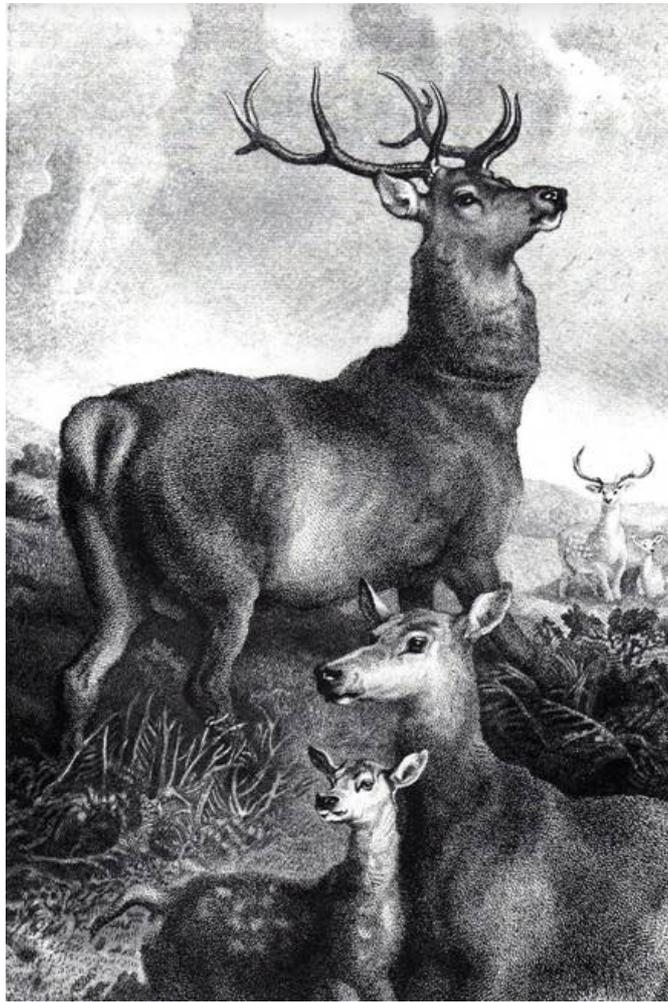


# *The Ecology and Economics of Medieval Deer Parks*

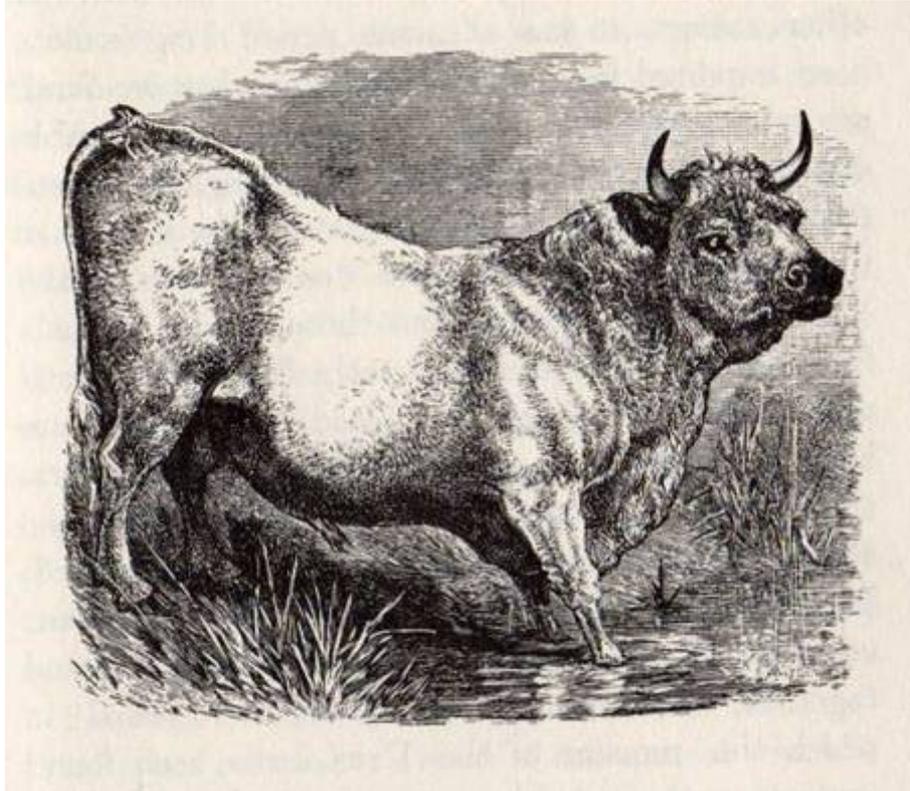
Ian D. Rotherham  
Sheffield Hallam University



## **Summary**

Where deer parks survive, and even this is rare, they do so as a unique landscape separated in time and function from their origins. They reflect the landscapes of the time and place they were imparked and the changes in economic function and ecology over a long lifespan. The ecologies of these landscapes were driven by uses in a multi-functional system of economic utilisation. As purpose changed so did ecology, each new phase incorporating, preserving or removing that which went before. It is argued by Frans Vera that these landscapes that originate in medieval or earlier times, give a unique insight into once great primeval savannah across much of north-western Europe. Certainly, their remarkable biodiversities provide evidence of such potential lineage. These landscapes present palimpsests of ecology and archaeology that reflect their economically driven origins over 800-1,200 years. The notes that follow are based on a chapter in the soon to be published book on Medieval Park Landscapes by Windgather Press, and will be the focus of the September 2007 Conference in Sheffield on *Medieval Parks and Parklands*.

## An Introduction to Parks and their Ecology



Since Oliver Rackham's seminal works *Ancient Woodland* (1980) and *The History of the Countryside* (1986), it has been clear that wood-pasture was once the most abundant type of wooded landscape in north-western Europe. In essence, wood-pasture is a system of land management where trees are grown, but grazing by large herbivores is also permitted, be they domesticated, semi-domesticated, wild, or a combination. Wood-pasture in England is well documented for over one thousand years, and Domesday Book (1086) probably records a landscape dominated by the practice. It has been suggested that wood-pasture was an ancient system of management that developed in a multi-functional landscape where woodland was plentiful and where there was little need for formal coppice. Coppice is a more intensive and rigorously managed system, intended to ensure vital supplies of wood and timber in a resource-limited landscape (Fowler 2002; Hayman 2003; Perlin 1989). Pasture-woodland is an older and in many ways more 'natural' system and significantly, most livestock, wild or domesticated, will take leaf fodder or browse, if offered, in preference to grazing (Vera 2000).

Medieval parks are part of a suite of landscape types that mix trees and grazing or browsing mammals. These include wood-pasture, wooded commons, forests, the relicts of what was probably in prehistory a great wooded savannah across much of north-western Europe. In both origins and ecology parks are essentially a form of 'pasture-woodland', related to forests, heaths, moors, and some commons, with grazing animals and variable tree cover. Aside from the obvious external enclosure, these landscapes are often essentially unenclosed grazing lands. In considering their ecology, it is important to establish origins and relationships to other wildlife habitats.



The idea and techniques of constructing and maintaining a park to keep animals such as deer long pre-dates the Norman Conquest; parks being known from the first century BC in both Roman Italy and Gaul. Cummins (1998) notes a document of Charlemagne from 812 AD that clearly refers to the maintenance of a hunting park and its boundary. The dates of establishment and the numbers of parks in England remain a matter of debate. There is evidence at Conisbrough Castle Park, South Yorkshire for example, of a possible lineage of enclosure from around 600-700 AD (Paul Buckland and Colin Merrony pers. comm.). However, the functions are not confirmed and the locations of earlier and medieval features are displaced. Liddiard (2003) presents an overview of parks in the context of Domesday Book, drawing attention to the possible similarity between parks and hays; the latter being rather enigmatic and perhaps representing a variety of hunting structures with differing degrees of permanence.

In the two centuries following the Norman Conquest, numbers of parks in England increased dramatically to perhaps 3000, with possibly 50 in Wales and 80 in Scotland. From the early thirteenth century, a royal licence was technically necessary to create a park in areas of royal forest; though Cummins (1988) notes that in both England and Scotland baronial parks were also created without licence. Where documents survive, they provide invaluable reference materials for a now vanished age, giving insight into landscape and ecology. The average English medieval park was around 100 acres, although size could vary considerably. The date of establishment, the area enclosed, the functions of the park and the interplay between enclosed and unenclosed areas all influence the ecology of these landscapes (Jones 1996; Jones *et al.* 1996).

## Ancient Wooded Landscapes

In Britain, there are two broad distinctions in 'ancient woodland' landscapes. Firstly, there are coppice woods, often managed since the medieval period as simple coppice or more frequently 'coppice-with-standards'. Such areas have relatively few large trees, but strikingly rich and sometimes diverse ground floras. Secondly, there are parklands, which may have historic links back to their use as medieval parks. These areas generally have poorer ground floras due to grazing livestock, and are characterised by massive and ancient trees, chiefly 'pollards'. In terms of wildlife conservation it has been assumed that coppice woods were excellent habitat for woodland birds and flowers and parks for rare lichens and fungi growing on the trees, and insects or other invertebrates that depended on veteran tree dead wood

habitat. The general assumption was that coppice woods had strong links to ancient landscapes and vaguely conceptualised ‘wildwood’ (Beswick and Rotherham 1993).

Research over the last twenty years has shown many of these assumptions incorrect or naïve in their interpretation. Researchers such as Paul Harding developed interest in British pasture-woodlands, and Frans Vera has challenged many accepted ‘truths’ of woodland history, placing park landscapes in their wider ecological context. Much current excitement about deer park landscape ecology is because they appear to represent the closest analogies to north-western European primeval forest landscapes. Parks are juxtaposed with but different from medieval coppice woods. They are unique resources for conservation; providing insights into ecological history (Rollins 2003). Research by scholars such as Keith Alexander and Roger Key have transformed the understanding of the importance of parks for invertebrates, and Ted Green has awakened interest in ancient tree fungi and the significance of the trees themselves. In northern Britain, Chris Smout (2003), and others have transformed our knowledge of Scottish woods and the Caledonian Pine Forests and palaeo-ecologists such as Paul Buckland have closed gaps in information concerning these landscapes and their ecologies in prehistoric and more recent periods.

Recent studies are bound by seminal writings of authorities like Oliver Rackham (1976), George Peterken (1981 and 1996) and Donald Pigott (1993) to forge coherent visions of woodland landscape ecology, with parks representing an important component. From a broader ‘woodland’ perspective, it is possible to assess the historical ecology of medieval parks. Parks have trees (usually but not always), and large (and sometimes smaller) grazing mammals, and to survive trees need protection. Some parkland trees are ornamental and others are managed ‘*working*’ trees, with fundamental differences in species and structures associated with these different functions. Taigel and Williamson (1993) and Bettey (1993) give useful introductions to the complexities of these landscapes. Such historical contributions are important since the ecologists must understand history, and the historian the ecosystem. The potential of cross-fertilisation is considerable: Rackham (2004) provides an eloquent exposition on the evolution of park landscapes and of their trees in particular, and Muir (2005) is a particularly accessible account of recent developments.

## The Parkland Palimpsest

It is necessary to differentiate medieval parks from other imparked areas and from other associated grazing landscapes, a process than can often be difficult. Parks share features with other unenclosed grazed landscapes with trees and woods, such as chases, forests, moors, and heaths. A complicating factor is that many parks took in significant elements of earlier landscapes when they were enclosed often from ‘waste’ or ‘forest’. In some cases, park management has allowed parts of this ancient ecology to survive or, in other cases, parks include features from periods of positive management with specific ends and outcomes, followed by abandonment, or changed use. Each phase will necessarily preserve, modify, or remove the earlier ecology of working landscapes that have sometimes evolved over a thousand years or more. To understand today’s ecology requires awareness of changes through both management and neglect. Imparkment may have affected the original ecology in different ways:

1. **Preservation:** original features and species maintained within the enclosed area.
2. **Modification:** original features and species maintained but modified within the enclosed area.
3. **Removal and replacement:** original features and species removed by enclosure and subsequent management, to be replaced by new features and a new ecology.

Such processes may have occurred during the original establishment of an early park or at each subsequent phase of 'improvement' or abandonment, generating both continuity and innovation. Such a process varies from site to site, in some cases all that remains is a single veteran tree or it may be a significant parkland resource with substantial elements from earlier periods. Trelowarren Park on the Lizard remains as an intact boundary with mature trees and an ancient woodland flora; yet the parkland core has long since gone, replaced by agricultural fields. Old trees on the park pale are not veteran park trees, but hedgerow trees since grown out. Earthworks and differences in vegetation may be evidence of changed land-use and boundaries. At Calke Abbey in Derbyshire for example, the present-day park includes large areas of former medieval open fields, with their characteristic sinuous ridges and furrows. Other parks incorporate short, straight ridge and furrow from Napoleonic or Victorian steam-plough incursions into the park landscape during the late eighteenth and nineteenth centuries.

Much ecological research has failed to differentiate between different origins and histories. For many ecologists, a park is a park. The reality is very different and consequently the study of ecology in parks is often not placed within a reliable historical framework. There is also little hard information on the ecology of these landscapes in previous period when they were 'functioning' parks. For such evidence, assumptions are often made retrospectively based on modern observations. Either that or they are gleaned from material such as household and estate accounts. The complexity of park occurrence and presentation in the landscape, both today and in the past, is illustrated by Squires and Humphrey (1986), investigating and mapping in detail the parks of the former Charnwood Forest, Leicestershire. To understand the historical ecology of parks, it is essential to appreciate their form and function, and how these have changed over time. In many cases only a fragment of the earlier landscape is visible today, and sometimes these fragments remain unrecognised. Even where a park survives with proven continuity to earlier periods, however, the management today will differ from the past. Whilst the former ecology may not be fully understood, or the management that maintained it, it is known that the two were inextricably linked. That park management, the wider landscape in which it is seated and specific features within it will have fluxed greatly over what is often a long history, is not in doubt. The ecology of today reflects this part continuum and part palimpsest. As Squires and Humphrey (1986) suggest, the appreciation of any particular park requires consideration of form and function, and the context of the development of the manor as a whole. Such thinking applies to a park's ecology as it does to other aspects of the landscape.

## **The Uses and Functions of Medieval Parks**

Cantor (in Squires and Humphrey, 1986), notes that the medieval park was an important feature in its landscape. He emphasises, however, how the medieval park was different in character to its modern counterpart, the latter based on images of eighteenth- or nineteenth-century landscaped parks, or of nineteenth- or twentieth-century municipal parks. As Cantor notes, medieval parks were very different, often areas of rough, uncultivated landscape, usually wooded, and frequently on the edge of manors away from cultivation (Cantor and Hatherly 1979). Owned by the lord of the manor these were primarily designed as hunting parks; stocked with deer and other game. Our vision of a working medieval park is in a landscape of open field, waste, woodland, and royal forest, with their ecologies inexorably linked.

Medieval parks provided hunting, foodstuffs, and wood and timber for building and fuel. Alongside deer, medieval parks contained wild boar, hares, rabbits (reintroduced to Britain by the Normans), game birds, fish in fishponds, together with grazing for cattle and sheep. In the case of parks such as Bradgate, pannage (feeding pigs on acorns) from the oaks provided revenue in rents. Parks generally had large areas of heath or grassland (called launds or plains) dotted with trees, along with woodlands (called holts or coppices, and if for holly (*Ilex*

*aquifolium*) hollins). The launds and the coppices provided food for animals in summer, and in the case of hollins, through the winter months. The park may have held and maintained deer (fallow (*Dama dama*), and red (*Cervus elaphus*)) for the table and for the hunt. In the latter case, this sometimes involved release beyond the park pale and into the chase beyond (Whitehead 1964 and 1980). Cummins (1988) discusses the size of parks and the differences between smaller baronial parks with semi-domesticated animals, and the much larger royal parks. Some parks extended over many miles, Woodstock (Oxon.) had a perimeter of seven miles and permitted hunting on a grand scale. Others were much smaller, with some little more than deer paddocks; it follows that their ecology must have been similarly varied with larger parks able to maintain more of the earlier wilderness and the associated ecology. There were also links between both hunting in parks and in the forest or chase beyond, and in their ecologies. Alongside deer, other livestock exerted additional grazing pressures, with, for example, specific areas set aside, enclosed, and maintained as rabbit warrens. The extent and influence of parks could be substantial and beyond one individual site: according to Cummins (1988) in 1512 the Earls of Northumberland had a total of 5571 deer in 21 parks spread across Northumberland, Cumberland, and Yorkshire.

With socio-economic changes the fashions for parks and the means for their upkeep fluctuated. Most were created from 1200 to 1350, and then declined following the Black Death (Mileson 2005). Consequently, boundaries moved, small parks were enlarged or totally replaced by new creations. Parks and their relationship to great houses also changed with time and fashion. Originally an enclosed area at a small distance from the main house, perhaps containing hunting lodges later parks were increasingly the settings for houses and gardens. The house moved to the park, or the park was moved or modified to envelop the house.

Solitary trees in the launds were pollarded (high coppice), and some shredded (branches removed from the tall, main stem). The only new tree growth outside the woods took place in the protection of thickets of hawthorn (*Crataegus monogyna*), holly, and bramble (*Rubus fruticosus* agg.). There were special woods called holly hags or hollins where holly cut on rotation fed the deer in winter. A boundary fence, called the park pale; a cleft oak fence, or a bank with a cleft oak fence, or a wall, surrounded the park. If there was a bank, it normally had an internal ditch. Park pales often contained structures called *deer leaps* to entice wild deer into the park. Buildings in parks included manor houses (from Tudor times), keepers' lodges and banqueting houses.

Expensive and difficult to maintain, many deer parks fell from fashion to be abandoned and destroyed. Between the fifteenth and eighteenth centuries, medieval deer parks were deliberately removed (disparkment), to become large, compartmented coppice woods, or farmland. The park was multi-functional and part of the wider economy of the manor. Turf and stone were extracted, mineral coal too if it occurred. Squires and Humphrey (1986) noted arable crops such as cereals grown within the park pale. Deer were a priority but shared the landscape with other domestic stock such as cattle, horses, and even goats. The park at Wharnccliffe Chase near Sheffield even acquired North American Buffalo in the early twentieth century (Jones and Jones 2005). As the rural economy changed so did the values and costs of a park. Many were abandoned during the English Civil War (1642-1649), and few survived intact as the wave of agricultural improvement swept through the landscape from 1600 onwards. Some such as Tinsley Park in Sheffield, and Tankersley Park in Barnsley, were lost to industrial development as landowners discovered coal and ironstone beneath their land. A small number retained their medieval character, and some of their functions to the present day.

## Park Ecology

The ecology of working parks reflects the factors described above. What survives today mirrors these events and pressures. Park landscapes had unimproved grassland across much of the grazed area, species and communities varying with grazing intensity. Many grassland plants and associated invertebrates cannot cope with short swards and intensive grazing. If grazing levels were low or areas seasonally protected from livestock, however, the vegetation grows tall, flowers, and sets seed, and would be similar to modern unimproved pasture and hay meadow. Such areas would have been rich in wild flowers and in associated invertebrates such as butterflies, bees, and hoverflies, with a patchwork of shorter grass, bare ground, and in acidic locations, heath. Wet areas such as valley bottoms, or land with impeded drainage, had extensive moist grassland, marsh or bog. The typical plants of ancient woodlands (such as dog's mercury (*Mercurialis perennis*), wood anemone (*Anemone nemorosa*), primrose (*Primula vulgaris*), and bluebell (*Hyacinthoides non-scripta*)) would have been restricted and found only in enclosed woods, copses, lane sides, hedgerows, or streamsides, and perhaps in areas of less intensive grazing.

Keystone species in the park were deer, with other grazing mammals of varying domestication; these animals being the main drivers in the deer park ecosystem. Other important ecological components were fungi in the unimproved grasslands, and associated with extensive animal dunging. There would have been a rich fungal flora of both mycorrhizal associates of both trees (ectomycorrhizas), and of grasses and forbes in the sward (vesicular-arbuscular mycorrhizas). These would present as both individual groups of toadstool fruiting bodies as can be seen today with the dung-associated species such as the shaggy ink caps (*Coprinus* sp.), and as spectacular 'fairy rings'. Associated with animal dunging would be rich faunas of coprophagous and predatory flies, and dung beetles. It can be assumed that high numbers of animals would lead to carcasses and faunas of species such as burying beetles. With the high numbers of mammals were rich faunas of parasites such as mites, ticks, and biting or egg-laying flies.

Imparking sometimes included deliberate or accidental preservation of domesticated, semi-domesticated, or wild grazing mammals within the enclosure. The white park cattle are a case in point, with the Chillingham Park herd in Northumberland perhaps the best example; aside from a small herd established some distance away as a precaution against foot-and-mouth disease, this unique breed of ancient cattle survives at only one location. Whitaker in 1892 described the park as 1,500 acres, well wooded, and with moor and wild grounds (Whitaker 1892). This ancient and extensive park enclosed and encapsulated an entire ecosystem that has been maintained ever since. Outside the park, species including the cattle have long since disappeared. Enclosure of large areas of semi-natural landscape was not the exclusive prerogative of the deer parks. Ornamental parks of the seventeenth and eighteenth century often involved similar scales of enclosure, sometimes from common fields but often from the 'waste'. This may have included marshes, grasslands, heaths and extensive bogs. Hotham and North Cave Park in the East Riding is such an example (Neave and Turnbull 1992). Management as a park also impacted on other species both within and beyond the pale. In particular, predators were vigorously controlled and this would have impacts on ecology that were deep and long lasting; the control of both foxes and wolves being noted in estate accounts.

## Trees and 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 and Drake 1993) have highlighted the role of wood for saproxylic invertebrates, especially

insects. Others (Rose 1974, 1976; Harding and Rose 1986) have noted the habitat value for epiphytic plants, lichens, and fungi. A characteristic of most, but not all, parks were large, often very old, trees. In the best cases, these provide good quality saproxylic habitats and important continuity of resource over many centuries.

Park trees may have been a mixture of timber trees enclosed when the park was formed. Others were planted deliberately as part of the park management. Many parks such as Chatsworth in Derbyshire include later additions through the conversion of field systems and their hedgerow trees. These trees are now veterans in the contemporary landscape but originated in an agricultural environment. Most of the very old trees, often oak (*Quercus robur*), are specimens that have been actively managed for at least several centuries and then abandoned. Now ranging from youngsters of maybe 400 years, to real veterans of anything from 800 to 1,200 years, these specimen trees represent one of the most precious resources of former medieval parks. However, some parks known to be early established such as Prideaux Place Park in Cornwall are devoid of major veteran trees. It is possible that some parks never had them, or they have been removed at some point in the park's long history. Early estate survey maps often record significant veteran trees which can be matched to the modern landscape. In other cases, removal is recorded in estate accounts. Younger veterans could be valuable timber trees taken in time of financial pressure. When the Duke of Newcastle's Clumber Park estate in Nottinghamshire was sold in the 1940s, the main interest was from local timber merchants who planned to remove all the veteran trees of any commercial value. The National Trust acquired the site and developed it as a recreational park, recouping some of their outlay from sale of large oaks from the park's ancient woods.

Large trees performed many functions in working parks, providing shelter in winter and shade in summer for cattle and deer. Importantly, they could also provide herbage to feed to the livestock; most deer and cattle preferring to browse on leaves and shoots, than graze grass. To ensure a continuous supply of branches and leaves, the trees were cut high, several metres above ground, keeping re-growth out of the reach of the grazing animals, until the parker cut it for fodder. The technique was known as pollarding and is in effect a high coppice. Furthermore, the provision of special hollins and hags ensured herbage was provided for livestock throughout the winter. For several months of the year, and longer during colder periods, grass does not grow in Britain and stock consequently depend on stores of hay, a valuable and often scarce commodity, and cut branches of evergreen holly. Pollarding extended the lifespan of trees beyond that normally achieved and in so doing ensured a major supply and continuity of dead wood, a highly important wildlife habitat.

Large oaks were grown for timber, in some cases, the trunks and boughs were carefully nurtured to form particular shapes and sizes for specific functions. Careful planning and management over many decades are key aspects of park historical ecology. The records of great estates often give precise details of the removal of trees, their price and destination. Around the park, sometimes as individuals or as small groups, trees of a diversity of species, native and exotic, were planted. The form and the species obviously varied with time and fashion. Now neglected, these younger veterans add to the resource of dead and dying wood in the contemporary park landscape.

Where air pollution allows, the bark of these great trees provides habitat for rare lichens. However, oaks have acidic bark, are relatively poor in lichens, and gross air pollution for over a century has exterminated many species over large areas especially the English lowlands. With air pollution falling, there has been a remarkable recovery in the lichen populations of many areas including the veteran trees of former medieval parks. The importance of ancient pasture woodlands for survival of rare epiphytic lichens was highlighted by Francis Rose and colleagues, and the recovery well documented by Oliver Gilbert (Rose, 1974, 1976; Rose and James, 1974; James *et al*, 1977).

## The Importance of Dead Wood and Continuity

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.

The value of dead wood for wildlife varies with aspect, humidity, temperature, state of decay, continuity on site (as many associated species are highly immobile), and whether it is on living or dead trees. If dead, then whether the tree is standing or has fallen also affects associated ecology. Careful analysis of associated fauna and flora provides insights into ecological history, and former site management, with the potential to document an ecological archive to complement other sources of historical information. In particular, many associated species require habitat continuity over time, presence, or absence of key species giving information on site management and on significant breaks in parkland regimes.



Relationships between ancient woodland, especially pasture woods, and their saproxylic fauna are critical to understanding park historical ecology. Invertebrates vary dramatically in habitat requirements, and importantly here, in dispersal behaviour. Some species migrate, in many cases over considerable distances, and others disperse moderate distances from their breeding sites to new areas. A few species are very limited in their ability to move, and in a very few cases, at least under contemporary environmental conditions, means only a few metres from the trees from which they emerged. In most cases the larval stage lives in the dead wood or associated habitats, and the adult, perhaps a beetle or hoverfly emerges to disperse, breed and lay eggs. The critical habitat is the dead and dying wood of ancient parkland trees, but other environments and communities in the park matrix are also important. Adult insects such as hoverflies or beetles, may feed on nectar and pollen of plants such as bramble (*Rubus fruticosus*), or hogweed (*Heracleum sphondylium*), and require suitably mature plants in abundance with the right conditions of temperature and sunlight. Some ancient woodland

indicators, for example certain hoverflies, feed not on dead wood itself but on abundant aphids associated with old trees. However, the hoverflies still seem to be closely associated with continuity of old trees on site. Of the dead wood specialists, some feed on the wood itself in varying degrees of decay, others on the fungi that cause rot. For high-grade invertebrate faunas in these ancient habitats, the keys are habitat continuity and quality. Some species are very specific and in a few cases, like the black and yellow wasp mimic crane fly *Ctenophora flaveolata*, a Red Data Book species, dependent on soft, decaying heartwood of massive veteran beeches.

It is important to differentiate between species requiring dead wood habitats, and those that need continuity 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 also generated 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 (Aranea), 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 (*Anobium*), 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 highly synanthropic death-watch beetle (*Xestobium rufovillosum*) 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.

Harding and Rose noted the dependence of reliable interpretation on understanding species' ecologies, and variation within species' range. Some invertebrates are very reliable indicators of habitat continuity at the periphery of their range, but occur more widely (in hedgerow trees or even gardens) at the core of their distribution. This suggests that with global climate change, some species distributions may vary markedly. The Lesser stag beetle (*Dorcus parallelipedus*) is locally common in southern England, occurring widely in ash woods and hedgerows, but much more restricted further north. Another species, *Hylecoetus dermestoides*, is widespread in the north and midlands of England, in woodlands and plantations, but much more tightly defined in the south, restricted to a few ancient pasture-woodlands. The most dramatic clusters of records occur at famous sites such as Moccas Park, Sherwood Forest, and Windsor Park, but there are many records for a range of taxa outside known parkland sites (Harding and Wall 2000). This begs the question of whether some of these records relate to unrecognised remnants of medieval park landscapes and highlights the need for further integrated studies.

## The Demise of the Park and the Impact of Landscaped Parks

Rackham (1986) stated that parks were troublesome, precarious enterprises. The boundary in particular was expensive to maintain, especially for large parks. Owners were often absent for much or all of the year, a situation that could lead to mismanagement and neglect. Deer often died of starvation or of other rather vague causes such as ‘Garget’, ‘Wyppes’, and ‘Rot’. In Henry III’s deer park at Havering, Essex, in 1251 the bailiff was instructed ‘to remove the bodies of dead beasts and swine which are rotting in the park’ (Rackham, 1978). Even well run parks faced ongoing problems of maintenance. Rackham (1986) noted that many smaller parks were short-lived, and by the thirteenth century some were already out of use. Sometimes a park was retained but its location changed within the manor, with consequent impacts on their delicate ecologies.

During the sixteenth century, the primary function of the park shifted from game preserve and source of wood and timber, to setting of the country house. A disused park might revert to woodland through neglect or deliberate re-planting. Many former parks became farmland, some like Trelowarren in Cornwall, retaining the park pale, bounding the newly enclosed fields. The late seventeenth and early eighteenth centuries witnessed a fashion to impose formal design and rigid regularity on both existing and new parks. Straight, tree-lined avenues, walks, and straight canals dominated landscapes. At the same time, there came a renewed interest in planting trees, and with wide vistas cut through existing woodlands, new woods were designed in regular patterns within the overall vision. Nature was perceived to be under strict control, and the parks paralleled the great gardens and houses they accompanied (Lasdun 1992).

Changed fashions provided a new lease of life for some old landscapes, however, with the injection of capital necessary to maintain them against pressure to ‘improve’ *per se*. If changes allowed habitat-continuity, then some original ecology such as rare dead wood insects might hang on. As Rackham (1986) pointed out new parklands were not created from a blank canvas, designers of parks and gardens generally adapting and imposing on earlier landscapes. This could mean working with and maintaining elements of an original park. It might also lead to the creation of a new park that incorporated earlier features from a non-park landscape. Even when formality was very much in vogue it was still felt that venerable trees added dignity to the feel of a country residence. In a social landscape where lineage and continuity were highly valued, then a park that was new but looked and felt old, made an important statement. The designer would therefore not only plant anew but would incorporate elements of ancient countryside into their new landscapes. Old pollards and other trees from ancient hedgerows, lanes, or other boundaries were retained and made significant in new settings. This ensured that ancient pollards and sometimes coppice stools can be found embedded in a landscape dominated by seventeenth- and eighteenth-century plantings.

Rackham described these as ‘pseudo-medieval’ parks suggesting this phase of landscape history both preserved some ancient parks, and created these new sites. He notes the New Park at Long Melford Hall, Suffolk incorporating earlier field boundary trees, similar to the situation in the eighteenth-century landscape park at Chatsworth, Derbyshire. Here, trackways, boundaries, ridge and furrow and veteran trees survive from the old field system. Oakes Park, formerly in North Derbyshire, shows a similar use of old field boundary trees to lend an air of elegance and antiquity to a created eighteenth-century park. Such sites are identifiable from archives and records, from field archaeology (showing early non-park features) and also from ecology. They lack ancient deer park indicators but may have indicators of medieval woodlands, hedgerows, and perhaps veteran pollard trees. This can give what I describe as ‘*acquired antiquity*’, the landscape having elements normally associated with a genuinely ancient feature or area, but acquired or ‘borrowed’ from

fragments of an earlier period incorporated into a later design. This is presumably what designers hoped to achieve, though perhaps not at the ecological level.

## Wooded Landscapes, Forestry and Gardening

As discussed above, the relationship between people and nature, politics and fashion were important in determining the lineage and evolution of park landscapes over time. Nature and landscape were becoming the concern of the cultured British, philosophers, poets, writers, and artists. The eighteenth century brought a revolution in parkland design with, at the highest social level, symmetry, and orderliness displaced by informality and naturalness. This was the era of the great landscaped park, characterised by large areas of rolling grassland. Some were substantially re-contoured, with naturally shaped woods, clumps of trees (and roundels), individual large trees, and expanses of water. Such natural looking, but mostly artificially created, landscapes had necessary buildings such as lodges and boat-houses, and also features such as temples, obelisks, mausoleums. From the 1700s onwards new plants (species and varieties), particularly new tree species were imported and used, beginning a distinctive phase of the ecology of these park. Still with us today are the exotics and in some cases invasives *Rhododendron ponticum*, Giant Hogweed, Japanese Knotweed, and many others.

Lancelot 'Capability' Brown (1716-83) left a dramatic legacy of designed landscapes, especially parkland. Key features were the serpentine, grouping or dotting of trees, irregularity and gentle landscape undulations. Water was manipulated through lakes, pools and canals or rivers, and partly wooded banks. Strategic clumps of trees, and isolated specimen trees were managed to carry the eye and mind into the distance. Winding ribbons of trees around the periphery of the park implied continuity (and ownership beyond), cleverly blotting out undesirable views. Brown's landscapes are typically impressive vistas viewed almost uninterrupted from the main rooms of the great house. He generally used long-established and native trees, plus and for special effect Cedar of Lebanon. However, Brown and many of successors were great destroyers of what went before, with implications for the survival of continuity of former parks subjected to his designs. We know great avenues of lime and elm destroyed, as were formal gardens. Little is written about the earlier landscape elements that were lost. Old trees and other features were sometimes saved, but much was removed, and not everyone appreciated Brown's work. Sir William Chambers for example described his landscapes as resembling: *'...a large green field, scattered over with a few straggling trees ... (where) he finds a little serpentine path, twining in regular S's along which he meanders, roasted by the sun, so that he resolves to see no more, but vain resolution! There is but one path; he must either drag on to the end, or return back by the tedious way he came.'* The Brown-style landscape superficially may have resembled an ancient deer park, but it was a synthetic landscape designed to please with simplified ecology.

## The Picturesque

Brown's successor Humphrey Repton (1752-1818) acquired Brown's reputation as 'an improver of landscapes'. He was less brilliant in water management than Brown, but imaginative with cattle grazing under mature clumps of trees, dotted individual trees, and a surrounding belt of woodland. Brown designed his landscapes to be seen *from* the House, Repton as settings for the House and those passing by, or approaching. They were intended very much to show the correct social status and wealth of the owner. In *Theory and Practice of Landscape Gardening* (1816) Repton used two views of a recently improved estate, and argued against improvement merely for profit suggesting sympathy for the past and its landscapes. Perhaps in his landscapes there was a chance for continuity and for survival:

*'By cutting down the timber and getting an act to enclose the common, he had doubled all the rents. The old mossy and ivy-covered pale was replaced by a new and lofty close paling; not to confine the deer, but to exclude mankind, and to protect a miserable narrow belt of firs and Lombardy poplars: the bench was gone, the ladder-stile was changed to a caution about man-traps and spring-guns, and a notice that the footpath was stopped by order of the commissioners. As I read the board, the old man said 'It is very true, and I am forced to walk a mile further round every night after a hard day's work'.*

Recognition of the picturesque was important for the survival of elements of antiquity, and ecological continuity from medieval parks. Sir Uvedale Price (1747-1829) wrote of landscapes in a way that reflected the past but looked to the future. The picturesque was less obvious, less generally attractive, and had been neglected and despised by professional improvers. He suggested planting exotics in remote parts of landscaped grounds. *'There seems to be no reason against the familiarising our eyes to a mixture of the most beautiful exotics where the climate will suit them.'* He promoted the leaving of fine old trees, and the making of new plantations, to give an effect of natural vigour. *'...the rugged old oak, or knotty wyche elm,..... are picturesque; nor is it necessary that they be of great bulk; it is sufficient that they are rough, mossy, with a character of age, and with sudden variations in their forms. The limbs of huge trees, shattered by lightning or tempestuous winds, are in the highest degree picturesque; but whatever is caused by those dreaded powers or destruction, must always have a tincture of the sublime'* (Hayman 2003). Advocacy of exotics was passed down to Victorian gardeners and now is a matter of concern for many conservationists.

## **The Victorian Landscapers**

By the time of Victorian gardeners and municipal parks, many ancient parks were faded memories or fragments of ecology and landscape. Sometimes swamped by urban sprawl, or agricultural improvements, some survived in whole or in part, incorporated into the final great phase of parkland creation. Sir Joseph Paxton (1801-1865) was one of the major figures famed for Crystal Palace and Chatsworth. Generally considered the finest of the Victorian group, his most beneficial and permanent influence was on public parks and their planting as boundaries between parks and gardens blurred (Lasdun 1992). William Robinson (1838-1935) was hugely influential with his publications such as *The Wild Garden* (1870) and numerous books advocating the *Gardenesque style*. He emphasised the strong use of 'wild', naturalised, exotic species. A pioneer of what are now local authority parks, he generally held to have had a positive influence on landscape design. One of his main legacies to park ecology was his advocacy of naturalised exotic herbs, shrubs, and trees alongside natives, in 'wild' landscapes. These are often amongst the most striking features of parklands today, imposed and imposing on earlier palimpsests.

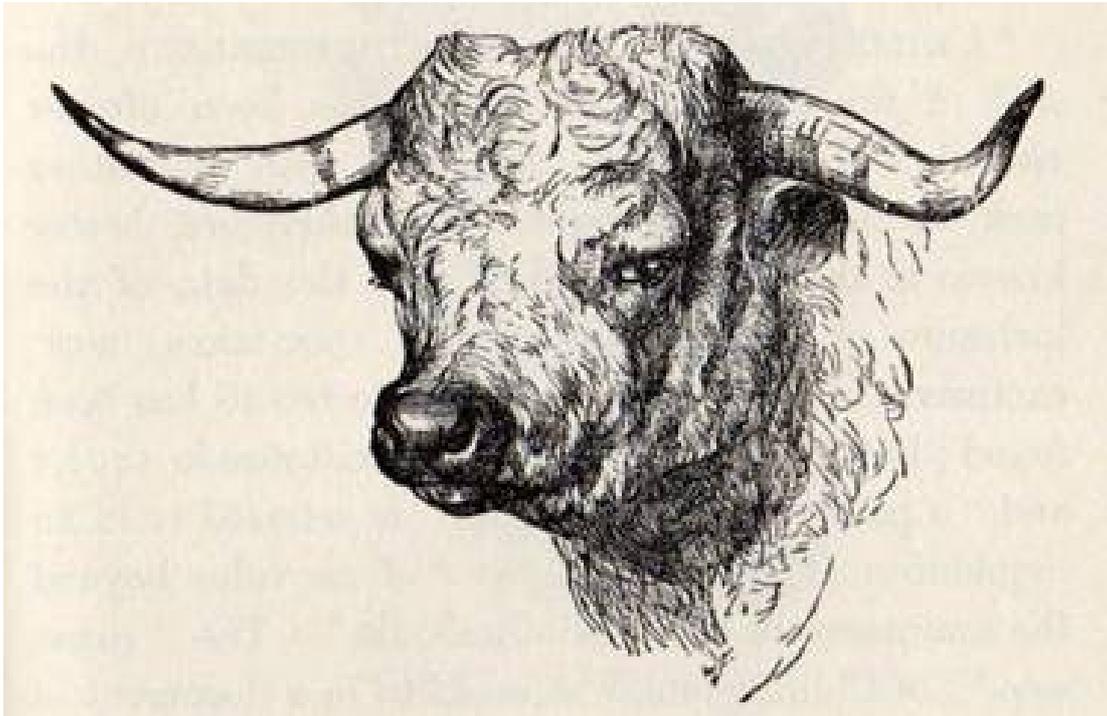
## **Conclusions: the Decline, Fall, and Re-emergence in the Twentieth Century**

By the late nineteenth and early twentieth centuries many houses, parks, and gardens were subject to neglect or became financial liabilities. In the 1950s, even famous and now highly valued locations like Chatsworth Park in Derbyshire were seriously considered for demolition. The losses and severance of the landscape lineage is beyond calculation. The loss of Ongar Great Park, Essex, and a pre-Conquest survival was possibly the worst loss of a visible Anglo-Saxon antiquity in the twentieth century (Rackham, 1986). So what have we left? The nineteenth-century clergyman and diarist, the Revd Francis Kilvert gives some idea, describing the ancient oaks of Moccas Park, Herefordshire:

‘.....grey, gnarled, low-browed, knock-kneed, bowed, bent, huge, strange, long-armed, deformed, hunchbacked, misshapen, oakmen with both feet in the grave yet tiring down and seeing out generation after generation.’

Parks and great trees may ‘*survive*’ in new landscapes, housing or agriculture, but most are erased from land and memory. Even if the trees survive there is no means to replace them as time and nature run their course; so the remaining sites are conservation icons, often isolated in time and space. They possess a unique resource of ecology: lichens, bryophytes, insects, spiders and more, enmeshed with a cultural lineage from the great forests of north-western Europe.

How we find, preserve, and conserve this heritage is a huge challenge. There is no single approach and correct answer. Involving local people and engaging with local communities must be a key. There is a further issue too. It is now suggested and accepted at least in part that remnants of medieval parks are vestiges of very ancient landscapes. These may precede human domination and agriculture. Vera’s vision of forested savannah indicates a lineage to great primeval origins of the European forest. Harking back evocatively to the past, this view also informs the future. The vision of landscapes is freed from anthropogenic constraints of medieval agricultural and pastoral scenes, setting new challenges for deeply embedded precepts of nature conservation. The best working examples are in the remains of once numerous and great, medieval parks, a powerful lineage. Individual case studies prove hugely rewarding and informative and the recent seminal volume on the Duffield Frith in Derbyshire (Wiltshire *et al.*, 2005) is a wonderful example of what can be achieved.



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