: Introduction to Woods and Wooded Landscapes

B.4: What is an Ancient Woodland?

B.5: Woodland Ecology and Biodiversity

D.1: Introduction to Surveys and Survey Techniques

D.2: Surveying Physical Characteristics

## **Introduction**

By looking at the structure, species composition and vegetation patterns within your woodland you can gather information which will help you identify important ecological features. Recording the pattern of habitat types in your woodland can highlight areas which you may want to focus on for more specialist surveys such as botanical indicators and invertebrates. The findings from this initial assessment can also be used to make decisions about conservation management.

## Planning Your Field Visit

**Chapter D.1** gives details on general survey techniques including carrying out a preliminary walkover survey, maps, plotting features, taking grid references and gives a list of the basic field equipment that you will need. It also gives **Health & Safety information** and guidelines on obtaining **permission from the landowner** before any survey is carried out. Please read **D.1** before carrying out this survey.

Before undertaking this survey:

- Make sure that you have permission from the landowner and they know of your plans.
- Understand the Health and Safety implications for the site.
- Have a supply of the survey sheets and your annotated base maps (Ordnance Survey 1:2,500 scale) including several photocopies of the map generated from the physical characteristics survey (**D.2**).
- Have with you the basic field equipment and a Plant and Tree Identification books or Field Studies Council guides.

## How to Use the Survey Guide

Please read this section whilst looking at your survey worksheet.

### PART A

#### GENERAL INFORMATION

After entering your name and the survey location details, please enter the name of the person / organisation who/ that own(s) the woodland. You will have generated a centre grid reference number or polygon references for the physical characteristics worksheet. Please enter the same grid reference number here (see **D.1** on how to do this).

#### TYPE(S) OF WOODLAND

Determining the 'type' of woodland present will allow you to split your woodland into several smaller areas if necessary. For example, one area might be classified as a coniferous plantation and another as broadleaved woodland. Note that tree cover needs to exceed seventy percent for a site to be classified as woodland. Where tree cover is less you may be looking at wood pasture or other wooded landscape.

#### Definitions:

**Broadleaved Woodland** is woodland where the canopy is comprised of 10% or less of coniferous trees. There are many types of broadleaved woodlands- they can be ancient semi-natural, planted, secondary or / and wet woodland. Most native broadleaved woodlands include a number of species such as Ash, Hazel, Oak, Hornbeam and Birch. In the southern and south eastern parts of England Beech and Small-leaved Lime are also native within broadleaved woods. Other trees, such as Horse Chestnut, Sweet Chestnut and especially Sycamore, are regarded as non-native although this view is debatable. Furthermore, it is worth remembering that the exotic species may now be long-standing parts of our cultural landscapes. You do not need to know if your wood is made up of native or non-native species or if it is ancient semi-natural or secondary woodland.

**Conifer woodland** is woodland where the canopy is comprised of 10% or less of broadleaved trees. The vast majority of coniferous woods in England are planted, except for some areas in northern England.

**Mixed woodland** is woodland where the canopy is comprised of 10% or more of both broadleaved and conifer trees. It can either be dominated by conifers or by broadleaves or it can be a more or less even mix.

A **plantation** is woodland where the trees have been deliberately planted (normally for Forestry purposes). A plantation can be made up of conifers, broadleaves or a combination of both (mixed). Identifying a plantation is not always easy especially if you are dealing with broadleaved trees. Where trees occur in obvious rows and are all the same age, they are likely to have been planted.

**Wood pasture** generally comprises scattered big trees and open grass or heath areas with grazing animals. For example old deer parks or wooded commons are typical areas of wood pasture.

An **orchard** is a plantation of fruit trees, and in both hedges and some woods you may come across old fruit trees. This is a sign that there may have been a garden or an orchard here in the past which is now overgrown by secondary woodland growth.

On the worksheet tick several boxes if necessary. It might be that your woodland has many big old scattered Oaks in it indicating that it was once a wood pasture but has since been invaded by Birch trees. In this case, if you are sure of what the historic landscape looked like you can tick both broadleaved woodland and wood pasture. If you do tick several boxes make sure you describe your wood in more detail on the survey form.

## OTHER HABITAT-TYPES WITHIN YOUR WOODLAND

Other habitats found within your woodland can increase its structural diversity which will enhance its value to wildlife so it is important to note these. For example, a ride will provide an open sunny area which attracts insects, birds and other animals. If a habitat type is not listed on the form but is present in your woodland, please specify this under 'other'.

**Dead wood** provides a very important microhabitat and it is therefore important to record it. In **D4.3** dead wood habitats for invertebrates and other species can be recorded in more detail.

**Standing dead wood** are trees that have not been cut down once they have died but have been left standing. Standing dead wood is the most important type of microhabitat especially for bats, birds, invertebrates and fungi.

**Fallen dead wood:** Dead wood found on the ground such as fallen trees and branches.

## WOODLAND STRUCTURE

The structure of your woodland is determined by the different vegetation layers present. For more information on woodland structure see **B.5**. You should have recorded physical characteristics as part of **D.2**. Here you can record information about the canopy of your wood therefore determining which areas are likely to be of particular value for wildlife.

There are several questions you can ask yourself when looking at the canopy of your wood and the answers to these form some basic types.

**Is the canopy relatively uniform - made up of similar ages and tree shapes or are there evident changes? (Type 1)** For example, Spring Wood in the Chilterns is dominated by beech trees throughout and most are of similar shape (tall Maiden trees) and size.



**If there are changes, are the different canopy types in distinct patches/ areas or not? (Type 2)** If your wood shows changes in its tree species, ages or shapes, you will need to separate these into compartments. For example, in Wharnccliffe Woods, Stocksbridge, South Yorkshire there are several compartments; one compartment is comprised of young Silver Birch trees and another is dominated by mature stands of Oak and Beech.

**Does the wood have small patches with different canopy types within it? (Type 3)** Your wood can be generally uniform but have patches of (often planted) other tree species within it that are not in keeping with the rest of the wood.

**Is there a mix of canopy types throughout or are there so many compartments it is hard to classify your wood? (Type 4)** Some woods are very varied, and if you cannot separate the compartments out then you have two options. If your woodland is large, choose just one smaller area within it which you can try to separate out into compartments. If this is not possible treat your wood as Type 1 (uniform).

Remember to assess your wood in broad terms. It does not matter if not all trees are exactly the same, it is larger scale changes we are looking for. where a plantation is replaced by a broadleaved woodland for example.

Aerial photographs might help you to assess canopy types and compartments. Visit [www.multimap.com](http://www.multimap.com) or [www.google-earth](http://www.google-earth) and find your woodland by typing in a nearby village or town. Navigate to where your wood is situated and click on Aerial at the top of the map to view the photograph.

Please only tick **ONE** box for Section 4.

### Describing your Wood

Here are some terms you might find useful and that might help to describe your wood. They are all fairly obvious terms and you do not have to use them. Try to focus on describing the STRUCTURE of your wood.

#### Some Terms Used to Describe the Structure of Woodland

- Broadleaved / Coniferous / mixed
- Plantation
- Understorey vegetation
- Coppice / pollards
- Scrub
- Dense / continuous
- Parkland
- Planted
- Scattered trees
- Recently felled
- Glades
- Light
- Dark
- Ground flora
- Patchy
- Bare
- Open

## **PART B**

- If the wood is **generally uniform** you only need to fill out PART B once.
- If the wood is made up of **2 or more canopy types** that can be separated into distinct areas please fill out a separate PART B sheet for each canopy type. For example if your wood has one area of planted conifers and one area of broad-leaved woodland, fill out two PART B worksheets, one for conifer and one for broad-leaved woodland.
- If the wood has several patches of another canopy type within it you can fill out a Part B sheet for each canopy type. For example if you have a patch of conifers, an area of coppice and an area of single stemmed secondary trees you can record each type individually.
- If the wood is very varied (so you cannot place it into distinct canopy types) you only need to fill out PART B once.

## **WOOD COMPARTMENT / CANOPY DETAILS**

If you have separated your wood into two or more canopy types you should mark these on your map as polygon features. Use a copy of the map created as part of the physical characteristics survey to do this. Give each canopy type / area an ID number and note on the worksheet how many compartments there are in total. Note the boundary of the canopy areas using obvious features such as tracks, walls or others. Where the boundary of your canopy area is clearly defined you can work out several grid references for the polygon otherwise take a central grid reference only (See **D.1**).

## **TREE SPECIES**

In the canopy area you are examining please note the most common tree species that are found here.

## **TREE LIFE STAGES**

Please note approximately what life-stages the trees in your canopy area are in. Again this is an approximate measure as each species is different. Even if this exercise is not very precise it will still show if you have any very young or very old trees in your wood.

*Some rough guidelines:*

- Seedlings are trees that are less than 1m in height.
- Mature trees will show particular characteristics such as having a certain amount of dead wood in their canopy, and often but not always, being of considerable size. All will have some other wildlife associated with them and this may include fungi, birds and others.
- See **D3.3** to find out the characteristics of an ancient tree.

Most of the woods you may survey with the help of this manual are likely to be mature, but may have areas of young trees within them. It does not matter if the life-stage classification is not totally accurate as long as it provides an indication.

## **TREE FORMS**

Tree forms give insight into the management currently or previously carried out in your compartment or whole wood. Please tick one box per given 'tree shape'. If you cannot remember the different tree forms, please see **D3.3**.

## **WOODLAND STRUCTURE INFORMATION**

Please tick one box for each woodland layer on the form.

**Ground layer:** This includes mosses and lichen.

**Herb layer:** The herb layer is separated into grasses, sedges, ferns (including Bracken), ground flora, tall ruderals (weedy species) on your survey form.

**Woody shrubs:** This includes Hawthorn, Blackthorn, Bramble, Holly, Hazel and similar species.

**Canopy:** This is the tree layer including species such as Oak, Beech, Hornbeam, etc.

*Description of terms:*

**Dense:** The layer (e.g. moss) covers the ground continuously and thickly with very few gaps.

**Medium:** Continuous layer or very large patches with several breaks in cover.

**Open (patchy):** Layer occurs in small patches with areas of no cover (of this layer) in between.

**Bare (not found):** Layer is absent.

## OTHER NOTES

Please note findings that might be of interest. You can also mark features such as vegetation patches (e.g. area of Bluebells) on your map. It helps to take photographs of each canopy type to remind yourself, at a later stage, about the surveys you carried out. If you take many photographs devise a reference number system on your survey sheets so you can link each compartment (if applicable) to the correct photographs - it also helps to describe what each photograph shows.



*Woodland glade and Pines, Roudsea NNR, Cumbria.*

© Lindy Smith

## SECTION D: ECOLOGICAL SURVEYS

### CHAPTER 4.1: WOODLAND STRUCTURE AND DIVERSITY

#### PART A

##### 1. GENERAL INFORMATION

Woodland name &amp; Location:

Surveyor's name(s):

Grid reference (approx. centre):

Date of survey:

##### 2. WOODLAND TYPE

You can tick several boxes if applicable

- |                          |                          |  |                          |
|--------------------------|--------------------------|--|--------------------------|
| Broadleaved woodland     | <input type="checkbox"/> | Wood pasture (Parkland/ scattered trees) | <input type="checkbox"/> |
| Plantation (conifers)    | <input type="checkbox"/> | <u>Mixed woodland</u>                    | <input type="checkbox"/> |
| Plantation (broadleaved) | <input type="checkbox"/> | Dominated by Broadleaves                 | <input type="checkbox"/> |
| Plantation (mixed)       | <input type="checkbox"/> | Dominated by Conifers                    | <input type="checkbox"/> |
| Orchard                  | <input type="checkbox"/> | Other                                    | <input type="checkbox"/> |

Other please specify:

##### 3. OTHER HABITAT TYPES WITHIN YOUR WOODLAND

You can tick several boxes if applicable

- |                            |                          |                     |                          |
|----------------------------|--------------------------|---------------------|--------------------------|
| Recently felled area(s)    | <input type="checkbox"/> | Disturbed ground    | <input type="checkbox"/> |
| Glades/ rides/ canopy gaps | <input type="checkbox"/> | Rock exposure       | <input type="checkbox"/> |
| Springs/ flushes           | <input type="checkbox"/> | Standing water      | <input type="checkbox"/> |
| Hedge                      | <input type="checkbox"/> | Heathland           | <input type="checkbox"/> |
| Dead wood standing         | <input type="checkbox"/> | Dead wood on ground | <input type="checkbox"/> |

Other please specify:

##### 4. WOODLAND STRUCTURE

Please tick **ONLY ONE** of the boxes.

1. The canopy is generally uniform throughout the wood
2. The canopy differs and the wood can be separated into compartments
3. The canopy is generally uniform but has patches of other canopy types within it
4. The wood is very varied and cannot be separated into different compartments

Please describe your wood

## SECTION D: ECOLOGICAL SURVEYS

### CHAPTER 4.1: WOODLAND STRUCTURE AND DIVERSITY

#### PART B

##### 5. WOOD/ COMPARTMENT DETAILS

NOTE: If your wood is comprised of several canopy types and can be separated into several distinct compartments please fill out PART 2 of the worksheet for each compartment. Please also note the different compartments on a map (approximately). If your wood is more or less uniform or cannot be separated into compartments you can go straight to 6. TREE SPECIES.

Name of your wood:

Surveyor's name(s):

Compartment ID number:

Total number of compartments within your wood:

Compartment Centre Grid reference/ or GPS polygons:

##### 6. TREE SPECIES

Please note the most common tree species found if possible

Species 1

Species 4

Species 2

Species 5

Species 3

Species 6

##### 7. TREE LIFE STAGES

Please tick one box per tree life stage.					
	Very common (dominates)	Common	Occasional	Rare	Not found
Seedlings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mature trees/shoots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ancient trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

##### 8. TREE FORM

Please tick the appropriate boxes. Please only tick one box per tree form listed.					
	Very common (dominates)	Common	Occasional	Rare	Not found
Recent coppice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recent pollards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lapsed coppice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lapsed pollards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maiden/ standard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other please specify					

##### 9. WOODLAND LAYERS

Please tick one box per woodland layer.				
	Dense	Medium	Open (patchy)	Bare (not found)
Moss & lichen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grasses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ground flora	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bracken & ferns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tall ruderals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bramble	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woody shrubs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canopy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Photo frames linked to tree and notes on content.

Photo frame

Contents

## **D.4.2: Ancient Woodland Botanical Indicators - a Survey Guide**

**Ian D. Rotherham, Barry Wright and Lindy Smith**

### **Aim of the Survey Guide**

To identify and record ancient woodland botanical indicators within your woodland.

### **What the Guide can be used for**

- To undertake a survey to look for the herbaceous plants growing in your woodland and identify any potential ancient woodland indicators; this will complement other investigations to ascertain if the woodland is ancient.
- To complement the survey on woodland structure (see **D4.1**) to find out more about the vegetation patterns of the ground flora.

### **Prior Surveys**

D2: Surveying Physical Characteristics

D4.1: Woodland Structure and Diversity

### **Background Information**

B.4: What is Ancient Woodland?

B.5: Woodland Ecology and Biodiversity

D.1: Introduction to Surveys and Survey Techniques

D.2: Surveying Physical Characteristics

## **Introduction**

The best time to survey your wood for ancient woodland botanical indicators is in the spring. This is when most herbaceous species will be in flower making it easiest to identify them. If you survey your wood later in the year be aware that you may under-record some plant species but you may pick up on some later flowering ones that are often overlooked in spring.

Surveying woodlands for ancient woodland indicator species requires a careful and detailed approach. Much of the published literature merely refers to total species lists for entire tracts of woodland. Normally there is no indication of the abundance of species and there are not usually any precise indications of their locations within the woodland concerned.

You have already identified any potentially rich areas for ancient woodland indicators in your physical characteristics and woodland structure surveys. These include wet flushes, small streams, rock outcrops, obvious changes in vegetation composition (recently coppiced areas) and any archaeological features that may retain ancient woodland species. Look at your base map and think about which areas you want to target although keep an open mind as some areas that you did not initially think of as being potentially rich may in fact be the best spots.

Note that the compartments you may have separated your wood into may not necessarily relate to the ground flora although often they will. For example, where a stream is present the canopy may not have changed whereas the ground flora could be significantly richer along the flush. You can note such areas of botanical interest on your base map. You can also record a central or polygon grid references for such areas.

## Planning Your Field Visit

**Chapter D.1** gives details on general survey techniques including carrying out a preliminary walkover survey, maps, plotting features, taking grid references and gives a list of the basic field equipment that you will need. It also gives **Health & Safety information** and guidelines on obtaining **permission from the landowner** before any survey is carried out. Please read **D.1** before carrying out this survey.

Before undertaking this survey:

- Make sure that you have permission from the landowner and they know of your plans.
- Understand the Health and Safety implications for the site.
- Have a supply of the survey sheets and your annotated base maps (Ordnance Survey 1:2,500 scale) including several photocopies of the map generated from the physical characteristics survey (**D.2**).
- Have with you the basic field equipment and a Plant and Tree Identification books or Field Studies Council guides.

## The Survey Form

This survey form provided is a simple list of some of the most likely ancient woodland indicators you may encounter across England and Wales. It is derived from the lists in Rose (2006) and includes species that can be found in the majority of different regions. There is space on the survey worksheet to add others you may feel are important and you can check these against the list (see Appendix **F.5**) either in the field, or when you get back.

You can either record just those species present in your wood / compartment, or you can include information about the abundance and patchiness of the species. The simplest abundance score is called the DAFOR scale - Dominant, Abundant, Frequent, Occasional and Rare. This does not require agonising over percentages and uses words that are universally recognised and the results are not intended to be 'rocket science' but merely to indicate if a species is relatively rare or hyper-abundant. There is also a column to indicate if the species is patchy in its distribution. This often happens with some of the important species like Herb Paris. It also helps if you can note where these patches are either by roughly marking these on your map or by using a high sensitivity GPS. Photographs also help to characterise the setting of the patch and can aid relocation.

## Interpretation of results

The main starting point for interpretation would be the published lists in Rose (2006) and choosing the most appropriate regional list. This list is included in the appendices, in alphabetic order of scientific name. If there is no list available for your region, then the next nearest region would be an appropriate starting point with the caveat that the species may not be entirely applicable to your study area. Your assessment should take into account the risks and pitfalls of assigning ancient woodland status based only on the number of species in each wood. However, you will hopefully be able to make a better interpretation of the significance of the species lists you derive by integrating the other research you have carried out for your wood. In combination with this surveying for botanical woodland indicators is a very useful tool in assessing the status and biodiversity conservation value of your wood.

## SECTION D: ECOLOGICAL SURVEYS

## CHAPTER 4.2: BOTANICAL ANCIENT WOODLAND INDICATORS

Woodland Name		Surveyor's name		
Survey location		Survey date		
Compartment (if applicable)		Grid reference of wood		
Scientific Name	English Name	Present Y/N	Abundance DAFOR	Patchy Y/N
<i>Adoxa moschatellina</i>	Moschatel			
<i>Allium ursinum</i>	Ramsons			
<i>Anemone nemorosa</i>	Wood Anemone			
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden-saxifrage			
<i>Chrysosplenium alternifolium</i>	Alternate-leaved Golden-saxifrage			
<i>Conopodium majus</i>	Pignut			
<i>Convallaria majalis</i>	Lily-of-the-valley			
<i>Epipactis helleborine</i>	Broad-leaved Helleborine			
<i>Equisetum sylvaticum</i>	Wood Horsetail			
<i>Galium odoratum</i>	Woodruff			
<i>Hyacinthoides non-scripta</i>	Bluebell			
<i>Lamium galeobdolon</i>	Yellow Archangel			
<i>Lathraea squamaria</i>	Toothwort			
<i>Luzula pilosa</i>	Hairy Wood-rush			
<i>Luzula sylvatica</i>	Great Wood-rush			
<i>Melampyrum pratense</i>	Common Cow-wheat			
<i>Melica uniflora</i>	Wood Melick			
<i>Milium effusum</i>	Wood Millet			
<i>Orchis mascula</i>	Early-purple Orchid			
<i>Oxalis acetosella</i>	Wood-sorrel			
<i>Paris quadrifolia</i>	Herb-Paris			
<i>Polystichum aculeatum</i>	Hard Shield-fern			

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## **Example of a Local Project: Researching the Ecology of an Ancient Woodland**

### **The Friends of Ecclesall Woods, Sheffield, South Yorkshire.**

#### **Introduction**

The Friends of Ecclesall Woods (FEW) was founded in 1993, with the aim of preserving, protecting and investigating this large (350 acres) ancient woodland located within Sheffield. It is called woods (as opposed to wood) as different parcels within the woodland were owned by different people. We (the Friends of Ecclesall Woods) work closely with the Parks and Countryside Department of Sheffield City Council who own the woods and are supporting our research into its history, archaeology and ecology.

Ecclesall Woods has two carved Mesolithic stones, remains of field systems, probably Romano-British, and extensive evidence in terms of earthworks of its industrial use up to c. 1800-50. These include about 100 Q-pits, which were used for the production of white coal needed for lead smelting, and over 300 charcoal hearths. This extensive industrial usage and especially the charcoal production, has left large areas within Ecclesall Woods depleted of topsoil which was removed as turf for the charcoal heaps. The woodland was also used for the production of coppice poles, and there is a disused ganister quarry. In about 1800-1850 tree planting was carried out as the woods were converted to timber production including Beech, Larch, and Scots Pine. The history of Sweet Chestnut (very frequent) and Hornbeam (patchy) is not known; they may well have been present before 1800, though it is suspected that Chestnut was less frequent then than it is now.

#### **Ecology Group of Ecclesall Woods**

The Ecology group consists of about 15-20 people and a botanical survey is carried out every year focussing on different topics/ species. For this purpose the woods are divided into 21 areas, and volunteers survey the same area for different aspects of the vegetation year after year. This gives us in depth knowledge for the area surveyed.

#### **Past surveys include:**

- Bluebells (1999); location, and spread of Spanish Bluebells and hybrids (2003)
- Spring flowers - Wood anemones, Lesser celandine, Golden saxifrage, and Wood sorrel (2001)
- Grasses: Creeping Soft-Grass and Wavy Hair-Grass (2002)
- Elm regeneration (2004)
- Spread (and discouragement) of Himalayan Balsam (2005)
- Mature oaks (those with trunk diameter greater than 12") (2006)
- The vegetation (especially the ground flora) in areas where large trees have been removed by the Parks and Countryside Department, and also at the vegetation growing in, and on the banks of, Q-pits. (2007)

The FEW have also produced a booklet on the Flora of Ecclesall Woods in 2006. The aim of this booklet was to help visitors to the Woods with the identification of plants they may see adding to the visitor's experience. This booklet includes a list of 527 species identified so far - we believe this is nearly complete, though a new species was identified this spring. A further booklet is in preparation, which will cover birds, fungi, moths and butterflies, mosses, invertebrates, and other topics of interest.

## D.4.3: Assessment of Ancient Trees as Invertebrate Habitat - a Survey Guide

Lawrence Bee, Lindy Smith and Christine Handley

### Aim of the Survey Guide

To identify and record the value for invertebrates of some of the ancient and mature trees within your wood or wooded landscape.

### What the Guide can be used for

- To undertake a survey to identify potential invertebrate habitats within the ancient and mature trees growing in your woodland; this will complement other investigations to ascertain the biodiversity value of your woodland.
- To complement the surveys on identifying veteran and working trees and assessing woodland structure and biodiversity. (see **D3.3** How to Identify and Survey Ancient and Working Trees and **D.4.1** Assessing Woodland Structure and Biodiversity).

### Prior Surveys

D3.3: How to identify and Survey Ancient and Working Trees

### Background Information

B.1: Introduction to Woods and Wooded Landscapes

B.4: What is Ancient Woodland?

B.5: Woodland Ecology and Biodiversity

D.1: Introduction to Surveys and Survey Techniques

## Introduction

Woodlands and the trees within them form one of the most valuable habitats for wildlife. Individual ancient and veteran trees can contain many microhabitats, each offering particular conditions required by many uncommon and rare species, particularly invertebrates. Examples of such microhabitats within the tree include hollow trunks, rotting wood, the bark, sap runs and water pockets. These trees also provide additional habitat by supporting the growth of fungi, ivy and lichen. Invertebrates and other animal species such as bats, owls and woodpeckers take advantage of these habitats. Some of the invertebrates have evolved to particular conditions which are only found within ancient trees. Furthermore, some species depend on different microhabitats provided by the tree at different stages in their lifecycle.

The intricate network of invertebrate relationships within the ecosystem of ancient trees is illustrated in areas of exposed heartwood. Here, small pin-hole borings are created by the beetle *Ptilinus pectinicornis*; eggs are laid and larvae develop within these tunnels, feeding on the surrounding heartwood. In turn, the larvae of another beetle *Tillus elongatus* are specialist predators on *P. pectinicornis* larvae. Finally, the galleries are used by *Toxomia bucephala*, a beetle unable to excavate the heartwood, to gain access to the interior of the tree where its larvae are specialist feeders on decaying wood.

Two ant species, the Brown Tree Ant and the Jet Ant are associated with ancient trees. Both species are found in decaying heartwood, where their nests provide a habitat for a wide range of other insect species. In particular, rove beetles (*Staphylinidae* - *Zyras spp.*) live in the runs and nests of the Jet Ant. *Mastigusa macrophthalma* is a spider strongly associated with these ants in and around ancient trees and dead wood whilst its close relation *Mastigusa arietina* is only found in their nests within tree stumps and old trees.

## Planning Your Field Visit

**Chapter D.1** gives details on general survey techniques including carrying out a preliminary walkover survey, maps, plotting features, taking grid references and gives a list of the basic field equipment that you will need. It also gives **Health & Safety information** and guidelines on obtaining permission **from the landowner** before any survey is carried out. Please read **D.1** before carrying out this survey.

Before undertaking this survey:

- make sure that you have permission;
- understand the Health and Safety for the site;
- have a supply of survey sheets and maps including several photocopies of the map generated from the physical characteristics survey (**D.2**); and
- have with you the basic field equipment and Identification books or Field Studies Council guides.

## Filling Out Your Survey Form

Use the information that you have collected from your previous surveys and choose one or several trees you want to investigate: the older the tree, the better. You can also choose to record a dead tree. Please fill out one survey form for each tree.

### General Information

Record the name of your wood and its location. For each tree surveyed, note its grid reference, the tree species, tree form and tree ID number. You can use the survey form in **D3.3** to assist with this.

## Tree and Invertebrate Information

### Trunk and Branches

- Please note extent of apparent hollowing within the main trunk.
- Remnant trunk would be used to indicate where there is an incomplete shell of the trunk remaining - please estimate the percentage of outer circumference missing.
- Where partial hollowing has occurred please indicate whether the base (B), middle (M) or top (T) section of the trunk has hollowed in the comments section. Also note whether apparent hollowing exists in the main branches.
- Estimate the percentages of dead wood in the crown and main trunk in the separate sections as indicated.

### Rot or Wood Decay

- Rot usually develops naturally by the action of fungi (where fungi are present, please include this in the Fungi section- see below).
- Attempt to distinguish between different types of rot by colour, texture and moisture content. Note the number of areas of rot within respective sections.

- When heartwood begins to rot, its early stages are described as **white-rot**. One of the main fungi causing this white rot is the bracket fungus *Ganoderma resinaceum*. The Sulphur Polypore fungus or Chicken of the Woods is one of the main fungi promoting **red-rot** decay in ancient and veteran trees. Heartwood affected by white-rot and red-rot eventually degrades into **black-rot**, within the hollow trunk.

### Bark

- Please note the extent of living, close fitting bark on the trunk and main branches or presence of dead / loose fitting bark.
- Also, note if areas of the trunk are completely devoid of bark and their location - base of trunk (B), main trunk above 2m(T) or crown(C) in the comments section.

### Fungi

- Different types and species of fungi support different invertebrate communities. The location of where the fungi fruiting body is growing is also important and you can record this on your form (e.g. does it grow on a standing tree, on fallen wood, under the crown etc).
- If fungi can be identified accurately please enter the species recorded in the comments section. If you do not know the species, you can still note its growth form. Is it a bracket fungus (e.g. Artist's fungus), does it cover patches of wood entirely (like a layer of skin), does it have a cap and stalk or is it a slime mould (blobs of slime on tree)?

### Holes, Cavities & Water Pockets

- Distinguish between water pockets - naturally occurring hollows or depressions (often found where major stems join) which can fill with rainwater - and other holes and cavities that are not filled with water.
- Holes and cavities may originate through limb loss or bark damage. They can be enlarged as a result of invertebrate activity. Do not include in this section bore holes and other small excavation holes caused by tunneling larvae of beetles, for example.
- Both water pockets and wet holes provide an important microhabitat for the development of various invertebrate larvae, particularly hoverflies.
- Note the presence of old birds' nests in any larger holes, which can be significant invertebrate habitats, in the comments section.

### Sap Runs

- Sap may emerge from wounds or cracks in exposed wood or bark without any obvious signs of decay and can be an important habitat for fungi and invertebrates.
- Occasionally, sap may emerge from large bore holes excavated, for example, by Goat Moth larvae.
- Note the type of sap that is present and its consistency as noted on the survey sheet.
- Note the number and location - base of trunk (B), main trunk above 2m (T) or crown (C) - of the sap runs under the appropriate description. Enter the number and the appropriate letter (e.g. 4 T in the 'Wet' section would mean you found 4 wet sap runs on the main trunk).

### Epicormic Growth

- This is a twiggy shoot growth often in substantial clumps on the main trunk of the tree, occasionally lower down nearer the base or in the tree crown.
- Epicormic growth can, where the clumps are large, form an important shelter site for invertebrates, particularly spiders and some moth species.
- As with the sap runs note where the epicormic growth is found on the tree: the Base (ground to 2m), the trunk (2m to crown), the crown or none at all.

### Invertebrate Evidence

- Please note any evidence of invertebrate activity on the tree and fungi where appropriate - bore/exit holes and presence of dry powdery remains of tunneling activity (frass) in various locations on the tree.

### Features in close proximity

- Dead wood and fallen limbs on the ground around the tree can provide habitat for invertebrates requiring the particular conditions of dead, rotting wood on the ground.
- Record the presence of any nectar sources - flowering trees and shrubs, particularly Hawthorn, Wild Pear and Crab Apple.
- Other ancient / veteran trees close by can be important for invertebrates which are phoretic (hitch a ride) on flying insects.
- Record the condition of the ground around the base of the tree as far as the crown spread e.g. ploughing, clearance of dead wood, active grassland management.
- Is the tree shaded by close neighbours or exposed to extremes of weather conditions?

In the comments section please record where your tree is located (e.g. in the open, in a woodland, in a parkland etc.).

### Further Comments

- Please include any additional information here. Where there is not enough space on the main form for information please add it in this section with reference to the particular section of the main form.
- If invertebrates are seen and can be identified please include the records and where on the tree they were found, in this section. eg. Hornet emerging from crack in trunk.
- Presence of bryophytes (mosses and liverworts) and their location on the tree should be recorded - where species are identified please include this on the form.
- Please record in the further comment section if ivy growth is present on the tree, its location (on trunk, main branches or both), its extent (percentage cover) and whether it is alive or dead.
- Presence of other wildlife associated with the tree can also be included in this section e.g. bats and birds. Also see **D.4.4**.



*Insect Holes in Dead Wood. © Ian D. Rotherham*

**SECTION D: ECOLOGICAL SURVEYS  
CHAPTER 4.3: ANCIENT TREES AND INVERTEBRATES**

1. GENERAL INFORMATION									
Wood name & location			Name of Surveyor						
Grid Ref.			Date of Survey						
2. TREE AND INVERTEBRATE INFORMATION									
Species	Tree Form				Tree ID No.				
Trunk & Branches	Apparently solid trunk	Completely/ Partially hollow %		Remnant trunk	Dead wood in main trunk %		Dead wood in crown%		
	Comments								
Rot	Colour	Cubical Dry	Fibrous Dry	Fibrous Moist	Soft/ Moist	Wet/ Disintegrating	Other	None	
	White								
	Red/Brown								
	Black								
Bark	% Living bark on trunk		% Loose/dead bark on trunk		% Living bark on main branches		% Loose/dead bark on main branches		% Bark Loss
	Comments								
Fungi		Tree		Fallen Wood		Ground under Crown		Other	None
	Bracket								
	Skin-like covering								
	Cap & Stalk								
	Slime								
	Comments								
Holes/ Cavities/ Water Pockets	Water filled hollows		Damp/Moist holes & cavities		Dry holes & cavities		None		
	Comments								
Sap Runs	Dry		Wet		Sticky		Bubbly		Other
Epicormic Growth	Base (ground to 2m)		Trunk (2m to Crown)		Crown		None		

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**SECTION D: ECOLOGICAL SURVEYS**  
**CHAPTER 4.3: ANCIENT TREES AND INVERTEBRATES**

<b>Invert. Evidence</b>	Bore Holes in exposed Heartwood	Bore Holes in Fungi	Bore Holes in Dead Wood	Spiders' Webs on Bark	
<b>Features in Close Proximity</b>	Fallen Dead wood	Nectar Sources	Other Ancient Trees	Protection from Grazing/Ploughing	Shading from other trees

**FURTHER COMMENTS (Species names, photographs taken etc):**

**I. MAPS AND PHOTOGRAPHS**

Have you marked your tree on a map? YES  NO  Map reference number\*

\*please give each map you use for your surveys a reference number (e.g. map 1) and indicate which map your tree is marked on.

Have you taken any photos of your tree/ features? YES  NO  Number of photos

Please remember to mark any photos you take of your tree with the tree ID number or name noted at the top of this form.

**IF YOUR TREE IS BIG AND OLD PLEASE HELP TO PROTECT IT BY ENTERING THE DATA YOU HAVE COLLECTED ONTO THE ANCIENT TREE HUNT DATABASE AT**  
[www.ancient-tree-hunt.org](http://www.ancient-tree-hunt.org)

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## **D.4.4: Surveying for Other Woodland Fauna**

**Lindy Smith and Christine Handley**

It is beyond the scope of this manual to give details on how to carry out a complete ecological assessment of your woodland.

However, if at this stage you feel you would like to do more to find out about the ecology and biodiversity conservation value of your wood, the next step is to build up a record of all species you have within your woodland. In many voluntary groups there are several members with very good natural history skills and you may want to use their expertise to compile lists and / or to pass knowledge on to other members of the group. Identifying species from plants, to fungi, to insects, to birds and mammals takes time, interest and some degree of patience to get better at it but it is very rewarding and can be fun. Do not forget to look for signs of species such as badger holes, bird song, insect holes, bat droppings, frogs and newts in ponds and tracks (especially on those rare days when snow covers the ground) as well as actual sightings.

If you do not have any 'experts' in your midst, try asking your local Council's ecologist for help. If you are keen they may be happy to spend an afternoon in the wood with you looking for and identifying species or they will know the local experts who would be able to assist. Local Natural History Societies, British Trust for Conservation Volunteers (BTCV), Field Studies Council and Wildlife Trusts run identification courses on a regular basis which you could attend.

Please do not take specimens home but try to identify them in the field where possible as you may be dealing with a rare species.

Ensure that any information you gather is kept on a 'central' database (e.g. Excel spreadsheet) if you are part of a group. Share any records with your local biological records centre as they will be pleased to receive such information and can distribute it when needed.

Field Studies Council (FSC) Guides (see [www.field-studies-council.org/publications/index.aspx](http://www.field-studies-council.org/publications/index.aspx)) - often fold-out ID guides to common species are a good starting point for those new to species identification. Guides are available for many groups and also animal signs. There are many good basic guides to identifying species, for example the Collins series.



*Dog's Mercury* © Barry Wright



*Stag Beetle* © Ian D. Rotherham



*Jay* © Ted Green



*Wood Anemone* © Barry Wright

## **Section E: Using Your Surveys**

**This section looks at the follow on work you should think about after you have carried out your surveys and documentary research. It outlines several different ways that your information can be used and communicated to others. Before starting to put together your report you may wish to re-read *Section B: The Heritage* to help put your findings into context.**

**The information from your survey and documentary work should be collated, analysed and compiled into a report which answers the questions you set out to answer when you started your surveys. It may also give you a new set of questions to answer if you uncover new information or highlight aspects that were unclear at the start. Copies of the surveys should be sent to other organisations with your report or on their own so that they can then be added to the archives and record centres to form a permanent record of your work. These organisations may in turn produce other information which will help in your work. Putting all your material together will involve some 'sifting and sorting' but it will be invaluable in helping you gain a wider understanding of your wood and how it should be managed for the future.**

**This section includes the following chapters:**

- 1. Putting Together the Survey Findings.**
- 2. Using the Results for Conservation Management.**
- 3. Getting the Message Across - Producing an Interpretation Plan.**

**As a minimum you should let the landowner and local records centres have copies of your surveys and research. This will enable others to find out about your work. A basic report which includes some analysis or interpretation should be the next step. Further follow on work would be to use the report to guide conservation management and to put together an interpretation plan.**

# ***E I: Putting Together the Survey Findings***

**Christine Handley and Mel Jones**

## **Introduction**

Once the surveys have been completed and the documentary research undertaken the data that have been gathered need to be used and shared. This is an important stage of the project as the information that is produced may uncover new and interesting aspects of your woodland that people were unaware of. It may also be the first time that some of the features have been recorded in recent times and will be a valuable addition to the archives and record centres. The best way to present your information after collating is as a short report. A report can be used to guide future management of the woodland and collate information which may be worth publicising more widely with events and leaflets. This chapter suggests how the survey data can be used to produce a report. Chapters **E.2** and **E.3** look at ways that findings can be applied to develop a management plan or interpretation work.

## **Who to Inform**

The question of who to inform about your survey findings will to some extent depend on who owns the woodland and who you sought permission from to undertake your surveys. As a minimum, you must let the landowner know your survey results. Subject to permission from the landowner (which should have been obtained before you undertook the surveys), if there are any archaeological features, the Historic Environment Records (H.E.R.) Office should be informed and copies of any ecological data sent to the Biological Records Centre or the Trees and Woodlands Officer or equivalent from your Local Authority. Other organisations such as the Woodland Trust and the Ancient Tree Hunt would like to know about any significant trees within the woodland. More information on informing organisations and the local community can be found in **E.3** which looks at interpretation and education.

## **Verifying the Data**

Before starting to collate the data from your work you should make a note of how confident you are of their reliability. This is good practice as it will help you assess the data at an early stage and discard or earmark some data for further investigation. It will help you look at the data in a critical way before the report is circulated more widely. Where factual measurements are involved, there should be a high degree of reliability. There may be some uncertainty over interpreting the features found, so use a basic description and make a note to ask an expert for help with identification if you are unsure. Documentary and historical records sometimes raise issues over their reliability in answering questions and here you have to consider the context, time and purpose for which they were written. See **Section B** for some contextual information. There will be a further stage of verification when you are looking at your conclusions and recommendations but the same principles will apply.

## **Collating the Survey Findings**

The first step in using your survey results is to collate all the data from your historical research and your individual surveys. You may already have devised a simple referencing system for each piece of work which will give basic information on the source of the work, who undertook it, when it was undertaken, the questions it was designed to answer, and the basic

details it has uncovered. If you have not already done this then it is suggested that you go through your material and do this first. This will enable you to 'navigate' your way through your data and produce a summary which will then help with your analysis.

One of the most useful ways of collating your data is to use a table or matrix which lists each piece of data that has been collected with the basic information. A summary example of this is given below.

Item	Source & date	Work carried out	Findings (in short)	Documentation of work/ survey
Historic maps - OS maps and Burdett's map	Local studies library - Christine. Feb '07	Researched age of wood - when did it first appear on map? Extent/ boundary etc.	On first edition OS map. Irregular boundary, much reduced in size on recent map.	Summary notes made
Aerial photographs- 1940s & 2000	Local studies library- Frank. Feb '07	Changes in extent and species composition	More conifers in recent photo. Houses encroaching	Summary notes made
Physical characteristics survey	Field visit- Frank, Chris, Bob. Feb. '07	Determine landscape context/ natural features etc	Along steep sided valley, stream running through it.	Completed Physical characteristics survey form, Stream already marked on base map (1:2500)
Basic archaeology survey	Field visit Frank, Chris, Bob, Anna March '07	Presence of features/ earthworks/ basic mapping	Several earthworks, 4 old buildings, a quarry, old coppice stools	Noted features on base map, Determined grid refs for each feature. Grid refs on spreadsheet.

Another essential task is to transfer the data from your individual survey maps onto one or two base maps, perhaps one for the archaeology and another for the ecology. It is important that you have used the same scale map for all your surveys otherwise the process can be very time-consuming. If you are lucky enough to have the resources to do this electronically it can be put onto a Geographical Information System (GIS) system. A simpler and more cost-effective way is to use a base map with the physical details on and overlay these with sheets of clear acetate on which you have traced the data from each of your individual surveys on the archaeology and ecology. Each of the layers can be colour coded and by placing one on top of the other you will be able to build up a picture of where features co-exist or influence each other. If you have taken any photographs or made sketches, it is also useful to plot the location of these onto a map to assist you when you start analysing the survey results. This is made easier in a GIS programme as each layer can be turned on and off to display the data in different ways. Some GIS systems are easy to use and easily accessible, see [www.mapmaker.com](http://www.mapmaker.com).

## Analysing the Survey Findings

As a starting point, think about the context of your woodland and the surveys that you have carried out. This will help start to place your information within a time-frame and the local landscape.

Set out the questions that you wanted to answer at the outset of your project and any supplementary questions that arose during the course of your surveys and documentary research. Use the information from collating the survey findings as a guide to look for patterns, overlaps and similarities (from different sources) in the data. Examining the data in this way will also identify where the findings from one source appear to tell a different story to the physical remains. You should try to categorise your data by organising your findings into themes, for example, boundaries or in chronological order to provide a structure for your analysis. One useful way to do this is to make copies of your survey forms and other information that you have collected. Then allocate a colour to a theme or time-frame and with highlighter or coloured pens go through your documents highlighting the relevant parts. This will help draw the information together and enable you to put it into table form or write a paragraph or two describing your findings. The maps that you have prepared at the collation stage and the photographs and sketches will give you a visual representation of some of the information which can then be read in conjunction with your historical research to identify any overlaps there.

Be prepared to come back to your analysis and talk about it amongst your group perhaps several times before you are confident that you have picked up everything that you can at this stage. If something does not 'fit' or seems to be throwing up another question, make a note of it and ask for another opinion. Do not be tempted to discard any information that does not agree with your current thinking; it will be of use at some stage and may need further expert opinion to verify it or it may cause you to re-think your questions. It is important to make sure that the process is well documented so that you can go back later as new information comes to light and you can show others how you have carried out your analysis.

## **Interpretation and Further Work**

This is one of the most important stages and one of the most difficult to do if you are new to the subject without help from an expert or reference to key texts. It follows on from the analysis stage and it is important that the analysis is carried out thoroughly before any interpretation is undertaken. This is sometimes difficult if there is a very 'obvious' feature but you should try to guard against jumping to conclusions and making assumptions - even so called 'experts' can get it wrong!

As a minimum, you should aim for making your own tentative interpretation and then showing this to the Local Authority Archaeologist, Trees and Woodland Officer, sharing it with the Ancient Tree Hunt for them to assess. The simplest way is to look for patterns in your analysis and put them into context using your background reading and knowledge. Ask the questions, what is the analysis telling me? and what are its closest matches? Write down all the possibilities and then assess them for their likely occurrence in the part of the country or type of woodland that you are dealing with. You may come up with a list of probable explanations which you can then share with others; this may be one or two or be longer if you are unsure of what your analysis is telling you. Again documenting this process will help you in the future and allow others to assess your conclusions. Bear in mind as well, that many findings cannot always be explained immediately or fully. This becomes an on-going challenge.

It is very unlikely that your initial research has answered all your questions about the woodland and following on from the interpretation of the results there is likely to be a further stage or stages of work identified. It is useful to list these in the report as it will show how the project may develop and allow others to comment on the work needed or identify areas of uncertainty that should be investigated further.

## Writing and Producing a Report

Once you have assembled all the information, carried out some analysis and attempted to interpret the findings the next step is to write a report. This can be given to landowners for use in a management plan or used as a basis for interpretation and circulated more widely.

You may have access to a computer and be able to produce a typed report or know someone who will be able to type up a handwritten report. The report should include photographs, illustrations and maps. It may be possible to produce a bound copy of a report or perhaps publish findings in an appropriate newsletter or journal.

The report should follow a standard format (see example below) but can be as short or as long as the information merits. Be prepared for the report to undergo several drafts and allow different people to read the drafts to ensure that it is not only factually correct but is also understandable to someone who has not been involved with the research. This latter point is especially important if it is to be passed on to a landowner or other third parties who may use the report for their own work or to inform management.

### Suggested Format for a Research Report

1. Introduction.
2. Background.
3. Methods - how the research was carried out.
4. Ownership History and Meaning of the Wood's name (if undertaken).
5. Location and Size.
6. Topography, Geology and Soils (if undertaken).
7. Documented History.
8. Archaeology (including relationship to documented history).
9. Ecology and Nature Conservation Issues (and relationship to 7 and 8 above).
10. Evaluation including recommendations for further work with summary of key points.
11. References and Bibliography.
12. Appendices - copies of completed survey forms.

Note: Maps, photographs, diagrams and other illustrations should be integrated in each chapter.

Source: M.Jones and C.Handley (2007)

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## ***E.2: Using The Results for Conservation Management***

**Ian D. Rotherham and Christine Handley**

### **Introduction**

Developing an understanding of the history, archaeology and ecology of your woodland is an essential part of putting together a management plan and deciding what conservation management needs to be carried out. The previous chapter gives guidance on putting together a report from your findings which can then be used to inform conservation management. This chapter, which should be read in conjunction with **B.5**, gives some guidance on putting a management plan together and assessing the priorities for management. **Appendix F.6** gives information on more detailed management for specific features.

### **Producing a Woodland Conservation Management Plan**

Your woodland may already have conservation management taking place within it and have a five- or ten-year management plan which sets out the work that should take place each year. If a plan exists, it would be worth getting hold of a copy or contacting the person who has put the plan together. You will then be able to see how well the information that you have gathered fits in to the current plan. It should be noted that the validity of any management plan varies with the amount of time, effort and money that has been put into it. You may have identified new features that are in areas where management is due to take place. In this case you will need to bring these to the attention of the woodland managers. Hopefully the management will be modified and your findings added to the management plan (as an addendum) until it is time for the plan to be reviewed. Your findings can then form part of the review and be incorporated fully into the plan.

However, you may find that although the woodland does not have a conservation management plan, work is still being carried out. Where this is the case or there is no management at all, **it is recommended that a plan is produced** to take into account your findings. This will need the agreement and support of your landowner, local authority and any groups or organisations which use the woodland. But it is essential if you want to safeguard important woodland features.

Putting together a management plan can be quite time-consuming. It requires some technical knowledge and expertise in carrying out practical management, undertaking public consultation and drawing up work plans and budgeting for the work. This is likely to be beyond the scope of your group so you will need to call on experts. Guidance may come from the Local Authority, the Forestry Commission, the Woodland Trust, the Local Wildlife Trust, and British Trust for Conservation Volunteers (BTCV). You should have already notified the Local Biological Records Centre and the Historic Environment Records (H.E.R.) of your findings (see previous chapter); and they may have asked to be kept informed if any management is proposed around the features you have surveyed or may be happy to provide suggestions on what management can take place. However, it is important to realise that many individuals or organisations who are competent and willing to help with a management plan, may be unaware of many of the issues raised here.

If you decide to produce a management plan, there are templates available for you to use. You can download templates and examples of plans from the Forestry Commission's website [www.forestry.gov.uk](http://www.forestry.gov.uk), the Woodland Trust's website and BTCV which has examples in its manuals. The plans follow the same overall format but depending on the landowner may have their own specific style. Plans can be developed on a 5- or 10- year rolling cycle with a review built in every five years. There will be detailed management prescriptions for the first five years and then



broader management proposals for the following 10, 15, 20 years etc. An example of a management plan structure is given below. This sets out the basic elements which need to be included.

Remember that in some cases the best protection and conservation for parts of your site may actually be recognition and non-intervention *i.e.* note it but leave it alone!

### **Example: Structure for a Woodland Management Plan**

#### **Introduction**

#### **Background Information**

- location, ownership, site designations
- geology, topography
- history, archaeology
- habitat, biodiversity and protected species

#### **Strategic Aims and Objectives**

- *eg.* to enhance biodiversity

#### **Management Prescriptions and Operations**

- *eg.* create more dead-wood piles

#### **Management Work Programmes**

- when, who, how, budget

#### **Consultation**

- how, who and list of organisations consulted and their responses

#### **Monitoring and Review**

- check on effectiveness of the work as well as its progress

## Stages in Putting a Plan Together

The **first stage** is gathering background information to set the management in context. The information from your surveys and research will form the basis of this stage. The background information will also need to include any site designations eg. Sites of Special Scientific Interest (SSSIs), Tree Preservation Orders (TPOs) and any restrictions on site use eg. proximity to powerlines.

The **second stage** covers the discussion and setting down of the aims and objectives of the plan and the overall strategy for the woodland. It will be informed by the background and involve consultation and negotiation with other parties on the purpose, uses and values that can be ascribed to the woodland currently and in 5, 10 20, 50 years' time. As a timescale, fifty years may seem daunting but in terms of the traditional management (see earlier) or the life of a tree and archaeological remains it is very short. At this stage competing objectives may appear, for example, between preserving features and public access, and consensus has to be reached on a way forward.

The **third stage**, once the strategic aims and objectives have been agreed, is to look at the management needed to achieve these. This stage will set out in detail the management prescriptions (what will happen) and operations (how it will happen) for management needed across the whole woodland. It will include sections on infrastructure (paths, steps, seats) as well as habitat management and further surveys. Depending on its complexity (and overall aims) the plan may also detail community involvement and interpretation. See E.3 for more detail about interpretation plans. This stage also sets out the timeframe for each management operation giving further detail which will be developed into an annual work programme for use by the woodland manager and his / her team. Approximate costs for carrying out the management prescriptions and operations will also be detailed in this section and an annual budget put together. Funding will probably need to be sought for some of the management so this section is crucial for putting any bids together. The work programme is usually set out in table form with accompanying maps which show the locations and extent of features and the areas where management will be taking place.

The **fourth stage** will include consultation about the management prescriptions. The extent of the consultation will depend on the ownership, location and current use of the woodland and the work that is to be undertaken. If the woodland is part of a statutory designated area or contains an ancient scheduled monument then there is a formal consultation process that must be adhered to. Often consultation with the local community or other interested groups takes a more informal route and may start at an earlier stage of the plan when the strategic objectives are being discussed. Nevertheless, letting people know what you are intending to do, the reasons and likely impact on the woodland is needed especially where there is public access.

An important **final stage** is to set down how you will monitor the success of the management and whether the objectives are being met. Effective monitoring is key to the review of the management plan so should be designed with this in mind. It may be as simple as having a checklist of your management prescriptions that are ticked when complete. More commonly it will include further surveys on areas where management has been carried out and consultation with other groups to assess the impact of any changes. This will identify changes (either positive or negative) to habitats and species. One useful and fairly simple way of monitoring changes is by taking fixed point photographs, the first before management takes place and then at regular intervals afterwards to provide a visual record of the changes.

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## ***E.3: Getting the Message Across - Producing an Interpretation Plan***

**Christine Handley and Mel Jones**

**An Interpretation Plan should answer the following key questions.**

- Which features or parts of the woodland need to be explained or highlighted?
- What key messages should people remember about your woodland?
- Who is/are your target audience(s)?
- Which method(s) need to be used / would you like to use?
- What resources are you likely to need?

### **Introduction**

In addition to giving copies of your findings to a local record centre or library, the information that has been gathered, analysed and written about can be used to publicise your project more widely. There are many different ways to get your message across to a wider audience; this will depend on the time, interest, support and resources available. This chapter looks at the steps you can go through to help decide on how and what you are going to do by producing a written interpretation plan.

### **Why Produce an Interpretation Plan?**

Sometimes getting your message across may be as straightforward as organising a public walk pointing out features or plants that people may find interesting; in this case a written plan is not required. However, if you have produced a substantial amount of new information or existing information has been re-assessed, putting together an interpretation plan can be useful if you wish to tell others about your findings. An interpretation plan will help you to decide how and where your information can be presented and who your audience may be. If you do not own the woodland you have been working on you will need to get permission from the landowner before doing interpretation work. Similarly even where you may have a management agreement you will need to get permission for some types of interpretation before you use them.

Developing and writing an interpretation plan involves several stages. Firstly, focus your ideas on what you would like to see interpreted. This may result in you concentrating on one specific feature or aspect of your woodland. It will make you identify your target audiences and the appropriate methods to use. The next stage involves identifying the resources that are needed, both in financial and people terms, to carry out the interpretation work. This stage will then influence any timescales that you may wish to put on achieving the work. Modifications may be needed depending on resources available. Finally a plan should identify ways of assessing whether your interpretation has worked.

The plan can be as simple or as elaborate as you want it to be (and funding allows). The extent will also depend on the amount of time and level of enthusiasm group members have. It may also depend on whether you can call on support from a project officer or other organisations. The amount of information that you have collected and its significance may also dictate how detailed your plan becomes. A well thought out and presented plan can be used to attract funding for your work and act as publicity for your project before the interpretation is in place.

## What Information to Include?

Even before you decide who will be involved in writing the plan, you will need to decide what information you will be using and what is 'special' about the woodland. Look for themes or specific features and ideas that have been identified through your research. Think about the hidden as well as the obvious features that may be encountered on a visit to the wood. Make a list of your themes, features and ideas, some of which will be interlinked, and try to put them in order of importance or priority. Walking around your woodland using a 'fresh pair of eyes' may help with prioritising the items on your list. Ask someone who has not been involved with the research to accompany you and talk to them about what they would like to know. This may lead you to revising your list or the order of priority or importance. This process will help clarify and shape your plan and decide whether you can keep it simple or need to produce something more detailed.

## Objectives for the Interpretation

Interpretation involves applying a 'filter' to your information and deciding what messages you want to communicate to people. There are commonly four main objectives which you should be aware of. These are listed below.

- **Learning:** What you want people to know about the woodland and your project.
- **Emotional:** What you want people to feel when they come into contact with the woodland either directly or indirectly.
- **Behavioural:** What you want people to do after looking at / experiencing the interpretation.
- **Promotional:** What you want people to think about your group / organisation or the woodland.

Your plan may focus on only one or two of these objectives depending on what you wish your interpretation to achieve.

## Outcomes of the Interpretation

Agreeing your objectives will help to clarify the main outcomes from your plan. There are six types of outcome for you to consider and these are listed below.

- **Raising Public Awareness:** letting people know about the importance of your woodland and the features it contains.
- **Education:** explaining why the woodland and its features are important.
- **Conservation Management:** giving people an understanding of what features need to be managed or what damage may be done if they are not managed properly.
- **Visitor Management:** guiding people around the woodland to increase their understanding and enjoyment whilst making sure they do not cause any damage.
- **Marketing & Promotion:** using the information gathered to publicise the woodland and your group's work to attract further resources and interest.
- **Raising Funds:** charges can be made for public events, talks and leaflets which can either be used to cover the costs of producing the interpretation, to fund further research or for conservation work.

All of these outcomes will be relevant to the project to some extent so it is necessary to decide which are the most important to focus on first and which are less of a priority. These priorities may change over the life of the interpretation plan and the project. It may also be influenced by feedback from your target audiences.

## The Plan Contents

### What message(s) do you want to give to people?

This will depend on your research and may focus on what is 'special' about your woodland. It may cover the history of the wood, its ownership, types of products, an explanation of archaeological features found, identification of different species and habitats found and why they are there and the management (past / present and future) of the woodland.

Other information that will be useful to include are location details, access points and paths for visitors; contact details for the group or owner; and some guidance on how people should treat the woodland. These messages are important as they are part of the 'public face' of the woodland and may encourage others to value the woodland more and potentially get involved with your project.

### Who do you want to tell?

There is a range of different audiences for you to consider. It is worth thinking about who would be most interested in your findings, who uses your wood and who lives nearby. Some of the main audiences are listed below.

- Families
- School groups
- Those who live in the local area
- Visitors on holiday
- People who may only visit once
- People who already visit regularly
- Those with specific / specialist interests e.g. local history society, wildlife group.

Some of these groups may already be people that you have been in contact with whilst undertaking your research and may be the most interested in what you have discovered. All these groups are not necessarily mutually exclusive but the methods that you choose and the location of any interpretation will differ depending on your target audience(s). These groups also include people of all ages, ethnic backgrounds and abilities and you will need to consider how you can engage with these groups as well.

If you are new to interpretation, it is better to build your plan around only one or two of the target audiences. Selecting those who would most help you achieve your objectives and anticipated outcomes. This approach will help you to focus on producing something which is manageable and achievable and will help with bids for funding. This can then be used as a template for further work at a later stage.

### Where will you tell people?

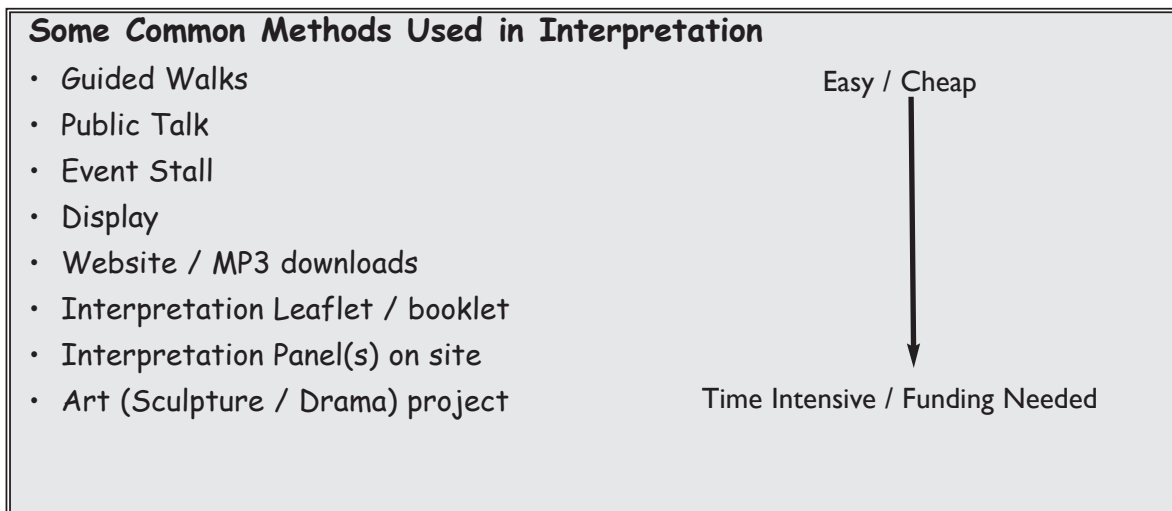
You will need to decide whether your interpretation can or will take place within the woodland or whether you will use methods that happen away from the woodland or a mixture of both. Some methods of interpretation such as the provision of information boards and guided walks have to take place within your woodland. Others such as a talk to a local group or a display take place away from your woodland. Leaflets or booklets can be distributed outside and then taken and used within the woodland.

Decisions about where your interpretation is carried out needs to consider access issues around parts of your woodland (including health and safety considerations). It also need to take into account the sensitivity of the archaeological and ecological features that you would like to

interpret as well as the message you want to get across. The landowner will need to be approached to give permission for the type of interpretation that you would like to use especially if this includes any permanent or semi-permanent structures. Other issues that need to be considered include the effects of any interpretation; an increase in the number of visitors to your woodland resulting in pressures on existing footpaths and parking and longer term management issues.

## How will you tell people?

Well thought out and planned interpretation which engages the audience and provides an enjoyable experience which will make them want to look after or visit your woodland should be your aim. An interactive or two-way process where people can do something, ask questions or explore for themselves is often a better way of getting a message across. However you will also need to consider your target audiences and their backgrounds and familiarity with woods and woodland settings. Some people may prefer to look at a display or slide show away from the woodland followed by a guided walk tailored for them.



## What resources are available?

Thinking about the human and financial resources that are needed to deliver the plan's outcomes is crucial to its success especially for a volunteer group. It is important to be realistic about what can be achieved in the timescales that have been set and not to get too carried away. One good idea, when you have discussed what you would like to see interpreted, is to decide on a couple of people from the group who will be responsible for overseeing the production of a plan and who can liaise with potential partners.

If your woodland is run by a Local Authority or agency such as the Forestry Commission or Woodland Trust, the local officer should be involved and may be able to offer support in helping to put the plan together and applying for funding. They will have sample plans and interpretation for other areas, perhaps a 'house style', that they can share with you. They and organisations such as British Trust for Conservation Volunteers (B.T.C.V.) should also be able to give you an idea of costs for designing, producing and installing interpretation. This will help you to draw up a budget for the work.

Some of the costs may be borne by the group. There may be sufficient skills and experience within the group to carry out walks and talks, design leaflets and websites. If you have access to a computer and design package, you may be able to print your own leaflets. This will keep direct costs to a minimum and may be all that is needed for the first stage of your plan.

## Finding Funding

If your interpretation is too expensive to be covered by the group you will need to look at how this can be funded. Very often this will mean applying for grants and funds from either local sources, for example the Local Authority or national and regional sources such as the Heritage Lottery Fund. There is a large range and variety of funding organisations; the criteria for awarding grants differ between them and may change from year to year. It is therefore important to check on whether your ideas fit into the criteria by reading their guidance notes and advertising material before you start to apply. Application forms vary in complexity.

If you are new to applying for funding, it will be worth asking for advice. In some areas, there are specific organisations e.g. in South Yorkshire there is a funding bureau open to all voluntary groups, or officers within local authorities who can provide some guidance. If your woodland is owned by the Forestry Commission, Woodland Trust or your group is affiliated to the Woodland Trust or BTCV these organisations will also be able to provide some guidance. In some cases, depending on what you want to do, they may also be able to offer a grant themselves.

## When will the outputs from the plan be delivered?

Timescales for producing the interpretation depend on the resources that you can call on and the amount of work needed to turn the findings into the interpretation. The timescale will depend on your target audience and the time of year when activities are best carried out. Some of these may be constrained by other community events. If you are applying for funding you will need to take into account any funder's deadlines and the time it will take them to process your application plus the time needed to carry out the work. It is important to be realistic about what can be achieved.

## How will we know we have been successful?

One of the important things which people often overlook but which should be included in an interpretation plan is some measure of gauging whether you have achieved your objectives. At a basic level some form of feedback, asking for comments or seeing how people react to the interpretation is all that is necessary. This will not only enable you to see how successful the interpretation has been but will provide a base from which to undertake further work and, if you can demonstrate success, help with any further funding bids.

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Examples of Different Types of Interpretation




# LADIES' SPRING WOOD

## Site of Special Scientific Interest



**Great Spotted Woodpecker**  
*Dendrocopos major*

1347: Great Spotted Woodpecker  
*(Dendrocopos major)*

**Wildlife**

The wood contains a number of flowering plants rarely found outside ancient woods. This is because they are generally slow colonisers, particularly those that spread vegetatively rather than by seed. Among the more unusual of these ancient woodland indicators are greater woodrush and common cow-wheat. Others include bluebell, wood sorrel, dog's mercury, yellow archangel, ramsons (wild garlic) and yellow pimpernel.

The wood has a rich bird life, particularly of hole-nesting birds including nuthatch and all three resident woodpeckers: great spotted woodpecker, lesser spotted woodpecker and great grey woodpecker. Dipper and Grey Wagtail can also be seen. Sheaf at the foot of the wood.

**AN ANCIENT WOOD**

Ladies' Spring Wood is a very special wood - what woodland historians call an ancient wood. This means that it has existed since at least AD 1600. It was only after that date that landowners in this country planted trees in order to form woods.

Three characteristics of Ladies' Spring Wood strongly suggest that it is an ancient wood.

- Its name:** the word 'spring' is the Old English (Anglo-Saxon) name for a coppice wood, suggesting it is of pre-1600 origin.
- Its shape:** it is uneven with sinuous bends and zig-zags, suggesting that it is the result of clearance of the surrounding land over a long period of time.
- Its location:** its western boundary is the River Sheaf, in part the ancient parish boundary between Sheffield and Norton (and incidentally the ancient boundary between Yorkshire and Derbyshire and between the Anglo-Saxon kingdoms of Northumbria and Mercia). Surviving ancient woods are very often on parish boundaries.

Ancient woods are either primary woods or ancient secondary woods. A primary wood is a much altered descendant of the primeval woodlands that were formed from about 11,000 BC after the end of the last Ice Age and have never been cleared of trees in the intervening period. An ancient secondary wood is a wooded site that was cleared of trees before 1600 and used for farming or settlement for a period of time. Woodland then grew back, again before 1600, when the settlement or farmland was abandoned.

It is much more likely that Ladies' Spring Wood is an ancient primary woodland than an ancient secondary woodland as it is on a very steeply sloping site and contains no signs of early settlement or field boundaries.

**Ownership and management history**

Between the late 12th century and the Dissolution in the 16th century the wood belonged to Beauchief in c.1175 by Robert FitzRanulf, lord of the manor of Norton. Ladies' Spring is a corruption of the early probably an allusion to the fact that the abbey was Lady and St Thomas à Becket. On the dissolution in 1537 the Beauchief lands became the property of Sir lord of the manor of Ecclesall, from whom they of Strelley-Pegge, Pegge and Burnall families. Staff acquired the wood in 1931. It was designated a Site of Special Scientific Interest (SSSI) by the Nature Conservancy in 1986.

**Coppice-with-standards management of wood**

This is known to have been practised in the adjacent area as early as 1486 and was almost certainly the way Spring was managed in the past. In this type of wood trees were periodically cut down to ground level to produce a stool and from the stool grew multiple stems - underwood. Some of the trees were not coppiced, to grow on to become single-stemmed trees and standards that provided timber for building. In the past standards in local woods were oak trees and Ladies' Spring was no exception to this general rule.

The most important use of coppice poles was for charcoal for iron smelting and wharfedale for lead. In Spring Wood there are at least 10 charcoal platforms where the charcoal stack was placed) and about 1 (depressions with a lip at the narrow end where cord over a fire to drive out the moisture - also known as charcoal platforms could have been constructed period and then used over and over again. The wood was used in the period 1575-1750.

...had ceased by the end of the 19th century. It became a canopy wood in which the thinning of trees not native to the area (exotic pine) took place



**How to Spot an Ancient Woodland**

**What is an ancient wood?**

An ancient wood is one that is known from existence since at least AD 1600. It is only in this country planted trees to form wood. In this country planted trees to form wood. In this country planted trees to form wood. In this country planted trees to form wood.

**WHEATA WOOD & PRIOR ROYD**

two ancient woods at Grenoside

**FUELLING A REVOLUTION**

The woods that founded the steel country

Sheffield City Council



## Example of a Local Project: Ideas for community and interpretation work for an ancient wood

### The Friends of Thynghowe, Forest of Birklands, Sherwood Forest, Nottinghamshire

The Friends of Thynghowe are a constituted group formed from members of three local historical societies in the Sherwood Forest area. The group was formed after two members gained ownership of an 1816 document of the Perambulation of the Lordship of Warsop. The perambulation details the walk around the parish boundary and also gives useful information with regard to the location of boundary stones, trees and other landmarks. In January 2005, it was decided to try to locate any evidence of the perambulation using the 1816 document. Many of the boundary stones were discovered still *in situ* preserved by the woodland that they happen to be located in. In addition, other landscape features marked on the map were also found relating directly to the woodland. It indicates the history of a working woodland that could go back to the Bronze Age.



One of the ancient oak trees within the Forest of Birklands © Lindy Smith

After the re-discovery of the features, the group was formed to preserve the archaeology of the Forest of Birklands and to disseminate the knowledge acquired to a wider community.

The group is called Friends of Thynghowe because one of the most important sites rediscovered was a hill called Thynghowe (meeting place) shown on a 1609 map of Birklands. On this site stands the ancient Forest Stone of Birklands.

The ancient forest of Birklands is managed by the Forestry Commission on long-term leases from the Thoresby, Welbeck and Fitzherbert estates.

Birklands is an old Viking word meaning Birch land and was first mentioned in documents in 1251 and is likely to be at least 1,000 years old.

It was part of the vast royal forest of Sherwood that covered over 100,000 acres of Nottinghamshire. The wood remained the property of the Crown for nearly 600 years and was used as a source of timber, grazing land and as an exclusive hunting ground rich with wild deer for successive Kings and Queens of England.

Today the Birklands is predominantly pine plantation, planted in 1938 and used for timber production, with the main species being Scots and Corsican Pine. Broadleaved trees only constitute 35% of the tree cover with a large number being spectacular ancient oak trees. A programme of heathland and oakwood restoration is currently in progress. The woodland is of high biodiversity value and important for recreation.

Raising awareness of and conserving the history and the archaeological and ecological features of the Forest of Birklands is what the Friends of Thynghowe are hoping to achieve. As part of the Woodland Heritage Champions Project the group established key points which they want to address as a way forward:

- To understand and record the significance of the site and in particular Hanger Hill and the boundary features. Thus far the group has not been able to find out exactly what the Thynghowe hill was used for and they are hoping to involve professional help from an archaeologist to determine its origin and meaning. Only if the significance of the site is understood will it be possible to grant it the full protection we suspect it deserves.
- To raise awareness within the wider community about the significant landscape that is hidden on our own doorstep in particular the woodland and its history. This includes group visits to the site emulating the old perambulation of the boundary and re-enacting what the original walks did to mark the boundary. This perambulation walk would particularly be aimed at schools and local history societies.
- To establish a way-marked trail around the Forest of Birkland with accompanying leaflet pointing out boundary stones, local wildlife, trees *etc.* we hope to encourage local people and visitors to view the wood through different eyes. We are currently in the process of producing a leaflet which will be distributed in libraries, schools and local tourist information offices.
- To produce a document which re-creates the 1816 perambulation today, in order to be able to preserve it for posterity and compare it with the 1816 perambulation. The information would be collated and archived with the possibility of producing a booklet in the future.



*The Friends of Thynghowe during their archaeology workshop led by Colin Merrony, University of Sheffield, November 2006. © Lindy Smith*



*Stacking coppice wood into a cord*  
© Joan Jones



*Hurdle Making*  
© Joan Jones



*Modern Charcoal Making.*  
© Joan Jones

## ***Section F: Appendices***

### **1. Glossary of Terms**

### **2. Legal and Planning Designations**

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## ***F.1: Glossary of Terms***

**Peter Graves, Lindy Smith, Alastair Oswald.**

**Accounts:** a record of financial transactions for an asset or individual.

**Ancient Replanted Woodland:** ancient woodland sites where the original native tree cover has been felled and replaced by planting, often with conifers and usually in the twentieth century.

**Ancient Semi-natural Woodland:** ancient woodland sites that have retained the native tree and shrub cover that have not been replanted. They may have been managed by coppicing or felling and allowed to regenerate naturally.

**Ancient Tree:** a tree that is very old and in the declining (end) stage of life; normally such trees have a larger girth than other trees of the same species. The term encompasses trees defined by three guiding principles: 1. trees of interest biologically, aesthetically or culturally because of their age, 2. trees in the ancient stage of their life and 3. trees that are old relative to others of the same species.

**Ancient Woodland:** woodland that has been under continuous tree cover from 1600AD, ancient woodland can be primary woodland Ancient Semi-natural or Ancient replanted.

**Ancient Woodland Indicators:** species which because of their characteristics (shade tolerance, slow colonisation and restriction to woodland habitats) tend to be found in old established woodlands. These are most commonly vascular plants (flowering plants and ferns) or Ancient Woodland Vascular Plants (AWVPs).

**Archaeology:** the study of the human past through its material remains (see also archaeological remains).

**Archaeological Remains:** buildings, earthworks, artefacts (including ecofacts such as veteran trees and hedges), subsurface deposits and environmental data.

**Artificial Woodland:** woodland which is not semi-natural, i.e. a planted wood.

**Aspect:** in geography it refers to the direction to which a slope faces.

**Association:** a group of organisms which occur together at the same geographical location.

**Beech Mast:** the prickly fruits of beech trees contain the beech nuts.

**Bell Pit:** a hollow in the ground created by shallow mining by sinking an unsupported vertical shaft into the ground.

**Besom:** a broom made from twigs (i.e. a witches broom).

**Biodiversity:** the variety of life (including species, populations, habitats and genes).

**Black Rot:** the end point of heartwood decay via either red or white rot where black wood mould causes the wood to look black (also called black wood).

**Bloomeries:** a type of furnace once widely used for smelting iron.

**Bole:** main trunk of a pollard.

**Bolling:** the trunk or stem of a tree, may also be used to describe the trunk and cut branches of a pollarded tree.

**Boundary:** a border that encloses a space; a boundary in surveying is the dividing line between parcels of land; in landscape history boundaries divide between areas of differing land use.

**Brash:** (also called Shreds) small branches trimmed from the side of a tree.

**Broadleaved Woodland:** woodland where the canopy has less than 10% of coniferous trees.

**Bronze Age:** is the age of Stonehenge, round barrows (see tumuli) and the introduction of the first metals (2000 - 750 BC).

**Bryophyte:** mosses and liverworts.

**Bundle Planting:** when several tree seeds are planted in the same hole, and multiple stems arise (a common feature of historic parks and gardens).

**Canopy:** the layer formed by the leaves of trees which form the highest vertical layer in a woodland.

**Carr:** a term for wet woodland (mainly northern England).

**Charcoal:** a carbon containing material obtained by heating wood or other organic matter in the absence of air.

**Charcoal Hearth:** the area used to process wood into charcoal, nowadays normally all that remains is a round shallow depression in the ground or a flat surface and retaining wall cut into a slope.

**Chase:** a private hunting area, which may be forested or open (see also firth).

**Chronological Sequence:** when over time one thing follows another.

**Climax Community:** the stable end point of the process of succession at a site.

**Clough:** term used for a narrow woodland valley in northern England (see Gill).

**Coke:** mineral coal from which most of the gases have been removed by heating.

**Commons:** a piece of land over which people exercised traditional rights, such as grazing their animals, collecting timber etc.

**Community:** in ecology a naturally occurring assemblage of plant and animal species living within a defined area or habitat.

**Compartment:** a subdivision of a woodland, historically an area of land used for forest inventory and/or management.

**Conifer Woodland:** is woodland where the canopy has 10% or less of broadleaved trees.

**Coopering:** making or repairing casks.

**Coppice Ring:** an old coppiced tree where the middle of the coppice stool/stump has died and new shoots grow outwards from the stump forming a ring of shoots.

**Coppice:** technically a tree whose trunk has been cut close to the ground to encourage growth of young poles (shoots or suckers) which can be then harvested. The term is also used to describe a dense stand of scrub.

**Coppice-with-standards:** an area of woodland where most of the trees are coppiced but a few are allowed to grow into timber trees.

**Copse:** a small woodland, or a coppiced woodland.

**Crown:** the spreading foliage and branches of a tree.

**Cruck:** a pair of curved timbers used in to support the walls and roofs of houses.

**Dead Wood:** wood which contains no living cells and which does not contribute towards the functioning of a tree, term used to describe both wood which is still attached to a tree and fallen wood.

**Deer Leap:** a gap in the deer park fence which allows deer to enter the park but not leave.

**Deer Park:** a substantial area of land enclosed (see park pale) to provide a constant supply of deer and other wild animals for hunting and food, these areas were also managed for timber and woodland resources.

**Den:** a former swine pasture, clearing or common (in the Kentish Weald).

**Designed Landscape:** any land purposely planned by humans including parks and gardens.

**Earth-fast:** objects (for example boulders) held in the ground and not easily moveable.

**Earthwork:** any artificial feature surviving as humps and bumps visible on the ground surface.

**Easting:** the eastward measured distance or x co-ordinate of a grid reference.

**Ecology:** the study of the interactions of organisms with their environment and with each other.

**Ecosystem:** the complex of a community of organisms and its environment functioning as an ecological unit.

**Ellenberg Values:** scores given to a plant species in terms of five environmental variables (light, moisture, pH, salt, and soil nitrogen) to indicate the conditions under which that species is usually found - for more details see <http://internt.nhm.ac.uk/eb/ellenberg.dsml?button=0>.

**Enclosure:** the conversion of common land into individual ownership, may involve the construction of barriers such as banks, ditches, walls and hedges.

**Epicormic Growth:** thin, twiggy shoot growth directly from the trunk of a tree, often forming substantial clumps.

**Exotic:** an alien species, in this context, introduced from outside Great Britain.

**Faggot:** bundles of brushwood tied up with twisted bands (called withies) of ash, birch, hazel or willow. Faggots were used as fuel in bread ovens and for strengthening wood banks.

**Field Layer:** a lower layer of vegetation in a woodland, consisting of small non-woody herbaceous plants eg bluebells, daffodils, ferns, the layer lies between the ground layer and scrub / canopy layers.

**Firth:** a private hunting area, see also chase.

**Flush:** either the sprouting of new leaves, or an area where water has washed over the surface or through the soil creating a small area of wetter habitat.

**Fodder:** see leaf fodder.

**Forest:** nowadays a term used to mean a woodland, historically it applied more broadly to any land on which forest laws applied.

**Forest Laws:** medieval laws introduced into England by the Normans and designed to protect wild animals for hunting by the aristocracy.



**Frass:** dry powdery remains left beneath a small hole in a tree, indicating invertebrate tunnelling activity.

**Fruiting Body:** the reproductive part of a fungus that contains or bears spores, for example a toadstool.

**Ganister:** a type of sandstone with a very high silica content and which was used to make bricks to line blast furnaces.

**Ghosts:** in the context of the manual, the marks left in a landscape by previous occupants and users of the area.

**Gill / Ghyll:** ravine or narrow stream; in the Kentish Weald and other areas, a narrow sinuous steep-sided woodland.

**Girth:** the circumference of a tree.

**Goit:** see Leat.

**Grid Reference:** a standard method for the location of a point on a map. The grid itself is a co-ordinate system on the map, and is numbered so as to provide a unique way to identify any given feature.

**Ground Layer:** the lowest vertical plant layer of a woodland, up to 10 cm above the ground and consisting of mosses, lichens, small flowering plants and seedlings.

**Habitat:** a particular type of local environment, the place an animal or plant lives.

**Hammer Pond:** pond used for providing power to water-powered forges.

**Handbill:** a printed sheet or pamphlet distributed by hand.

**Hardwood:** a term used to describe broad leaved trees (i.e. non conifers), the term does not refer to the actual hardness of the wood.

**Head Race (Leat / Goit):** a water channel leading to a water-powered wheel.

**Heartwood:** the dead wood in the centre of a tree.

**Hectare:** an area of land 100 metres by 100 metres (10,000m<sup>2</sup>), or approximately 2.5 acres.

**Herb:** botanically any species of flowering plant.

**Herb Layer:** layer comprised of ferns, grasses, flowering and non-woody plants between the ground and shrub layers in a woodland.

**Herbivore:** animal which feeds on vegetation.

**High Forest:** woodland dominated by tall trees (standards) suitable for timber.

**History:** the study of the past focused on human activity and leading up to the present day.

**Historic Environment:** all the physical evidence for past human activity and its associations that people can see, feel, find and understand in the present world.

**Holistic:** concerned with the complete system and how it works as a whole.

**Hollin or Holling:** an area where holly was historically managed to provide leaf fodder.

**Hollow Way:** see Trackway.

**Housewright:** a person who built wooden-framed houses.

**Humus:** the organic part of soil formed by the breakdown of plant and animal remains.

**Hurdle:** a small gate made of woven wood, used in temporary animal shelters.

**Intrinsic value:** the value of an object (woodland) in itself, excluding its value to people.

**Iron Age:** the period associated with hillforts and the development of tribal regions (750 BC - 43AD).

**Ironstone:** a sedimentary fine-grained rock, important as a source of iron (iron ore).

**Keystone species:** a species that has a key role in an ecosystem.

**Landslip:** downhill movement of unstable earth and rock, etc.

**Lapsed pollard/coppice:** a pollarded or coppiced tree that has not been cut for many years.

**Lateral diversity:** the variety of species and habitat found as you walk across a site or area.

**Laund:** an open area of land containing mainly grassland and scattered trees usually found in parkland, see also plain.

**Layering:** when part of a tree (branch or trunk) is bent or falls into the horizontal and shoots grow from this upwards towards the sun. This may occur artificially as seen in a layered hedge or naturally if a tree or branch falls over.

**Leaf fodder:** cut leafy branches of trees cut to provide grazing for domestic animals.

**Leaf Litter:** the layer of undecayed plant material on the surface of the woodland floor.

**Leat / lete (also goit / race):** a man-made water channel. Leats or Goits are artificial water channels that connected water-powered industrial sites to the rivers or streams on which they were located. The term leat is more commonly used in Southern England and goit in Northern England.

**Lichen:** a composite organism consisting of a fungus and an alga living in symbiotic association, lichens may be crust like, scaly or leafy, and grow on trees, rocks or soil.

**Lignin:** the binding agent that holds the cells in wood together.

**Linear feature:** a feature, e.g. ditch, bank or trackway, which is long and narrow, and whose course can be defined by a line (straight, curved or sinuous).

**Maiden:** a tree that has never been cut and thus has a single main stem.

**Mesolithic:** the Middle Stone Age period which began in Britain at the end of the last Ice Age (12,000 to 10,000 BC), a period of hunter gathers, which ended when early settled agriculture began.

**Mixed woodland:** woodland where the canopy is comprised of 10% or more of both Broadleaved and Conifer trees.

**Monoculture:** the cultivation of a single species.

**Moss:** tiny leafy-stemmed flowerless plant.

**Multi-trunk:** a tree which has several trunks growing up together occurring naturally (see also bundle planting) multi-trunks may look similar to a coppiced tree which has been deliberately cut to form several trunks.

**Multi-disciplinary:** involving the use of expertise from a variety of subject areas.

**Mycelium:** the vegetative part of a fungus, may form fruiting bodies such as mushrooms.

**Mycorrhiza:** micro-organisms (fungi) in a mutually beneficial (symbiotic) relationship with the plant root.

**Neolithic:** the last stage of the Stone Age, which ended with the start of the Bronze Age (2000 BC). Sometimes referred to as the New Stone Age, this is a period characterised by early settled agriculture and by the construction of the earliest communal monuments.

**Non-native:** a species which does not occur naturally in a particular area but has for example, been brought into a country as a result of human activity.

**Northing:** the distance or 'y' co-ordinate of a grid reference.

**Old growth:** a tree which has not been managed for over 200 years.

**Orchard:** a plantation of fruit / nut trees.

**Ornamental tree:** a general term referring to a tree bred or grown for the beauty of its structure, foliage and flowers rather than its functional reasons.

**Pale:** a high fence or wall often surrounding a woodland, deer park or other wooded landscape.

**Pannage:** autumn feed for pigs in woodland (for example beech mast or acorns), or a payment for pasturing pigs in woodland.

**Park:** land containing widely spaced trees and enclosed for domestic or wild animals.

**Pasture:** a field of herbage used for grazing livestock.

**Pen pond:** small pond lying close to a larger pond, used to fill the main pond during dry weather.

**pH:** a measure of acidity and alkalinity on a scale of 0 to 14, where a PH of 7 is neutral, a pH of less than 7 is acidic and a pH of greater than 7 is alkali.

**Phytosociology:** the classification and characterisation of plant communities.

**Pitstead:** another name for a charcoal hearth (from northern England).

**Plain:** a cleared area of land (mainly grassland) containing scattered trees, see also laund.

**Plantation:** a woodland where the trees have been deliberately planted, normally for forestry purposes, for example timber production.

**Point feature:** a small feature which can be recorded on a map as a single grid reference or point, e.g. a saw pit or charcoal hearth.

**Pole:** a young tree or branch of fairly small girth from a coppice or pollard, of a size suitable for making poles.

**Pollard:** a tree whose trunk has been cut at 2 to 4 metres above the ground, i.e. above the height of grazing animals, then allowed to regrow to provide a crop of young branches, (see also bolling.).

**Polygon:** term used in mapping to denote a shape with irregular sides which is larger than a point feature and may contain point or linear features, for example a compartment of a woodland.

**Post-medieval:** the period following the medieval period, estimated as starting about 1500AD.

**Potash:** describes any material containing potassium, but is specifically used to describe potassium carbonate (lye) mixed with other potassium salts derived from wood ashes. Potash was used in dyeing, soap and glass manufacture and as a fertiliser.

**Primary Woodland:** woodland that has been woodland, or has been under continuous tree cover back into prehistory.

**Processing platform:** levelled areas, cleared of smaller trees and undergrowth lying close to a road or path within a woodland, used to store wood and timber products from woodland industries.

**Q-pits:** a Q shaped hollow in the ground surface, linked to the historical production of whitecoal.

**Quadrat:** a rectangular sampling plot used for ecological or species population studies.

**Ramel / Rammel(l):** this term is first recorded in fifteenth century woodland records in South Yorkshire in Latin as ramayllis. It means brushwood and was used to make faggots (bundles of brushwood). Rammel is now the South Yorkshire dialect word for rubbish.

**Recent Woodland:** woodlands that were created after 1600 on previously un-wooded sites.

**Red rot:** a form of wood decay where the lignin of the tree is unaffected (also called brown or orange rot).

**Remnant trunk:** stem of a tree where the inner part of the wood has been lost through decay leaving the whole or part of the outer stem (living part of the tree).

**Ride:** a wide path or track originally made for riding through a woodland.

**Ridge and Furrow:** a term used to describe the pattern of peaks and troughs created in a field from a system of ploughing with oxen from the Middle Ages.

**Royal Forest:** land over which certain rights were reserved for the monarch and /or aristocracy, the concept was introduced to England by the Normans in the 11th Century, at its height one third of the country was designated as Royal Forest.

**Ruderal:** a weed plant, characteristic of disturbed and waste ground.

**Sap run:** when sap oozes out of a tree after the surface bark has been damaged.

**Sapling:** a young tree between 1 and 2 metres high.

**Saproxyllic:** relating to dead or decaying wood.

**Saw pit:** a rectangular hole in the ground used to saw tree trunks into planks by two people, one working above the hole and the other in the pit.

**Scrub layer:** a layer of woody vegetation (shrubs and seedlings / saplings) lying beneath the main tree canopy of a woodland, but above the ground and field layers.

**Secondary Woodland:** woodland that now grows on land that, at some time in the past, was cleared of trees and used as pasture, meadow, arable.

**Seedling tree:** a young tree that is less than 1 metre in height.

**Senescent:** old, aged or dying.

**Setting out:** the valuation of an area of woodland, prior to the sale of timber, etc.

- Shade-bearing:** a term used to describe a species which can grow under the canopy of another species, in an area of low light.
- Shred or shredding:** the process where side branches are removed from a tree; a tree where the side branches have been removed for use.
- Shrub Layer:** layer of small trees and woody plants between the herb layer and canopy.
- Silviculture:** the care and cultivation of trees.
- Smelting:** the process for extracting metal from ores.
- Softwood:** term used to describe conifers or evergreen trees and the wood from these types of tree.
- Soil downwash:** the movement of soil downslope due to farming.
- Spring:** a term used sometimes to describe a coppiced woodland.
- Standard:** a tall straight tree with a trunk of 1.8 metres or more which is suitable for timber; in woodland it may also be used to describe the trees which make up the canopy layer.
- Stool:** the base of a tree left after coppicing.
- Stub:** the stump of a tree, the piece remaining on a trunk or branch after it has been cut.
- Succession:** an ecological term meaning the gradual and orderly process of change in an habitat brought about by the replacement of one species or habitat by another species or habitat until a stable climax is established.
- Survey:** the systematic examination of a site, at various levels of details.
- Tail race (leat / lete / goit):** a water channel flowing from a water-powered wheel.
- Tanning:** the process for preserving animal hide as leather by primarily using extracts from tree (especially Oak) bark.
- Tannins:** a variety of substances of plant origin; used in tanning and in medicine.
- Tar:** a viscous black liquid derived from the distillation of organic matter, including wood.
- Timber:** large trunks of trees which are suitable to be sawn into planks (lumber).
- Tithe:** a tax or assessment of one tenth of produce levied on all communities to support the established church.
- Title deeds:** documents evidencing ownership and extent of a property, also sets out any rights or obligations that affect the property.
- Topography:** the shape of the land.
- Trackway:** a beaten or trodden path, sometimes deeply eroded by use to form a hollow way.
- Transect:** a straight line/route between two points used for survey purposes.
- Tree Protection Order:** a planning designation given to a single tree or group of trees, which protects the tree(s) from development and damaging activities.
- Tree throw:** the blowing over of a tree by strong winds, this may leave a small hollow in the soil which when the tree has rotted away may be mistaken for a pit.

**Triangulation:** (1) A method of surveying in which a region is divided into a series of triangular elements based on a line of known length so that accurate measurements of distances and directions may be made by the application of the rules of trigonometry. (2) a method of establishing the accuracy of information by comparing several independent points of view or sources of information.

**Tumulus (plural Tumuli):** an antiquated term used by Ordnance Survey to describe burial mounds or barrows usually of Bronze Age date.

**Turf:** the surface layer of soil containing a mat of grass and grass roots.

**Turnery:** the use of a lathe to turn solid wood into shapes for chair legs, pegs, toys, etc.

**Understorey:** the plants growing under the main canopy of a woodland.

**Underwood:** the lower storey of a woodland (lying under the canopy layer of trees) and/or of coppice/pollard poles or suckers.

**Utility:** a measure of the use or satisfaction a person gains from an object, such as a woodland.

**Vascular plant:** plants which have specialised cells/tubes which are used to conduct fluids around the plant, the group includes flowering plants, conifers and ferns.

**Vera Hypothesis:** the theory that the original woodland cover (the Wildwood) did not consist simply of dense woodland, but was made up of a patchwork of woodlands, open grassland and solitary trees, before human modification.

**Veteran tree:** a tree that is usually in the mature stage of its life with important wildlife and habitat features including; hollowing or associated decay, fungi, holes, wounds and large dead branches. Veteran trees may be of interest biologically, culturally or aesthetically or because of their age, size or condition.

**Walkover survey:** a systematic visual inspection of a site and its vicinity, usually resulting in basic notetaking and / or photography.

**Waterlogged:** a soil where all the gaps between the soil particles are filled with water causing an absence of air in the soil.

**Weald:** once meant a dense forest especially the famous Great Wood stretching far beyond the ancient counties of Sussex and Kent, where the present countryside of smaller woods is still called the Weald.

**White rot:** degradation of the heartwood caused by fungi making the wood bleached, fibrous and spongy.

**Whitecoal:** kiln-dried wood used as fuel in lead smelting.

**Wildwood:** the original forest which developed in Britain as the glaciers melted at the end of the last Ice Age.

**Wood:** a term used to describe the hard fibrous lignified substance under the bark of trees, or a term used to describe branches of a tree which are smaller than timber, or to describe an area covered in a dense canopy of trees. Coppicing produces wood not timber.

**Wood pasture:** a very open type of woodland, a cross between grassland and woodland, historically often used for grazing.

**Woodbank:** an earthen bank topped with trees.

**Wooded Landscape:** a generic term for woodland, parkland, wood pasture, former forest and other treescapes.

**Woodland:** is land that is covered with trees and shrubs.

**Woodland structure:** the vertical and horizontal layers of habitats found within a woodland, vertically this may include a canopy layer, a shrub layer, a herb (or flowering plant) layer and a ground layer.

**Woodward:** the head woodman on a private estate.

**Working tree:** a tree which at some stage in its life was managed by humans to generate wood for a particular usage, such trees normally have a modified shape/form.

### Acronyms

A.S.N.W.: Ancient Semi-Natural Woodland

A.W.I.: Ancient Woodland Indicator

A.W.P.S.: Ancient Woodland Vascular Plants

D.B.H.: Diameter at Breast Height (i.e. the height for measuring girth)

G.I.S.: Geographic Information System

G.P.S.: Global Positioning System

H.E.R.: Historic Environment Record

O.S.: Ordnance Survey

P.A.W.S: Plantated Ancient Woodland Site

S.M.R.: Sites and Monuments Record

## **F.2: Legal and Planning Designations**

**Peter Glaves, Lindy Smith, Alastair Oswald**

### **Ecological Conservation Designations, Laws and Protection**

#### **Statutory designations**

There are a wide range of conservation (ecological) designations which are applied to sites in England; these include local, national and international designations. Some of the most important ones are detailed below:

#### **Sites of International Importance**

- Special Protection Areas (SPAs) classified under the EC Birds Directive
- Special Areas of Conservation (SACs) classified under the EC Habitats Directive

#### **Sites of National Importance**

- National Nature Reserves (NNRs)
- Sites of Special Scientific Interest (SSSIs)

#### **Sites of Regional/Local Importance**

- Local Nature Reserves (LNRs)

Most of the above sites, with the exception of Local Nature Reserves are protected by the SSSI legislation, which was initially set out under the National Parks and Access to the Countryside Act (1949) and was most recently revised under the Countryside and Rights of Way Act (2000). A site will be designated as a SSSI if it has certain attributes of national importance for conservation such as for example a rare community of woodland plants or invertebrates. The law is quite complex, but essentially within a SSSI there are specific activities for which permission must be sought from Natural England, before they are undertaken. The condition of SSSIs is periodically assessed by Natural England which means that if your site is a SSSI then information on its species and composition will be available online at the Natural England web site at: <http://www.naturalengland.org.uk/conservation/designated-areas/default.htm> For more details on the law relating to legally protected conservation sites see: <http://www.defra.gov.uk/wildlife-countryside/ewd/ewd08.htm>.

#### **Non Statutory Designations**

There are a variety of non-statutory (non-legal) designations applied to sites by a variety of public and private bodies, for example the county Wildlife Trusts or the Royal Society for the Protection of Birds (RSPB). Please ensure you contact the relevant organisations as well as the site owner before carrying out any survey work. These organisations are generally very happy to receive the results of your studies, as they may be of use in planning future site management.

Most local planning authorities designate sites of ecological importance in their region, a variety of names are used such as '*Sites of Importance for Nature Conservation*' or '*Sites of Special Interest*'. These are usually planning designations and many authorities hold information on the sites concerned. Please check with your local planning department if you think your study site may be one of these areas.

#### **Tree Designations**

Legally there are three ways in which a tree can be protected:

- via a Tree Preservation Order (TPO) for an individual or groups of trees;



- as a planning condition; or if
- the tree lies within a conservation area.

All three designations are applied by Local Councils. Sometimes the information is shown on council web sites, if in doubt you should contact your planning department to confirm if your study area is subject to any of these designations. This is especially relevant if you want to carry out tree management such as felling, lopping, topping, uprooting or wilful damaging trees without the permission of the local planning authority. For further detail and guidance on TPOs please see: <http://www.naturenet.net/trees/tpo.htm#Conservation%20Areas> and [http://www.aie.org.uk/download/tpo\\_detr\\_guide.doc](http://www.aie.org.uk/download/tpo_detr_guide.doc).

## Legally Protected Species

The Wildlife and Countryside Act 1981 (and its subsequent modifications) sets out the protection for certain species of wild animals and plants in Britain. The law is quite complex but is summarised below. Species can be included in so-called Schedules, which gives them a particular level or type of protection. Generally whilst undertaking your survey work you should take care:

- not to disturb the nest of any breeding bird;
- not to harm, disturb or damage any animal or place used by an animal as its shelter; and
- not to uproot a native wild plant, or pick its flowers.

### Useful websites:

- For a list of protected animals see: <http://www.jncc.gov.uk/page-1815>
- For list of protected plants see: <http://www.jncc.gov.uk/page-1816>
- If you wish to understand more about conservation law please visit <http://www.naturenet.net/law/>

## The Historic Environment: Designation, Legislation and Protection

### What is the Historic Environment?

Individual historic features of different types and periods, surviving in different conditions, litter the British Isles. You will seldom find yourself more than a stone's throw from some old building, grassy earthwork, or site whose remains now only survive buried below ground. More importantly, perhaps, it is now widely recognised that past human intervention has shaped the present character of our whole physical environment. In other words, 'the historic environment' is more than merely a scatter of individual dots on the map; it is the very fabric of the map itself. In recent years, there has been an ambitious attempt to get to grips with this big picture in England through a national project called 'Historic Landscape Characterisation'. To find out more please visit <http://www.english-heritage.org.uk/server/show/conWebDoc.3943>.

### Protecting the Historic Environment

English Heritage, Historic Scotland and Cadw are the national heritage organisations responsible for, amongst other things:

- providing advice on the historic environment, and
- ensuring the protection of the historic environment.

To achieve this, the three national organisations work closely with local authorities (City and County Councils, Unitary Authorities, National Park Authorities, as well as major landowners). Most local authorities, including all National Parks, have a dedicated Archaeologist who will probably be your first point of contact with the professional establishment and who will help to initiate links with the relevant national heritage organisation if appropriate. Major landowners such as the Forestry Commission, the National Trust and the Ministry of Defence also have staff who perform similar roles. Your first point of contact within the relevant national heritage organisation may well be the local Historic Environment Advisor (formally known as the 'Inspector of Ancient Monuments').

English Heritage, Historic Scotland and Cadw identify key historic assets and 'designate' them as being of 'national importance'. These are then afforded legal protection by the Secretary of State for Culture Media and Sport under the Ancient Monuments and Archaeological Areas Act (1979). For many decades, these protected historic assets have been known as 'Scheduled Monuments', 'Listed Buildings' or 'Registered Parks and Gardens'. As this publication goes to press, however, the whole process of heritage protection in England is being reformed and it is not certain that these terms, which sometimes overlap, will be retained. Internationally important monuments such as Stonehenge and Hadrian's Wall, together with their wider settings - are designated as 'World Heritage Sites'. The decision to designate a historic asset rests on an assessment of its importance, taking into account a number of factors, including its rarity, its condition (that is, its state of preservation) and its cultural associations.

Many historic features are of purely local significance, or perhaps of importance only to an individual researcher trying to understand the history of a particular area. This does not mean, however, that English Heritage, or its counterparts in Scotland and Wales, and the local authority's Archaeologist ascribe no value whatsoever to such features, nor that they will have no opinion on how they should best be treated.

## **What does Legal Protection mean in Practical Terms for you as a Researcher?**

To begin with, you will need to find out exactly what is protected within your study area, by consulting the Historic Environment Records (see **C.2**). Surveying the surface remains of protected historic features, without disturbing them in any way, is likely to meet with warm approval from the local authority's Archaeologist, as well as from English Heritage or its counterparts in Scotland and Wales. However, without prior consultation with and written consent from these authorities, it is illegal to:

- excavate or otherwise disturb the protected area
- use a metal detector within the protected area
- remove artefacts from the protected area, even if these are lying exposed on the surface
- use geophysical survey equipment within the protected area.

Geophysical survey, like surface survey, is non-destructive, so all that is normally required is an exchange of letters between you, as the researcher, and the relevant national heritage organisation local Historic Environment Advisor (formally known as the 'Inspector of Ancient Monuments'). Excavation of any form is a different matter and it is generally recommended that excavation work is not carried out of any feature unless the Local Authority archaeologist suggests otherwise. The fact that a feature is legally protected does not mean that permission is never given to excavate. But it does mean that, because excavation is inevitably a destructive process, there has to be a very strong case in favour of this course of action, with clear, achievable research and conservation goals. There will also need to be a clear strategy for seeing

the project through after the excavation, with proper funding to ensure that specialists can be employed, if appropriate, and proper arrangements made in advance for publication and archiving. English Heritage's 2007 publication *Management Of Research Projects in the Historic Environment* (available on-line through the English Heritage website) provides a useful checklist of everything you will need to consider in planning any excavation project.

If you are considering excavation of a protected feature, it is wise to begin liaising at an early stage with the Local Authority archaeologist and with the national heritage organisation's local Historic Environment Advisors (or Inspector of Ancient Monuments). Indeed, while it is not illegal to excavate features that have no legal protection (as long as you have the permission of the landowner), early liaison with the local authority Archaeologist is still advisable. If you discover a feature which is potentially of national importance and press ahead with excavation without prior discussion with at least the local authority Archaeologist, neither the local authority nor the national heritage organisation are likely to be well disposed towards your project and your group. On the other hand, if you have taken care to liaise closely with these representatives of the authorities from the outset, you will develop a mutual trust. With their active support for your project and your group, everything will run much more smoothly.

### **The Portable Antiquities Scheme**

The Portable Antiquities Scheme was set up to improve arrangements for recording all 'portable antiquities' which fell outside the scope of the Treasure Act 1996. It is a voluntary scheme for the recording of archaeological objects found by members of the public covering the whole of England and Wales. The Scheme was established to promote the recording of chance finds and broaden public awareness of the importance of such objects for understanding our past. Information about the scheme and how to register finds can be found at [www.finds.org.uk](http://www.finds.org.uk).

## ***F.3: Results for Place-name Exercise (C.5)***

**Mel Jones**

Abbreviations: OE = Old English; ME = Middle English; ON = Old Norse; N-F = Norman-French

### **A. Meaning of the settlement names**

Akden = oak valley (OE).

Akley = oak clearing (OE).

Alderthwaite = Alward's clearing. Thwaite is ON.

Ashurst = wooded hill dominated by ash trees (OE).

Birkwith = birch wood (ON).

Brigshaw = wood (shaw, OE) by the bridge (ON).

Clayroyd = clayey woodland clearing (OE).

Hollingreave = holly wood (OE).

Longley and Upper Longley = long woodland clearing (OE).

Lundhouses = hamlet in the wood or grove. Lundr is ON.

Mapperley = woodland clearing with maples (OE).

Okenholt = oak wood (OE).

Southfield = treeless area in an otherwise well-wooded landscape (field is OE). Where there is a Southfield there probably is or was a Northfield.

Stanley = Stoney woodland clearing (OE).

Stanningfield = a stoney treeless area in an otherwise well-wooded landscape (OE).

Woodseats = cottages deep in the wood (OE).

### **B. Meaning of woodland names**

Ashurst Shroggs = a scrub wood on a wooded hill dominated by ash trees (OE).

Birkencliff Wood = steep slope: cliff = OE or klif = ON) covered in birch trees (birk = ON).

Carr Wood = fenny or marshy wood (kjarr = ON).

Far Woodseats Spring = coppice wood belonging to the inhabitants of Woodseats (OE).

Hanging Hagg = enclosed wood on a steep slope (OE).

Loundes Wood = small wood or grove (lundr = ON).

Park Spring = coppice wood once part of a deer park (ME).

Prior's Coppice = coppice wood belonging to a monastery (note that it is close to Stanningfield Priory).

Raincliffe Spring = coppice wood on a steep slope close to a boundary (rein = ON for boundary).

Ramshaw Wood = wood full of ramsons (OE).

Storrs Wood = coppice wood (ON).

The Cobby Wood = coppice wood (N-F).

The Far Hollins = holly wood at some distance from its owner.

The Holts = wood (OE).

West Haigh Wood = haeg or haga = enclosed wood (OE).

## F.4: Interpreting Archaeological Features

Paul A. Ardron, Ian D. Rotherham and Alastair Oswald

This appendix should be used in conjunction with the survey guides in **Section D**. Here some of the more common point and linear features you may come across are described to help you interpret your feature. A wide range of features may be present, and this manual cannot hope to cover all of them. It provides a basic introduction but is supported by a number of excellent general publications, both national and regional in scope, which may help you further.

### Linear Features

**Linear features** can offer remarkable insights into the history of our landscape and are some of the most important historic features you may come across in your research. They may include boundaries and route-ways but also ancient cultivation areas such as field lynchets. **Boundaries** are a sign of land ownership; define parishes and different land uses. Some boundaries originated in prehistory and have been in use up to the present day; others have been renegotiated many times, shifting their course and often their physical shape or form. Patterns of boundaries can sometimes reveal the story of a place's development over thousands of years. Some boundaries are not continuous features on the ground, but are marked at intervals by boundary stones and distinctive immovable landmarks, such as watercourses, natural outcrops, and prehistoric monuments. These 'permeable' boundaries served to define cultural land divisions, such as parishes, parliamentary constituencies and common rights on open moorland, but in terms of land management had no practical function in themselves. Boundaries and other linear features may move around, within, or through your woodland.

**Hedges, walls, fences and banks and ditches** on the other hand, were generally designed to keep animals and/or people in/out of certain areas and so served to separate different land management regimes. Probably the best known woodland boundaries of all, park pales, were of course built to keep deer in as well as to keep other livestock and people out. For this reason, the bank that supported the pale (a high fence or wall) was invariably built with a ditch running along its inner side. Elsewhere, trees and the products associated with them were essential everyday crops, so woods were managed just like fields of pasture and wheat, enclosed within boundaries that physically prevented grazing and browsing animals from entering at will. Eating young trees, leaves and shoots would spoil the crop and reduce the regeneration and growth-rates of trees in the longer term and so a ditch, wall, fence or hedge was needed to keep animals out. This is why most ancient woodlands have remnants of boundary features either around or even within them.

Other linear features found in woodlands include **trackways, drainage networks**, and other **artificial watercourses**, including those associated with some post-medieval industries. Trackways, in particular, can reflect the history of a piece of woodland. Many of the deeply eroded 'hollow ways' (trackways used heavily and thus erode to form a sunken path) in the Weald of Kent are largely the product of the iron industry that thrived there in the sixteenth and seventeenth centuries. Trackways can also include rides, carriage drives and avenues, which almost always relate to more aristocratic traffic: Rotten Row, which passes through central London's Hyde Park, for example, began life as Route du Roi (King's Avenue). Others avenues and carriage drives and avenues can be linked to the many minor houses and halls that dotted the landscape during the eighteenth and nineteenth centuries, and may also be relate to farmsteads. During the Second World War, anti-invasion defences included '**stop lines**' which included anti-tank ditches. Woodlands are some of the few places these military 'boundaries' still survive as earthworks.

Wooded landscapes along the flanks of the Pennines often have braided hollow-ways used by pack-horse trains in medieval times. Many of these salter or psalter lanes were for transporting goods, especially salt from the Cheshire Plains. It is worth noting that both physically and over time many of these features had multiple and over-laying uses.

## Point Features

### I - Mounds and pits created by natural processes in woodlands

This section describes some of the natural features that are most easy to confuse with artificial features. The list is not intended to be exhaustive and it is always worth recording a feature if you think there is even an outside chance of it being artificial.

#### A. 'TREE THROW' PITS

When a tree falls over, usually as a result of high winds, it leaves a pit where the root plate once anchored the trunk into the ground, known as a 'tree throw'. These may be quite recent or centuries old. If a tree fall is recent, the presence of the fallen tree, or of an existing stump, will make it easy to distinguish the depression from an artificial earthwork. However, if the stump has rotted away completely, it can be very difficult to confidently interpret the pit that is left. Usually, tree throw pits are approximately circular and about 1 to 4 metres in diameter, depending on the species and size of tree. Sometimes, there are more clues: a semi-circular pit with a mound along its straight edge is characteristic of a fall in which one side of a large root plate has remained partially embedded in the ground, forming the earthen mound after decades of gradual decay. Confusingly, some artificial earthworks, such as some small-scale quarries and 'weapons pits' dating to the Second World War, can look very similar after seventy years of erosion. In these cases, analysis of the wider distribution pattern is usually the key to telling the difference. If in doubt, record the feature and mark it for re-examination at the end of your fieldwork. By then you will be more familiar with the overall character of your woodland. Mistakes are possible, so for example, if you have identified a single weapons pit in the centre of a wood that contains no other evidence for Second World War military activity, the chances are that you have misinterpreted a tree throw pit.

#### B. LANDSLIPS

Woodland is often found on land that is unsuitable for arable agriculture: on steep slopes, boggy ground, or heavy soil. Clay sub-soils, especially, can combine all three of these factors likely to promote woodland, and they also create conditions under which landslips can occur, especially after wet weather. Therefore, woodland and landslips often coincide. These landslips vary in size and can later be confused for artificial platforms or exploratory diggings. As with tree throw holes, the key to dismissing a particular mound or hollow as a natural feature may well be a thorough examination of the surrounding area. You will need to ask yourself:

Are the natural geology and topography of the area likely to lead to a landslip in this particular place? Are there any active landslips nearby? Assuming the earthwork might be an artificial quarry or trial mine working, is there any sign of what rock or mineral outcrop might have been targeted? Are there any components of the surface remains which must be artificial, that simply could not have occurred naturally?

#### C. WATER FEATURES

A supply of water was important to certain woodland industries, particularly metal smelting and working, where water provided a vital source of power. To this end, natural streams were often exploited and manipulated. This can make it difficult to tell the difference between a natural

watercourse and one whose channel has been subtly adjusted by human intervention, especially where the stream continues to follow the artificial course today. Once again, you may not be able to decide on the degree of naturalness, based on an examination of the channel in isolation, especially if the water course has had sufficient time to develop a more naturalised appearance. You will need to judge from analysis of the local topography whether a different course might be more likely for a purely natural flow of water. Above all, perhaps, you will need to decide whether you can understand the potential purpose of the diversion, and particularly whether you can establish a relationship with other industrial remains in the vicinity. Streams may have been dammed to create what is now a point feature, and both natural and artificially constructed ponds are found.

#### **D. ANIMAL BURROWS**

Woodland animals such as rabbits, foxes and badgers are capable of moving vast amounts of soil. Even woodland ants will produce sizeable mounds that may appear artificial. Wild boar - which are increasingly common in south-east England and the midlands - will scour shallow depressions for their beds. Badgers, because their setts are extensive and sometimes occupied for many decades, can produce earthworks that may be mistaken for artificial diggings, particularly when they have abandoned their homes many years ago. Close examination of badger sets will usually show a pattern of organic growth, with some mounds of spoil cast up over others. Burrowing animals will often target the soft ground provided by artificial earthworks, so you should bear in mind that what you are looking at may be the end product of several quite different activities, some artificial, some natural. Foxes and badgers will also occupy features such as abandoned mine workings. You may also come across medieval rabbit warrens or pillow mounds - artificially constructed rabbit breeding sites.

#### **E. TREE STUMPS**

Large tree stumps or dead standing trees should also be recorded during a survey. Oak stumps, for example, decompose very slowly and give an insight into the trees that once grew in your wood. Indeed, it is highly probable that these 'natural' features were once regularly managed by humans.

#### **F. GLACIAL FEATURES**

During the Ice Ages features were formed by extreme freeze / thaw conditions, retreating glaciers depositing sediment in regular mounds, and banks and hollows scoured out by huge quantities of periglacial meltwaters (released as the ice sheets melted). Some of these features can be extremely difficult to distinguish from artificial earthworks. In Norfolk's Breckland, the extreme cold of the Ice Ages left corrugated land surfaces which are, even on close examination, very difficult to tell apart from the traces left by medieval ploughing, especially where genuine medieval ridge and furrow lies nearby. In parts of North Yorkshire and elsewhere the landscape is dotted with materials dumped by retreating glaciers. Once again, an appreciation of the topography and the wider distribution of these humps and bumps may be the best way of reaching an interpretation of an individual feature. Consulting geological maps and looking at other physical characteristics of the landscape will help you to find out how the area as a whole may have been affected.

Norfolk, for example, has woodlands with groups of very circular ponds derived from 'pingoes' formed during these periods of past climatic extremes. These can look like the bell pit coal and ironstone mines of the English Midlands or even the widespread clay and marl pits from the seventeenth and eighteenth centuries. It is important to consult a geological map and if possible, a local geologist to gain more insight into these features.

## 2- Features created by woodland industries

### A. CHARCOAL HEARTHES (in some regions called PITSTEADS)

Charcoal making was a widespread industry that took place within Britain's woods for at least 1,500 years. During the medieval and early industrial periods, woods were often intensively 'farmed' on a rota to yield the highest crop of thin stems suitable for conversion into charcoal. Not until the eighteenth century did coal replace charcoal as a key fuel for many important industrial processes, particularly the smelting of tin, iron and lead. Charcoal, along with sulphur and saltpetre, is one of the key ingredients of gunpowder, which remained a very important explosive well into modern times. The charcoal burners encountered by Arthur Ransome's Swallows and Amazons in the early twentieth century were probably producing charcoal for the Lake District's clutch of gunpowder factories. Charcoal was also used for household cooking, because it is relatively smokeless and gives a more even and controllable temperature than wood. This is still a major use in many less developed parts of the world today, and is sometimes very damaging to forests.

Charcoal hearths are probably the most typical archaeological feature of many woodlands in zones where manufacture took place. You should look out for them in any suitable area of potentially ancient woodland. The presence of ancient coppices within a wood will usually imply the presence of charcoal hearths. Today, most survive usually as more-or-less circular platforms, ranging from about 4 metres to 15 metres in diameter. Where these platforms were located on slopes, they were partially cut into the hillside, sometimes with a wall retaining the terrace of spoil down slope. Where the ground surface is even, they present more subtly with a shallow dish and a raised perimeter. Changes in vegetation and the tell-tale evidence of charcoal dust and fragments provide clues. It may be quite difficult to identify a charcoal hearth, but fragments of charcoal on the ground surface, and a layer of charcoal dust in the soil horizons may help. Check for evidence in animal diggings in and around the site. The disturbance, burning, and materials such as ash and charcoal often result in a vegetation different from the woodland nearby. This may include the presence of distinctive mosses on the platform. It is worth noting that the season of year may make a big difference in the visibility of charcoal platforms on flat ground. Late winter is best. Also, if the tree canopy is opened through windfall or site management, the subsequent re-growth of vegetation in the resulting glade may mask the evidence for several decades. Do not assume that because you cannot see the platforms that they are not there. Go back at other times when conditions may be more suitable.

It is important to look at sites both in wooded and non-wooded landscapes. A charcoal platform outside a woodland may reveal a woodland clearance episode, or it may have been a process occurring beyond the woodland boundary. Check for other evidence such as estate records and maps, and indicator species. Also outside your woodland, but in suitable areas such as the south western moors of Devon and Cornwall, Cumbria, or the Peak District, you may also find peat charcoal platforms now within or close by, a wooded landscape. Again these provide vital clues to land use and history.

### B. Q-PITS

The process by which whitecoal was produced is not fully understood. It is known that kilns were built in the form of often stone-lined circular pits, about 2m in diameter. A flue (known as the 'tongue') ran into the middle of the pit from a stoke hole (the 'mouth'), making the plan of the kiln as a whole somewhat Q-shaped in appearance. Today, few Q-pits are well preserved, as the kilns were presumably dismantled after use and the stones lining the pits were mostly removed subsequently. The 'mouth', or stoke hole, can often be distinguished and sometimes it will be possible to detect the remains of the stone lining. There will often be a mix of coal, coke, charcoal, burnt wood and ash in the sediments within the pits. The clay-lined bases can provide evidence (if expert advice is on hand) of the temperatures of any burn and hence the possible



functions of these pits. They vary considerably in size and detail of structure, some with a lot of stone and others with little. It is known that dressed stone structures were removed within living memory. The pits were probably covered by large stone lintels in the case of permanent locations (such as Froggat in Derbyshire). Here the fuel was brought to a permanent or long-term kiln that served a smelter close by. Short poles of wood were placed on the lintels and the fire below dried the wood to form whitecoal. Others were covered by cut green timber (logs) on which the wood was stacked, and these were most likely to be in situations where the process moved around the wood or woods, and the whitecoal was then taken a distance to the smelter.

Often the pits occur in groups, and the flue leading to the mouth of the pit varies considerably in length. Some pits are without a lip, and there is evidence of multiple usage of these features over time. They most often occur in areas where there was extensive lead mining or smelting, and are well-documented from the Yorkshire Dales, Wales, South Yorkshire, and North Derbyshire. When you are surveying expect variation! These pits are similar to corn drying kilns and mistakes can be made.

#### **D. SAW PITS**

Sawpits occurred both within the woods and larger ones at processing locations outside. Despite their widespread use in the past, the smaller sawpits within woods are rarely recognised. This is because many were constructed for a brief period of use and may have collapsed or infilled soon after their abandonment, leaving only shallow depressions that are not very distinctive in appearance. Indeed, many contracts for woodland use specified that the sawpits should be filled in when work was complete. However, where there have been thorough searches, such as in the Chilterns, a good number of well-preserved sawpits have been recorded. Most are rectangular, 2 to 3 metres long by 1 metre wide. You are looking for a trench that is roughly coffin sized and shape, and 1 metre to 2 metres deep.

#### **E. POTASH KILNS**

This widespread industry has been largely overlooked, though it is well-known from Cumbria, associated with industrial scale production. The surviving evidence is in the form of very large stone built structures for the burning to ash of green vegetation. Some of these are to be seen in south Cumbria woods, along with the bases of the potash makers' huts. The other evidence is in variable and often shallow depressions and quite large earth pits. These are where the ash was boiled to make the caustic potash. The larger pits are rather amorphous and can look superficially like stone-getting pits or even crude Q-pits. There are many shallow, often rounded pits in ancient woodlands, and these could well be the site of less intensive ash burning.

#### **G. PROCESSING AND STORAGE PLATFORMS**

These are both large and small levelled areas, formerly cleared of smaller trees and undergrowth. They will be connected by a road or path (best recorded as a linear feature), which usually gives access to a public road near the wood. Processing platforms were common in the past to store finished products prior to either use, or to transporting out of the wood. These platforms will most easily be recognisable in woods located on slopes and are often found in association with charcoal hearths, settlement areas and Q-pits.

### **3 Features related to woodland industries**

#### **A. SETTLEMENT SITES AND STRUCTURES**

Workers involved with woodland industries often lived where they worked, at least seasonally. This does vary geographically and over the centuries. Wood Colliers, in particular, constructed huts close to the charcoal hearths in order to keep a close eye on the burning process, but other workers such as bark collectors or bobbin makers may have also lived in the woods. Therefore,

settlement sites should be expected close to charcoal hearths and in woods where other industries are known to have been carried out. Old photographs and drawings show that in the nineteenth century, the wigwam-like dwellings of Wood Colliers were often built of the same locally available materials as the charcoal stacks themselves - cut poles and turves - sometimes with bracken roofs. In areas where stone was available, huts sometimes had stone wall footings which can still be seen today. Most however will be difficult to recognise, leaving only faint traces such as low circular mounds. However, the huts, like the hearths, were usually built on level platforms and indeed sometimes re-occupied former hearth sites. This can make it difficult to distinguish between the two. Similarly in some cases hearths were built on much older house platforms. Charcoal barns and other buildings used to store woodland products prior to sale and transportation may also be found within the wood where the harvesting took place.

## **B. PONDS**

Ponds are common in woods and many were associated with woodland industries. Water power was of vital importance to many early industries, so it was usual for the main industrial site to be located adjacent to a natural water course, where a string of ponds could be constructed to power a sequence of water wheels. Water was also needed for the woodland craftsmen and often their families and for livestock too. Prior to the mid nineteenth century, water wheels were usually sited immediately below the dam and the industrial activity therefore took place close by. Good examples are the so-called 'hammer ponds' of the Weald of Kent and Sussex (in reality, the water wheels often powered the bellows of iron works blast furnaces, rather than the hammers used to forge the metal). There, large earthen dams known as 'pond bays', typically several metres high and tens of metres long, were built across narrow, steep-sided valleys. Today, these are often the most obvious evidence of industrial activity. Even where the dams were eventually breached and the ponds themselves no longer exist, Ordnance Survey map-makers routinely recorded large industrial earthworks with a high degree of accuracy.

Large ponds are almost invariably accompanied by smaller 'pen ponds', built wherever the topography is suitable upstream. Their function was to pen up smaller volumes of water so that the supply to the main pond could be replenished quickly even in dry weather. This was important because blast furnaces required a constant supply of power over several days: if water ran short, the water wheel would slow, the bellows would falter and the smelting process would fail. Other dams, along with artificial channels, served to divert watercourses to more convenient points to maximise capacity.

Artificial channels called leats or goits (depending on the part of England you are working in) were widely constructed to maximise the water supply by conducting streams over longer distances. Initially simple ditches with banks on the downslope side, these channels were eventually often carefully engineered, with stone walls, sluices and overflows. Channels on slightly steeper gradients, known as 'head races' and 'tail races', were built respectively to take water from a dam to a water wheel and from there back to the natural stream. Where several ponds are found in close proximity, you will need to bear in mind the possibility that not all are contemporary: look for evidence of change over time, and responses to perceived problems, both in your field survey and in your documentary research. Some industrial ponds re-used earlier mill ponds and/or were subsequently converted to serve other industrial processes, such as fulling or corn milling. Others were sometimes incorporated into garden designs and are retained as ornamental features to the present day.

Industries which did not require water for power were also often sited near a water supply. Sometimes water played a direct role in the industrial process (in charcoal making, for example, to 'cool off' the clamp kiln by damping down the turves). Basket makers also used natural ponds or made small ponds for soaking their hazel and willow rods. Water was also used to boil oak coppice poles when making 'swill' baskets. But it is also worth bearing in mind that industrial

activity is usually hot, thirsty, dirty work, often with a risk of burns or other injuries, and a cool stream or pool nearby may have been a very welcome facility. Where workers lived on site, a nearby source of water would have made life easier.

Ponds, whether natural or artificial in origin, were regularly cleaned and maintained as watering holes for livestock. In medieval deer parks, a source of drinking water was always provided for the deer. The Serpentine, in Central London's Kensington Gardens, for example, underwent successive episodes of ornamentalisation from the late seventeenth century onwards but began life as a series of small drinking ponds along a tiny watercourse which flowed through Henry VIII's hunting park. Documents suggest that deer were rarely hunted while drinking, because this discouraged them from gathering together in daylight.

Ponds occur in relatively recent sites such as twentieth century conifer plantations often as fire ponds. Again these may help you construct your site time-line.

Finally, if the wooded landscape has an association with an early park, or perhaps a monastic site, then look out for medieval fish ponds. These are often overlooked, and there are relatively few detailed descriptions to help you.

### **C. TURF CUTTING**

In charcoal making, turf was widely used to cover the stack in order to stop air getting to the charring wood. For this reason, ancient woods often have a very thin layer of topsoil and can have a relatively species-poor herbaceous layer (although shading by mature trees, especially beech, may obscure this effect). It is worth looking for signs of turf stripping in a wood where charcoal making is suspected or known to have taken place. Turf was also sometimes used as roofing material for workers' huts or storage stacks to keep bark and wood dry. Turf cutting can still be detectable today as slight but abrupt changes in ground level and in changes in vegetation patterns. Sometimes the presence of species indicative of a more open woodland landscape, such as heather or bilberry, may indicate that the original topsoil layer has not been removed, leaving these plants to survive from a time when the wood was managed as coppice and more light penetrated the canopy.

## **4 - Ornamental features in designed landscape woodlands**

Many medieval hunting parks, together with the managed copses and pollards they contained, were incorporated into post-medieval parks and gardens. These are often collectively referred to as 'designed landscapes' and have become a distinct topic for specialist research. Individual veteran trees were generally accorded great value by landscape designers, partly because of their visual interest and the feeling of maturity they lent to a new design. Equally important was their symbolic value, because they could suggest (sometimes misleadingly) the antiquity of the landowner's claim on the estate or because they might acquire a folkloric or cultural value in their own right. A typical example is Queen Elizabeth's Oak, in Nonsuch Park in Surrey, a hollow veteran which the Queen is said to have used as a concealed 'standing' from which to shoot deer. The ancient tree almost certainly was a feature of the parkland surrounding Henry VIII's magnificent palace (demolished early in the seventeenth century), but the association with Elizabeth is almost certainly fictional. The origin of the name is uncertain, but its promotion probably owes much to the period in the early nineteenth century when the landowners were making efforts to emphasise the links between their new residence and its much grander royal predecessor.

Ancient woodlands incorporated into post-medieval designed landscapes may contain a wide variety of ornamental point features dating to the post-medieval period, all contributing to the character of the woodland today. These include shady grottoes, monuments and ruins built as eye-

catchers, ice houses, fish ponds and pet cemeteries, as well, of course, as exotic species of imported trees and shrubs. Faint traces of earlier garden designs may be masked by later earthmoving and planting.

## **5 - Point features not related to woodland**

### **A. INTRODUCTION**

You will inevitably come across features that are not directly related to woodland industries or management and apparently just happen to be within your wood. In Saxonbury Wood in the Weald of East Sussex, for example, coppiced woodland which forms part of the Eridge Estate includes an Iron Age hillfort. Excavations undertaken in the early twentieth century suggest that the presence of the hillfort owes much to the region's prehistoric iron industry, which like the post-medieval iron industry in the Weald owed everything to the geological conditions, the availability of water and the abundance of fuel for making charcoal. At the centre of the approximately circular hillfort stands an eighteenth-century tower, an eye-catcher (less accurately but more commonly known called a 'folly') for the great house at the heart of the Eridge Estate. This monument can be linked to the presence of rhododendrons within the hillfort and a sparse scatter of exotic trees within the surrounding wood. Again, there are links between the hillfort and the eighteenth-century eye-catcher: both occupy the highest ground, with good visibility, and it may be further inferred that the woodland on the summit was cleared while the hillfort was occupied. In addition, the prehistoric monument would have been a notable historic asset within the Estate and the construction of the tall tower served to pin-point its location in a landscape which was, by the eighteenth century, evidently heavily wooded once more. Below the most common and important features are listed but there are many more than can be dealt with here. For this manual they are listed as a reference in case you come across features you are unsure about.

### **B. PREHISTORIC AND ROMAN REMAINS**

Ancient woodlands, because they have not been subject to intensive ploughing or development, can act as guardians of prehistoric and Roman remains, sometimes preserving them in extraordinarily good condition. Those best preserved as earthworks have usually been mapped with great accuracy by the Ordnance Survey (offering useful landmarks in areas where there are few other landmarks). However, less well-preserved examples are constantly being discovered and woodlands remain amongst the most under-researched areas. Finds of stone tools indicate that the Weald of Kent and Sussex, for example, was widely inhabited and exploited in the Neolithic and Bronze Age, yet the number of known monuments and settlement sites of those periods, remain disproportionately low, undoubtedly due in part to the lack of archaeological survey. Those prehistoric remains which it is appropriate to record as point features include Bronze Age burial mounds, or 'round barrows', referred to on Ordnance Survey maps as tumuli (from the Latin for 'bump'). Iron Age hillforts and the later prehistoric cultivation terraces and boundaries referred to on Ordnance Survey maps as 'field systems' are usually best recorded as polygons, because they can cover large areas. Ancient woods within the Slindon Estate in West Sussex, for example, contain vast, yet almost entirely unrecorded, tracts of prehistoric field systems of a type known well on the surrounding open downland pasture.

### **C. LATE MEDIEVAL AND POST-MEDIEVAL INDUSTRIAL REMAINS**

Limekilns were built to produce quicklime which was used in mortar and as fertiliser. Limestone or chalk, usually quarried close at hand, was burnt within stone built kilns that characteristically had an arched entrance through which the lime was collected. Limekilns were often built into a steep natural slope and can be found in woodlands that are underlain by limestone or chalk.

Disused mine entrances and ventilation shafts are sometimes found in woodlands. In Wharnccliffe Wood in Stocksbridge, South Yorkshire, for example, mining for ganister took place and shafts are still evident today. Most such shafts will have been identified and accurately mapped by the Ordnance Survey and you may find that historic maps show more details of the mining operation, so additional survey may be unnecessary. Under no circumstances should you enter any mine shaft or tunnel: they can be extremely dangerous.

So called 'bell pits' are mines for minerals and stone such as coal or flint which can be found relatively close to the surface. Vertical shafts were excavated into the ground to reach the horizontal seams of the desired rock or mineral. The base of the shaft was then broadened horizontally (resulting in the distinctive bell-like shape) to extract as much of the material as could be conveniently reached. If the operation was deemed too dangerous and the shaft threatened to collapse, a new shaft was dug nearby, so bell pits are often found in large numbers and tight clusters. In the modern forestry plantations around Lingheath in Suffolk, thousands of pits, some more than 10m deep, were dug in the post-medieval period to extract high quality flint for the manufacture of gunflints. The top of each shaft was typically surrounded by a horseshoe shaped mound of spoil although bell pits dug to extract coal are often surrounded by a complete ring of upcast material. On a cautionary note, it is worth mentioning that the abandoned pits at Lingheath were backfilled simply by throwing in as many logs and branches as it took to block the opening: stepping on the depression may lead to sudden and immediate collapse.

Shallow, open-cast pits are common in woodlands, the target materials varying widely. Often, only an intimate understanding of the area's geology will allow you to identify the purpose of the digging, although a study of local vernacular buildings will sometimes give you a clue. For example, shallow pits on Sevenoaks Common in Kent are believed to have been dug to obtain lumps of low-grade ironstone, which is widely used for cobbling in the nearby town. Larger quarries, if not depicted on modern Ordnance Survey maps, were routinely recorded by the Ordnance Survey in the nineteenth century. The surveyors noted if there were no signs of recent or current activity, but often reached their own conclusion as to the raw material being extracted, so you will often find useful annotations such as 'Sand Pit (Disused)'.

#### **D. MILITARY REMAINS**

During the Second World War in particular, but also at other times of conflict in the twentieth century, woodlands, especially those that formed part of Ministry of Defence land, were widely used as training grounds for both regular infantry and Home Guard troops. Other woodlands were used to provide camouflage for vehicles, ammunition and massing troops, with the intention of protecting them from detection and aerial attack. In some woods, military remains are abundant, including pillboxes, weapons pits and slit trenches, concrete bases of Nissen huts and other buildings, and networks of tracks and areas for storage and vehicle parking. In the South-East and around major cities elsewhere in England, the craters left by stray bombs and by Hitler's so called 'vengeance weapons' - the V1 and V2 rockets - can also be found. Sometimes, such near misses were recorded in contemporary press reports or are still well remembered by local people. In a few cases, 'bomb decoys' were sited in woods near large cities. Strings of electric lights were strung between the trees and the power was cut at the moment when it was hoped the leading aircraft might just have spotted the decoy target, with the intention that the bombs would drop harmlessly in the uninhabited wood.

#### **E. STONE GETTING PITS AND QUARRIES**

These form a diverse range of feature too great to describe here. Some may relate to the woodland itself where the objective of stone extraction was to build for example a wood boundary. It may also have been extracted to construct the features associated with woodland industries. In many case the extraction was for materials to be used elsewhere, either for building

or for other industrial purposes. Woodlands contain pits ranging from prehistoric and Roman (such as for quernstone [grindstone] manufacture), to twentieth century building stone and ganister, and from a few metres across to large, opencast mines.

## F. PONDS

See ponds in 'Features related to woodland industries'.

## G. BUILDINGS AND OTHER STRUCTURES

You will find that most ruined buildings, along with structures such as bridges, troughs and boundary stones, will have been diligently mapped by the Ordnance Survey in the past, even if they are no longer depicted on modern maps. This will allow you to obtain an accurate grid reference for your record of the point feature, but not necessarily to work out its precise function. You should therefore carefully examine and analyse any derelict buildings or other structures you come across to see what the physical remains can tell you, and record your findings, using the historic maps as an additional source of evidence.

## 6. Conclusion

Many woods contain a variety of historic remains and by studying the physical remains, you will learn more about the history of the wood itself and about the processes that have shaped its appearance today. Survey is one of the strongest weapons in your research armoury, but you will undoubtedly add value to your fieldwork by investigating other forms of evidence: documents, photographs, geology, ecology and oral history. By recording these historic features, and making your records available to others, particularly local Historic Environment Records, your research will help your group, or others, to look after the woodland better, today and in the future. The interpretation of some humps and bumps may be tricky, or even impossible without further research. However, identifying the location of the point feature and producing an initial basic record is always a vital, invaluable beginning. Above all, do not be content with simply making a list of the point features you find. At all times, asking yourself why a feature is located exactly where it is and why it takes the precise form that you observe will enrich your experience of survey.



*Collier's Grave Memorial, Ecclesall Woods, Sheffield.*

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## F5 Tree Species and Girth Size

Below is a list of the widest recorded girth size for the following tree species. The table also gives an indication of what size might indicate an ancient or veteran tree (information taken from the Ancient Tree Hunt website at [www.ancient-tree-hunt.org](http://www.ancient-tree-hunt.org)).

English name	Latin name	Champion Tree Girth*	Size of potential veteran or ancient tree**
Ash	<i>Fraxinus excelsior</i>	1056 cm	352 cm
English Oak	<i>Quercus robur</i>	1363 cm	454 cm
Sessile Oak	<i>Quercus petraea</i>	1338 cm	446 cm
Hornbeam	<i>Carpinus betulus</i>	938 cm	313 cm
Silver Birch	<i>Betula pendula</i>	401 cm	133 cm
Yew	<i>Taxus baccata</i>	1158 cm	386 cm
Holly	<i>Ilex aquifolium</i>	547 cm	182 cm
Beech	<i>Fagus sylvatica</i>	962 cm	321 cm
Common Hawthorn	<i>Crataegus monogyna</i>	380 cm	127 cm
Common Lime	<i>Tilia x europaea</i>	1078 cm	359 cm
Black Poplar	<i>Populus nigra v. beautifulia</i>	685 cm	228 cm
Crack Willow	<i>Salix fragilis</i>	770 cm	257 cm
Horse Chestnut	<i>Aesculus hippocastanum</i>	705 cm	235 cm
Sweet Chestnut	<i>Castanea sativa</i>	1530 cm	510 cm
Scots Pine	<i>Pinus sylvestris</i>	628 cm	209 cm
Sycamore	<i>Acer pseudoplatanus</i>	864 cm	288 cm
Field Maple	<i>Acer campestre</i>	510 cm	170 cm

\* from [The Tree Register](#)

\*\* one third champion girth size

### Most common native ancient tree species

1	Common oak	<i>Quercus robur</i>
2	Common yew	<i>Taxus baccata</i>
3	Sweet chestnut	<i>Castanea sativa</i>
4	Common beech	<i>Fagus sylvatica</i>
5	Common ash	<i>Fraxinus excelsior</i>
6	Hornbeam	<i>Carpinus betulus</i>
7	Field maple	<i>Acer campestre</i>
8	Sycamore	<i>Acer pseudoplatanus</i>
9	Common lime	<i>Tilia x europaea</i>
10	Hawthorn	<i>Crataegus monogyna</i>

## ***F6: The Importance of Ancient and Veteran Trees in Woodland***

### **Lawrence Bee**

The presence of ancient and veteran trees in woodland adds a highly valuable habitat component for many uncommon and rare species, particularly invertebrates. The terms 'ancient' and 'veteran' can be defined as follows:

**Ancient** - A tree that is very old, in the declining stages of life, and in most cases larger in girth in relation to other trees of its species, depending on how it has grown and where in the country it is growing. Ancient trees are not normally tall but stand out visually as being very special.

**Veteran** - A tree that is usually in a mature stage of its life and has important wildlife and habitat features including hollowing or associated decay fungi, holes, wounds and large dead branches. Will generally include old trees but also younger middle aged trees where premature ageing characteristics are apparent.

Individual ancient and veteran trees can contain many microhabitats, each offering particular conditions required by specialised dead wood invertebrates.

### **Hollow trunks**

The spaces created within the trunk and branches of a tree as they hollow out provide a sheltered habitat protected from extremes of heat and humidity. As such, they provide suitable conditions for a variety of creatures. As well as Tawny Owl and Barn Owl and bats such as the Noctule and the Brown Long-eared Bats, hollow trunks of old trees provide nest sites for the Hornet *Vespa crabro* and the dark, damp, cool, spacious environment for some spiders, particularly the rare Orb-web spider *Meta bourneti*.

### **Rotting Wood**

One of the most important aspects of ancient and veteran trees for invertebrate habitat is the presence of rotting heartwood. In its phases of decay it offers a wealth of varying conditions suitable to a wide range of invertebrates, some of which are associated with quite specific stages in the rotting process. When heartwood begins to rot, its early stages are described as white-rot. One of the main fungi causing this white rot is the bracket fungus *Ganoderma resinaceum*. Larvae of beetles such as the Lesser Stag Beetle *Dorcus parallelipipidus* and the Rhinoceros Beetle *Sinodendron cylindricum* are common consumers of white rotted heartwood, where their distinctive galleries are excavated. As white-rot progresses, the heartwood becomes increasingly soft and moist - it is these conditions that are preferred by the larvae of some of the more striking craneflies e.g. *Ctenophora bimaculata*. The same decay conditions, particularly in ash and beech, attract the larvae of *Melandrya caraboides*, a large black beetle distinguished by a metallic green sheen whilst the later drier stages of white-rot attract larvae of the tortoise beetle *Thymalus limbatus*.

The Sulphur Polypore fungus or Chicken of the Woods *Laetiporus sulphureus* is one of the main fungi promoting red-rot decay in ancient and veteran trees. The fungal mycelium then provides food for the Hairy Fungus Beetle *Mycetophagus piceus*, the larvae of which are prey to the larvae of the Click Beetle *Lacon querceus*. This is just one of many examples in ancient and veteran trees of an indirect association of an organism with the ancient tree habitat - this rare Click Beetle larva is not directly associated with the red-rot substrate but is associated with prey which feeds exclusively on the particular fungus causing it. Some rare beetles found in the red-rotted



heartwood are associated with particular tree species. The rare Noble Chafer *Gnorimus nobilis* favours old fruit trees in particular, and the conservation of well-established orchards with mature apple or pear species should be seen as a priority for this beetle.

Heartwood affected by white-rot and red-rot eventually degrades into black-rot, within the hollow trunk. Although benefiting from the stable temperature and humidity levels within this sheltered environment the decayed heartwood itself is poor in nutrients. Where birds such as the Tawny Owl, Jackdaw, or Stock Dove nest in cavities in ancient trees this final stage of decay can be enriched by the remains of their prey items, droppings or moulted feathers. These fall into the hollow trunk providing an important addition of minerals. This particular environment supports the larvae of some of Britain's rarest invertebrates including the extremely rare Violet Click Beetle *Limoniscus violaceus* that is found at only three ancient woodland sites in the UK, and *Ampedus cardinalis* - a striking red and black Click Beetle.

## Invertebrate Woodland Indicators

Two ant species, the Brown Tree Ant *Lasius brunneus* and the Jet Ant *Lasius fuliginosus* are associated with ancient trees. Both species are found in decaying heartwood, where their nests provide a habitat for a wide range of other insect species. In particular, rove beetles (Staphylinidae - *Zyras* spp.) live in the runs and nests of the Jet Ant. *Mastigusa macrophthalma* is a spider strongly associated with *L. brunneus* and *L. fuliginosus* in and around ancient trees and dead wood whilst its close relation *Mastigusa arietina* is only found in their nests within tree stumps and old trees. The intricate network of invertebrate relationships within the ecosystem of ancient trees is again illustrated in areas of exposed heartwood. Here, small pin-hole borings are created by the beetle *Ptilinus pectinicornis*; eggs are laid and larvae develop within these tunnels, feeding on the surrounding heartwood. In turn, the larvae of another beetle *Tillus elongatus* are specialist predators on *P. pectinicornis* larvae. Finally, the galleries are used by *Toxomia bucephala*, a beetle unable to excavate the heartwood, to gain access to the interior of the tree where its larvae are specialist feeders on decaying wood.

## The Importance of Fungi

As well as being an essential contributor to the rotting process of ancient and veteran trees fungi, specifically its fruiting bodies, provides food for a large variety of invertebrates. The hard black fungi known as King Alfred's Cakes *Daldinia concentrica*, found on Ash, are particularly attractive to many insects including the uncommon Cramp-Ball Weevil *Platyrhinus resinosus*. Other fungal fruiting bodies, for example bracket fungi, found on ancient trees also support their own invertebrate communities. Some bracket fungi are long lived but even the more transient species such as Oyster Mushroom *Pleuroterus ostreatus* provide food for some adult insects including the red and black *Triplax russica* beetle.

## The Significance of Bark

The bark of ancient trees, particularly where it is deeply fissured provides a suitable retreat site for spiders such as *Nuctenea umbratica* and *Amaurobius fenestralis*. The webs of these spiders are often found in and around deep cracks or underneath loose sections of the bark of ancient trees such as oak. The webs of *A. fenestralis* particularly may well attract the Cobweb Beetle *Ctesias serra*, the larvae of which feed on remains of insects left in the web by the spider. They are covered with long hairs which act as a defence against the predation of the web owner. Another arachnid, the pseudoscorpion *Dendrochernes cyrneus* is found under loose bark on the branches of ancient trees, especially Oak. It particularly favours dead and dying branches that are open to full sunlight. Its methods of dispersal depend upon other dead wood specialists - the longhorn beetles, upon which the pseudoscorpion is phoretic i.e. it hitches a ride from tree to tree hanging from the leg of the beetle. *Saperda scalaris* is a Longhorn Beetle that favours the same microhabitat as *D. cyrneus* and has been known to act its innocent transporter. The larvae

of Longhorn Beetles are preyed on by larvae of another occupier of this habitat - the Wood Snipe Fly *Xylophagus ater* that develops under the bark of the branchwood of ancient trees in the early stages of decay.

### Sap Runs as a Special Wildlife Habitat

When branches fall from an ancient tree sapwood can be exposed. The resulting wound may possibly 'bleed' sap and this can be a valuable source of moisture and dissolved sugars for certain invertebrates, particularly the larvae of beetles and flies. Larvae of the hoverfly *Ferdinandea cuprea* develop within the sap runs of oak and other broadleaves and the adults of beetles such as the Lesser Stag Beetle *Dorcus parallelipipedus* and the Rhinoceros Beetle *Sinodendron cylindricum* (the larvae of which have been already mentioned in association with white-rotted heartwood) will fly to sap runs to feed. The Goat Moth *Cossus cossus* is one of the very few invertebrates associated with ancient trees where the larvae can digest the cellulose in living timber. The resulting larval excavations can ooze sap.

### Rot Holes and Water Pockets for Invertebrates

Many ancient and veteran trees develop small hollows at the junction of branches and trunk that fill with rainwater and persist as small pockets of stagnant water. These provide a decaying wood environment favoured by the developing of larvae of hoverflies such as *Xylota sylvarum* and *Criorhina floccosa*. Some saproxylic invertebrates have aquatic larvae which feed on dead leaves which build up in water pockets e.g. the larvae of the beetle *Prionocyphon serricornis*. The water pockets themselves can support a specialist freshwater community containing mosquitoes, gnats and non-biting midges of the Chironomidae family.

### Invertebrates in the Epicormic Growth of Trees

Epicormic growth consists of dormant buds developing from the growing stem or branch of the tree, but not developing into recognisable branches. They are often apparent as aggregations of shoots forming tight bundles on the trunks of trees. They form a sheltered environment that often contains accumulated leaf litter. Larvae of the white-spotted pinion moth *Cosmia diffinis* feed on epicormic leaf growth on English Elm and Wych Elm. Linyphiid spiders such as *Lepthyphantes minutus* are also associated with the dry leaf litter habitat, feeding on the minute organisms it contains.

### Ivy growth

Moderate Ivy growth on ancient trees provides shelter for invertebrates associated with the bark and trunk surface. It also helps to reduce the impact of temperature and humidity extremes, particularly on isolated trees. However, if Ivy is allowed to cover the majority of the tree it can discourage the development of bryophyte communities and the growth of bracket fungi. Moderate Ivy growth can be beneficial but it must be controlled to allow space for other trunk organisms. There is also an often overlooked matter that great Ivy plants may themselves be veterans and of both ecological and historic interest.

### Fallen Limbs

When branches fall from the tree their habitat value still remains high but may differ from that pertaining to dead and dying timber still within the tree canopy. For example, dead branches lying on the ground will experience moister conditions (from their proximity to the soil) than similar branches remaining on the tree. These moister conditions may cause fallen branches to decay more quickly than dead wood in the tree but they will promote a different range of microhabitats throughout the age range of decaying wood on the ground to that found in the various stages of drier, decaying wood remaining on the tree. These two contrasting habitats may well attract different invertebrate communities.

## Value of Ancient and Veteran Trees

The value of ancient and veteran trees to invertebrates is unquestionable - the extensive range of suitable microhabitats within a single ancient tree can attract a wide variety of invertebrates which, in themselves, form a valuable food resource for woodland birds. Species such as Redstart *Phoenicurus phoenicurus*, Treecreeper *Certhia familiaris* and Nuthatch *Sitta europea* are typical of mature woodland particularly where it includes ancient and veteran trees. They find suitable nesting sites in small holes in the trunks of mature trees or behind sections of loose bark. Being insectivorous they are well supplied with a wide variety of invertebrate food in this habitat. Redstarts fly out from perches within the canopy to catch insects in flight, whilst Treecreepers and Nuthatches collect insects from fissures in the bark as they scuttle up and down tree trunks. Where individual ancient or veteran trees already possess features attractive to saproxylic invertebrates and also support a substantial canopy of leaves their value as a food source for other invertebrates and the insectivorous birds preying upon them is substantially increased.

In creating the range of micro-habitat niches within ancient trees, fungi play a critical role. The heart rotting fungi particularly are 'keystone' species - they make a significant contribution to the ecological complexity and value of an ancient tree - to numerous invertebrates, as we have seen but also to other animals and birds; woodpeckers and bats, for example, would be hard pressed to find suitable homes without the presence of hollowing trees. Individual ancient trees can be viewed as nature reserves within themselves but where they grow in wood pasture or parkland i.e. in reasonable proximity to other trees of the same species and similar age, their value to wildlife is markedly improved. Ancient trees growing in a dense woodland environment are not likely to offer the same range of habitat conditions - and are less ecologically valuable.

The survival of saproxylic invertebrates in the UK is wholly dependant on the continued existence of ancient and veteran trees in the countryside. They provide a unique ecosystem utilised by some very rare invertebrates and should be regarded as a priority habitat for conservation.

## ***F.7: Specific Management of Features***

**Ian D. Rotherham and Paul A. Ardron**

### **Guidance on Management Prescriptions of Specific Features and Operations**

The following set of guidelines suggests the preferred conservation management for specific historical and archaeological features including significant trees. There is also a set of general management guidelines that should be included as best management practice. Only carry out management with the support of professionals and with consent from the landowner.

### **Guidance on Specific Archaeological Features**

#### **Raised earthworks and structures**

Raised earthworks and structures are vulnerable to the effects of heavy or sustained activity around them. If possible therefore, paths, tracks, and "desire-lines" should be directed away from them. Over time ditches and pits become in-filled and may contain important artefacts and archaeological sediments. So again, direct tracks away from them to prevent compaction and other damage to the sediments. No pit or ditch should be dug out without expert consultation.

#### **Linear features**

Linear features (for example, earthworks such as boundary banks, hedges and lines of trees) may be relatively well-preserved, extensive, and clear features in the landscape; others are much more fragmentary. These features tell us the location of routeways, old fields, the sub-division of large woods into compartments and other land boundaries. It is particularly important to ensure that fragments are not lost or further degraded. Bear in mind that they may be inconspicuous and 'lost' in a fragmented landscape already. More-or-less complete linear features should be preserved in their entirety. The ill-considered removal of a single old stump or "poor-looking" tree could result in a boundary element being lost as a visual feature. The interpretation of former landscapes is somewhat like constructing a child's "dot-drawing". Obviously, the removal of individual dots, or trees for that matter, will make the picture more difficult or even impossible to build-up. This will then lead to errors in interpretation.

#### **Point features**

Small-scale archaeological features such as charcoal-hearths and Q-pits, are particularly vulnerable to damage or loss. The rutting or scouring produced by the passage of a heavy vehicle might only scar one part of an extensive boundary but could almost totally obliterate a charcoal-hearth. Some pits have been in-filled with debris, in some cases garden waste which may indirectly benefit by disguising them and protecting the internal sediments. Other pits and platforms are relatively deep and obvious and have been dug out in recent years. Charcoal-hearths and kiln sites may be particularly vulnerable to disturbance as they are often over-looked. The deposits they contain may show the longevity of use of the site and are part of the historical record. The friable nature of the platforms themselves may lead to animal disturbance (rabbits, badgers, dogs) digging into the surface. With these points in mind, it would probably be most appropriate to use those pits and platforms that are already prominent, for amenity use / interpretation and leave alone any which are in-filled and / or heavily disguised by thick vegetation. The same general principles can be applied to other pits and platforms such as potash kilns and saw-pits.

It is important that the position of all recognisable pits and platforms are accurately recorded and well-known to local field-workers, because of the vulnerable nature of the archaeological deposits associated with these features. If any occur on or close to paths or "desire-lines" some

attempt should be made to deter movements along these routes. If well-established paths pass close by these should be used for interpretation. In such locations, the paths should be made-up and formalised to minimise the chance of further damage occurring to the feature.

## **Trees as Historical Features**

There are a number of guidelines that should be applied when tree management work takes place. Ideally, notable trees should have individual management prescriptions written for them, because they rarely conform to a strict typology. However, there are certain general management procedures that can be applied and these are given below.

Expert advice should be taken if there is uncertainty as to whether or not management work may damage known or suspected notable trees. If you are unsure, then leave it alone.

### **Native trees**

Mature, native trees should only be felled as a last resort. If felling is essential, perhaps for safety reasons, the episode should be comprehensively recorded and photographed to create an archive. Details of the tree should ideally be recorded on a standard form which should include information about tree shape, height, spread, girth, and especially the presence of any old trunks or basal fragments of old wood. Recording the latter is essential if the history of the tree is to be determined. After felling, the age of the tree should be assessed by counting the annual-rings. A data-set of species age information would be very useful, especially if the same procedure were applied more generally. Unfortunately, trees of the same species may grow very differently in varying environments, so that a relatively unimpressive looking specimen may be much older than it appears. This phenomenon may be the result of a variety of environmental factors, for instance the tree's localised exposure to harsh weather, the occurrence of impoverished soils, or because the tree has grown through a clutter of rocks, or because of high levels of air pollution in the 1800s and 1900s. Establishing a dataset which identifies girth to age ratios at key locations may help provide better guidance on this and so discourage the felling of smaller veterans (see the Royal Forestry Society's website and the Ancient Tree Forum's website [www.woodland-trust.org.uk/ancient-tree-forum/](http://www.woodland-trust.org.uk/ancient-tree-forum/) for more information).

### **Thinning of non-native species**

If there are any non-native species in the vicinity of a notable tree these could be thinned-out to encourage the veteran. This procedure may have to be urgently applied if the notable tree is showing signs of decline. However, beware of removing a dense cover of young trees from around an old, open-grown veteran in one go. It is best to remove planted or self-set trees gradually (though grant aid may make this difficult). The sudden removal of surrounding trees will kill many veterans.

### **Notable non-native trees**

Beware of felling simply to remove exotic tree species. Bear in mind that if these are 150-250 year old trees (such as European Larch, or Corsican Pine for example), they are part of the historic record of the woodland, and often of enormous wildlife and landscape value too.

It is desirable that mature or distinctive-looking non-native trees are also preserved whenever possible. However, it is important to recognise that it is not only native species that were used in woodland industries. Sycamore and Sweet Chestnut have been used as a source of raw material for charcoal production, modified by past woodland industries, and so may provide information on historical land-use. Furthermore, once any tree has attained a certain size and stature it will have significant wildlife value and have been noticed by the local community and will therefore have attained both landscape significance and amenity value. In such cases the natives versus exotics arguments should be set to one side and the non-native tree allowed to remain.

## Stumps and old wood

The basal remains of old trunks found by living trees, lumps of earth-fast dead wood, and stumps should only be removed under exceptional circumstances. These features are important indicators of past woodland activities and industries. Unfortunately, over-zealous "tidying-up" in the past has eradicated much of this resource from many areas. In some cases, ancient stumps are very long-lived and may indicate the presence of ancient woodland on a site, and even the species of trees that were there. They can also be a significant wildlife habitat for a range of invertebrate and fungal species and be an essential part of the wider woodland food chain.

## Standards

Mature standards should be retained whenever possible. They have wildlife interest and area notable landscape features. They may be important to the local community and have boundary significance. Moderate sized standards of native species such as sessile oak should not be hastily selected for felling, because of the possibility of reduced growth-rates, and they may be much older than you think. If felling is necessary, the actual age of the tree should be assessed by counting the annual rings: this may help future management of living trees of the same species by giving an idea of the growth rates of the felled trees. Any standards of native species that need to be felled could be encouraged to form a coppice-stool or pollard. However, the procedure would need to be fully documented, so the purpose of the coppicing or pollarding is recorded for the future.

## Re-grown standards (see D3.3)

Re-grown standards should be retained whenever possible: they may appear ordinary to the layman and unattractive to the forester, but are vital indicators of past woodland management. Any re-grown standards that need to be felled should be retained as coppice. However, the procedure would need to be fully documented, so the purpose of the coppicing or pollarding is recorded for the future.

## Multi-trunks (see D3.3)

Mature multi-trunks (coppice / pollard / bundles) should be retained whenever possible: they are prominent indicators of past woodland management. Any multi-trunks that need to be felled should be retained as coppice, or even 'multi-trunk pollards'. However, the procedure would need to be fully documented to provide a record for the future. These trees are often a matter of concern for foresters wanting to know what to do. These may, but not always, have been working trees. So surely we should re-coppice them. Well not always. Sometimes they are natural with alder and small-leaved lime for example forming natural, ancient coppice. But also the veteran coppice is evidence of the last working phase, and to remove that, removes the heritage and historic value. The idea is often that they must be coppiced in order to conserve them. That is not necessarily the case either. Very often, as is the case with long-neglected pollards, the shock will kill them. And if it is decided that re-pollarding or coppicing is the best solution, you will need to programme the work at the right time of year (for example, not too cold or within a month of the spring flush or in drought or high temperatures) and be able to provide the correct after-care and longer term management. Again, it is often best to leave them alone. Frequently, if the individual coppice poles fall over, the tree will sprout again naturally.

## Coppice-stool fragments and hedge remnants

It is vital that any coppice-stool fragments or hedge remnants are retained and protected, because they are rare in many working woodlands and are vital indicators of past management and former landscapes. They are particularly vulnerable because they are usually inconspicuous and are therefore over-looked. Furthermore, they are under decline because of over-shading, the result of the conversion of woods to "high-forest", and abandonment after charcoal-making ceased about one hundred years ago. Some are in a very poor, even moribund state. Local field

workers need to fully document these important veterans and be very aware of their location. It is vital that young or non-native trees are cleared from around the coppice-stool fragments or hedge fragments which show signs of having been laid to reduce the possibility of their terminal decline. The hedgerow resource should be assessed and healthier lengths of hedgerow may be suitable for 're-laying' and gaps re-planted, but as with all the recommended tree management work the procedure should be fully recorded for future reference.

## General Tree Management

### Tree root damage

Growing trees can be major agents of damage to archaeology. Established mature trees of course pose major problems for managers. It is therefore desirable to remove seedling and sapling trees growing on or around archaeological features. Tree root growth can seriously damage archaeological structures and sediments. The trees should be felled with minimum disturbance to the feature; ideally carrying the cut material off site. The stumps should be chemically treated to prevent re-growth.

If a mature tree is growing on an archaeological feature it is probably best to leave the tree alone since most of the damage may already have occurred. Further damage may result from the felling procedure itself and subsequently as the extensive root system de-composes. In addition, the tree may have an association with the archaeology and could help to date the use/ abandonment of the feature and may be a valuable wildlife habitat.

### Tree Felling and Management

Any tree-felling or management should be directed away from known or potential archaeological and other landscape features. The status of historic or working trees should be ascertained prior to tree works. Any mature or historic / working tree should be assessed for its wildlife potential and the presence of protected species such as bats before any management work is carried out. Appropriate mitigation will then need to be put into place before management work can begin.

The carrying out of tree felling operations will probably be outside the remit of a voluntary group but the principles need to be written into any management plan if the woodland resource is to be adequately protected.

Any trees that need to be felled for health and safety or to open up the canopy can be cut well-above ground level to provide 'standing-timber' for invertebrates, fungi, nesting and feeding birds, and bats *etc.* Water-filled 'rot-holes' in tree trunks are important micro-environments for invertebrate larvae, notably of rare 'ancient-woodland' crane-flies and hoverflies. They may also be important drinking spots for woodland birds *etc.* Most of these features occur within the bottom metre or two of the tree trunk and so may attract the commercial forester to a tree ripe for eradication! The presence of 'rot-holes' may signify that a tree is dangerous, diseased, and has no timber value, but their ecological value cannot be over emphasised. Thus, if possible, the tree should be retained or at least felled a metre or so above the rot hole.

Ideally, felled trees should be sawn up and left on site as habitat features for fungi, mosses, slime moulds, invertebrates *etc.* 'Habitat-piles', created from the cut branches, are of great value to wildlife and also help recycle nutrients back into the woodland soils. Unfortunately, in urban areas, they can increase fire risk with destruction of 'habitat-piles' and scorching of areas of underlying soil. A more serious factor is damage to healthy trees, with fire-setters lighting fires between the 'root-props' of large specimens. With this problem in mind, in woods that are at risk, it may be recommended to leave large logs on site, whilst removing the smaller branches off site by converting the wood into chippings or scattering the branches thinly over a wide area.

The larger timbers form very good habitat for fungi and invertebrates and shelter and feeding sources for other animals; they can also be used as 'natural' barriers, so called dead hedging, to reduce undesirable or illegal use of motorbikes in the woods.

However, if trees are being selected for timber use, they should be extracted along routes avoiding known archaeological and other landscape features. Logs should not be dragged over earthworks or past old trees where vestiges of ancient growth may lie hidden in the litter or ground vegetation. Work should be effectively supervised and monitored. Within the management plan it is essential to note that there must be a pre-works briefing on site where the issues and importance of the resource can be explained to contractors.

### **Dressing and pruning**

Smaller scale dressing / pruning work should also be strictly controlled. If it affects young single-trunk trees then there should be no problem, provided that the tree is thoroughly examined to make sure that it is not a re-growth from an ancient remnant. If there is any doubt a specialist should be consulted. Work of this kind planned on veteran native trees, or any trees showing evidence of past management should only be carried out after the strict recording and photographic procedures described above have been followed. There are examples of routine 'tidying' of veteran Rowans that in about ten minutes inadvertently removed several hundred years of heritage.



*Woodland workers' Hut, Haverthwaite,  
Cumbria. © Ian D. Rotherham*



## **F.8: Useful Books, Contacts and Websites**

**Lindy Smith and Peter Glaves**

### **Woodland History**

BESWICK, P. and ROTHERHAM, I.D. (Eds.) (1993) Ancient Woodlands - their archaeology and ecology - a coincidence of interest, *Landscape Archaeology and Ecology*, 1.

BETTEY, J.H. (1993) *Estates and the English Countryside*. Batsford, London.

FOWLER, J. (2002) *Landscapes and Lives. The Scottish Forest through the ages*, Canongate Books, Edinburgh.

HARDING, P.T. and WALL, T. (Eds.) (2000) *Moccas: an English Deer Park*, English Nature. Peterborough.

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MARREN, P. (1990) *Woodland Heritage*. David & Charles/Nature Conservancy Council.

MUIR, R. (2005) *Ancient Trees, Living Landscapes*. Tempus, Stroud.

MUIR, R. (2007) *Be Your Own Landscape Detective*. Chapter 1 'Trees and Woods'. Sutton Publishing.

PERLIN, J. (1989) *A Forest Journey*. Harvard University Press, Massachusetts.

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RACKHAM, O. (2004) Pre-Existing Trees and Woods in Country-House Parks. *Landscapes*, 5 (2) 1-16.

RACKHAM, O. (2007) *Woodlands*. Collins (New Naturalist series).

VERA, F. (2000) *Grazing Ecology and Forest History*. CABI Publishing, Oxon, UK.

WHIYTAKER, J. (1892) *A Descriptive List of the Deer-Parks and Paddocks of England*. Ballantyne, Hanson & Co., London.

## **Woodland Management (Archaeology and Ecology) and Practical handbooks**

AGATE, E. (2003) *Woodlands*. BTCV Handbook. BTCV. [online] Last accessed 30 August 2007 at <http://handbooks.btcv.org.uk/handbooks/index/book/132>.

BANNISTER, N.R. (1996) *Woodland Archaeology in Surrey- Its recognition and importance*. 1st Edition. Surrey County Council.

BROAD, K. (1998) *Caring for Small Woods*. Earthscan Publishing.

FULLER, R.J. and PETERKEN, G.F. (1995). *Woodland and Scrub*. In: Sutherland, W.J. and Hill, D.A. *Managing Habitats for Conservation*. Cambridge University Press. 327-361.

HARDING, P.T. and ROSE, F. (1986) *Pasture-Woodlands in Lowland Britain - A review of their importance for wildlife conservation*, Institute of Terrestrial Ecology, Monks Wood Experimental Station, Huntingdon.

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KIRBY, K. J. (1988) *A Woodland Survey Handbook*. Research and survey report no. 11, JNCC Peterborough.

KISER, B. (1991) *Trees and Aftercare*. A practical Handbook. BTCV.

PETERKEN, G. (1981) *Woodland Conservation and Management*. Chapman & Hall, London.

PIGOTT, C.D. (1993) *The History and Ecology of Ancient Woodlands. Landscape Archaeology and Ecology*, 1, 1-11

READ, H.J. (2000) *Veteran Trees: a guide to good management*. English Nature, Peterborough.

ROTHERHAM, I.D., ARDRON, P.A., (2006) *The Archaeology of Woodland Landscapes: Issues for Managers based on the Case-study of Sheffield, England and four thousand years of human impact. Arboricultural Journal*, 29 (4), 229-243.

WARREN, M. and FULLER, R. (1993) *Woodland Rides and Glades: Their management for wildlife*. Joint Nature Conservancy Committee.

WARREN, M. and FULLER, R. (1993) *Coppiced Woodlands: Their management for wildlife*. Second Edition Joint Nature Conservancy Council.

WATKINS, C. (1990) *Woodland Management and Conservation*. David & Charles/Nature Conservancy Council.

## **Woodland Ecology and Wildlife**

FITTER, A. and MORE, D. (2004) *Trees: How to Identify the Most Common Species*. 3rd Edition. Collins Gem.

GULLIVER, R. and GULLIVER, M. ( ) *Key to Plants Common in Woodlands*. Field Studies Council.

- HUMPHRIES, C., PRESS, J., and SUTTON, D. (2000) *The Hamlyn Guide to Trees of Britain and Europe*, Hamlyn.
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- ROSE, F. and JAMES, P.W. (1974) Regional studies on the British lichen flora, I. The corticolous and lignicolous species of the New Forest, Hampshire, *Lichenologist*, **6**, 1-72.
- SPEIGHT, M. (1989) *Saproxylic invertebrates and their conservation*, Council of Europe, Strasbourg, Nature and Environment Series, 42.

**Useful Websites (there are many others but these are some the main ones and often have links to further websites)**

The Woodland Trust: [www.woodland-trust.org.uk](http://www.woodland-trust.org.uk)  
Woodland Trust Community Woodland Network:  
<http://www.woodland-trust.org.uk/communitywoodlandnetwork/>  
Forestry Commission: [www.forestry.gov.uk](http://www.forestry.gov.uk)  
Woodland Heritage Champions Project: [www.woodland-heritage.org.uk](http://www.woodland-heritage.org.uk)  
Forestry Commission's Research group: [www.forestresearch.gov.uk](http://www.forestresearch.gov.uk)  
Ancient Tree Hunt: [www.ancient-tree-hunt.org.uk](http://www.ancient-tree-hunt.org.uk)  
Ancient Tree Forum: [www.woodland-trust.org.uk/ancient-tree-forum/](http://www.woodland-trust.org.uk/ancient-tree-forum/)  
Tree Council: [www.treecouncil.org.uk](http://www.treecouncil.org.uk)  
Natural England: [www.naturalengland.gov.uk](http://www.naturalengland.gov.uk)  
English Heritage: [www.english-heritage.org.uk](http://www.english-heritage.org.uk)  
Heritage Lottery Fund: [www.hlf.org.uk](http://www.hlf.org.uk)  
Small Woods Association: [www.smallwoods.org.uk](http://www.smallwoods.org.uk)  
Field Studies Council: <http://www.field-studies-council.org/>  
British Trust for Conservation Volunteers: [www.btcv.org](http://www.btcv.org)

## Local Projects / Websites / Organisation

Below are listed several local projects we have come across during the development of the manual and which may be able to give you support and guidance. If you are interested in woodland volunteering opportunities these may also be a good first point of contact. There are no doubt many other projects and groups in your part of the country which we have not included here.

National: The Ancient Tree Hunt: [www.ancient-tree-hunt.org.uk](http://www.ancient-tree-hunt.org.uk)

Chilterns: The Special Trees and Woods Project: <http://www.chilternsaonb.org>

Cumbria: Wood Education Programme Trust: <http://www.woodeducation.org.uk/>

North Wessex Downs: Woodland Heritage Project: <http://northwessexdowns.org.uk>

Oxfordshire: The Wychwood Project: <http://www.wychwoodproject.org/>

Norfolk & Suffolk: The Norfolk & Suffolk Heritage Tree Hunt: email:  
[treehunt@et.suffolkcc.gov.uk](mailto:treehunt@et.suffolkcc.gov.uk)

Essex: Epping Forest & Harlow Tree Hunt: <http://www.favouritetrees.org/>

East Devon: Great Trees of East Devon Project:

[http://www.eastdevon.gov.uk/index/visiting/countryside\\_index/great\\_trees\\_of\\_east\\_devon.htm](http://www.eastdevon.gov.uk/index/visiting/countryside_index/great_trees_of_east_devon.htm)



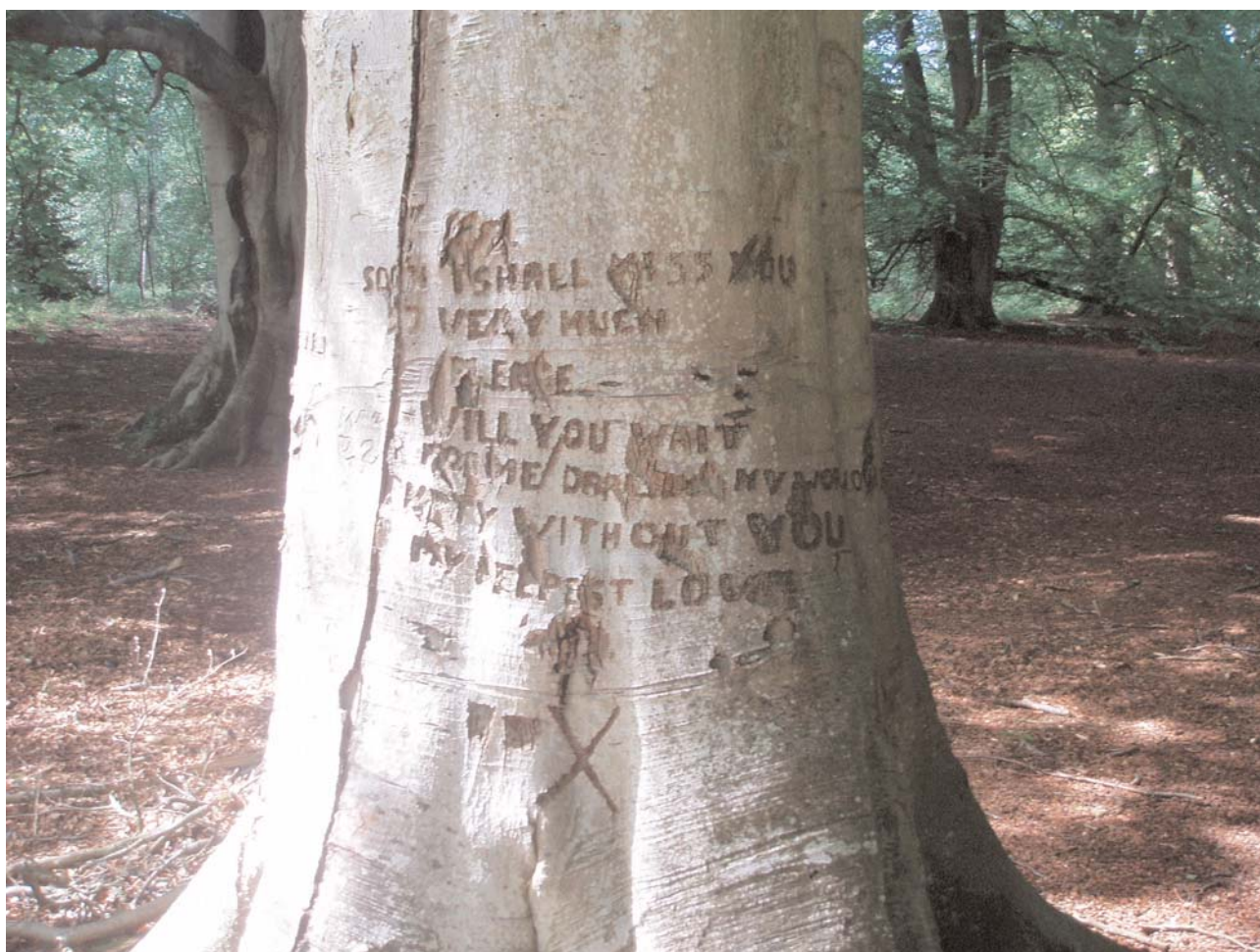








**This manual has been designed with and for people who would like to find out about the history, archaeology and ecology of their local woodlands. It outlines the essential background to woodland heritage and has sections on historical research, undertaking practical surveys, how and why to manage woodland and producing interpretation. Project examples from Volunteer groups around England are included to illustrate the range of work being undertaken.**



*Ancient Beech tree in Felbrigg Great Wood, North Norfolk.*

*There are many ancient beech trees in this part of the wood and all have love declarations scratched into their bark. The story is that couples used to visit the trees before he left to fight in the Second World War and inscribed their love to one another into the trees. On this tree the words read: 'Soon I shall miss you very much. Please will you wait for me my darling my world is empty without you. My deepest love.'*

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