Investigating Tree Archaeology

History and Technology of Woodland Management and Product Use

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Conference Abstracts & Papers

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South Yorkshire Biodiversity Research Group / The UKECONET
Overview and Context
Professor Ian D. Rotherham,
Dept. of Natural & Built Environment, Sheffield Hallam University
i.d.rotherham@shu.ac.uk

The conference brings together a broad church of practitioners, researchers, academics and enthusiasts to consider aspects of ‘tree archaeology’ from the rural landscape, via the processes of harvesting and working the products, to their destination in buildings and other structures. The idea of the event emerged from discussions at the January 2017 meeting in Leicester of the Vernacular Architecture Group. There is a follow-up 3-day conference in September 2019 on the same theme but with a deliberately international flavour, and there will be both a proceedings volume from this event and a separate book ‘Tree Archaeology’ to be published by the University of Exeter Press and launched at the 2019 conference.

Planting & woodland management – producing wood and timber for construction in pre-industrial England
Ian Rotherham,
Sheffield Hallam University

Figure 1. Charcoal burner’s shelter in the New Forest, late 800s

Summary:

Understanding how landscape resources have been used throughout history is central to the study of long-term environmental history. In this context, the relationships between vernacular buildings, other build structures, and natural resources are of particular interest.

Research into vernacular architecture for example, may set out to place structural timbers and other woodland products into the context of the buildings and other artefacts, but often the connection to the landscape is relatively limited.

Experts in analysing, for example, timber in situ, may not be so knowledgeable about the processes involved prior to the delivery of materials onto site, or to the workshop of the craftsman.
Furthermore, there may be only limited appreciation of the general environmental issues surrounding the management and conservation of woodland and the other demands placed upon its exploitation in pre-industrial societies. Competing demands historically included fuel extraction and processing for domestic and for industrial usage. There were also tensions between those requiring woodland or parkland timber for different structural uses – from local modest buildings, to higher status construction, and to other uses such as shipbuilding. The management and resolution of these issues is at the core of understanding ancient woodlands and trees in the landscape.

Finally, the 2017 annual meeting of the Vernacular Architecture Group at Leicester highlighted a need to understand better the dynamics of the interrelationships between the wood and the landscape producing the raw materials, the craftsman and others shaping the products, and the end uses in buildings or other construction.

![Figure 2. High status building from local materials in middle England](image)

**Planting & woodland management:**

Much of the interest ranges broadly from the early medieval period to the eighteenth century, up to and including the main period of parliamentary enclosures, a time of major transformation in the landscape. Indeed, in the build-up to enclosures, to agricultural revolution and to industrial revolution and urbanisation, attitudes to the countryside and its management began to change dramatically.

This paper provides a perspective to processes and issues of environmental change, and associated demands on woodland and related resources. I consider the management responses to the pressures and demands, and especially the competition for resources by different actors.

Woods and other ‘tree’d’ habitats provided ‘timber’ and ‘wood’ resources plus much else besides; often with competing demands between different stakeholders. Since from the early medieval period with growing human populations across Europe and Great Britain, resources came under greater pressure, managers were forced or opted to approach the landscape differently. This utilisation might be to produce timber for building and other construction or generate fuelwood or to manufacture charcoal for industry. From the extensive wood pasture landscapes and commons, woods and parks were enclosed and protected, and in the increasingly ‘hedged’ countryside hedgerow trees became significant too.
Vernacular histories & localisation:

The uses of, and demands upon, natural resources for buildings vary over time. If we consider pre-industrial society in Great Britain specifically, we see also marked geographic variations and resulting character depending on the nature of the landscape. Additionally, as populations ebbed and flowed with climate change, diseases, conflicts, and economic fluctuations, the demands on resources fluxed and the choices of materials in buildings shifted with availability, cost, convenience, status and fashion.

Resources:

- Timber
- Wood
- Turf
- Peat
- Stone
- Clay
- Reed & sedge
- Bracken
In the pre-industrial countryside many ‘prime’ resources were not available to most people, and almost all resources were carefully (and sometimes strictly) controlled. We see a separation between the resources and materials used for high-end prestigious projects and buildings (royal, aristocratic, and ecclesiastical uses), those of the wealthier peasants or in towns, those in commerce or crafts, and the poorer commoners and peasantry.

All these issues influenced and affected the way sites were managed and resources were harvested and utilised.

**Seeing the wood in the trees......:**

Evidence of past usage of tree resources may be visible in the once-worked but now abandoned trees – so-called ‘working trees’ as they ‘worked’ for a living, and now are ‘worked’ or ‘retired’ veterans. This ‘tree-archaeology’ with coppices, shreds, stubs, pollards, and single-or multiple-stemmed open-grown standards, can be hugely informative about past management. Some of the multiple-stemmed, open-grown standards may be outgrown coppices selected on for specific uses, singled as individual trunks, or else merely abandoned.

It is also important to recognise the difference between ‘wood’ or ‘underwood’ (*boscus* in Latin medieval documents, or *le spryng bosc* combining French and Latin (Jones, 2009)) which was small diameter poles cut from coppice, pollards, shreds or scrub, and ‘timber’ which was large diameter material for major constructional work (referred to as *meremium* or *maerimium* in Latin medieval documents). Poles from coppice or other sources provided fuel but also wood for lighter constructional work, (such as wattles or light, supporting struts), on modest buildings and around farms or cottages. In some regions such as fenland areas the products would be predominantly small-wood from willow or alder coppice and brushwood. Similarly in many upland zones or areas such as the Western Isles for example, there was an acute shortage of larger timbers and therefore larger wood poles were important and prestigious.

![Figure 5. Shielings on Jura in the 1700s, but note the exaggerated scale](image-url)
In order to understand the roles of woodland and trees in building construction, it is necessary to know about their history of both management and utilisation, and about how these were controlled. We need to know who had the rights to what, where, and when?

Before Domesday, (1086), most British ‘woodland’ was in the form of ‘wood pasture’ – with open, grazed grassland and heath populated by large ‘open-grown’, standard trees, and probably more-dense areas of close-canopy ‘forest’ and scrub. This was a large and expansive landscape with a relatively low density human population. Across much of the countryside they would have been only limited controls over what resources were available and to whom; perhaps related to ‘tribal’ ownership of resources and rights.

A key account and source of information is the Domesday record of the Saxon countryside researched and drawn up for William the Conqueror, the Norman overlord. There are two versions with the ‘Little Domesday Book’ which includes Norfolk, Suffolk and Essex and is less of a summary than the main text and has greater detail than ‘Domesday’ for the rest of the kingdom. As a document it is perhaps less organised and some of the nomenclature differs too.

![Figure 6. An entry from Essex from the Little Domesday book](image)

However, overall, the ‘Great Domesday’ account of 1086 provides detailed insight into woodland resources across much of England which it describes in four main forms:

1) **Silva** – simply woodland
2) **Silva modica** – not known exactly but perhaps some form of woodland with coppice
3) **Silva minuta** – meaning coppice
4) **Silva pastilis** – meaning wood pasture
At Domesday, documenting the former Anglo-Saxon landscape, although the countryside varies in terms of the extent of arable land etc., there is generally an abundance of (4) Wood pasture, and less of the coppice types. This is typical for an extensive landscape of abundant resources and relatively few people. Interpreting distances and areas in Domesday can also be a problem with different measures applied at regional levels. However, the following are broadly accepted:

**Acre, acra, ager:** A value of land assessment frequently applied to pasture, meadow, and woodland. Measurement of an acre was a multiple of ‘hides’ but this varies from region to region.

**Hide, hida:** This was a measurement of land for tax assessment and used outside Danelaw counties (for which ‘carucates’ were used) and was around 120 acres, dependent on local variations in the acre.

**Carucate, carucata:** Derived from the Latin word caruca, meaning plough, this is a measure of land used in Danelaw (North and Eastern) counties in Domesday. This was equivalent to a hide and represented the amount of land which could be ploughed by one plough team.

**League:** A measurement of distance, twelve furlongs, or about 1½ miles.

With the imposition of the Norman feudal system across England this inherent flexibility in the countryside changed into very organised and largely fixed manors distributed with rights rigorously controlled from the Crown and gifted to those in the hierarchy below. Within this new organisation, rights and access to resources were strictly controlled and allocated through a mix of ownership and long-established traditions. However, there was a further twist in this situation, when, as acknowledged in the *Act of Commons* (1235), the various parts of the manor estate were fixed and allocated to diverse functions – the ‘wood’, the ‘park’, the ‘common’, the open fields, the heath, the bog, the fen, and more. Within this medieval countryside the role of timber and wood from hedgerows is often forgotten.

This act, also called ‘*The Statute of Merton*’, is regarded as the ‘*Magna Carta of the landscape*’ and whilst it probably did not bring about the changes in the countryside it ratified processes occurring under the Norman feudal system. The extensive and often fluid rural landscape and its resources were increasingly fixed and regulated to supply the needs of growing populations and a source of revenue for the Lord and the State.
Furthermore and important in terms of their maintenance, for the commoner and many of the poorer peasants, the resources from the unenclosed commons and heaths were vital for both fuel energy and for constructional works. As the human population grew steadily over the period from around 1100 to 1300 AD, the countryside became an increasingly disputed space and resources needed to be managed more rigorously in order to maintain the sustainable provision of vital materials. In some regions such as Norfolk and Suffolk for example, the increasingly hedged landscape became important in the supply of faggots of wood-fuel (often from pollard trees), and for timber trees too.

The emergence of managed ‘woods’:

One consequence of the shift noted above, from wood pastures to coppice woods, was the development of protected ‘woods’, named and enclosed by a bank and ditch, a wall or a paling fence to keep out grazing livestock but also to demarcate the wood from the lands around. Most of today’s ‘ancient woods’ derive from about this time of the Act of Commons, or in some cases, a little earlier. These are enclosed medieval ‘woods’ and were usually privately owned, by the Crown, an aristocrat, a manorial lord, or an ecclesiastical foundation; and a few were in common usage.

The management process:

Coppice: – the coppice cycle to produce poles of varying ages & sizes dependent on the subsequent use – anything from a 7-year to a 25-year cutting cycle. The relatively young growths are cut back to a stool at about ground level and allowed to ‘spring’ back with new growth.

This may be simple coppice with no over-storey of timber tees, or coppice-with-standards, which in effect has two cycles of harvesting intermeshed in the same area of land. The timber might be on a cycle of 80 to 120 years, but with ‘thinnings’ harvested at younger ages to allow the bigger trees to mature.

Pollarding: – The pollard cycle was similar to that of the coppice but at a height of up to several metres from the ground in order to raise the young sprouts about possible grazing by livestock, both wild and domestic. The harvest may be for wood fuel, for light constructional work, or for lead fodder and the timing of the cut varies accordingly.
Shredding: – The approach here was similar to pollarding except for the lateral branches were cut back to the stem all the way up the trunk. This system is still practiced in parts of Europe but was probably used in Britain too, though little documented.

Some coppice was cut at different ages from an individual stem, and this is most frequently seen in the Western Atlantic Oak-Hazel Woods, but can be found in other woods too. The individual tree can be cut to provide the specific gauge of wood required for a particular job on a ‘cut-and-come-again’ system.

Standards: – These tall, woodland standard trees branchless to the first three to four metres in height were suited to conversion into structural timbers. Growth in the tight confines of closed canopy woodland encouraged tall, straight stems. In the more open conditions of parkland or hedgerow for example, a mature oak could send out major branches at maybe 1.5 metres to 2 metres height, and produce a massive, spreading crown of 25 metres or more in diameter. Such open-grown trees were less suited to the production of straight and uniform constructional timbers, but might be selected for specific shapes required in certain buildings. These might even be specifically shaped over decades to fulfil a particular need. The best examples of this are the so-called ‘guided pollards’ found in parts of the Spanish Basque Country.

Oak was the main species for major constructional work being strong and resilient plus being pliable and useable when ‘green’ in the period soon after felling, but hardening over the years to give strength to a building. Rackham (1986) suggested that around ninety percent of structural timbers in England were of oak, but noted that elm, ash, and aspen were also used in lower status buildings. Elm was especially useful in wet situations and was applied to piles, conduits, pipes, and for example, weather-boarding. Ash was generally too pliable to take the strain of larger structures.

The industrial woodland cycle as evidenced in South Yorkshire from the 1600s and 1700s:

According to Jones (2009), the following terms were applied to the standard trees in the coppice-with-standards managed woodland:
a) **Standards** – uncoppiced trees that remained throughout the coppice cycle and beyond.

b) **Wavers** – young trees in the early stage of the standards cycle.

c) **Black barks** – about 40 to 50 years old having grown through two coppice cycles of 20 to 25 years.

d) **Lordings** – older standard trees, maybe 70+ years old

The intention of this system was to produce a sustainable supply of both underwood (coppice) and timber based on two inter-linked cycles in the upper and lower canopies. The timber and wood were from mostly oak, but also ash, field maple, hawthorn, birch, rowan, hazel, lime, willow and holly. The larger woods were each divided into different compartments managed on a cyclical basis and these individual units were often names, sometimes as separate named ‘woods’.

The complex and carefully controlled industrial harvesting must have evolved from traditional woodmanship developed with local variants though the medieval period.

**The medieval rights:**

Gifted by the Crown, and disseminated via the feudal system, land resource rights might be in the ownership of a Lord, perhaps an aristocrat or one of the lesser gentry, or of an ecclesiastical foundation. From these ‘owners’ the lesser but more numerous commoners, serfs and un-landed poor had access to enough vital resources to at least survive. Such access to resources was recognised in rights such as:

a) **House-bote:** This is an allowance of necessary timber out of the landlord's woods, for the repairing and support of a house or tenement. This belongs of common-right to any lessee for years or for life. House-bote is said to be of two kinds - *estoveriam aedificandi* (estovers) = a right allowed by law to tenants of land to cut timber for fuel and repairs, *et ardendi* = to burn.

b) **Hedge-bote:** This is wood used for repairing hedges or fences.

The wider context of these rights to resources was a largely rural society with few urban settlements, and certainly very few with more than a few thousand inhabitants.

**Estovers:** Derived from the French word meaning ‘necessary’, a right of estover conferred the ability to take limbs of timber for minor works to buildings, for making farm implements and hurdles, and as deadwood for fuel, or to take bracken and heather for bedding. This was once a mainstay of rural communities.

In the medieval landscape, ‘timber’ and ‘wood’ were subject to different rules, ownership, rights, and access.

**The wood, the common, the fields & lanes, & the park:**

Wood, timber and other building materials such as stone, clay, sand and gravel, turf, furze, and ling might be sourced from various parts of the manor estate. However, in terms of wood and timber, the different areas supplied varying types and qualities of produce. A working ‘wood’ for example, produced abundant coppice ‘wood’ and timber up to a certain size, but for the massive timbers
required for major constructional work, it is likely that these might be supplied from the manorial park. In the park landscape, big standard trees were grown alongside grazing animals as a multi-functional system. In some cases, trees were grown to a specific shape and destined for a particular use over a period of more than a hundred years – requiring vision and foresight on the part of the landowner. A particular example of this practice was the growing of so-called ‘guided pollards’ in the Basque country with trees grown and shaped for individual, specific purposes.

Smaller wood was taken from wooded common and heath, and both wood and timber might be harvested from lane-side and field boundary hedgerows; though in the latter cases, over-large specimens might not be tolerated because of their shading of arable crops.

Generally, from the common resources, peasant commoners with rights would be allowed to take or harvest the necessities for survival but not for commercial gain. The cottages and other buildings of the rural poor were a direct reflection of these resources available to them.

Some buildings were long-lived permanent structures but many were temporary or short-lived residences, some associated with transhumance and others with semi-nomadic rural crafts such as charcoal burning, clog making, potash burning, bodging, and barking.

The emergence of industry & commerce:

Towards the later medieval and into the early industrial periods, the emergence of commercial harvesting of resources such as wood and timber, probably resulting from the demands of the increasing urban centres of population and stimulated by other, major constructional projects that necessitated the purchase of valuable resources. The growth of commercial and industrial exploitation undoubtedly competed with traditional common utilisation. In woodlands owned for example by emerging coal and iron masters (such as the Duke of Norfolk and the Earl Fitzwilliam in South Yorkshire, these conflicts of interest might cause serious problems for those relying on access to such resources. One solution, with the landowners help, would be a shift towards alternative building materials (for example from wood and timber, to brick and stone), or the re-location of communities from rural to urban (as commoners moved to the towns). In developing industrial regions such as
South Yorkshire, North Derbyshire and the north-east, the commercial production of wood for charcoal and whitecoal, and poles for pit-props, or timbers for industrial construction, displaced other usage.

Relating to the latter, as common rights lapsed, commercial exploitation of the countryside resources took over. Around London for example, former wooded commonland was exploited commercially for fuelwood for the city. This intensive use of oak and beech pollards must have displaced common rights and also compromised the production of constructional timbers.

![Image](image.jpg)

**Figure 12. Fuelwood pollards at Burnham Beeches**

**The distribution of resources:**

In the wider landscape, people, wealth, and resources are not distributed evenly, meaning that demand for and access to resources such as wood and timber were uneven across the countryside. Furthermore, the use of local resources for all but the highest status buildings, led to distinctive vernacular styles based on availability at regional and local levels. Within a particular region the use of materials for construction differentiates between the needs and abilities of the different classes. In this case, to understand the constructional use of wood-based materials in buildings, it is useful to consider separately the social level of the end user.

In regions with abundant timber and wood, such as part of the English midlands, then building styles and structures reflected this availability of resources, and homes from quite moderate to high status would include big timbers. However, in extensive wetlands such as the pre-drainage fenlands, the Cumbrian or Pennine uplands, or the Scottish Islands, for example, large timbers would be very scarce indeed. In these situations, the common people would resort to building materials and structures that reflected local availability – in the fens, withies, turf or mud, and reeds, and in the uplands, birch poles on stone bases, supporting turf thatch and rushes or bracken. Highly-prized, large timbers would be reserved for manorial or ecclesiastical buildings.

A further potential limitation to the use of particular materials such as large timbers for construction would be the availability of the skills to manipulate and to prepare them. For a major or prestigious
project such as a large ecclesiastical or aristocratic residence, the specialist labour could be imported, for others this might be an issue.

Conversion to timber:

The living tree was often selected for a specific end purpose, and might be chosen in situ by the craftsman, often the master carpenter, responsible for the construction. The tree needed to be selected, payment and contracts agreed, and then prepared on site for felling and processing. Nothing in this economy was wasted so bark, branches, broken twigs (ramel), stumps and roots, were all accounted for. Sometimes the cut stump might be converted to coppice. Felling would normally be undertaken in winter when after leaf-fall the carpenter could best assess the size, shape, and structure of the tree. Additionally, the woodman might fell the tree with the least damage to the underwood adjacent. Sometimes felling would be delayed until the spring when the rising sap added value to the harvest of bark. After felling the timber was next ‘scapped’ (roughly hewn into squared beams) for transportation.

Cutting the felled ‘raw’ tree into workable timbers was called conversion, and this involved various technical steps from squaring up with box hearting, to box halving and box quartering. The carpenter would make best use of the particular strengths and properties of wood relating to species, to position on the tree, and of course, to grain. A cut log might be split radially or sawn through. In England, it seems that the saw was introduced at some time around the twelfth century, and before that time, timber was worked with an adze. Again, a matter for experience, but it would be important for the carpenter to judge the smallest piece of timber able to do the necessary job as required. Availability and cost would be prerequisites.

With all these factors to take into account, most structural timber trees were harvested at a relatively young age – maybe from fifty to 150 years old. Much older than this and a tree may have succumbed to attack by beetles and by fungi, and even though they may live to a much older age, their usefulness and value were compromised.

Cutting at the sawpit would be outside the wood for timbers but inside at smaller pits for underwood. With the beams and planks produced at this stage, they could the tidied up to varying degrees depending on the status of the building and the position of the timbers within that structure.

Work by Mel Jones in South Yorkshire (Jones, 2009) shows that many later medieval and early industrial stone-built buildings encased or enclosed an earlier timber-framed structure, and in many cases stone-work rests on a ‘substantial framework of locally grown timber’. Stone only began to displace timber as the main material for construction in the seventeenth century, and even then of course, the roof trusses remained timber-built.

Other examples:

The management or exploitation of woodland and timber resources varies as described in pre-industrial and early industrial societies according to access, need, supply and demand. As the human pressures vary and the countryside resources differ, the detail changes. So in Japan with the prevalence of large bamboo species, these materials were managed, harvested and used for
construction at all levels of society. The bamboo forests provided a ready and adaptable resource for domestic building.

When European settlers colonised North America, they were faced with a super-abundant forest and timber resource. This could be harvested and utilised almost free for the taking and became the mainstay of settler domestic constructing. Furthermore, the burning of brash and other materials to make potash as a cash harvest helped fund land improvement efforts. In this super-abundant landscape of excessive resources beyond demand, at least at first, there was little need to manage or maintain the resource. The forest could be clear-cut for harvesting and then the wave of settlers moved on to the next untouched area. The land cleared of trees could be converted to pasture, arable, or orchard. This must have borne similarities to the situation in pre-Domesday England except that it occurred more speedily and more thoroughly. Only as the human pressure increases and the natural resources reduce or become less available, is there an imperative to manage the forest sustainably.

The impacts of such exploitation, pressures and landscape transformations is eloquently expounded by Perlin in ‘A Forest Journey’ (1989), as he explores the role of wood and timber in the development of civilisation.

Building structures:

There is an extensive literature on timber building forms and styles, and there is little need to repeat the information here. In England, by the medieval period, there were major regional schools of carpentry involved in the construction of timber-framed buildings. A major separation was between ‘box-frame’ buildings constructed as integral timber frames sitting on sills, and so-called ‘cruck’ buildings with an A-frame of two massive timbers, often from a single tree. In the latter case, which is not strictly a timber-frame as such, the weight of the building is carried directly to ground by the curved major timbers seated on padstones in the ground. A true timber-frame structure is a little like an old-fashioned Meccano set except much larger and in wood. A big advantage of the timber frame approach was that much of the structure could be pre-fabricated and then carried to the building plot for rapid assembly and erection. Proper timber-frame building was being adopted in England by around the thirteenth century. Cruck-framing has a remarkably northern and western distribution in Britain.
The primitive:

Alongside these higher status dwellings described above, were the low status, temporary or even portable dwellings of itinerant workers and the poorer peasants and landless poor. Often rough shacks of wooden poles supporting a covering of turf, bracken or ling, some of these persisted in the English landscape until the early 1900s, and are probably one of the oldest building types known. Whilst less is written on these traditional dwellings of the rural poor, they too depended on locally available natural resources, but often those taken from the common, heath, bog or fen.

Woodland crafts workers such as charcoal burners lived in these primitive and ancient wigwam shelters and a photograph from Parkwood Springs in Sheffield shows such as building in the late 1800s. Each craft group (potash makers, barkers, charcoal-makers etc) had their own distinctive type of shelter.
Conclusions:

Throughout history, wooded and forested landscapes have been contested spaces, and this applies to both stakeholder groups and between different products and demands. In an extensive landscape with abundant resources and relatively low density human populations, timber and wood might be taken freely from the countryside. However, as human populations rose or resources became depleted, the forest or the wood had to be protected and managed through controls on usage or on access to exploitation. These rules were necessary in order to provide for the raw materials for essential domestic construction at every level, from the rich to the poor.

Conflicts arose through illegal harvesting or from competing uses - such as grazing animals in areas of managed ‘woods’, and later from commercialisation and industrialisation. As contested spaces, the woods and forests were under pressure for lordly or royal recreation (hunting), for the extraction of big timber for the construction of ships, especially warships, and for the production of charcoal especially for metals smelting. All these demands would have compromised the ability of the countryside to produce and provide material for domestic construction but these conflicts were spatially uneven and linked to factors such as proximity to major water-courses suitable for transportation of extracted timbers. The impacts varied with geography and through time.

With changing technologies, and socio-economic fluxes, the pressures also changed. So with urbanisation and industrialisation, many commoners were displaced and migrated to emerging townships. Intensive industrial coppice management took over to provide ‘wood’ for metal smelting and mining, and other lands were converted to modern-style ‘forestry’. Woodmanship and traditional woodland management continued extensively in the industrial woodlands until around the middle of the nineteenth century, but declined thereafter. Additional pressures and conflicts arose as commons and manorial woods were moved into management for game and sport rather than the provision of locally-needed resources. Again, this is too big and complex an issue to address in detail here.
In the face of competition and problems of access, one solution to the domestic construction problem was to move to alternative materials as was always the case in landscapes where wood and timber were inherently scarce. With industrialisation the shift was towards mass-produced building materials such as bricks from clay. The poorer people made do with whatever they could find as so evocatively portrayed in books such as ‘Home-Made Homes - Dwellings of the Rural Poor in Wales’ by Eurwyn Wiliam (1988). Sadly these examples of basic rural and urban domestic architecture are generally poorly documented and many examples were swept away during the passion for ‘improvement’ during the early- to mid-twentieth century. These buildings relied very much on immediately available natural resources from wood, forest and common, but when they were ‘improved’ little evidence of their origins and form remained.

![Figure 16. A welsh mud house in the early 1900s from Eurwyn Wiliam (1988)](image)

It is clear that in England ‘management’ of wooded landscapes to produce necessary resources of ‘timber’ and ‘wood’ for local consumption became a necessity in the post-Conquest period. Growth in the human population, reduction in immediately available resources, and conflicts between users and uses meant that at a manorial level, exploitation had to be controlled. This is reflected in the Act of Commons of 1235. Throughout the medieval, pre-industrial period, the careful allocation of essential timber and wood was via a mix of ownership and of common rights and this helped ensure that most people could at the very least survive. However, with modernisation, urbanisation, enclosure and ‘improvement’ came a further shift; this time away from local communities and towards commercial or industrial exploitation of ‘woods’, and then a combination of modern forestry and the conversion of landscapes to recreational and ‘sporting’ interests. This latter change is a part of the process termed ‘cultural severance’ (Rotherham, 2011, 2012) whereby local people become separated from their subsistence countryside which is converted to the twin uses of exclusive sport (as leisurely landscapes), and to industrial agriculture and forestry, or else abandoned. These processes can be witnessed in many other parts of the world, such as for example in North America subject to Western European colonisation.

In 1808, the Philadelphia Society for Promoting Agriculture noted how ‘......Timber is wantonly because lavishly and unnecessarily destroyed; and becomes in a few years scarce, where its abundance was at first accounted a burden......Fencing, fuel, building, implements etc., call for timber - but it is distant or gone’. Written in the early nineteenth century, this could just as easily have been about the post-Conquest colonisation of England.
Finally, from the productive countryside through the process of the craftsman, into the constructed buildings there is a trail of history, of archives and of archaeology that tells a story of resources, of people, and of architecture. The craftsmen have left a trail of worked trees, of humps and bumps in the woodland landscape, and through the knowledge of traditional crafts and processes. From within the built structures there is the story in the crafted timbers and the tree-rings or carbon dates that informs our understanding of the craft processes and the landscape beyond. Even the problem insects which bore into constructional timbers of antique buildings originated in the ancient trees of forest, park and chase. All this is the subject we now call, ‘tree-archaeology’.

References & Bibliography


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The Oaks of Lincoln Cathedral
Andy Alder,
Woodscapes Consultancy
andrew.alder@outlook.com

This paper will focus on the timbers of Lincoln Cathedral, those already in place dating back to 966 and those that are ready to replace timbers in the future, both stock piled and also growing and being planted in dedicated woodlands.

The research combined fieldwork and desk top research, and shows a hidden side of the building of which 75% of the wood work is original. We also recorded an art installation in the Chapter House, hewing beams using traditional tools and methodology.

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Interpretation of Beetle Remains in Archaeological Deposits – Wood-decay Beetles are Associated with Trees not Woodland.
Keith Alexander,
keith.alexander@waitrose.com

Beetle remains have been found in a wide range of substrates. Their chitinised cuticles are very resistant to environmental degradation, and fragments may remain recognisable to species level for very long periods, depending on the medium in which they have been preserved. The ecology of most species is known to a basic level at least, and many have been subject to detailed scientific studies. Their presence in a site may potentially provide very useful information on the local conditions under which the deposit was made. It is important to work with the species-specific knowledge when analysing assemblages rather than to make unfounded assumptions; for example, the presence of a large number of saproxylic (wood-decay) beetle species does not imply woodland conditions, but rather the availability of a wide range of saproxylic niches. The richest sites under modern conditions tend to be characterised by good numbers of large open-grown veteran trees. Only shade-demanding species should be used to imply closed woodland conditions and even these may potentially be found away from such woodlands. This presentation will provide examples of saproxylic beetle species which have been found in dated deposits, will discuss current knowledge of their precise habitat requirements, and how this knowledge provides evidence for the nature of the local treescapes.

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The Diversity and Origin of Modified Tree Forms: with Reference to Type Specimens Found in the UK and Case Studies from the Gleadless Valley, Sheffield

Paul Ardron,
paulardron@rocketmail.com

The diversity and origin of modified tree forms: with reference to type specimens found in the UK and case studies from the Gleadless Valley, Sheffield

This paper will explore and attempt to classify the many and varied forms of trees modified by past human activity. Some of these trees have resulted from specific woodland based industries; others have been shaped and impacted by a variety of forces, not all necessarily anthropogenic. Type specimens from case studies sites including the Gleadless Valley, Sheffield and Upper Derwent, Derbyshire will be cited along with examples from other locations around the UK. The focus will be on tree forms other than coppice and pollards, although certain variants of these types will be discussed. Upland trees in particular, often subject to extremes of weather and other geophysical forces combined with more ad-hoc human influences have sometimes developed particularly dramatic and distinctive forms.

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Timber Use and Selection at Must Farm: Construction, Life and Destruction of a Late Bronze Age Settlement

Mike Bamforth,
University of York
michael.bamforth@gmail.com

Recent excavations by Cambridge Archaeological Unit (funded by Forterra and Historic England) at the Late Bronze Age pile dwelling of Must Farm, Peterborough, have provided a rare glimpse into life on the edge of the fens. The settlement came to an end, possibly not long after its construction, in a catastrophic conflagration / fire event. Although the settlement has been partially truncated by quarrying five circular, wooden, stilted-structures supported by earth-fast driven piles, a section of raised wattle walkway and an encircling palisade were excavated from the muds of the palaeochannel they were constructed above. Interrogating the wood and timber selected to build the settlement and craft so many of the artefacts used by the inhabitants will be one of the key elements to understanding this enigmatic site. Analysis of the carpentry used and timber selected alongside traces the catastrophic fire has charred into the wood at Must Farm are providing a wealth of information about the construction, use and destruction of the settlement.

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Trees of National Special Interest - Past History, Safeguarding Present and Future Values

Jill Butler,
Woodland Trust
jillbutler@woodlandtrust.org.uk

Some trees stand out from all others as very special or remarkable. This may be due to their age, size or condition, as a collection of trees of historic or biodiversity value or their association with nationally important people or events. Most of these will be important to science because they give us insights into past lives and activities i.e. tree archaeology.

Excavated, oak sub-fossils from the gravel beds of the River Trent near Nottingham provide evidence of pollarding in the UK back 4,400 years. Some living pollard oaks may predate the date when England became a recognised state in 927. The practice of pollarding has continued throughout the intervening period until today and is associated with historic landscapes – wood pastures, old hedgerows and old orchards. It is a Europe wide, deeply historic practice that provided the many products for everyday life for people and their domesticated stock.

Ancient yews are often associated with places of worship which long pre-date the Romans. Ancient open grown oaks and other species of tree are often found in mediaeval deer parks where they were essential for mast production for the deer and also as vantage points for the hunt. Their roles depicted in Mediaeval Books of Hours and other artefacts. Other trees such as the Parliament Oak, Capon Tree, Newton’s Apple Tree, Tolpuddle Martyr’s tree, to name a very few, have associations with celebrities or uprisings or cultural events.

Sadly, despite their value to us as national icons, they can be extremely vulnerable. Even in the nineteenth century, the Boscobel or Royal Oak is said to have been destroyed by tourists all too keen to take a souvenir away with them. The Pontfadog Oak blew over a few years ago and a similar fate befell the Buttington Oak in 2018 – both lost due to poor root structure. Others are threatened by development such as at Aldermaston Court in West Berkshire around which there was a significant campaign to save them.

Although archaeology can be protected e.g. by Scheduled Ancient Monument designation and trees maybe protected by Tree Preservation Orders (TPOs), much can still be lost even as we start to become more interested and aware. However, TPOs do not differentiate trees of national status, they are most often used in protection of trees in local development situations. More recently there have been calls for a statutory designation of Tree of National Special Interest with agreed criteria that distinguish those trees that tell us more about history, our past lives and activities. As such the stories about their value as tree archaeology would demonstrate to owners their value to society as a whole and ideally be eligible for management grants where necessary – inspiration and inducement. The Woodland Trust and Ancient Tree Forum would wish to see all ancient trees designated in this way and many collections of ancient and other veteran trees to make their values more visible to society, owners, policy makers, advisors and grant aiders.
Abbots, Barons and Trees – Five Centuries of Woodland Management in Two Yorkshire Dales
Ian G. R. Dormor,
PLACE, York
i.dormor@daelnet.co.uk

This paper explores the woodland management traditions that were practised in two neighbouring Yorkshire Dales over a period of 500 years. In Nidderdale, coppice woodland was a widespread feature of the land-use framework put in place by the Cistercians of Fountains Abbey whilst in Wensleydale seigneurial tenure resulted in large tracts of land being set aside for deer hunting.

In Nidderdale, the monks of Fountains Abbey were engaged in extensive lead-mining and smelting activities which were reliant upon charcoal derived from managed coppice woodlands on the Abbey’s satellite granges where access to those woodlands by tenants was strictly controlled. By contrast, in mid-Wensleydale a profusion of deer parks on the lordly estates around Middleham and Wensley gave rise to a form of land-use that favoured wood pasture over coppice. In essence the functions of woodland differed markedly in two discrete areas at the same time.

Following the Dissolution of Fountains Abbey in 1539 there was a gradual transition from the intensive monastic coppice regime to amenity and plantation forestry practice by the Inglisby Estate on former monastic land. Two sixteenth-century valuations of former monastic woodland have been interpreted by the writer to provide an insight into the composition and management of the monastic woodlands prior to their transfer to secular ownership.

On the Bolton Estate in Wensleydale, woodland was initially regarded as a means of addressing the estate’s financial shortcomings. However, a remodelling of former parkland wood pasture into plantation woodland, which took place within the space of a few years during the late eighteenth century, can be seen to have influenced the rise of commercial forestry in the North of England. This process has been revealed by the writer’s fieldwork together with a study of estate archives.

The characteristics of present-day woodland are in many cases related to past management which is itself a function of the outputs, or end-uses of woodland. Thus the extensive semi-natural woods that characterise a large extent of Nidderdale are the product of a coppice management regime whose purpose was primarily industrial – for the production of charcoal or kiln-dried wood. Much of the dale today supports commercial plantation woodland, and similarly, many woods in Wensleydale that originated in an environment intended for leisure purposes were subsequently replanted for timber production and now take the form of commercial plantations.

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The ICOMOS Principles for the Conservation of Wooden Built Heritage
Doug Evans,
ICOMOS-UK Wood Committee
dougevans12@gmail.com

Ever since the ICOMOS International Wood Committee was established in 1975, the need for a set of conservation principles has been a continuous theme in the Committee’s ongoing discussions and activities. The first “Principles for the Preservation of Historic Timber Structures” were adopted by ICOMOS at the General Assembly in Mexico in October 1999. In a session of the of the 19th General
Investigating Tree Archaeology 16/17 May 2018

Assembly of ICOMOS held in Delhi on 15th December 2017 a new and updated “Principles for the Conservation of the Wooden Built Heritage” were adopted as an ICOMOS doctrinal text. The presentation will look at the main reasons that led to the revision of the Principles including: to recognise a wider variety of wooden heritage including its intangible side; to better recognise the diversity of cultural heritage and the subsequent diversity of approaches, and therefore to reflect the Nara Document on Authenticity (Japan 1994); and to update and adapt its content to present day concerns, knowledge and processes.

Keywords: ICOMOS, ICOMOS wood committee, timber, conservation, conservation principles, wooden built heritage.

Bobbin Mills in the North of Scotland

Joanna Gilliatt,
Woodland Heritage Researcher,
Ancient Woodland Restoration Project
jrgilliatt@gmail.com

The first bobbin mill in the UK was set up in 1788, in the Lake District, to provide bobbins for the developing textile industries, and over the next century bobbin making became a considerable industry in its own right, with over 100 bobbin mills in the Lake District alone.

Over the past 3½ years I have been working as a volunteer researcher for the Woodland Trust’s Ancient Woodland Restoration project, with the aim of contributing towards the body of knowledge about the history and cultural significance of our ancient woodlands. My focus has been on researching the bobbin mills which used to make use of birch woodland in the north of Scotland. I have found evidence of 88 bobbin mills in the north of Scotland, which existed at some point over the 150 years between 1830 and 1980. There is evidence in primary sources (including the census, valuation roll and early Ordnance Survey maps) for 73 of these mills and from secondary sources and personal recollections for 15 more.

| Turning Mills and Bobbin Mills – by geography and date established |
|---|---|---|---|---|---|---|---|---|---|---|
| 1830s | 1840s | 1850s | 1860s | 1870s | 1880s | 1890s | 1900s | 1910s | 1920s | 1930s |
| **Angus:** 15 often urban, stone or brick built, steam powered, turning mills which produced 1-piece, birch bobbins and/or 3-piece beech bobbins, for the flax & jute industry. The last rural mill closed c.1907 and the last urban mill c.1975. |
| **Perthshire:** 23 mostly rural, stone-built, water powered, turning mills converted from a previous use such as corn mill, lint mill, waulkmill or oil mill. The mills produced 1-piece, birch bobbins and/or 3-piece beech bobbins, for the flax & jute industry. The last mill closed as a turning mill c.1977 |
| **Aberdeenshire:** 9 mostly rural, stone or timber with stone footings, water powered turning mills, which produced 1-piece birch bobbins and/or 3-piece beech bobbins for the flax & jute industry. The last rural mill closed c.1905 and the last urban mill c.1973. In addition, two similar mills, which made bungs & buckets rather than bobbins, still exist today. |
| **Highlands:** 11 rural bobbin mills of varied build/power source. Set up by & supplying |
| **Highlands:** 20 rural, timber-built steam powered bobbin mills, supplying thread mills |
| **Highlands:** 10 (including 3 from highland Perthshire) mostly rural, timber built, steam powered, bobbin mills supplying jute mills with 1-
thread manufactures with 1-piece birch bobbins/spools. Last mill closed in c.1889. With 1-piece birch bobbins/spools. Last mill closed c.1891 (or early 1900s). Piece rough-cut birch bobbins. Last mill set up c.1938, all continued to operate, well into the 20th century. Last mill closed c.1954.

For 150 years, bobbin making was a significant industry in the north of Scotland. Yet nowadays there is often little or no trace of the bobbin mills which once operated, or the impact they had, and many people are unaware that this industry ever existed. This presentation gives an overview of my findings about the industry.

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The Missing Ingredient: The Materiality of Alcohol Fermentation in Early Medieval Ireland
Jessica Gleman,
University College Dublin
jessica.gleman@ucdconnect.ie

Alcohol fermentation has been utilised by societies across the globe over several millennia, despite differences in societal structures, cultures, economies and broader food-ways. In early medieval Ireland (AD 400-1100), alcohol, particularly ale, was central to social gatherings and ceremonies, from the inaugurations of kings to the payment of labourers. This begs the questions, how was alcohol made, presented and shared in Ireland’s past?

The production and storage of ale requires a suite of suitable objects and containers – the brewing kit. Whilst alcoholic fermentation is frequently discussed in terms of consumption and ritual, there is far less consideration of the container itself, and relationships between the contents and the vessels used in fermentation and storage. Vessels have an observable effect on beverages and the fermentation process – today these effects are mostly associated with aging alcohols to add flavour complexity. The project examines evidence of fermentation in early medieval Ireland by exploring ale through a multidisciplinary approach, drawing upon historical writings, folklore, archaeological science, material culture and international ethnographies, along with scientific analysis to compare wooden vessels of different materials and analysis of how fermentation affects the vessel (use-alteration) and vice versa.

The selection of materials is influenced by the interplay between brewing, the brewer and cultural choices. In contemporary society, the emergence of the craft-beer movement demonstrates a new appreciation of the brewer and their creative outlet. This project will investigate choices made by early medieval brewers, in particular vessel material selection, and the wider concept of the craftsperson. International studies on fermentation have developed useful scientific approaches and ethnographies, but such approaches have not been applied to early medieval evidence, especially in Ireland. The project will therefore utilise an international approach to better understand brewing and associated material culture in early medieval Ireland.

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Dugout boat finds in Britain as records of ancient great trees from prehistory to the late medieval period

Damian Goodburn,
London Mus. Arch.
futtock.goodburn@gmail.com

The paper covers such finds as records of moderately to very, large trees in the past landscapes of several regions of Britain from eastern Scotland, through Wales to South-east England. This account is informed by a number of relatively recent studies indicating the variations in the parent trees used through time and space. Several of the examples used were subjects of experimental reconstruction which informed this work.

Working and Worked Trees
Ted Green MBE,
Founder President of the Ancient Tree Forum
edwardgreen629@btinternet.com

To follow

Tanneries and Treescapes (poster)
Christine Handley & Ian D. Rotherham,
SYBRG / Sheffield Hallam University

The relationship between supply and demand for wood, timber and bark across markets, geographical areas, and times is complex, but there are common themes. These relationships have influenced the form, structure and management of woodlands; and their legacies can be seen today. Bark was sometimes described as a waste by-product of other wood and timber industries. However, it is clear that with the high economic value of the tanning industry as a whole, and the central role of leather goods in society for centuries, the impact on woodlands in some areas of the country to ensure a ready and steady supply of mostly oak tree-bark for tanning varied but could be highly significant. From an early twenty-first century and Western perspective, it is difficult to appreciate the central role that leather and woodland products once had. Furthermore, even the memories of past, traditional uses have often been lost (see for example, Rotherham, 2007; Rotherham et al., 2008)). They were fundamental to everyday lives and their economic influence shaped the way societies developed. Problems of supply of tree-bark, rich in tannins, to meet the demand for leather were eventually solved by finding alternative reliable sources of tanning agents. However, this did not start to have a significant impact until later in the nineteenth century; until then the woodland resource had to be used. Interestingly some writers on rural craft industries do not seem to recognise tanning as such (e.g. Green, undated, late 1800s). On the whole earlier writers have not considered how bark was exploited in different circumstances, and the way this has affected the present woodland resource. We begin to address these issues in outline in this poster.
A Right Royal Forest: The woodland archaeology of Speech House, the Forest of Dean

Andrew Hoaen,
University of Worcester
a.hoaen@worc.ac.uk

The Foresters Forest is a large Heritage Lottery Funded project looking at all aspects of the heritage and culture of the Forest of Dean and the Hundreds of St. Briavels. As part of the Foresters Forest there is a small survey looking at Veteran Trees and their history. An original pilot project focused on Speech House and Brookways ditch. In this paper, I will discuss how an archaeological approach can help in understanding the history of woodland and the survival of ancient trees within it. Speech House as well as having the largest concentration of Veteran Trees within the Forest, also has a large number of notable and specimen trees. Many of these trees are associated with memorials either to members of the royal family or significant foresters. Remarkably, there has been little formal recording of these monuments and their associated trees. Using a mixture of crowd sourcing and ground-truthing the project aims to produce an inventory of the monuments and trees within the environs of Speech House with the objective of writing the history of the area and its trees from c. 1700 onwards.

Tree Species & Uses from Documentary Evidence

Della Hooke,
University of Birmingham
Della.Hooke@blueyonder.co.uk

Most of the early written evidence of tree species present in England comes from charters and place-names which mainly indicate the distribution of species, but their usage can be deduced from this, including the recognition of wood-pasture regions characterised by certain species of trees. After the Norman Conquest, forest documents provide much more evidence for the use of particular species, confirming much that is known from archaeological sources and standing building evidence. Throughout, the oak seems to have been the most valued tree.

Sweet chestnut in Britain: archive review, dendrochronology and DNA analysis

Rob Jarman*a, Gill Campbell¹, Frank M. Chambers³, Zoë Hazell¹, Claudia Mattioni⁵, Andy K. Moir⁵, Karen Russell⁵, & Julia Webb⁴

¹Centre for Environmental Change and Quaternary Research, University of Gloucestershire, Cheltenham, UK; ²Tree-Ring Services, Mitcheldean, UK; ³Institute for the Environment, Brunel University, Uxbridge, London, UK; ⁴K Russell Consulting Ltd, Leighton Bromswold, Huntingdon, UK; ⁵Consiglio Nazionale delle Ricerche, Istituto di Biologia Agroambientale e Forestale, Porano, Italy; ⁶Historic England, Fort Cumberland, Portsmouth, UK.

*lead author - rjarman1@glos.ac.uk

This paper presents evidence from three integrated studies of the historical ecology of sweet chestnut Castanea sativa in Britain, to indicate techniques useful in investigative tree archaeology.
Our review of all the published archaeological and palaeoenvironmental records described as sweet chestnut found in Britain (thirty-five finds of wood, charcoal, pollen and nuts for the pre-Roman period through to AD 650) has revealed that some finds are misidentifications, some are not identifiable or not dateable, and others are food and artefacts considered imported. Three recently analysed records might possibly derive from sweet chestnut growing in Britain before AD 650, but their provenances are indeterminate. Several written records geographically locate specific trees and their produce, dating from AD 1113 (Goldcliff Priory, Mon.) and AD 1145–54 (Castiard and Flaxley Abbey, Glos.): they indicate sweet chestnut trees/groves established before the twelfth century AD and are the earliest definitive evidence of sweet chestnut growing in Britain.

Our DNA analysis of over 750 sweet chestnut trees/stools across Britain and Ireland has revealed a single overall genepool, part of a larger genepool covering areas of France, Spain, Portugal and Italy regarded as refugia during the Last Glacial Maximum. Clusters within the British and Irish genepool distinguish the oldest trees from the youngest, and historic park/garden and ancient woodland trees from plantation and open countryside trees. Interpretation of these results is under review. The DNA analysis examined individual trees/stools for clonality, to determine their antiquity and geospatial characteristics: some ‘enormous’ stools are in fact conglomerates of several plants, but some of <16 metres girth are single plants. Several iconic collapsed and layered trees have been genetically mapped, identifying their sequential growth phases over hundreds of years. Some geospatially separate clonal trees evince, for the first time, vegetative propagation from one location to another.

Our dendrochronological analysis of living trees, fallen deadwood and previously cut stumps has provided a tree-ring chronology for sweet chestnut in southern Britain, presently spanning AD 1660–2014. This was constructed from 54 growth-ring sequences from 28 trees, sampled from 15 sites in historic landscapes and ancient woodland across southern England and south-east Wales. Twenty three trees cross-matched to form a master Castanea chronology and cross-dated with oak Quercus reference chronologies from Britain and N. France, confirming absolute dates for specific trees and their contextual landscapes. Measurable growth-ring sequences were extracted from long-dead fallen trees and stumps, with pith and sapwood surviving in trees >250 years old lying dead for <60 years. The results indicate the potential to dendrochronologically determine sweet chestnut wood (with >50 growth-rings) in archaeological or historical contexts.

DNA and dendrochronological analyses enable the histories of individual trees/stools and their landscape contexts to be more accurately described.
Managing Woodland in the Past for Constructional Timber – the Documentary Evidence from South Yorkshire and Ireland

Melvyn Jones,
Sheffield Hallam University
m.jones570@btinternet.com

Using a range of historical documentary sources relating to South Yorkshire and County Wicklow in the Republic of Ireland this paper will reveal the sources of constructional timber used in the past. First I must explain why I am using evidence from two widely separated regions. The connection is woodland ownership. One set of the South Yorkshire woodland owners that I shall be referring to, the Honourable Thomas Watson-Wentworth, and his descendants the Marquises of Rockingham and the earls Fitzwilliam of Wentworth Woodhouse, had an estate of nearly 90,000 acres in Ireland, in County Wicklow, where they managed more than 30 coppice woods covering nearly 2000 acres (805 hectares).

First some examples of timber-framed buildings and other buildings using large amounts of constructional timber in South Yorkshire will be examined. This will be followed by a discussion of the management of deer parks, wooded commons and coppice-with-standards woods in South Yorkshire in the past to supply constructional timber for local buildings; domestic and agricultural, and for industrial structures related to coal and ironstone mining and the water-powered light-metal trades. In South Yorkshire ship timber was a minor end-product because of its location far from the coast. This was not the case in the Watson-Wentworth estate woodlands in County Wicklow in Ireland in the first half of the eighteenth century. There, besides making a major contribution to the building of the colonial landscape of churches, schools and courthouses, the woodlands were sources of constructional timber not only for agricultural buildings and industrial premises, but also for the ship building and ship repair industries in the ports of Dublin, Wicklow, Wexford and Arklow in Ireland and Whitehaven in England.

Particular emphasis will be placed on the significance of sophisticated coppice-with-standards management in both South Yorkshire and County Wicklow.

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The history of wood pasture and tree uses in Herefordshire from documentary sources and digital mapping

David Lovelace,
Ancient Tree Forum
david@tilia.org.uk or david@bosci.net

Digital methods and equipment have dramatically increased the accessibility of primary historical sources for local historians. Free and open source software for mapping, analysis and data handling is now as powerful and functional as any proprietary equivalent and can be used by anyone with a bit of patience. Aerial photography, LIDAR and GNSS/GPS are free resources for landscape study and field work. I will use selected sites throughout Herefordshire including the Forest of Deerfold, Bringewood Chase, Croft Estate and the woods of the Wye Valley to illustrate how digital methods have helped gain insights into their histories.

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An accumulating body of tree-ring evidence for Scotland from the last thousand years allows some more general observations to be made regarding the timber supply and Scottish woodland history. The medieval tree-ring record shows that native oak was the principal source of structural timber in Scottish buildings before about 1450 AD, often very long-lived oak which started life in the tenth and eleventh centuries. At first sight this seems like an impressive resource but may really signify a lack of sustainable forestry practices and difficulties in regeneration meaning that younger timber is not available. The contributing factors were complex, including intense grazing pressures, widespread bark-stripping, difficulties of timber transportation and the worsening climate of the onset of the Little Ice Age. After 1450 the majority of tree-ring dated and provenanced oak in Scotland is imported, with structural timber coming from Scandinavia and fine boards from the Eastern Baltic. In the late medieval and post-medieval periods there are only a handful of identified buildings with native Scottish oak, and the timber quality in them is often poor. Importation continues in the seventeenth and eighteenth centuries, but is almost wholly of pine, initially from Scandinavia but after the mid-eighteenth century more usually from the eastern Baltic. This is despite increasingly frequent documented attempts to exploit the native Caledonian pine woods.

However, our overall picture from the dendro evidence is rather skewed because it is much easier to recognise and date imported timber through the extensive network of reference chronologies in Europe for the medieval and post-medieval periods. With regard to oak, there are far fewer native Scottish oak chronologies for comparison, and the record is patchy both geographically and chronologically. This is being addressed through new research to build native Scottish oak chronologies in regional gaps, such as the new SESOD (South East Scotland Oak Dendro) project.

Meanwhile the ability to date native pine has been enhanced greatly by the SCOT2K project, which has built a robust network of native pine wood chronologies alongside targeted work on Highland buildings. Application of a new dating methodology, ‘Blue Intensity’, has facilitated the dendro dating of the first twenty Scottish native pine buildings, most of them in the Highlands close to the native pine woods, but occasionally further afield. Thus the balance is being redressed and the continuing role of native timber in the late- and post-medieval periods is being increasingly recognised. Our understanding of past woodland exploitation and management is augmented by field investigations of a range of surviving historic Scottish woods, using a combination of tree-form, tree-ring and documentary and historic map evidence.
Roundwood age and diameter: useful criteria in recognizing past woodland management?

Welmoed Out1, Kirsti Hänninen2, Katarina Čufer3, O. López Bultó4, & Caroline Vermeeren2

1Moesgaard Museum, Department of Archaeological Science and Conservation, wo@moesgaardmuseum.dk; 2BIAX Consult, hanninen@biax.nl, vermeeren@biax.nl; 3University of Ljubljana, Biotechnical Faculty, Department of Wood Science and Technology Katarina.Cufar@bf.uni-lj.si; 4Autonomous University Barcelona, Department Prehistory, oriollopezbulto@gmail.com

European wood and pollen data sets from periods as early as the Mesolithic and Neolithic have been interpreted as indicative of woodland management such as coppicing and pollarding. Particularly finds consisting of large quantities of long, straight branches or stems at archaeological sites often raise hypotheses about woodland management. While it is highly likely that people affected their surroundings in such a way that they benefitted the quality and quantity of wood, leaves and/or fruits of various trees, direct and representative evidence of the intentionality of such practices in prehistory is available for few regions and periods only.

To study woodland management in the past, a first important question is actually whether it is possible at all to obtain evidence of this former woodland management. While various methods based on archaeological wood assemblages are available, this method focuses for practical reasons on branch or stem age/diameter of uncarbonized, waterlogged wood.

This paper presents an overview of a method that has been designed to investigate whether the study of branch/stem age and diameter of uncarbonized wood allows us to detect woodland management in the past. A model has been developed that predicts the branch age and diameter of managed and unmanaged trees. It is assumed that managed trees tend to produce long, straight branches that grow relatively fast and that branches of unmanaged trees are less straight, grow slower and thus are older when they reach the same diameter. Measurements of branches and stems of managed and unmanaged hazel, alder, ash and willow have been collected and used to test and adjust the model. The results show that wood of managed and unmanaged trees can be distinguished to a certain extent, particularly when a representative number of measurements is available. The model and data from modern-day trees can be used to interpret the archaeological wood assemblages. Here, data from three archaeological case studies will be presented: the Early Neolithic lakeshore settlement of La Draga in Catalunya, Spain, the late Neolithic pile-dwelling at Stare Gmajne in Slovenia (Eneolithic according to Slovenian terminology), and a single Late Neolithic structure with unknown function at Ronæs Skov, Denmark. A challenge for future research is to collect large quantities of measurements of branch and stem age and diameter from archaeological sites.
Incorporating cultural and palaeoecological data to further understand historic woodland usage
Suzi Richer, suziricher@gmail.com

Woodlands often have a complex history, both in terms of how people have used them and how they have evolved floristically. This complexity and the interconnections between the various elements is often lost in the research process due to the necessary specialisation along disciplinary lines. Using a case study of Shrawley Wood, Worcestershire, UK, this paper illustrates how it is possible to not only bring these individual stands together, but how they can be woven together to bring the complex history of the woodland to life. Using oral history, palaeoecology, archaeology and woodland management, we can start to refine our understanding of the development of the woodland, the products that came from it and the people who lived there.

Hidden woodland heritage in south-east Wales
Nicola Strange, University of Exeter, ns427@exeter.ac.uk

The archaeological value of abandoned managed trees is highlighted through the study of Deri Fach woodland, south-east Wales, demonstrating that woodlands are as deserving of survey and analysis as ‘traditional’ archaeological sites. Deri Fach’s stools and pollards are the remains of a working landscape, which encompassed local industries, lifeways and identities. The nature and duration of woodland management is associated with the charcoal iron industry, oak-bark tanning and sheep farming. Variant forms of wood-pasture were practiced throughout Deri Fach, including a previously unrecorded system of ‘coppice-with stub pollards’.

The changing nature of trees for timber framed buildings - a Wealden perspective
Joe Thompson, Sussex Oak and Iron, joe@sussexoak.co.uk

The evidence in surviving buildings, from circa 1300 to 1900, shows a change in the nature of the trees and the methods and techniques of converting them into timbers for timber framed buildings. This is an aspect of vernacular archaeology that has had limited investigation but which can inform the history of woodlands as well as buildings. The seminal work by Oliver Rackham, mainly from an East Anglian viewpoint, established the framework for the fieldwork and subsequent analysis. This presentation will review and present new evidence regarding the species, sizes, grade and conversion of trees, gathered in the Weald; a region of Southern England, famed for its timber. The author has worked with timber framed buildings since 1990 and regularly teaches both practical and theoretical workshops on this subject, primarily at the Weald and Downland Museum in West Sussex.
Life and death of wooden artefacts: a review of the evidence for early medieval woodcraft (poster)
Kevin Tillison,
University College Dublin
kevin.tillison@ucdconnect.ie

Early medieval Ireland (A.D. 400-1100) was an intensely organic world, with pottery less visible in the archaeological record than during other periods, making wood the main material used for vessel manufacture. The significance of wooden vessels is exemplified in the Early Irish Laws, which suggested woodworking and woodworkers had distinct categories with variations of social status based on specialisation; from the lowly bowl turner to the high status yew-worker. Modern archaeological investigations have provided a large corpus of effectively recorded and classified material to examine. However, when evidence for woodworking has been recovered, it has lacked further analysis and interpretation. Rather, wooden artefacts are often limited to finds lists, hidden in grey literature or larger appendices. Therefore, this has left archaeological data and discussion on wooden material spread across many sources.

This project collates the data and discussion on evidence for woodworking and wooden artefacts using both existing and new assemblages. Part of this project explores how people made, used, and deposited wooden objects, in particular, exploring how the processes of repairing and recycling communicate a unique treatment of objects less frequently discussed. This project, also investigates woodworkers' impact on the rural economy and explores the possibility of an Irish woodcraft 'tradition'. In addition, this project investigates the concept of craft through the use of contemporary early medieval contexts, historical literature, and modern sources (experimental archaeology and ethno-archaeology) and its relation to wood and woodcraft, and their role within societies and cultures.

The changing nature of woodlands: the dendrochronological evidence
Cathy Tyers,
Historic England
cathy.tyers@historicengland.org.uk

Dendrochronology is generally perceived solely as a scientific dating technique that provides independent dating evidence in relation to when a structure or object was constructed or modified, hence informing the understanding and significance of that structure or object. This process involves the recording of various characteristics of the timbers during both the assessment of dendrochronological potential and the subsequent analysis stage. The information recorded relates directly to the trees utilised and hence can be exploited to reveal not only the date of felling of the trees but also information about the sources of those trees, be they woodlands or more open environments.

Two key but basic pieces of data, namely approximate age of tree at felling and average ring width (average growth rate), are used to demonstrate temporal changes and geographical differences in the character of historic timber trees. The examples provided highlight the potential of this ever increasing body of information to enhance our understanding of the historic treescape and potentially reveal differences in environmental and anthropological influences across regions and how these affected the use and selection of timber in historic structures and objects.
This presentation aims to flag up both the existence and the potential of this information that is basically an under-utilised by-product of the dendrochronological dating process that is so widely applied to historic assets.

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<td>Pelagic Books/ University of Exeter Press</td>
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<td>Gleadless Valley Wildlife Trust</td>
<td>University of Herefordshire Press</td>
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<td>LHRF</td>
<td>Wildtrack Publishing</td>
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<td>SYBRG</td>
<td>Woodland Trust</td>
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+ Individual posters
Field excursion

Bishops’ House

Ken Dash,
Friends of Bishops’ House

Bishops’ House is one of very few timber-framed buildings to survive from the Tudor period in Sheffield, and the only one with unlimited public access to the whole building. It is situated at the southern end of Meersbrook Park, 147 m above sea level. The House is situated in what was once the tiny Derbyshire village of Norton Lees, which became part of Sheffield in 1903 when the county boundary was moved.

Initial attempts at dating Bishops’ House in 1976 and 1977 placed the origins of the building in the 1500s, but without a good understanding of the sequence of its construction. A survey undertaken between 2011 and 2014 and a dendrochronological survey undertaken in 2017 have at last given a clear understanding of the sequence of construction and dating of the building.

The name Bishops’ House can be traced to the late nineteenth century when the House’s antiquity was being researched. Two of the Blythe family, who farmed the land and lived locally, John and Geoffrey, became bishops in the late fifteenth and early sixteenth century. However John died in 1499 and Geoffrey in 1532, dates which the 2017 survey confirmed are well before the House was built. The name, however, has stuck.

In its earliest phase, Bishops’ House was built in 1554 as a three bay, two storey oak built king post truss fully timber-framed building aligned north-south. Two of the bays survive from this time, the north bay being demolished in 1630 (see below). If the north bay was the same length as the other two bays then the building would have been about 12.5 m long, 5.3 m wide and 7.0 m high.

In 1580 a single storey two bay king post truss building, 11.0 m long, 6.5 m wide and 7.2 to 7.5 m high was added at right angles to the east of the original structure, effectively as a cross-wing. This had a flagstone floor but no upper floor until one was inserted in about 1630. Its purpose remains somewhat of a mystery.

Access to the upper floor was via a steep ladder-type staircase, some evidence for which survives in the middle bay. The original floor survives upstairs and several of its timbers provide evidence of having been re-used. During the 1977 dendrochronological survey one of these timbers was dated to 1446.

The recent dendrochronological survey provides strong evidence that for the 1554 and 1580 phases, timber was felled at the same time from the same stand of woodland on each occasion. Unfortunately the evidence cannot say where that woodland lay.

The Blythe family, who owned the surrounding land and most probably lived in Bishops’ House, were not only farmers but were heavily involved in making agricultural tools; sickles and scythes. In fact Norton parish, in which Bishops’ House lies, was the principal community for sickle and scythe making in the north of England in the sixteenth century.

In about 1630 the north bay of the original 1554 building was demolished and replaced with a stone-built structure on two floors. It is 4.1 m N-S by 7.0 m E-W and 7.2 to 7.6 m high. Part of this new
structure joined with the 1580 building, providing a grand staircase which replaced the original ladder staircase. This phase of the building is contemporary with William Blythe (1608-1665) and a surviving wall panel bears the inscription ‘WB 1627’. Now lost except in a photograph is an overmantel with the inscription ‘WB 1655’. At this time, or shortly after, a chimney was added at the south east corner of the 1554 building and another between the two bays of the 1580 building. The entire structure was clad in a thick stone wall up to first floor level. The stone wall provided the structural strength for a massive framed floor to be added to the 1580 building, giving it two floors. Whatever its original purpose it seems that this part of the building now acquired a more domestic use. In about 1665 an internal partition at the east end of the upper floor of this building created a new room.

The last of the Blythes to live in Bishops’ House was Samuel Blythe (1673-1735). On his death the building passed out of the ownership of the Blythe family. The 1580 building was divided by an internal partition wall in the mid / late eighteenth century and the whole building was let out to tenant farmers. A narrow second staircase was inserted at the north east corner of the 1580 building so that each household could have its own access to the upper floor. The land, no doubt including Bishops’ House, passed through a succession of owners – the Roebuck family from 1757 to 1783 and the Shore family from 1783 until 1843, when that family became bankrupt. There was enough money left within the family so that the House remained in tenanted occupation until in 1886 Sheffield Corporation acquired the land. The earliest of the tenant farmers that we know of are the Wilde brothers, George and Thomas, who lived there with their families from at least 1779 to 1816. Joseph White and later his son James and their families lived in Bishops’ House from at least 1841 until 1886. The farmers were removed to an adjacent cottage and a series of park keepers and gardeners lived in Bishops’ House until 1974 when the last of them left. Sheffield City Council renovated the building in 1975 and 1976, removing the partition wall and internal plasterwork and replacing timber that had rotted.

The House opened to the public in July 1976 as a museum. As a result of funding cuts Museums Sheffield pulled out of managing the building in 2011. Since then, Sheffield City Council has continued to maintain Bishops’ House with management of public opening conferred to The Friends of Bishops' House. In addition to making significant advances to our historical and structural knowledge of the building, the Friends have also successfully hosted many events, school visits and weddings.

**SOURCES**


