

AN ILLUSTRATED GUIDE TO ANCIENT WOOD  
PASTURE IN SCOTLAND

# ANCIENT WOOD PASTURE IN SCOTLAND

BY

PETER R QUELCH

NATIVE WOODLAND ADVISER  
FORESTRY COMMISSION, NATIONAL OFFICE FOR SCOTLAND



*hazel pollard at Glenfinglas wood pasture*



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veteran trees and wood pasture!

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# AN ILLUSTRATED GUIDE TO ANCIENT WOOD PASTURE IN SCOTLAND

## Introduction

The purpose of this guide is to first introduce the reader to the concept of wood pasture, then to look at some examples in Scotland, to get a feel for the habitat that we are talking about. After that we will look at wood pasture in more detail, and in particular the range of both natural and historical features that make wood pastures and the veteran trees they contain so interesting. The guide is aimed at anyone who wants to learn more about the history and ecology of the landscape around us.

Surprisingly perhaps, ancient wood pastures are a doorway that opens onto to a very wide breadth of knowledge. Even at the top levels of understanding at our universities and research institutes, it is noticeable how this topic has brought together people from a very wide range of disciplines and specialist fields. An interest, and sometimes passion, for the subject is shown by practical people such as farmers wishing to manage this habitat, or from tree surgeons interested in the work of pollarding, to grassland botanical surveyors, scientists who may be invertebrate specialists, lichenologists, mycologists, historians, archivists, archaeologists, and to those who just like big old trees! The list is actually much longer, including the poor forester who is asked to manage, or pay grants towards managing, a type of woodland which in his heart he probably believes is not a real woodland at all!



*foresters contemplating one of the huge veteran oak pollards at Ardery, Sunart*

So ancient wood pasture is somehow acting as a catalyst in bringing together all these interests. The information in this guide has been built up through many years of observing the native woodlands of Scotland, and the last few years in getting to recognise and understand ancient wood pastures as a special part of the wider woodland resource.

My hope is that by providing this guide, I will save others a lot of time in repeating all this thinking and discovery, so that they may be able to 'hit the ground running' and



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perhaps be able to spend more time with the owners of this type of woodland, and achieve some enlightened restoration work on the ground.



*Pictish stone, Muir of Dinnet*

Of course this learning curve has not been done entirely on my own, and I would like to thank all those foresters, conservationists, writers and historians who have helped make this journey of discovery so interesting and enjoyable. It is a journey that is by no means finished yet, as there is always more to discover in both the natural world, and in the realms of history. However I do believe in making knowledge widely available, and without waiting until all the i's are dotted and the t's crossed!

The Millennium Forest for Scotland Award Scheme certainly gave me a great opportunity to learn new skills, (and experience new frustrations!), with handling digital computer images, and I hope that this guide will be the first of many that I can create in the future. There is indeed something ironic about using the latest technology in helping present to others some of the oldest living things in today's landscape, and to help illustrate pre-industrial traditions in land husbandry which have their origins in the mists of time!

### **What is a wood pasture?**

Wood pasture is a type of very open woodland, one perhaps with more grass than trees, taken as a bird's eye view. It is a cross between woodland and grassland, or sometimes woodland and heathland. We don't use the word *savannah* much to describe vegetation in Europe (see Rackham, 1998), but wood pasture is very similar, at least in structure, to the dry savannahs of Africa - minus the lions and elephants! Soils in UK wood pastures can be wet or dry, they can be at low or high elevation, very sheltered or very exposed, even at the tree-line, above which trees will not grow.

In fact there is a very wide range of types of wood pasture: as many as there are woodland types and a few more besides. So there is upland oak wood pasture, slope-alder wood pasture, upland ash/elm/hazel wood pasture, even native Scots pine wood pasture. We shall also look at scrub based wood pastures, with hawthorn 'savannah', and juniper scrub. Each has its own character, to at least as great an extent as do the comparable woodland types.

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Since **grassland** is a normal part of wood pasture, does that mean that grazing by animals is a normal part of the wood pasture scene? Yes very much so! More than that, without the grazing animals there would be no wood pasture. In other words grazing animals are part and parcel of a wood pasture system. Wood pasture is in effect a grazing maintained habitat, just like old flower-rich hay meadows.



*Cattle grazing in birch wood pasture on Muir o'Dinnet*

This grazing is important, as it means that wood pasture management is very different from that of other woodlands in that it actually *needs* some grazing. It also means that wood pasture grazing prescriptions can be very similar to those of other fragile grazing maintained habitats like flower-rich meadows or water meadows. In most woodlands, grazing is seen as a threat, and of course too much grazing over too long a time is indeed a threat to woodland survival. However we will not be looking into how to set grazing regimes in this guide, as our purpose here is not to write a management handbook. The Veteran Trees Handbook (Read, 2000) contains a lot of advice on managing wood pastures, though is aimed primarily at lowland situations.

Can the trees in a wood pasture be of any age? Yes, healthy wood pastures should have a wide range of tree ages within them to ensure they survive into the future, but we are discussing here **ancient** wood pastures. The defining feature of an ancient wood pasture is simply the **presence of veteran trees in an open grazed habitat**. So, right away we are saying that very old trees, more than about 200 years old, are at the heart of wood pasture. We will be seeing a lot more of these veteran trees later on in the guide.

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*veteran ash at The Nest - ATF meet*



*veteran pollarded oak at Stonefield, Argyll*

Finally by being ancient, wood pastures are by definition historic! Indeed they have a real sense of history about them, and maybe that helps explain their popularity. Many of the features of wood pastures that we will be looking at later are of a historic character. Because veteran trees are themselves a kind of living ancient monument, this brings us into the realms of woodland archaeology, but where the ancient living things are of as much interest as the built structures and the earthworks. This too is significant, because wood pastures are not just a natural phenomenon, they have had the hand of man in their making. They are in fact part of the man-made or **cultural landscape** just as much as they are part of a natural landscape. But when we come to look at naturalness, certain types of wood pastures also excel themselves in being one of the most natural origin woodland types in Britain today!



*veteran ash fodder pollards in a cultural landscape, Watendlath, Lake District*

So, to **summarise** the main features of what we mean by the concept '**wood pasture**':

- veteran trees in a savannah like structure
- on historic sites, often with visible archaeology
- part of a cultural landscape, the guiding hand of man is evident
- a composite habitat, ie a grassland/heathland/woodland mosaic
- grazed by farm livestock (with or without deer as well)
- unenclosed upland wood pastures often have very natural origins



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## **Benefits of Wood Pasture**

Now we know what wood pastures are, why are they important and why should they be maintained into the future? What benefits do they have for their owners and for society as a whole? I will summarise these benefits in two lists, the first covering a surprisingly wide range of benefits to wildlife:

### **Wildlife benefits of wood pasture**

**Long continuity of habitat** - also humid and well lit, so good for epiphytic lichens  
**Niches** - for saproxylic invertebrates, and other insects grassland ants, wood ants etc  
**Grassland flora** - in numerous glades for butterflies, and woodland cover for moths  
**Animal dung** - available as insect habitat, better if livestock carefully dosed  
**Habitat for fungi** - both of unimproved pasture and old woodland  
**Flora** - species of grassland, heathland and woodland on one site  
**Rarer trees and shrubs** - often found in wood pasture, aspen, juniper, whitebeams etc  
**Birds** - open woodland and scrub favours own suite of bird species, eg black grouse  
**Red squirrels** - small-seeded broadleaved tree species favour reds over greys  
**Linkage habitat** - wood pasture in a network of semi-natural grasslands and woodland  
**Riparian habitats** - benefit from open broadleaved cover and controlled grazing

The second box covers a range of benefits regarding wood pasture as a land-use, as distinct from denser native woodland, or plantation forestry, or open hill pasture. These are benefits both for the land-owner and for the general public:

### **Land-use benefits of wood pasture**

**Sheltered grazing** - high elevation in summer, low elevation in winter  
**Organic food system** - opportunities for free-range organic beef  
**Farm tenancy** – friendly in agri-grants since counts as forage area not woodland  
**Deer habitat** - better than open hill or dense woodlands, so good for  
**Hunting and shooting** - the traditional use of wood pasture  
**Recreation** - open woods favoured by walkers, photographers, nature study etc  
**Water and soil protection** - improving fisheries and public water supplies  
**Archaeology** - maintained visible and protected from disturbance  
**Cultural landscape protection** - threatened by either no, or too much grazing  
**Landscape benefit** - of a buffer zone between woodlands and pastoral land  
**Carbon storage** - carbon locked up within massive long-lived trees

How an owner actually perceives the resource is of course a personal matter, and some may see no purpose in maintaining wood pastures at all in a modern landscape! However I hope that if an owner reads this, he or she will at least begin to appreciate what others see in wood pastures, and natural woodland types in general. The second box shows a long list of possible benefits, and it is unlikely that any one site will provide more than one or two of these. However another bonus to any owner would be a healthy income from grants and subsidies, in recognition of the public benefits provided by the wood pasture on that land. This aspect is being actively considered by SNH, SERAD and FC, who are the most likely sources of grant aid. However this guide will not be looking further into grants and incentives. You should contact your usual land-use advisers and agency offices to find out about them.



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### Where do we find wood pastures?

There is not yet a national inventory of either wood pastures or veteran trees in Scotland. Some local or regional surveys have been done, and SNH are now beginning to compile an outline inventory. It is also expected that land-use surveys will in future recognise wood pasture as a distinct habitat type, and so survey and map it as such. In the meantime, we need to be able to recognise a wood pasture when we see it, and the main purpose of this guide is to give enough information on the typical **features** of wood pasture so that anyone can do just that. Here are just two examples: huge old isolated trees in upland hill pastures, and interesting rot fungi inside veteran trees.



*ancient multi-stem birch, Nevis*



Wood pastures occur in a variety of situations in the landscape, but there are **three broad types**:

- lowland wood pasture and parkland
- cultural landscapes in the foothills and glens *chicken of the woods fungus on old oak*
- unenclosed upland wood pasture of natural origins

A feature of the second two types, but not the first, is that the wood pastures seem to survive best in areas which are somewhat remote, even by rural standards. So they are often on the shady north facing side of a glen or loch (eg Loch Tay, Loch Earn), and in places where the improving hand of our forefathers has touched but lightly.



*veteran birch beside a man-made platform, N-facing side of upper Glen Nevis*

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Neither can wood pastures retain their character after afforestation, even if a few veterans survive inside the forest (see for example the relicts on formerly more extensive wood pasture on the eastern shores of Loch Lubnaig, in what is now Strathyre Forest).



*Strathyre: two massive old wood pasture relicts, previously coppiced, then grazed in a wood pasture, then afforested on the hill behind. One seems to be flowing over the rock..*

Neither were veteran trees and open wood pastures tolerated during 19thC farming and estate improvements, unless they could be included as an ornamental feature within the designed landscape. Indeed the heart of agricultural improvement at that time was to enclose and improve land that had previously been unenclosed grazings. In some ways the wood pastures that remain today escaped that process, or survived, but somewhat as anachronisms. Shielings and other settlement ruins abandoned at that time are now almost a feature of wood pasture, as we shall illustrate later.

Each of these three types of wood pasture (lowland park, cultural and upland natural), has its characteristic features which we will explore below. The following section looks at the **character** of various types of wood pasture, refers to illustrated examples, and gives theories on the origin of wood pastures.

**A selection of sites to visit** is given in Appendix 4. Not all the other sites illustrated within the guide are open to the public, and it is important that on private farms and estates, permission is sought before wandering off tracks and public footpaths to look at wood pasture and veteran trees.

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### What is the origin of wood pasture?

How did these characteristic open grazed woodlands with scattered veteran trees come to be like this? Were they previously ancient woodland which fell on bad times and then were grazed for a long time. Or were they always of this character - perhaps they never have been densely stocked woodland? It seems that both may be true. There are a variety of situations with wood pasture throughout the landscape, and there may be quite separate explanations in each case as to why.

The simplest type to explain is probably the **lowland park** type of wood pasture, where a park of scattered trees has been planted and allowed to grow very old. The veteran trees are almost a backcloth to the use of the park for hunting of deer and game over the centuries, and for grazing by livestock. One of the best lowland wood pastures in Scotland is known as the **Cadzow Oaks**, (and also as Hamilton High Parks).



*the Cadzow oaks, after grazing has ceased in part of this lowland wood pasture*

The ancient Cadzow Castle, ruined in 1579, and perched high above the Avon gorge, presides over the famous Oaks, which are all that remains of the medieval hunting park of the Dukes of Hamilton. The designed landscape of Chatelherault Park later enveloped the oaks and their environs, but the ancient trees survived all these improvements and now sit within a modern farmed landscape. Legend holds that the early Scots King, David I (1124-1153), planted oaks here, but whether he planted bare land, or enriched existing open woodland is not known. Further planting (or possibly natural regeneration) of oaks has taken place, as they now cover a range of age classes, and recently the owners have planted new oaks of local origin in the park. However there are no trees in the 10-100 year range waiting to help fill the gap in succession. The deeply incised gorge of the River Avon has probably always held remnants of natural origin woodland, and the wood pasture is an extension of it, bounded also to the northwest by the Meikle Glen, and to the south and west by an ancient wall. To this day there are a few veteran oaks in the woodlands on the edge of the Avon gorge, and some of the oaks at Cadzow are very old indeed, dating back to the 15thC. They have been the subject of detailed study by dendro-chronologists and botanists (Dougall and Dickson, 1997).



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It is a feature of many of the oldest 'lowland' wood pastures (more accurately they are often in the 'foothills' of the uplands) that they are partly bounded by natural features which would contain livestock. Cawdor Great Wood is held between the V of two strong rivers with gorges, and like Cadzow, so is Dalkeith Old Wood lying as it does in the fork of the Rivers North and South Esk. Considering that the main use of these old hunting forests was to hold deer, boar, white bulls, and other game for hunting by their aristocratic owners, then simple, cheaply augmented and reliable natural enclosure on two sides of an enclosing triangle is an obvious benefit. Castles themselves were of course also built in such strategic positions simply for defence.

Some later deer-parks are bounded entirely by a high wall, eg the Cumloden deer-park was established by the earls of Galloway in perhaps the early 19<sup>th</sup> C , adjacent to the much earlier Garlies Castle ( c.1500), (M-A. Smythe, pers comm.) Much of Knockman wood owned by Forest Enterprise lies within that old deer-park, and restoration of some of the old parkland features is now underway, and its history is being researched.



*two views of the enclosing high wall to Cumloden Deer Park, Galloway*

### **Comparison with the built heritage**

Analogy with the built heritage can actually be a useful way of looking at wood pasture. So early wooden hunting-lodges were superseded by medieval towers, then by more comfortable castles, then converted to stately homes. Sometimes parts of the earlier built structures are still visible, and this is the same with ancient wooded landscapes. In the case of both designed landscapes and ancient woodlands we are looking at a series of overlain features (historians call this a *palimpsest*), accumulated over a thousand years. The lifetime of some of the oldest trees in an ancient park may be more than half a millennium, and so this puts a very historic context to wood pasture.



*Classic sycamore pollard in the remains of a former 19<sup>th</sup> C park attached to Kilmory Castle, Lochgilphead*

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Many parks in 18<sup>th</sup> or 19<sup>th</sup> C designed landscapes do in fact incorporate the occasional very old tree (and perhaps also the ruins of a tower or medieval castle) which predate the main house and gardens. The park designers may well have incorporated existing trees into the park, particularly if they are of native species (Debois, 1997). Pre-19<sup>th</sup> C trees in parks have often been pollarded in the past, and this is a feature shared by many lowland wood pastures and parklands throughout GB.

Another rather apt comparison with old buildings lies in their restoration. A two hundred year old farm building may have long outlived its original purpose, and the owner may wish to convert it to a new use. Society as a whole would surely wish that conversion to be done tastefully, preserving most of the old features. The same may be true of an ancient wood pasture, in that while one cannot recreate the traditional farming practices that helped create it, the present-day wildlife, scenic and shelter benefits can be valued, and the old features and character of the place protected. Probably one would sensibly apply this principle only to the very best sites, and preferably where the owner is willing.

### Wood pastures with a cultural origin

The second set of wood pastures are those which are not part of designed landscapes, but have evolved over the centuries through the interaction of ordinary country folk -engaged in nothing more glamorous than eeking a living from the land. The practice of pollarding long predates the cosmetic treatment of parkland trees in the early 19<sup>th</sup> C. Even at that time there must have been a folk memory of a much older practice which in many districts was part of farming life itself: the cutting of branches and leaves for feeding to domestic livestock. This fodder pollarding is known to be the cause of the characteristic pollards which are frequent in the Lake District valleys of Borrowdale and Langdale, and may also be seen in the hedgerows and open wood pastures of other upland areas in north England.



*ash fodder pollards in Watendlath, and . . .*



*Langdale, Lake District*

### **Borrowdale**

The evidence of fodder pollarding is indisputable in the Lake District. Within living memory of many of today's farmers the '**cropping**' of ash and holly for feeding to sheep was a common practice, especially in certain years when drought or other calamity forced it on farmers due to lack of other feeds. The techniques are covered in some detail in a number of books and articles about the Lakeland way of life (Rollinson, 1987), and the subject was researched by the National Trust before they embarked during the 1990s on a programme of rehabilitating many of these old traditional pollards (Mercer, 1993). Some whole hillsides (as in Seatoller Wood) have

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partly regenerated to dense woodland, but the numerous pollarded trees within are still very obvious. Many of these pollards are being restored and given more space, while new ones are being started to give continuity.



*l - ash pollard in Seatoller wood; r - national Trust staff repollarding an ash at Hartsop*

The National Trust are encouraging their tenant farmers to revive this practice mainly for traditional landscape restoration reasons (see outstanding examples in Watendlath valley), but also to improve the habitat niches in old pollards for specialist species, particularly lichens and invertebrates.

### **Scandinavia**

It is appropriate at this point to draw comparisons between the old Norse traditions in the Lakes, and very similar traditions in western Norway (Austad, 1989), southern Sweden, Finland, and the Aland Islands (Haeggstrom, 1998).



*ash pollard at Farnborg, Aland Islands, Finland*



*recent re-pollarding at Borsa Isle, Sweden*



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All these areas carried on a classic tree leaf-fodder pollarding system, in a number of native broadleaved species, but especially in ash, elm, birch, and goat willow. Over a long time this process results in a particular shape of tree, which is retained for at least a century after the pollarding stopped. In these countries too, a certain amount of pollard restoration is being done to preserve flower rich '**pollard meadow**' habitats, and also as part of the restoration of traditionally farmed cultural landscapes.



*pollard meadow at Nato nature reserve, near Mariehamn, Aland Islands, Finland*

### **Equivalents in the West Coast of Scotland?**

While in Scotland there appear to be no straightforward equivalents to either the Lake District fodder pollards, or to the fascinating pollard meadow habitat in the Baltic, there are often intriguingly similar situations, and many veteran trees which appear to hold evidence of this sort of activity in the past. It would be nice to speculate that there was indeed a similar tradition in Scotland, but more research, both documentary and in the field, is needed to provide convincing evidence or explanation. The social justification for historic fodder pollarding is certainly there, as the pre-industrial farmers had a precarious living, and the availability of winter keep was always a limiting factor of livestock husbandry. So farmers cut hay from bog rushes, and also gathered 'wood-hay' from between the trees and shrubs in open grazed woodlands (Grant, 1995).

### **veteran holly on Loch Etive side**

It seems logical that Scottish crofters would also cut leaf fodder for winter storage as



well as for feeding direct to stock in the late summer, as farmers did in the Lake District. Feeding twigs in winter and spring for sheep to nibble the bark was also common, as was the cutting of the evergreen **holly** for winter fodder (all over GB – for examples see Read 1991). It is not uncommon to find groves of very old multi-stem and possibly pollarded hollies in the Scottish highlands, and these may have had a similar use by shepherds as did the 'Hollins' in the Lakes.

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Similarly there are many **ancient birch** in parts of the western highlands, which closely resemble the old birch fodder pollards of Norway and Sweden, and they seem to be evidence of similar farming traditions. However, unlike the Lake District and the Baltic, the practice seems now to be beyond folk memory in Scotland, and is thus harder to prove.



*l: 'grown-out' pollard birch in Nato reserve  
r: the big birch pollard at Glenfinglas, beside old arable*



One piece of evidence that constantly crops up in Scottish wood pastures is that while many of the surviving trees do not show strong evidence of previous pollarding, if you look at the very oldest trees on site, eg veteran **ash** of over 300 years age, these can indeed have a strong pollard form, though now of course grown-out. This can result in the classic old pollard candelabra shape (see Kilmory pollard photo above – sycamore holds the candelabra shape better than most species). Even when a pollard has blown over and regrown vertically to some extent, it still holds that shape as evidence for decades to come (good example of fallen ash pollard in Glenfinglas).



*l: sycamore pollard, Lochgilphead  
r: ash pollard near Luss*





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### Rassal Ashwood

While Rassal ashwood does not contain classic pollards, it does have a lot of other features pointing the way to it being a cultural landscape artefact rather than a purely natural woodland. The main feature is the way that the oldest trees are sited on old limestone banks between flat smooth terraces, edged by what seem like stone clearance cairns, or short dykes. If trees are growing on some of these terraces, they are usually young, and never of the older age classes.



*un-wooded terrace in Rassal ashwood*

It seems to me that this used to be a predominantly farming landscape with clumps of ash trees on rough ground and on ancient stone dumps. The ash trees, and a few oak and elm, rowan and willow were probably managed in the past by coppicing and pollarding. This would have kept the trees from shading crops growing on the small terraces, and would provide wood for artefacts and tools, fuel, and leaf-fodder.

Once the system was abandoned, the trees would grow on, seed into gaps, and become a sort of woodland.



*l: ash on stone dump, Rassal  
r: non-pollarded but burry old oak on edge of terrace*



Since the trees at Rassal are probably of natural origin in the first place, and have many centuries of continuity, they are of course a good wildlife habitat. They are in fact adjacent to gully woodlands as well as limestone pavements, which are probably both true woodland refugia. In a similar way to Cadzow, despite being in a completely different situation, Rassal is in fact linked (at least historically) to a natural woodland refugium, which perhaps helps to explain its special character today.



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### Upland Wood Pasture - and its natural origins

The third main category of pasture woodland is both more highland and more rugged in character. This concerns the sometimes extensive areas of widely spaced veteran trees of all the native species found in remote glens that have escaped both agricultural improvement and conversion to forestry. The site held up as a model of this type is **Upper Glenfinglas** in the Trossachs, and for good reason, as it is very extensive, contains a wonderful collection of veteran trees of many types, and has a well researched and fascinating history which includes a long period as a royal hunting forest. It is owned by the Woodland Trust who are keen to continue managing it in a way that maintains its wood pasture character and values.



Why and how such extensive wood pastures survived to the present day is a matter for further historical research. However, many natural origin woodlands survived under the protection of being designated and managed as a royal or noble **hunting forest**.

#### *View within upper Glenfinglas – a savannah landscape*

Glenfinglas is a good example, but also intriguing wood pasture type remnants survive in other previous hunting forests such as Ettrick, Strathdearn, Drummond, Glen Artney, etc.

Even areas containing major pine forests such as Abernethy, Rothiemurchus and Mar were once medieval hunting forests (Gilbert, 1979). Many native pinewoods are not only of wood pasture structure, but also merge into true broadleaved wood pasture on their flanks.



*open grown riverside pine in Rothiemurchus Forest*

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No doubt many other upland pasture woodlands, or at least fragments of them, survived through chance influences on the legal history of their ownership, and on their utilisation and management. This was true even in the 20<sup>th</sup> century when some remarkable native woodlands were (by chance) not converted to forestry, including Tainish and Glenfinglas.

*grazed pinewood- the most northerly native pinewood at Corriemulzie, Einig*

### Are today's wood pastures simply exploited woodlands from the past?

The presence of very scattered alder veterans in some glens (for example the south side of **Glenkinglass**, Loch Etive) demonstrates that these are the sites of pasture woodlands which have very nearly been lost.

*Glenkinglass, furnace ruins on left, looking south to savannah*

The trees here are so scattered over a large area that they do indeed resemble the temperate savanna described in Rackham (1998). South Glenkinglass is not shown as woodland on the current OS sheets, and so would not have been considered for inclusion in SNH's Ancient Woodland Inventory. But the current



trees are too old to have arisen since the 1860 first edition OS map. One concludes that this glen was quite possibly densely wooded on both sides prior to the start-up of the major iron furnace at its foot, which ran from 1722 to 1738. The furnace's charcoal requirements must have made major inroads into all the woods on Loch Etive at that time.

The oakwoods on the north side of the glen were later enclosed in a dyke and many of them are in good condition today, while the south side is a declining savanna. The alternative scenario is that the south side was always a very open wood of low economic value: in 1720 then as now? In other words it is possible that some wood pastures have actually been of very open structure for centuries. However it seems more likely that wood pasture alternates with periods of denser woodland (see the

## AN ILLUSTRATED GUIDE TO ANCIENT WOOD PASTURE IN SCOTLAND

example of Achnatra wood, below). Possibly some glades favoured by grazing animals persist through these alternating structures? For a recent exposition of the theory that wood pasture was a significant part of, or even dominated, the original wildwood see Vera (2000).

It is known from historical documents that unenclosed 'black-woods' (non-oak natural-origin woodland), were grazed heavily in summertime throughout the 18<sup>th</sup>C. If they were also cut for charcoal and then grazed without protection then obviously they tended to be lost completely. For example Letterwalton Woods, Barcaldine, were reduced over the period 1777 to 1871 from dense black-wood which provided substantial charcoal produce, to a mere 'thin scattering of trees' (Lindsay, 1976). Some of today's wood pastures may therefore have had this somewhat ignominious history. A century and more of grazing since they were last cut has allowed particularly the hardy alder to form a slope-alder wood pasture. In other places the long lived oak and pine, especially if open grown and therefore relatively resistant to windthrow, have survived to become today's veterans.



*two views of slope-alder wood pasture at Glenfinglas. Massive alder on left also has a rowan 'air-tree' growing inside, a common feature in veteran hollow alders*

I would go so far as to hypothesise that many of today's poorest condition upland wood pastures are simply the long-suffering remnants of natural-origin, unenclosed, black-woods. These remnants may therefore be some of the most natural woodlands in the landscape, especially if they include undisturbed woodland *refugia* in deep gorges and on crags.



*sw Glen Orchy showing (l) wood pasture and crag refugium; (r) a gully refugium just to the north*



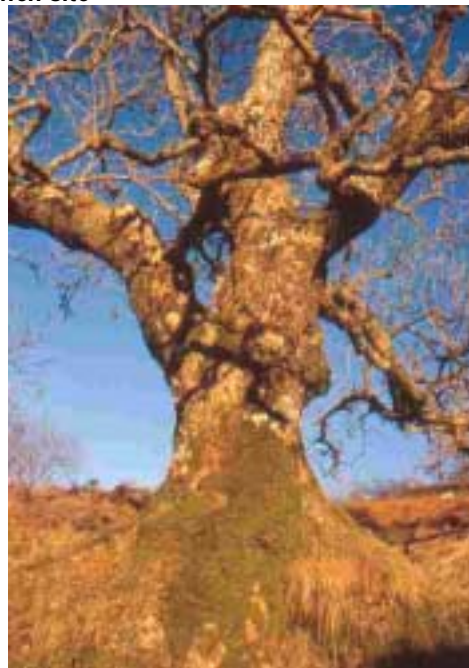
## AN ILLUSTRATED GUIDE TO ANCIENT WOOD PASTURE IN SCOTLAND

### Infilling of Wood Pasture

Some sites show quite clearly that given respite from grazing for a prolonged period, wood pastures will seed from the older trees and regenerate. **Achnatra Wood** on Loch Fyne is one such place, and the scattered veteran ash are still visible on adjacent land to show the sort of open wood pasture the site may have been, before a stock fence erected several decades ago allowed recovery. The open wood pasture in the adjacent **Glen Shira** is in fact one of the best habitats for old growth lichens in Scotland.



*very open parkland at Glen Shira with scattered ash and sycamore with some oak and sweet-chestnut. A top rate lichen site*



*l: canker wounds on veteran ash, good sites for lichens –white patches of lichen *Lobaria amplissima**

*r: an open grown outgrown pollard ash in the open parkland of Glen Shira*

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**The infill process** - given protection against grazing, hazel stools re-sprout, alder and birch seed in large patches, while ash and elm close canopy and send up vigorous young saplings. The result is a very natural appearance of woodland, with a wider than usual range of age classes.

Significantly, **the infilled wood pasture structure** contains post-mature growth stages inherited from the wood pasture. In his studies on the historical ecology of Atlantic woodlands, Rob Bohan used the structure at Achnatra as a natural analogue for pre-historic Taynish wood (Bohan, 1997). It would be possible to restore such a



wood back to wood pasture, though it is now more likely that the new multi-aged structure would be accepted, with some protection of the veterans from too-heavy shading to protect the continuity of lichen habitat.

In other sites, for example in parts of Glencripesdale NNR, non-native conifers have been planted into scattered veteran trees. The priority there is restoration of a plantation on an ancient woodland site (PAWS). The fact that the previous woodland was in some places wood pasture should make little difference to the decision to restore. It may however influence what is perceived as the optimum final outcome, and also the speed of conversion. Gradual restoration may in some cases be preferable to suddenly opening the woodland up to a scatter of fragile veterans. It may be better to maintain higher humidity, especially for the lower plant interest.

***Pollard ash with hazel, within the now infilled wood pasture known as Achnatra wood***

***Ash and oak open-grown veterans within Achnatra***



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### Cultural evidence in upland woods

Often in western native woodlands one finds scattered patches of oak coppice outside the main coppice enclosures. In fact such stands may well have been protected for some years after coppicing with brushwood fences and turf dykes. They survived to become patches of mature oak coppice in the context of pasture woodland. Because we can no longer see the remains of the turf and brushwood fences (often referred to in old wood-contracts as '*stake and rice*'), we forget that many currently grazed stands of oak, were in fact once protected, at least for a few years after coppicing. (See page 31 for a photo of a traditional Swedish fence, perhaps similar to *stake and rice*?) This might explain why old oak coppice can be found in an unenclosed wood pasture situation.



The two management systems are not as incompatible as they first sound, given a sufficiently labour intensive form of husbandry. In the uplands we now find the latter concept hard to imagine, but there is evidence of more intensive past management in many highland wood pastures.

*oakwoods on Loch Sunart with coppice patches interspersed with large open areas*

Careful fieldwork, combined with documentary studies, of the sort being done in Loch Sunart woodlands by a local woodland history group, may help explain these aspects more fully in due course. For further discussion of the link between wood pasture and the clumps of high forest that may be in mosaic with them, see papers by Neil Sanderson, (Sanderson, 1998) who has studied these structures in the New Forest, (also he carried out surveys in *Glenfinglas for the WT*).



*Glasdrum NNR*

It is impossible to describe here the many historic treatments of Scottish natural woodlands (see Smout, 1997). The picture is one of a complex interaction between human use of resources and the forces of nature. Man was using the upland natural woodlands for a host of woodland products, including tar, resin, charcoal, bark and fuelwood as well as timber. But above all he was grazing livestock, cutting wood-hay and leaf-fodder, hunting wild animals and gathering



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nuts, seed, honey and other wild food amongst those same trees. The story of wood pasture is one of a complex interaction between man and nature that we now find hard to comprehend.

All the truly ancient pasture woodlands presumably had a similar **origin**, in that they are directly descended from original post-glacial natural woodlands with continuity on the same or adjacent sites. This very continuity may explain the high nature conservation values on previous wood pastures - carried through to today. It is perhaps no coincidence that many of the highest quality woodlands designated for their conservation values seem to have a pasture woodland origin, eg Glasdrum, or Glencripesdale NNRs.



Oakwoods treated in a silvicultural way, even if only during the period of the iron furnace era, for example Dalavich or Strone oakwoods, remain substantially altered by that management, and consequently less natural. However they will develop naturalness in time, especially when they are part of a well wooded district.

***Strone oakwood, two views showing clear distinction each side of old earth dyke – to the left a coppiced stand, to the right, open non-coppiced pasture woodlands***

Of course some of these coppiced oak woodlands may have been planted on bare agricultural sites during the period of economic boom for oak products. Some interesting oak woodlands (eg on Luss Estates, Loch Lomond, and shown here at Strone, Dalmally) show both kinds of structure side by side, ie the ex-industrial coppice, and the open grown pasture woodland outside the protecting dyke. In other places the difference is not so obvious, but nevertheless each structural type can usually be mapped separately.

This varied history of utilisation, exploitation and management helps explain the range of condition in today's pasture woodlands. Knowing this history, together with an assessment of surviving ecological benefits and threats, gives us information to help decide the best future management for the wood pastures of Scotland.

***second view at Strone***



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## Part 2 - Features of Ancient Wood Pastures

This section looks at the range of features visible in wood pastures at several different scales. I have highlighted key words for the four scales:

- the whole **landscape** which includes the wood pasture
- the land immediately around you, either a **stand** of trees, or the open glades
- the veteran **tree** in front of you
- inside the tree's **interior**, or growing on it, but barely visible to the naked eye

Since this is the order in which you would approach a new site from afar, it is a logical way in which to look at the features themselves.

### Features at the landscape scale

We have already looked at a number of examples of wood pastures at the landscape scale when we were discussing their distribution and the broad range of types. However there is one aspect at the landscape scale to look at in more detail.

Wood pastures are very often linked to, and sometimes include actual patches of, **natural woodland refugia** (see photos of Glen Orchy on page 20). These are pockets of natural woodland surviving usually in inaccessible places such as crags (both inland and coastal), ravines, deep gullies (cleughs in the Borders), islands on lochs or the sea. Where the wood pasture includes some of these refugia sites, this strengthens the case for considering that wood pasture to be of natural origin.

It is common to find that woodlands in gullies and on crags contain a number of rare species of plants, trees and shrubs. Indeed they are often the only places in that district that these species are found. This is good evidence that the woodland containing them is of natural origin, and probably has a very long continuity, possibly stretching right back to the post-glacial wildwood. It is not easy to prove that to be true, except by *palaeo-botanical* techniques, which are not usually possible at the scale of a single gully. The survival of ancient woodland indicator species and other rarities is good evidence in itself.



**Rock Whitebeam (*Sorbus rupicola*) on woodland crag refugium at Creag Dubh, Laggan**

Practical and logical factors also support the idea of long standing woodland refugia, since they are by definition inaccessible, or nearly so, to grazing livestock and deer. Hence trees and shrubs survive a long time in them, and yet they can seed themselves into nooks and crannies, often in cracks in the rock itself, and so survive by self perpetuation.

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## Features at the stand scale



*Phoenix rowan*

### **Vegetative reproduction**

An aspect of woodland refugia is that they allow trees to perpetuate vegetatively, ie without seeding. It is quite common to find say a rowan tree on a crag or in a rocky gully to have fallen over, even been knocked over in a landslip, and then to be re-growing from the stump, or the branches putting on new shoots, or just turning up to the vertical in a curve from the tip. When a tree does this we call it a '**phoenix tree**', in that it has risen again!



*Old phoenix oak in wood pasture, Carstramon wood*

Small-leaved lime, a rare native tree which now grows only as far north as the Lake District, seems to be hanging on in various gullies in Lakeland woods by vegetative growth, and can thus apparently survive against all the odds, even though it is now too far north to set viable seed.

The interesting thing to note is that trees often seem to survive in refugia situations by using vegetative reproduction, and this is also a feature of wood pasture. Apart from the phoenix tree syndrome, other examples of vegetative growth include:

- aspen suckers, which are prolific, even on crags, when an older aspen begins to weaken or age
- hazel and willow growth as multi-stem shrubs, responding to grazing by producing ever more shoots
- layering of the branches of partly fallen or even just hanging limbs which touch the soil
- basal shoots springing from the soil around dying trees of many native species, which can give a kind of new sucker or coppice growth even without cutting, eg on alder
- the burry basal swellings which are a common feature of veteran trees in wood pastures (see in more detail below) may indeed be designed to do exactly this – to be a source of many new shoots to help perpetuate the tree in response to severe grazing pressure



*layered branches of bird cherry*



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*layered beech tree in Kilravock park*

### **Tree-line woodlands**

As well as being associated with woodland refugia, wood pastures are also to be found at very high elevations for native species, and indeed in many places actually constitute that tree-line wood, held to a certain elevation through a balance between grazing pressure and the ability of the trees to seed and survive. Usually at this high elevation the survivors may only be downy birch and juniper, but pine is a constituent in the highlands, while on better soils hazel, rowan and alder may be some of the highest trees before the open hill. If there is no upper containing dyke to the wood pasture, then this is a good indicator of a natural origin woodland – they do not get much more natural than that in the UK! (*Of course they are usually heavily grazed by livestock and deer, so in strictly scientific terms they are still termed 'semi-natural woodland'*).



*two views of high level wood pasture above Loch Earn*

In many wood pastures enormous veteran trees especially alder can occur right at the current tree-line, at well over 300m elevation.

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*huge veteran alder along with birch, rowan and hazel at the top of Inverchorachan wood, Glen Fyne*

### Scrub communities

Above the tree-line can be found growing the dwarf and prostrate shrubs like juniper and prostrate willows, which make up the low-growing vegetation of **montane scrub**. Natural populations of montane scrub species such as dwarf birch (*Betula nana*) are possibly remnants of previously more extensive woodland ecosystems which stretched from river valley to mountain top. Montane scrub may thus have been linked in the past with natural woodlands in the same way as wood pastures once were, especially near the treeline and in the vicinity of natural refugia. However this is mostly speculation, but an interesting area to research.

Another relict woodland type that may be similar in origins to wood pasture in the uplands is **juniper scrub**. It is of a similar open structure, sometimes with a few emergent trees growing from it, and usually heavily grazed. Juniper may also be a component of a native pine and birch wood, as is common in Speyside and less so elsewhere (*pinewoods as wood pasture are described below*).



*Juniper scrub pasture, Langdale*

There are situations like Glen Artney near Comrie where a notable juniper wood SSSI is sited close to areas of wood pasture, which were themselves once part of an extensive royal hunting forest. Perhaps this is a case of 'convergent survival' of these old landscape features? More work would need to be done on the distribution of these vegetation types to explain this coincidence.

A similar situation exists with **hawthorn**, usually in heavily grazed situations, where old scattered hawthorn occupies mid-slope unimproved pasture. This 'savannah' structure can be quite a feature in some districts and can also occur in rocky ground and boulder screes. Like rowan, birds can spread hawthorn seeds in their droppings, and so it can be spread some distance from a seed source, which may be an old hedge. Some of the thorn trees are undoubtedly very old, ie over 100 years, and are almost an old-growth woody feature in themselves.

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Interestingly they can also be seen inside infilled wood pastures, so demonstrating a recognisable link back to a period when that wood was probably grazed and more open. Hawthorn, almost uniquely in GB, is so well adapted to heavy grazing that it can seed, establish and grow into a short tree, all under constant grazing pressure. It is in that way a true savannah species.

*hawthorn pasture at The Nest*



Blackthorn on the other hand, while common in wood pastures, seems to have strength in numbers, and regenerates more as small clumps, rather than as individual shrubs as does hawthorn.



*hawthorn pasture in the Shropshire hills*

### **Native pinewoods**

Native pinewoods, especially those in the west, often have such a history of exploitation and subsequent grazing, that they too have a wood pasture structure. More than that, they often adjoin broadleaved wood pasture which has been formed in the same way, through centuries of grazing with little chance of extensive

regeneration. I would like to see new mapping of this interface between native pinewoods and broadleaves, as it seems to me that both have equal claims to being genuinely native woodland types. The broadleaved component has often been largely ignored in previous attempts to map and describe the native pinewood resource. This is as true of Steven and Carlisle in their survey of 1959, as it has been of my colleague Graham Tuley in his pinewood survey of the 1990s (see Jones, 1999).

It is very valuable however, to have the ***Caledonian Pinewood Inventory***, collated against strict criteria to include only those with genuine histories of being self-sown over many generations from natural origin stock. Modern GIS mapping techniques are revolutionising the way in which this sort of data is held and manipulated, and I hope this deficiency in the recording of natural origin broadleaved woodlands in the past may be remedied soon, if sufficient resources are made available to do the job. The two photos on pages 18 and 19 showed the similarity of many pinewoods to broadleaved wood pasture, and this is an area deserving more attention in future. The native pinewoods are after all unique, and contribute so much to the character of Scottish native woodlands.



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*rounded open grown pine in a wood pasture situation, Glen Affric*

### **Features of Wood Pastures as Cultural Landscapes**

We discussed above how some wood pastures are the product of a long history of man's intervention with certain woodland types, not only by grazing, but also by directly managing the trees themselves by pollarding. In modern times we are so used to having plentiful food, as well as materials for building and everyday life that we forget how dominant a factor in people's lives was the growing of food. If crops failed they would probably starve that winter. Similarly it is hard for us to imagine the use of wood for all manner of day to day uses, as well as being the main source of fuel, except in districts where peat was more abundant. We are also used to seeing a relatively well wooded countryside, where in fact timber is now a rather low priced commodity. During the few hundred years before the 20<sup>th</sup> C, there were very low levels of woodland cover in Scotland. Apart from areas of planted conifers on the lower lying land of the main tree planting Dukes of Atholl, Argyll, Buccleugh etc, the bulk of any woodland that existed was of native species and mainly on ancient woodland sites.



***Bonawe furnace, Loch Etive***

coppice oak poles, for tanning leather. The tanneries were mainly in the towns, and there was a lively trade in coppice products, their harvesting and their transport. Whole oak woodlands were coppiced and sold in leases to the iron furnace companies and others. After cutting, those coppiced woods were protected from

That woodland was actually quite profitable for landowners after the 1745 Jacobite rebellion, for it was about that time that a small number of major iron furnaces had been set up close to highland oakwoods to smelt iron ore with the aid of locally produced oak charcoal. Also very profitable at that time, and with both markets peaking during the Napoleonic wars in the early 1800s, was the use of oak bark peeled in springtime from 20-30 year old

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livestock, at least for the first 4 or 5 years, often by well built stone walls or at least by turf dykes, wooden palings and brush fences, to allow the coppice shoots to re-grow. The problems that occurred when these works were not done properly were discussed above.

*Charcoal hearth, Wood of Cree*



*traditional fence in Scandinavia – could this be similar to the old 'stake and rice'?*

**Woodland protection dykes** come in all shapes and sizes, and are an archaeological study in themselves. Many dykes within wood pastures were designed for enclosing deer for hunting as much as dykes around coppices were designed to keep deer and livestock out. Some old royal hunting forests have the remains of huge old earth banks and dykes associated with them.

*r: massive earth dyke at Glenartney*



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*coppice dyke at top of Wood of Cree*

*'one-sided' woodland protection dyke, Cowal*

A legacy of **earthworks and ruins** has been left in our woods and wood pastures from those times. Remember that before coal was available, wood, brushwood or charcoal were used as fuel in the smelting of metals and in many other types of kilns, such as limekilns.



People also used to live in wood pastures (*it does seem more likely than living within dense woodland?*). There are now ruins of settlements, shielings, crofts, and byres within ancient wood pasture, as well as cultivation terraces, cailyards, old tracks and drove roads. Thus there are domestic and settlement features within wood pasture, as well as relicts of industrial archaeology. *A separate and full guide to archaeological features within woodlands and wood pastures would therefore be useful for field observers.*



*l: field clearance cairn in wood pasture Glenartney*



*r: Woodland enclosure dyke, Glen Liver*



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l: Limekiln, Ardtornish ashwood, r: ruined dwelling (summer shieling?) in Glenfinglas wood pasture

### Features at the Single Tree scale

The last two scales at which we can view wood pasture are the *tree itself*, of which there are many unusual features, and *inside the tree*. Since we cannot easily illustrate the features *within* the old tree, of rot and fungi in particular, we will finish this guide with a selection of features of single veteran trees in wood pastures (those not already covered above).

As we have seen, the landscape itself in ancient woodland and wood pastures is packed with archaeological and cultural interest. Even at the single tree level this is true. Perhaps the most obvious way of seeing people's past intervention with natural trees in wood pastures is through their pollarding and coppicing. However there are a few other effects of people on trees that can be seen today, such as the **ancient folk-life uses of wood**, like cutting candle-fir wood, or resin tapping (*not yet seen in Scotland, but known to have been a regular practice in the past*). Resinous heartwood in old native pines was often cut out by axe for 'candle-fir' cottage lighting (Grant 1995). In the example shown here, after cutting out the heart of a veteran pine in a pine/alder wood pasture stand in Abernethy Forest the wound was overgrown by the tree, then the sapwood partially rotted away, but the evidence of this past use persists.



*candle-fir pine, Abernethy*

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*resin tapped Scots Pine (in Poland!)*

*r: old pine on Braulen estate, Glen Strathfarrar, with axed 'sinks' cut ready for cross-cut sawing by fellers during the second world war, who evidently never came back to these trees to finish the job!*

As with every other aspect of ancient woodlands, the features on individual trees are also a mixture of cultural influences, and natural effects. So after pruning, pollarding or coppicing is carried out, nature then heals the tree, but leaving evidence of the former treatment by man, even after the tree dies. So even though **pollarding** as a rural practice ceased over a century ago in Scotland, the effects of it persist.



*l: two stages of pollarding, oak at Rydalwater, r: sweet chestnut veteran pollard in Roslin Glen*



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We have seen a number of previously pollarded trees illustrated already, but there are some trees which seem to capture a **historic pollard shape** even better than the candelabra sycamores. An ancient pollarded alder at Balnabraid Glen, S Kintyre, shown below has been dead for decades, yet retains the classic short stumpy pollard head and swollen base typical of a tree which has been grazed around, and cut for wood or possibly leaf fodder, for most of its long life. That woodland has now mainly infilled with younger alder, but the striking 19<sup>th</sup> C pollards remain within it.

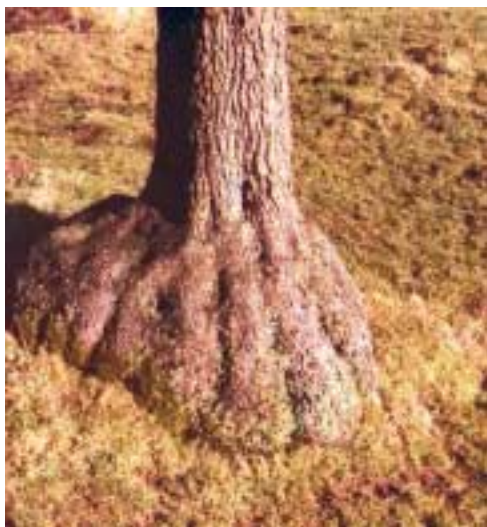


*alder pollard at Balnabraid Glen shape*



*ash pollard at Balnabraid, with similar*

Notice that both these classic pollards have a distinctly bulbous **basal swelling**, caused by myriad adventitious shoots at the base of the stem being constantly grazed by livestock, and the tree responding by building up burr tissue. This feature is a very reliable indicator of a wood pasture history, even when such a tree is now found within a current woodland. It is unlikely to be found in a tree of less than say 150 years old, and more likely in those of 200+ years.



*classic swelling on alder, Hallbankgate*



*big swelling on oak, dalkeith*



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*l: basal swell on alder, Glenfinglas (+rowan airtree), r: swelling on massive veteran oak, Cadzow*

*basal swell on what is left of an old ash tree in Golspie park!*



To a lesser extent **burring** in the stem is also a characteristic feature of at least some open grown trees.

*Burry oak in wood pasture at Glen Liver, Loch Etive*



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*Magnificent burry pollard oak at Inverbeg, Loch Lomond, with basal swelling*



Birch trees in old age develop a peculiar **ropey** effect on the bark, which is a kind of strengthening mechanism. This feature only develops in old age, especially on the large horizontal branches of ex-pollard birches but also on main stems of open grown birch. Also as birch ages, deeply blocked bark develops, which is a niche habitat for many specialist species of lichen and invertebrates.



*l: birch showing the ropey effect in a straight stem,*



*r: close up of a ropey branch*



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The classic shape of pollard has a distinctly flat **bolting** at the point where its main stem was cut, at between one and three metres from the ground. From this point many branches or stems emerge in a sort of 'Medusa's head'.



*l: sycamore bolting*      *r: big oak pollard at Balfron church showing flat topped bolting*



When arising from a low pollarding position at about one metre, a **stub tree**, or **low pollard** is formed, and these can be found in many wood pastures, on wood-banks, and on the edge of coppices, especially in oak, ash, and alder.



*l: excellent example of a low ash pollard, Glen Liver*      *r: ash stub, Glen Liver*



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A variant on the classic pollard is when there is no flat bolling as such, but the stem takes a horizontal turn after being cut, then resumes vertical growth on more than one subsidiary branches. The result is a sort of 'cock's comb'. It can occur naturally after a tree has been truncated in the wind, but most of the best examples of a **comb tree** are right beside buildings or other artefacts in the rural landscape. Obviously, this severe pruning effect is usually a sign of a previously man-influenced tree.



*l: comb oak at Kilmory, Lochgilphead*



*r: comb oak in wood pasture, Glen Artney*



*comb oak beside ruined building, in wood pasture on west Loch Lomond*

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*decapitated oak on shores of Loch Etive showing the comb-effect in the making*

The other main type of 'historic shape' is the **multi-stemmed tree**. Not all multi-stemmed trees have been coppiced, as the same effect can come about through release of browsed shoots after a period of heavy grazing. That may account for a lot of the multi-stemmed hazel, alder and birch in pasture woodlands, but probably most multi-stem oak have indeed been coppiced in the past.



*l: ancient coppice stool in Drimnin hazelwood*



*r: burry veteran oak coppice, Golspie park*

Because oak can live so long, oak coppice can survive for many centuries after it was last cut. Most oak coppice in Scotland has stems about 150 years old, dating back to the time when it was used for charcoal and tanbark as discussed above. However there are coppice stools which pre-date that era, and they have stems of over 200 years, on an even older stool. The extreme is seen in oak coppices of medieval origin, which have also gone through a long period of grazing in a park. This gives rise to the massive stools in Dalkeith park, and they can also be found in other wood pastures throughout the country.



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*massive coppice oak , Dalkeith park*

After a long period growing in the open conditions of wood pasture, old coppice stems on the same stool can merge and **fuse** to create odd effects. The same can happen on a smaller scale with hazel stems, which can fuse to form a sort of hollow tube. This can look similar to a hollow old stem due to internal rot, common in other species like alder.



*l: strange effects in hazel, Glenfinglas, with old coppice stems fusing and crossing over  
r: fused oak coppice in wood pasture, Stonefield*



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Sometimes alder can put down **roots** inside its own hollow stem, which later become visible after the main stem rots. This is similar to the 'air-trees' discussed above, where usually a rowan or birch roots down through a hollow veteran, often an alder. However it is usually possible to see what species each part of the mixture is! As we can see from the photos below, **air-trees** are remarkable survivors, and can outlast their host tree, though not always!



*l: successful rowan air tree in birch, Midgeholme burn, r: less successful rowan in alder, Loch Earn*

A further type of multi-stem tree, more common in lowland parks, or at least where visible from a mansion house, is the '**bundle planted**' tree. These derive from planting of a bundle of up to 10 plants in the same hole. This was a recognised 19<sup>th</sup> C landscaping technique (see Debois, 1997). The effect today is very like a coppice stool, only the stems are fused together and do not have a hollow centre.



*bundle planted beech at Carstramon wood*

There was a report recently of a large fluted tree being felled in an English park, and an iron stake being found in its centre, which somewhat proves its origins! Bundle planted trees are not common in Scotland, but when found they are usually of beech. Beech in Scotland was not normally coppiced in a commercial way, (neither is it a native tree). However, there is

evidence that sycamore was coppiced in lowland woods in Scotland in the past.

Bundle trees could in theory occur naturally, eg from a cache of beechnuts made by a squirrel, but I think this is very uncommon, as natural selection would tend to favour one or two seedlings over the rest. The bundle planted group is a very artificial phenomenon, simply done to create an impressive landscape effect of a massive spreading tree, more quickly than one could obtain from a single tree. There is one other multi-stem veteran tree type worth mentioning in passing, the '**coppard**'. This is the hybrid name given to a multistem coppice stool where all the stems have been

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pollarded at perhaps 2m from the ground, leaving a very strange effect indeed. One exists close to the public road near Luss (*no image available*).



*magnificent 'phoenix bundle planted beech' at Carstramon wood!*



*beech and sycamore double tree  
- a simple mixture of species close together such as this can occur by natural seeding*

Let's look a bit more at **hollows** in trees, another key feature of veteran trees, particularly those in wood pastures. The cause of the hollowness is decay of heartwood, but this does not always make the tree weaker. Far from it, as the hollowing, combined with pollarding to lower the centre of gravity, can give the tree lightness, strength in its tubular structure, and thus stability in winds. These are all adaptations which allow pollarded and hollow veteran trees to live a long life, especially in the open situation of a wood pasture.



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*l: hollow veteran oak, Cadzow*



*r: hollow oak pollard at Rydalwater (with polypody fern)*



X  
*l: hollow ash pollard at Myreton ,*



*r: massive hollow ash at Inversnaid*



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Hollows in veterans can extend right up into the rotted heartwood of branches, where they afford excellent habitat for bats and birds.



*l: hollow branches in alder, Balnabraid Glen*



*r: hollow logs on the ground, Cadzow*



*l: rotting fallen oak log, Dalkeith parkland*



*r: the ultimate fate of hollow veteran trees in*

Even after falling, the hollow veteran can however sustain fungal growth and act as a habitat for deadwood (saproxylic) beetles and their larvae for many more decades while it rots slowly.

### **Epiphytic plant features**

One of the advantages of all these old-growth features on veteran trees is that they afford niches for so many other species, helping make wood pastures such a good habitat. Not only are there insects and fungi inside the timber, but the outside of the tree has a range of specialist niches for **epiphytic plants**, which can include mosses and liverworts, lichens, ferns (particularly the common polypody, which is a real

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feature of veteran trees – how many photos in this guide have polypody?), and also some flowering plants grow in hollows and niches on the tree.



*l: layers or 'terraces' of mosses and liverworts are a feature of veteran trees, especially in the western woodlands (also with polypody). r: fungi on old birch*



*epiphytic plants on veteran alders l: polypody fern, r: wood sorrel*

Even the 'air trees' described above are really a type of epiphyte. Ivy occurs on veteran trees in wood pasture, but it is hardly a typical plant of wood pasture, probably because the grazing pressure itself prevents ivy from taking hold. Similarly honeysuckle is at low levels in wood pasture compared to less grazed woodland situations.



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A special mention should be made of **epiphytic lichens**, both the very obvious foliose and fruticose lichens, and the crustose and pinhead lichens on bark and deadwood. Wood pastures are a very special habitat for these organisms, many species of which are only found in ancient woodlands and wood pastures.



*l:* lichens of acid bark on birch.



*r:* *Lobaria pulmonaria* and *L. amplissima* on oak

below: *L. scrobiculata* (bluish)



*Platismatia glauca*, with  
*Hypogymnia physodes*,  
and *Evernia prunastri*





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## Appendix 1

### Glossary of technical terms

**Air tree** – jargon for a tree (usually rowan, sometimes birch or another species), which has grown in the decaying core of a hollow veteran tree, sending roots down inside. **Ancient woodland** – woodland which occurred on a site prior to the dates of the earliest country-wide map survey, which in Scotland is the Roy maps of 1750, while in England the date is fixed at 1600AD

**Ancient woodland indicator species** – species of plants and lichens usually only found in ancient woodlands, and so a good indicator of antiquity

**Black-wood** – 19<sup>th</sup> C term for non-oak (ie less valuable) broadleaved woodland in the uplands, usually unenclosed and not sustainably coppiced

**Coppard** – jargon for a previously multi-stemmed tree which has then had stems pollarded at above a metre from the ground – a multiple treatment – not very common!

**Coppice** – multi-stem re-growth from a cut stump or stool of a broadleaved tree

**Cultural landscape** – a rural landscape formed by the hand of man over a long period

**Dendrochronologist** – someone who studies the pattern of growth rings in trees, which can be used to date artefacts and events in the past

**Designed landscape** – the landscape designed to fit in as the environs of a mansion house, including gardens, policy woodlands, parklands, scenic clumps of trees, walls, drives, ornamental buildings etc (see Debois, 1997)

**Epiphyte** – a plant growing on another plant, in this case on a tree (not parasitic)

**Hearth** – or **charcoal hearth** – the level circular platform about 3m diameter on which the ‘colliers’ used to make charcoal in a dome-shaped, earth covered clamp (some platforms may have already existed as the foundations of old dwellings)

**Hollin** – a grove of holly trees used for fodder pollarding for livestock feeding

**Infilling** – the process of regeneration into wood pasture during a lull in grazing pressure -infill is not all good news, in that dense infill can spoil the very values of open wood pasture, yet some regeneration is needed to keep continuity of wooded habitat

**Layering** – the process whereby a living branch roots where it touches the ground, and gives rise in time to a new individual tree

**Old-growth features** – those caused by the presence of mature, post-mature and decaying trees in woodland; wood pasture excels in these features

**Orchard** – park like area but with fruit trees rather than timber or ornamental trees

**Palaeobotany**- understanding the historical development of natural landscapes by studying plant fossil remains and especially pollen deposits in lake beds and peatland

**Palimpsest** – a series of overlain features on any site, derived from successive periods in the past

**Park** – a lowland area of grassland with scattered trees, often planted, usually attached to a designed landscape

**PAWS** – plantation on ancient woodland site (can usually be restored to native woodland, or to wood pasture)

**Phoenix tree** – a tree which has fallen or been knocked over and re-grows healthy shoots in the vertical plane

**Pollard** – a tree cut from 1-3m above ground level in order to promote growth of new shoots above the reach of cattle and deer

**Pollard meadow** – an old subsistence farming system, whereby scattered trees were pollarded, while the meadow around them was cut for hay, and grazed in late summer

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**Refugia** – these are places in the landscape growing natural vegetation including native trees and shrubs; they are usually rough, steep, inaccessible and not used by man for growing crops now or in the past

**Saproxyllic** – used to describe usually invertebrates which live in and feed on the decaying heartwood of old trees

**Savannah** – open grassland with scattered trees, usually in the tropics, but see Rackham (1998)

**Self-coppicing** – whereby a vigorous shrub, especially hazel, can send up new shoots in response to a lull in grazing, without any coppicing or help from man

**Semi-natural woodland** – woodland which has arisen by natural means, ie through self seeding over the generations from naturally arisen parent trees

**Stool** – the ground level part of a multi-stem coppiced tree, which spreads in girth after each cutting of its constituent stems

**Suckers** – new shoots, each of which can form a new tree, arising from roots below ground – aspen excels in this form of regrowth, even though it can also set seed

**Tanbark** – a woodland product, whereby larger coppice poles, or branches and stems of oak, but also birch, rowan, willow, were stripped of bark by hand, which was dried, and later ground and dissolved in cattle-hide soaking pits to give tannins to preserve the leather

**Treeline woodland** – woodland or wood pasture growing up to the physical limits of elevation possible under the local circumstances of exposure, microclimate, soil fertility, and grazing pressure

**Vegetative reproduction** – non-sexual reproduction in trees and shrubs, which enable the tree to expand and perpetuate without setting seed, eg through layering, suckering, or 'self-coppicing'

**Veteran** – a deliberately imprecise term for a very old tree, which usually shows some distinct signs of age and old-growth features, as described in this guide

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## Appendix 2

### Wood Pastures in Scotland – A Selected Reading List

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### Appendix 3

## Wood Pasture and Veteran Trees in Scotland

### a selected list of sites open to visit

*Peter Quelch, Forestry Commission*

In many ways the woodlands and forests of Scotland contain such a wide array of majestic old trees, both native and non-native, that it is very difficult to pick out some examples. Many books and guides have been published, both of outstanding individual trees, and of attractive woodlands and arboreta.

However, the attached table shows a dozen or so selected larger sites which are open to the public without seeking special permission. These include three of the finest of the relatively few **lowland wood pastures** containing veteran oaks, comparable with the best of those in England.

The list also includes the well known **Fortingall Yew**, reputedly the oldest tree in Europe; but other single trees of note, of which there are very many, are not included.

The arboreal scene in Scotland differs in one significant respect to that in England and Wales, in that large areas of **natural origin woodlands** remain, both of native broadleaves and of Caledonian Pine. A user-friendly database (MS Access) of the 84 genuinely native remnant pinewoods has been published by the Forestry Commission in 1999, which is available in floppy-disc format at no charge. This **Caledonian Pinewood Inventory** gives a lot of information and a grid reference for each wood, but does not list recreational facilities or give details of access. Not all these woods are accessible to the public and of course some are more impressive than others. So a small selection of pinewoods is also included in this list, each with good access via waymarked trails.

A further type of natural origin woodland, ie **upland wood pasture**, with massive old gnarled alder and unusual single stemmed old hazel, is represented by **Upper Glenfinglas**, though many other smaller remnants may be found in the Scottish countryside, from the Borders northwards. They have persisted under more or less constant livestock and deer grazing regimes, resulting in a very open condition. Many have a very long history, in some cases from at least the middle-ages, when they were used by the Scottish royalty as hunting grounds.

Finally the list contains a small sample of **seminatural oakwoods** which have many veteran oak trees, often as coppice stools. Further examples open to the public may be found in leaflets available from Forest Enterprise, Scottish Natural Heritage, National Trust for Scotland, Woodland Trust, Scottish Wildlife Trust and others.

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Site Name	Grid Reference	Ownership	Site Notes
Lochwood	NY085970	Annandale Estates	Fine veteran pollard oaks beside ruined castle, informal parking
Dalkeith Country Park	NT335685	Buccleugh Estates	Veteran multi-stemmed oak; carparks and waymarked walks
Cadzow Oaks	NS732538	S. Lanarks. Council	Veteran oaks within Chatelherault Country Park accessible on a trail, from which can be viewed the privately owned oaks adjacent
Glen Nant	NN019273	Forest Enterprise	Old coppiced oakwoods; carpark, trails, and onsite interpretation
Allt Broighleachan	NN226328	Forest Enterprise	Western native pinewood with some big old pine; carpark and long trail
Upper Glen Finglas	NN520105	Woodland Trust	Veteran alder and hazel; old royal hunting forest. Access from Brig o' Turk village.
Fortingall yew	NN742470	Church of Scotland	Ancient yew in churchyard; oldest tree in Europe
Mar Lodge Estate	NO061897	National Trust for Scotland	Caledonian Pinewoods in Glen Quoich, Glen Lui etc. Carparks and trails.
Glenmore	NH977099	Forest Enterprise	Native pinewoods at foot of Cairngorm. Carparks, trails, interpretive centre.
Rothiemurchus	NH903109	Rothiemurchus Estate	Massive old pine trees. Carparks and trails – info from visitor centre
Loch Sunart Oakwoods	NM691645	Forest Enterprise	Old coppiced western oakwoods, carparks and trails
Glen Affric	NH283282	Forest Enterprise	Extensive native pinewoods, Carparks, trails.
Loch Maree	NH001650	Scottish Natural Heritage	Ancient pinewoods in Beinn Eighe NNR. Carpark and trails.

### Appendix 4a

### A Key to the Main Types of Wood Pasture in Scotland



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1. Veteran trees present
  - Yes.....2
  - No.....**Not Ancient Wood pasture**
  
2. Veteran trees with
  - Over 25% tree cover.....3
  - Under 25% tree cover.....6
  
3. Over 25% tree cover
  - Infilled with established woodland (over 25 years).....4
  - Infilled with recent woodland (under 25 years) .....5
  
4. Infilled with established woodland
  - Infilled with native species. . . **Long abandoned Ancient Wood-pasture with established secondary woodland**
  
  - Infilled with exotic species. . . **Ancient Wood pasture underplanted with mature conifers or non-native broadleaves**
  
5. Infilled with recent woodland
  - Infilled with native species . . . **Recently abandoned Ancient wood pasture with scrub and regeneration**
  
  - Infilled with exotic species. . . **Ancient Wood pasture underplanted with young conifers or non-native broadleaves**
  
6. Under25% tree cover
  - Grazed.....7
  - Ungrazed..... 8
  
- ..
7. Grazed
  - **Ancient Wood-pasture with long established open semi-natural ground flora and an element of woodland ground flora**
  
  - **Ancient Wood pasture with improved grassland**
  
8. Ungrazed
  - **Ancient Wood-pasture with rank grasses and scrub**
  
  - **Ancient Wood pasture on arable land/developments**

*Note-Any native woodland type will have an AWP (Ancient Wood Pasture) derivative as a result of past management and so this key does not differentiate between woodland types.*

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## Appendix 4b

### Ancient Wood Pasture woodland types found in Scotland.

Type	Description/ Location NVC Derivation	Tree Species Dominant in Bold (Regeneration)	Shrub layer	Ground Flora (non woodland) NVC communities
<b>Parkland</b>	Parkland/ Designed landscapes Amenity Lowland	Often with exotics Natives may pre- date buildings (no)	Scarce some Hawthorn	Improved pasture MG6/MG7
<b>Lowland Oak</b>	Medieval Hunting Forests Enclosed wood- pasture W10	Oak (no)	Scarce some Hawthorn	Improved pasture MG6/MG7 Semi natural grassland MG5/MG6
<b>Slope Alder</b>	Upland Unenclosed W7c	Alder Rowan Birch Ash (Vegetative and seeded)	Bird cherry Willow Hazel (pollard)	Rush pasture M23/M27 Marshy grasslands MG6/MG9/MG10 Flushes M6/M10
<b>Upland Ash</b>	Upland Unenclosed W8/W9	Ash Elm Holly (Vegetative and seeded)	Hawthorn Hazel (pollard)	Calcareous grasslands CG10
<b>Upland oak</b>	Upland Unenclosed W11	Oak Birch Rowan (seeded)	Hazel Holly	Heath H12 Acid grassland U4/U5
<b>Birch</b>	Upland Unenclosed W17	Birch Rowan	Sub-scrub species	Heath H12 Acid grassland U4/U5
<b>Pine</b>	Upland Unenclosed W18	Scots pine Birch (seeded)	Juniper	Heaths Acid grasslands Bogs

*This appendix, viz the Key and the above Table of types of wood pasture, was drawn up by Mike Smith, Edinburgh, as part of his consultancy work for SNH on a preliminary inventory of wood pastures in Scotland, March 2001.*

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**Author contact details:**

Forestry Commission  
Whitegates  
Lochgilphead  
Argyll  
PA31 8RS  
01546 602518  
[peter.quelch@forestry.gsi.gov.uk](mailto:peter.quelch@forestry.gsi.gov.uk)