

## Guidance

# Management of ancient wood pasture



## Summary

Ancient wood pasture is recognised as an important but now scarce element of the historic environment still evident in today's landscape. This guidance note provides an introduction to the restoration and management of ancient wood pastures in Scotland. It is aimed at land managers, their advisers and agency staff involved in land management and grant assessment. It has also been developed to help applicants to the Scottish Rural Development Programme deliver the 'Management of Ancient Wood Pasture' Rural Priority. In addition to basic guidance, links are provided to more detailed publications that may be of help to interested land managers.

The note is divided into six sections. The initial sections describe the different types of ancient wood pastures, some background history to their development, and how remnants may be identified throughout the Scottish landscape today. Recognition is also given to the variety of wood pasture habitats and their contribution to wildlife.

Guidance is provided on the care of veteran trees to ensure their survival and succession. Equally important is management of the pasture, and guidance is offered on the development of managed grazing regimes to maintain appropriate diversity of the pasture vegetation. The note concludes with promoting the benefits of a management plan and providing some guidance for its preparation.

This note was written by Roland Stiven for Forestry Commission Scotland. The project was carried out under the direction of a Steering Group made up of Forest Research, Scottish Natural Heritage, Historic Scotland, Royal Commission on the Ancient and Historical Monuments of Scotland, Farming and Wildlife Advisory Group, Scottish Agricultural College and Peter Quelch, an independent woodland advisor.



Grant funding is available through the **Scotland Rural Development Programme** to support the management of ancient wood pastures.

#### What are ancient wood pastures?

Ancient wood pastures are areas of grazed pasture, heath or open hill with a scattering of open-grown veteran trees. Once a common feature of the Scottish landscape, they provided shelter, pasture and fodder for livestock, as well as wood products for local people. Some trees may have been **pollarded** (cut back to a high stump out of reach of grazing animals), regenerating with multiple stems to provide poles, or browse for livestock in harsh times. The grazing prevented competition by younger trees, allowing some individual trees to survive to a great age.

The SNH booklet **Wood Pasture** is an illustrated guide to wood pastures in Scotland and is available online.

In many places the wood pasture structure has been erased by modern land-uses, but sites remain where the combination of old trees and pasture gives us a glimpse of an earlier managed landscape and the culture and traditions that created it. The trees themselves are inspiring; some are many centuries old and may have a lineage on that site stretching back to prehistory.

As well as being historic landscapes of cultural importance, ancient wood pastures now provide a precious habitat for some rare and specialised wildlife that depend on the old trees. Conserving these species requires protection of the habitat by managing the grazing and ensuring there will be a continuing supply of old trees into the future.

Wood Pasture and Parkland is a priority habitat of the UK Biodiversity Action Plan with targets for its conservation, restoration and expansion. Previously listed as **Lowland Wood** Pasture and Parkland the scope of the plan was extended in 2008 to include upland sites.



Shieling wood pasture at Glen Strathfarrar, Inverness-shire (Kate Holl, SNH)



Group of alder pollards beside old shieling hut in Glen Falloch, Stirlingshire (Peter Quelch)

# Recognising ancient wood pasture in today's landscape

Fragments of ancient wood pasture are present throughout Scotland. Some of the larger areas were within **medieval hunting forests** that were deliberately maintained to hold deer for sport. Elsewhere wood pasture was a key part of the **pre-improvement settlement landscape**.

Recent centuries of intensive grazing in the uplands has left the open landscape with few old trees. In the 20th century, large areas of commercial forestry were also planted on wood pasture sites. In the lowlands the improvement



Underplanted veteran oaks at Balmacara, Kyle of Lochalsh (Kate Holl, SNH)



Tree boxes regenerating the wood pasture at Jedburgh Laidlawsteil, Scottish Borders (Borders Forest Trust)



Veteran oak tree on golf course at Ross Park, Dunbartonshire. (Woodland Trust)

of in-bye pastures meant the veteran trees were increasingly restricted to field edges. Some wood pastures were incorporated into more formal policies and parkland, and converted to amenity ground such as golf courses.

Often the shadow of ancient wood pastures can go largely unrecognised. Where management continued into more recent centuries, they can still be identified on estates, farms, townships and common land. The old, open grown trees are the main tell-tale; the large canopies indicating a long history of growing in an open grazed landscape. Some of the trees may also show signs of having been lopped or pollarded in the past.

An Illustrated Guide to **Ancient Wood Pasture in Scotland** by Peter Quelch, is available online.

#### Is this an ancient wood pasture?

In practice, most ancient wood pasture sites can be confirmed by two simple questions:

 Was the woodland present as open woodland on the 1st edition Ordnance Survey maps? (These maps, from the 1860s, marked open woodland and parks with scattered tree symbols, distinct from closed canopy woodland and enclosed land. Other old maps, paintings, photos and estate records may also be worth investigating).



Remains of wall enclosing coppiced oak woodland (Kate Holl. SNH)



Oak wood pasture (Kate Holl SNH)



Pictures showing the distinction between previously enclosed coppice oak woodland and oak wood pasture as shown on the 1st edition Ordnance Survey map and contemporary aerial photograph. All pictures from Loch Katrine, Stirlingshire. (Mike Smith, FR)

The **1st edition OS maps** are readily accessible online from the National Library of Scotland.

2. Are open-grown, veteran trees present? (This indicates that the land has been historically managed as open grazed woodland)

If the answer to both questions is yes, then it is most likely to be an ancient wood pasture.

#### Types of ancient wood pasture

Many of Scotland's native woodlands were used historically for **sheltering and grazing livestock**. Tree regeneration would only have been possible when stock grazing was reduced or where individual trees were deliberately protected from grazing. The open wood pasture structure may be derived from such woods, where grazing patterns allowed a pasture with open-grown trees to become established. The tree species present in wood pasture will tend to reflect the natural woodland cover typical of the soils. In lowland situations however, there may have been deliberate planting, with non-native species introduced into the designed landscapes.



Cattle grazing in a wood pasture at Ardnaskie, Argyll (Kate Holl, SNH)

The **Woodland Grazing Toolkit** provides guidance and background on using woodlands (rather than wood pasture) for livestock shelter and grazing.

While modern land management often masks ancient wood pasture, there are many places where the structure can still be discerned.

The SNH publication **Ancient Wood pasture in Scotland: Classification and Management Principles** provides a more detailed classification of wood pasture types and the ways in which more recent land management has modified their structure.

The lowland oak wood pastures are perhaps the most readily identified, with large-girth ancient trees and relatively fertile (sometimes improved) pasture. These retained their value into more recent times as cattle parks or as amenity ground on the larger estates.



Lowland oak wood pasture at Loch Wood, Dumfriesshire (Kate Holl, SNH)



Lowland oak wood pasture at Dalkeith, Midlothian (Kate Holl, SNH)

Well-preserved lowland oak wood pastures such as those at Dalkeith and Cadzow are designated as sites of special scientific interest for their wildlife and historic value.

Ash-dominated wood pasture is still evident, especially in the Borders and Perthshire, often on the south-facing valley slopes where it would have been accompanied by elm and holly. The veteran ash trees also occur with hazel and scattered hawthorn on the thinner soils.



Pollarded ash tree at Tinnis Wood, Scottish Borders (Peter Quelch)

The Scottish Borders has a **Wood Pasture and Parkland Habitat** Action Plan.

Alder trees tend to be survivors, growing on the wetter grassy slopes in the uplands. This 'slope alder', which may also include birch, ash and hazel, is typical of some wood pasture sites in the Trossachs and in the Borders. The Glenfinglas Estate, managed by the Woodland Trust for Scotland, retains old slope alder wood pasture with some trees showing evidence of having been cut back or 'pollarded' in the past.



Alder wood pasture on grazed slope at Glen Strathfarrar, Inverness-shire (Kate Holl, SNH)



Alder wood pasture at Rhidorroch Woods, Wester Ross (Kate Holl, SNH)

In the central Highlands, the common grazings often encompassed pine and birch wood pasture. The old, open-grown trees are still found in the vicinity of shielings, abandoned settlements and along drove roads.

The pinewoods of Glen Affric national nature reserve were used as summer grazings for livestock until 1810 when the area was taken over for sheep grazing. In 1870 the estate was given over to sporting. Patches of wood pasture were evident on the early maps and veteran trees from that period still survive.



Open grown veteran pine tree at Glen Affric, Inverness-shire (Kate Holl SNH)



Shieling wood pasture at Glen Strathfarrar, Inverness-shire (Kate Holl SNH)

BAP species that may benefit include orange-fruited elm lichen, *Bacidia incompta* (a lichen); dark-bordered beauty moth, *Hammerschmidtia ferruginea* (an aspen hoverfly), juniper, black grouse and red squirrel

In the west, upland oak and birch woods still tend to be used for sheltering livestock. Although some areas were managed as oak stands or coppice, elsewhere an open wood pasture structure can still be identified by the few remaining wide-canopy trees.

The development of wood pasture was probably less deliberate in the uplands than in the lowlands. Distinct age classes of trees can sometimes be differentiated, suggesting periods when heavier grazing was interspersed with occasional opportunities for tree regeneration.

## Ancient wood pastures for wildlife

Old, open-grown trees are the defining feature of ancient wood pasture. The sunlit canopies attract insects and other wildlife less suited to denser woodland.

As the trees reach old age, growth slows until the crowns start to die-back. In a pasture situation, with no competing trees, the period of decline can last for many years – centuries in some cases. Mosses become established on the large branches and in crevices in the bark; wood-rotting fungi colonise broken branches and stems; beetles move into the dry deadwood and sap-sucking flies and hoverflies find a niche in the rot-holes, sap runs and other scars that these veteran trees accumulate. The process of ageing provides an uninterrupted supply of deadwood in various stages of decay, ensuring the needs of species continue to be met.





Black grouse (Lorne Gill, SNH)



Dark bordered beauty moth; male on left, female on right (Roy Leverton)

This long-term continuity is critical. Some insects and lichens occur only where there has been a presence of old trees stretching way back in time. The roots of ancient trees also develop complex communities of mycorrhizae, the fungi that play an important role in nutrient uptake by trees.

The surrounding pasture and open woodland flowers provide nectar sources for flying insects. Semi-natural pasture will support grassland fungi, rare butterflies and moths. Also, birds, such as woodpeckers, flycatchers and wryneck, as well as bats, stoats and weasels.

To justify management as wood pasture, the benefits to wildlife and historic landscape need to be clear. Conserving ancient wood pasture requires a long term commitment to grazing management and protecting the trees. If this is not realistic there may be more benefit in encouraging the site to revert to native woodland while maintaining the veteran trees. Similarly if the veteran tree resource is already seriously degraded and there are no mature trees to take their place, then conservation management of the open pasture may be more appropriate.

The Forestry Commission Scotland publications: Action for Scotland's Native Woods considers the opportunities for managing and creating native woodlands and The creation of small woodlands on farms provides guidance on woodland creation and management.

### Managing the trees

Where veteran trees remain, the priority for management will be to retain the old trees and their wildlife, while bringing on replacement mature trees to maintain the habitat.

#### Protect the veteran trees

Landowners, managers and those with way-leave rights should be made aware of the conservation value of the trees to prevent them being lost or damaged by unintentional or ill-considered actions.

For a comprehensive handbook download **Veteran Trees: a** guide to good management or a printed version is available from English Nature priced £15.

The Woodland Trust and the Ancient Tree Forum have also published **a series of short guides on managing ancient trees**.

Drift from herbicides, insecticides and fertilisers will damage the tree and the associated wildlife. Even veterinary products in livestock dung may have an impact and stock should be excluded from the area for a period after treatment.

Trees rely on roots near the surface, which spread out some distance. A rule of thumb is that the roots will extend away from the tree to a distance of 15 times the diameter of the trunk of a tree. Compaction of this ground around the trees, from trampling by people or livestock or by parked cars, should be avoided. Similarly, do not cultivate the soil around the tree, or dig ditches that interfere with roots or alter the groundwater.

Livestock should not be fed or watered close to trees as this will encourage trampling and cause nutrient enrichment of the ground around the tree, which will damage the tree and the wildlife.

Horses in particular may strip and rub bark from old trees and push them over.

Where barriers are constructed to protect trees, ensure that the ground around the tree can still be grazed, as competition from lush growth can weaken the tree and shade the lower trunk.

Grant funding is available through the **Scotland Rural Development Programme** for post and rail fences to protect veteran trees.

#### Reduce competition from other trees

Young healthy trees growing close to ancient trees will quickly dominate and shade them out. While it is important to retain nearby trees that can replace the veterans in time, ensure the veterans are given space to survive and access to light. Where old trees are already being crowded out, reduce the surrounding canopy gradually, avoiding damage to the veteran or sudden exposure to the elements.

There is useful guidance on pages 56-57 of **Veteran Trees: a** guide to good management.



Unchecked natural regeneration infilling ancient wood pasture with young trees.



Sensitive and gradual thinning around veteran trees to both reduce competition and restore open ground to help ensure their survival.

Source: Ancient Wood Pasture in Scotland: Classification & Management Principles (SNH 2002)

#### Allow the veteran tree to age naturally

**Trees age and decay in different ways.** Oaks, for example, may still be in their prime after two centuries. They tend to rot from the centre, staying alive with stable hollow trunks for centuries and standing dead for even longer. Birch on the other hand has a shorter life span and will rot and collapse more quickly.

Previous **pollarding** may have contributed to the tree's longevity, creating a broader, lower and more stable trunk. However, when regular pollarding stops, the crown can become top-heavy making the tree more likely to break up. There may be benefits in reducing the crown to improve stability **(primarily for safety reasons along public pathways)** but once such 'lapsed pollards' are in decline, re-pollarding is unlikely to rejuvenate the tree and may hasten its decline.



Low pollarded alder tree with holly 'bird tree' at Loch Katrine, Stirlingshire (Peter Quelch)

A 'Bird' or 'Air' tree is one that has seeded in the bough of another, developing through the host canopy. To sustain itself the 'bird' tree spreads aerial roots down the trunk of the host tree, thus developing independently.



Low alder pollard with large birch 'bird tree' at Glen Gyle, Stirlingshire (Peter Quelch) .



Massive oak pollard amidst upland wood pasture at Loch Katrine, Stirlingshire (Kate Holl, SNH)



Ancient oak pollards in upland wood pasture at Loch Katrine. These trees have been dated earlier than 1860. (Kate Holl, SNH)



Coring has determined that this pollarded ash tree at Loch Katrine predates 1730. (Dr Coralie Mills)



Damaged veteran ash tree at Laidlawsteil in the Tweed Valley, Scottish Borders (Borders Forest Trust)

It is the **dead and damaged** wood in the tree that is especially valuable to wildlife, so avoid pruning the trees or clearing up dead wood. If safety from falling trees or branches is a real concern, then consider other ways in which the risk might be managed before undertaking tree work.

Where trees must be pruned, remove as little material as possible and leave it close to the tree. Do not treat or paint pruning wounds or fill holes with concrete.

Veteran Trees: A guide to risk and responsibility is available online.

Hazards from Trees: A General Guide is a Forestry Commission Practice Guide that indicates the responsibilities of owners and managers for assessing the risk of hazards from trees, and considers what inspection procedures might be appropriate.

#### Allow the trees to re-grow

Trees that fall over may survive if some roots remain in the ground. Many tree species will develop new roots where the trunk or branches come in contact with the ground. These 'phoenix trees' resume growth ensuring continuity of the tree organism.

Trees such as alder, yew, aspen and hazel will **regenerate from root suckers** when grazing is relaxed. As the main trunk and crown die back, new stems take over.

The new growth will tend to draw resources from the main stem and will gradually shade it out. In some situations it

may be worth controlling re-growth so as to maintain the veteran trunk and its habitat until replacement veterans become available.



A 'phoenixing' birch at Glenkinnon Burn, Scottish Borders (Kate Holl, SNH)



Hazel pollard with re-growth at Rassal Ashwood, Ross-shire (Kate Holl, SNH)

#### Recruit new veterans nearby

If the wildlife that depends on veteran trees is to survive into the future, nearby trees must be available to take their place. Ideally these will be mature, open-grown trees with a long period of gradual decline ahead of them.

Grant funding is available through the **Scotland Rural Development Programme** to support work on individual trees and the planting of single and small groups of trees.



Regenerating the deer park wood pasture with young trees protected in tree boxes at Selkirk, Scottish Borders (Borders Forest Trust)

Where there are younger, well-grown trees, these can be helped to develop veteran features more quickly through pollarding, or by deliberately creating broken branches to help start a process of decay. Where trees were modified in the past, by pollarding, tapping for resin or birch sap, or by cutting resinous 'candle fir' from pine trees, it might be of interest to try out such practices on a few young trees.

Strapping fallen deadwood from veterans to younger trees can help inoculate them with the fungi, flora and insect species of the veterans.

To establish new trees, existing regeneration can be protected from grazing and browsing, creating clumps of young trees. Denser patches of regeneration can be thinned out to a few selected trees. If new recruits need to be planted, use the same species as existing veterans, from local seed sources. Other locally-native species suited to the site will add diversity, and help ensure the survival of some trees should others succumb to the consequences of climate change.

**Forestry Commission Practice Note 8** describes the system in place for identifying locally sourced seed of native species

Grant funding is available through the **Scotland Rural Development Programme** for post and rail fences to protect young trees.

Ensure that the 'future veterans' are well-spaced and will not compete with one another or with existing veterans. Competing young trees can be ring-barked over future years to create more deadwood habitat.

## Managing the pasture

Ancient wood pastures are grazing-maintained habitats; that means they require managed grazing to maintain the diversity of plant species and other wildlife, and to control scrub and young trees that compete with the veteran trees.

## The SNH living landscapes publication **Grasslands** provides background on grassland types in Scotland.

The pasture vegetation depends on the site and on previous management. In the lowlands, ancient wood pastures now encompass improved and unimproved pasture, neutral grasslands and mown amenity land. On wetter sites the ground may be rushes or wet grassland. In the uplands, the rough grazing ranges from patches of richer calcareous grasslands to the predominant acid grasslands and heath.

Practices that 'improve' the grazing, such as applying lime or fertiliser, or cultivating and reseeding, will **reduce** the diversity of wildlife in the habitat and can damage the veteran trees.

#### Improve the condition of the pasture habitat

Conservation management of the pasture should aim to enhance the overall value of the wood pasture for wildlife.

**Buglife -The Invertebrate Conservation Trust** produces leaflets on managing lowland wood pasture for invertebrates.

The veteran trees are a valuable feature, but unimproved grasslands are important for wildlife in their own right, providing habitat for birdlife, butterflies and grassland fungi. Wildlife advisors can help to identify the priority wildlife and the habitat conditions that best suit them.

#### The Fungus Conservation Forum has published **Grassland gems:** managing lawns and pastures for fungi.

The grazing should be managed to create a diversity of sward lengths including occasional patches of bare ground and areas of tussocky grass. Native plants should be allowed to flower and set seed, and patches of scrub and regenerating trees to develop where they do not threaten veteran trees.

## The SNH publication **Grasslands for plants and animals** is a concise illustrated guide to managing grasslands for wildlife.

If a site is overgrazed, the diversity of structure is lost and the ground can become poached and eroded. If grazing is insufficient the pasture will become rank with taller, coarser grasses dominating and shading out the smaller grasses, flowers and herbs.

If herbicides are required to control noxious weeds (such as ragwort or knotweed), use the minimum amount necessary as a spot treatment or weed wipe.

#### Prepare a management plan

Grazing management is the basic tool for conserving ancient wood pasture. However, each site will host different grassland communities and support different levels of stock.

Preparing a management plan can help to identify what 'favourable condition' of the habitat means in practice, and suggest how that could be achieved.

There is an SNH Information and Advisory Note on **The Grazing Behaviour of Large Herbivores in the Uplands**.

Sheep, cattle, goats, horses, and ponies each use pasture in different ways throughout the seasons. Some breeds of livestock may be more appropriate than others; traditional breeds tend to be better-suited to semi-natural pastures, being less selective in their grazing.

In some areas, the browsing of wild animals such as **red or roe deer, hares and rabbits** will also need to be taken into account.

An animal health plan may also be required to ensure animal welfare is well considered.

There is no fixed format for a management plan but it should include the following:

• The conservation priorities. Describe and show on a map the extent of the ancient wood pasture, the location of veteran trees, the pasture habitats and any species that require particular management for their conservation. A wildlife advisor can help identify the important habitats and species.

• Describe how the **condition of the wood pasture can be improved** to protect and maintain the veteran trees, and to ensure there will be 'replacement veterans' in future. Suggest how the pasture can be enhanced for the priority wildlife.

The SNH publication **Grasslands for plants and animals** is a concise illustrated guide to managing grasslands for wildlife.

- Set out a livestock management and grazing regime. Guidance is available and grant providers set some standard restrictions. Seasonal exclusions and suggested stocking rates for livestock on different pastures are available but, since all situations are different, it is important to focus on the grassland structures and plant diversity required to maintain the important wildlife. An ongoing process of 'monitoring and adjustment' will be required to achieve the right balance on any particular site.
- Note any **other management** required to protect the trees and ensure their replacement. This may include

Scottish Agricultural College Technical Note 586 provides advice on **Conservation Grazing of Semi-natural Habitats**. An on-line Grazing Toolbox with advice on appropriate sustainable woodland grazing will be available in 2010. marking exclusion zones or placing barriers around trees, work to reduce the risk to the public from the trees and the planting and management of replacement trees.

 Describe the process for monitoring what is being done. Who will check to see if the changes made actually improve the condition of the ancient wood pasture? How will they assess this, and how often?

Grant funding is available through the **Scotland Rural Development Programme** for the management of ancient wood pasture.

If a more developed grazing plan is not provided, the grants are subject to the following conditions:

Where the open pasture element of the wood pasture is grassland, improved or unimproved, on the inbye:

- livestock must be excluded for 6 consecutive weeks from 1 April until 15 June inclusive.
- at other times, grazing levels must be set to maintain an average sward height of between 5 cm and 20 cm.

Where the open pasture element of the wood pasture is acid grassland or heath, on the rough grazings:

• farm livestock must be excluded between 1 November and 28 February inclusive

Other conditions also apply



Illustration of wood pasture management for habitat condition improvement. Source: adapted from illustration in Veteran Trees: A Guide to Good Management (Natural England)

#### Wood pasture management for habitat condition improvement

## Woodpastures in the wider landscape

Only fragments of the area of the ancient wood pasture are left to conserve and the specialised wildlife may now be restricted to a handful of veteran trees in any area. In general, larger sites will host bigger and more viable populations of wildlife. Joining nearby fragments together, or at least make the intervening land less of an obstacle to wildlife, will be an effective way of improving the habitat.



Wood pasture can contribute towards sustaining cultural landscapes and the development of habitat networks. Source: Ancient Wood Pasture in Scotland: Classification & Management Principles (SNH 2002)

In many areas, gaps in the veteran tree resource will mean that creating a network of continuous wood pasture is not realistic. However, linking wood pasture sites with other **semi-natural habitats, such as hedgerows, streamside trees, riparian woodland, native woodlands, wetlands and grasslands** will increase opportunities for wildlife to move around and extend their habitat.

It may also be worthwhile expanding existing fragments of ancient wood pasture onto neighbouring land, especially where this helps to link semi-natural habitat.

New trees can be planted for the future, and young trees kept to mature.

There is also some experience of grass and heathland restoration. Where land has been improved, it can be shifted back towards a more natural state. Gradually depleting the nutrients through grazing, silage or hay cuts will start the process. Reseeding with seed collected from local grassland communities will reinforce the natural recolonisation of native plants.

Ancient wood pastures are just one element of the historic environment still evident in today's landscape. There may be opportunities to link conservation effort with the management of related scheduled monuments, vernacular rural buildings, historic landscapes and archaeology.

The SNH/FCS booklet **Habitat Networks for Wildlife and People** provides some background to the approach and more detailed studies to connect wildlife habitat are being prepared throughout Scotland.

SNH publications on grassland restoration include;

Guidance on Grassland Creation and Restoration

Using wildflower seed mixtures for grassland creation

Heather re-establishment on disturbed sites

Farming and Wildlife Advisory Group have published a Technical Information note **Wildlife-rich grassland**.

Floralocale host a list of seed suppliers and guidance.

**Forest Research** has information on developing lowland habitat networks.

**Forestry Commission Scotland** has published a policy statement on the protection and conservation of the historic environment in Scotland's forests and woodlands.

A practical guide Historic Environment - Information and advice for forest and woodland managers in Scotland.

A practical field guide for forest workers and managers to help them recognise aspects of the historic environment in forests and woodlands will be published in 2009.

Grant funding is available through the **Scotland Rural Development Programme** for the management of archaeological or historic sites and vernacular buildings.

## Contact Forestry Commission Scotland

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