

SCOTTISH WOODLAND HISTORY DISCUSSION GROUP
NOTES V



FIFTH MEETING – 14TH NOVEMBER 2000

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A C K N O W L E D G E M E N T S

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C O N T R I B U T O R S

Peter R. Quelch
Forestry Commission
Whitegates
Lochgilphead
Argyll
PA31 8RS

Andrew Barbour
Atholl Estate
Blair Atholl
Pitlochry
Perthshire
PH18 5TH

Robin Noble
Freelance Consultant/Researcher (Assynt)
Torr Beag Cottage
Drumbeg
By Lairg
Sutherland
IV27 4NW

Ian A. R. Hulbert
Scottish Agricultural College
Hill and Mountain Research Centre
Criannlarich
FK20 8RU

Keith Kirby
English Nature
Northminster House
Peterborough
PE1 1UA

Bob Bunce
Centre for Ecology and Hydrology
Merlewood
Windermere Road
Grange-over-Sands
Cumbria
LA11 6JU

Fiona Watson
Centre for Environmental History & Policy
(CEHP)
University of Stirling
Stirling
FK9 4LA

Mike Smith
23 Colinton Mains Green
Edinburgh
EH13 9AG

Christopher Dingwall
Garden History Society
Conservation Officer
Washington House
Main Street, Ardler
Blairgowrie
PH12 8SR

Kate Holl
Scottish Natural Heritage
2/5 Anderson Place
EDINBURGH
EH6 5NP

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INTRODUCTION

ANCIENT WOOD PASTURES IN SCOTLAND

CHRIS SMOUT AND FIONA WATSON

What defines wood pasture? What is its value for cultural history and for nature conservation? How does it differ from simply over-grazed woodland? If you want to conserve it, what is the best management? In these days of heightened awareness of the environmental value of past management, and of official Habitat Action Plans, the whole question of wood pasture has come to the fore. In a sense, the meeting of SWDHG at Battleby in November 2000 was a continuation of a meeting that SNH had hosted at Dalkeith in June, where we discussed problems of definition and action.

One of the firm conclusions of the summer meeting was that, in Scotland, we needed to consider upland wood pasture as well as the better-known lowland parks like Dalkeith and Cadzow. **Peter Quelch** opened the SWDHG day with an emphasis on the uplands and the need to distinguish ancient wood pastures from simply over-grazed woodlands. It was vital not to give the farming community the wrong message that animals grazing heavily in woods presented no problems. He suggested that ancient wood pasture can be recognised partly from documentary and cartographic evidence, much of it being located on medieval hunting forests, and from field study of woodland structure, the presence and archaeology of veteran trees and vegetational and wildlife surveys.

Chris Dingwall, coming from the perspective of the Garden History Society demonstrated the importance of wood pasture and parkland as cultural heritage, which perhaps tends to get less emphasis than it deserves. A fascinating paper was given by **Robin Noble** on the Assynt woods, which included old barley fields once fenced with hazel palings and areas where sheep and cattle were once seasonally herded. With the decline of shepherding, sheep are spending more time in the woods, yet their presence does not totally inhibit regeneration, and there is a tendency for the woods in many places to advance inland. Here is both an ancient and a dynamic, quick-moving landscape.

Keith Kirby came from English Nature to tell us about the wood pasture action plan in the south. With such an enviable wealth of lowland sites, and constantly expanding discoveries of new ones, both the opportunities and the problems seemed rather distinct from ours. Windsor Great Park is like Dalkeith and Cadzow, domesticated landscapes of ancient aristocratic pleasure. But the upland wood pastures are wilder, less likely to have been designed and planted, more likely to have been used by peasant farmers a great deal more regularly than by royal or noble huntsman. **Fiona Watson** took up this theme in a paper asking whether wood pasture in Scotland was “management or abuse?” By the eighteenth century there was much evidence for heavy and illegal grazing – for instance of 1200 cattle in the Forest of Mamlorne where the trees have, understandably, very largely gone. The main concern was probably deer, but what we know of management also favoured the trees up to a point.

The morning’s papers seemed to show that Lowland wood-pasture was essentially an enclosed park, but upland wood-pasture was an open range for deer and cattle. How far these fundamental differences are mirrored in biodiversity terms we did not attempt to establish. If they are, perhaps what we need is two different habitat action plans, or, if that is bureaucratically impossible, one plan in two halves that respect these obvious differences.

The afternoon's papers concentrated on more practical aspects of wood pasture and how they fit in with current landuse practices. **Andrew Barbour**, an estate manager in Perthshire, felt strongly that the current grant schemes made it difficult to think in an integrated fashion about agriculture and forestry, though this might well be desirable. Andrew also pointed out – and this was a key issue in the day's discussion – that whether woodland grazing might be considered a contemporary form of wood pasture was far from clear.

Ian Hulbert, from the Scottish Agricultural College based at Kirkton Farm near Crianlarich continued this theme of the integration of animals and trees. He and his colleagues are engaged in an experiment on the SAC farm to see what impact such integration would have in practice. It is extremely important, in any discussion of wood pasture, to pay attention to the requirements of both elements, since both have an intrinsic as well as an economic value. However, continued experimentation is required in order to establish exactly what levels of grazing would provide maximum benefit to one element without compromising the needs of the other.

We were very pleased to be able to listen to the wisdom of **Bob Bunce**, who has spend many years looking at wood pasture throughout the world. Bob was keen that we should learn from our colleagues on the continent, especially in the context of generating an increased biodiversity that seems, sadly, to be largely missing here in the UK.

Mike Smith of the Borders Forest Trust has been able to put his knowledge of biodiversity and the Habitat Action Plan into good use within a local community. He presented a very interesting and useful paper that effectively modelled an integrated landuse system, including trees, animals and people. Mike emphasised the cultural nature of wood pasture, its relationship with people, as well as the obvious importance of wood pasture to biodiversity. An inventory of all current sites within the UK is being organised and anyone interested in contributing to the Scottish element of this ongoing work could e-mail Mike Smith on mikey@ecostep.demon.co.uk

Kate Holl, from SNH, highlighted the official position vis-à-vis the Habitat Action Plan, emphasising the international importance of ancient wood pasture and parkland environments as homes for priority species, as a historical legacy of past management, and important landscapes in their own right. She admitted that, up till recently, these environments were presumed to exist predominantly in the lowlands, but that work done in Glen Finglas particularly had highlighted the incomplete state of our knowledge on the subject. There are thus clear problems with precise definitions of the term wood-pasture, as was indicated also in many of the day's papers.

Wood pasture is an extremely interesting topic, highlighting many issues relating to the intersection between ecological, economic and cultural priorities. As ever, more work needs to be done!

ANCIENT WOOD PASTURES IN SCOTLAND

PETER QUELCH

Further thoughts on their history and significance

The ‘further thoughts’ of the title reflects the stage I think we are still at with wood pasture. I cannot yet give you the results of research, completed surveys, many detailed case histories, nor firm management guidelines. Not yet; but many of these tasks are underway or about to start. You will hear later in the day about considerable progress and work achieved over the last year.

There is also wide interest in grazing within seminatural woodlands, and, in that area at least, a lot of research is going on. A number of woodland grazing trials are being set up, for example in the Speyside birchwoods, and the experiment with sheep and newly planted birchwoods at Kirkton Farm, SAC is well underway. However that is not my main topic for today.

In my last talk to you, I spoke of the pioneering period, beginning in 1996, when we began to recognise wood pasture as an entity, and began to think about surveying its extent. Kate Holl of SNH is now in a position to consider an inventory of wood pasture, and also promotional work aimed at landowners. So we have moved on in that year, and you will hear of the new developments later today.

So is that exciting discovery period now finished? Do we just get on with managing wood pastures, which thus become in effect another land-use? No, I’m afraid we are a long way off that point yet. There are still a lot of questions to answer.

The wood pasture dilemma

There is not much controversy about **lowland** wood pasture in Scotland, which is more or less equivalent to the English resource. The management guidelines in EN’s Veteran Tree handbook apply to Scotland’s lowland wood pastures and parklands.

The difficulties arise more with the **upland** versions, typified by Upper Glen Finglas. However, the Habitat Action Plan steering group have agreed that upland examples should also be dealt with as part of the LWPP HAP resource. Thus the main problem with upland wood pasture now lies in this question:

Q- When is a wood pasture not a wood pasture?

A- When it is just an overgrazed woodland!

In other words is a wood pasture:

- a) a fascinating example of a historic cultural landscape, with direct links to pre-improvement agricultural practices, and of significant archaeological interest at the landscape scale; or is it
- b) a natural origin woodland, but one which is heavily overgrazed, in poor condition, threatened as a habitat, and requiring urgent restoration if it is not to be lost.

Those are the two extreme viewpoints, but to some extent both are true – that is the dilemma of upland wood pastures. The need to answer this question and give clear definitions for surveyors becomes urgent when the needs of inventory are considered.

The Wildwood

So let’s go back a little and look at the origins of what we are now calling wood pasture. Let’s start with the wildwood, for whatever its structure and character actually was, it represents the natural woodlands of Scotland at their postglacial optimum. Typically it is imagined as dense high forest, with high levels of

standing and fallen deadwood, and high species diversity. The conventional history also sees a long period of gradual conversion to agriculture and loss to timber working, particularly in lowland areas and on better soils everywhere.

Most upland forests, however, were grazed incessantly by livestock, carrying on a tradition set up by wild herbivores before them, including the stag, elk, bull, boar, and beaver! This grazing pressure from wild and domestic livestock obviously put all forests under a lot of pressure, but presumably if the grazing effect did not exceed the capacity of the woodland to regenerate, then it survived. If the grazing was at too high a level, i.e. was unsustainable, then the woodland declined and eventually turned to open pasture. There is a distinct sequence of decline and survival of woodland refugia which can still be seen in the hills today - I'll return to this in more detail later.

Hunting Forests

Some woods survived into modern times because during the middle ages their use for grazing and cutting, and for arable cropping, was strictly regulated to preserve the deer and game for hunting. It is now probably no coincidence that many of the best wood pasture areas are within the boundaries or adjacent to the old royal hunting forests.

Glen Finglas is a good example, but there are many others such as Drummond Wood, or Glen Artney Forest which extended to the south shores of Loch Earn. There is much scope for research into this aspect, by correlating the inventory of wood pastures with historic settlements, sheilings and drove roads, and with medieval castles and hunting lodges.

I have seen remote remnant woodlands in Coignafearn on the upper Findhorn, and it seems these are within the area of the old Strathdearn Forest. Natural origin woodland remnants are found in other old hunting forests at Abernethy, Darnaway, Strathglass, Etrick, Glen Lochay, and in Geltsdale Forest in the N Pennines.

Actually there was a Forest of Redgorton, named after the village beside Battleby! In 1494 Andrew Lyall of Brechin held Redgorton in 'free forest', a legal term meaning that he was entitled amongst other things to set up a forest court. There are not too many wood pastures in this enclosed and improved farming landscape today. However the medieval woods of Methven, just a few miles west, were perhaps connected to or part of that forest? This is conjecture, but surely a topic worthy of further research, linking land-use history to the field evidence surviving today?

Woodland Refugia

Apart from the natural origin woodlands protected because they were royal or noble hunting forests, what other natural forest areas survive today? Remnant woodlands survive in inaccessible places, on islands, on crags and in ravines, and also on the very wet soils. Since these natural refugia are still unattractive to livestock then the woodlands in them tend to regenerate and retain a wide species complement. Indeed they often harbour the rarest of species; for example, the endemic crustose lichen *Parmentaria chilensis* survives only in a very few locations, and a main one is the Resipol gorge, in the Loch Sunart oakwoods.

Many of the most interesting woodland refugia are located in mountain gorges such as Talladale on Loch Maree, the Ardessie pinewood on the south side of Little Loch Broom, or even in the Border Cleughs, where the surrounding hills have been bare for hundreds of years.

Wood pasture can also be envisaged as a type of natural woodland refugium. However it differs from the other refugia in that it is often on quite good soils, and not at all inaccessible. While patches of ex-arable are very often located within extensive wood pastures, the old trees themselves are rarely on the better land (eg Rassal ashwood). This points to the as yet unexplored cultural history of wood pasture and its management.

Sequence of species loss

As mentioned above, there is a sequence in the decline of extensive upland woodlands, not only geographically, but also in species composition. Tree and shrub species are lost as the relentless grazing pressure continues over the centuries. Thus, elm, ash, guelder rose or bird-cherry may be lost over time, and this loss of the more succulent species, attractive to browsing mammals, might explain the relative paucity of aspen in Scotland, yet its widespread survival in the inaccessible refugia.

Oak, pine and alder, on the other hand, can live to a great old age and so end up dominating today's wood pastures. If anything, alder is the greatest tree survivor in the landscape – many veteran alder trees survive in slope alder wood pastures from the Borders to the far north.

Birch, rowan, willows, and also pine and alder, survive through their ability to regenerate easily, and so these pioneer species keep ticking over and renewing themselves. Hazel and juniper are somewhere in between. Hazel can survive far more intense grazing than ash and elm, yet if pushed too far will also succumb. Hazel can also survive into extreme old age as the gnarled veterans in Glen Finglas and elsewhere show. Hawthorn on the other hand is about the only British species able to withstand, and even be able to regenerate under, extreme sheep browsing levels. This allows hawthorn scrub to develop despite grazing, and in some locations it can develop into a characteristic hawthorn savannah.

Wood pastures within landscape ecology

To recap, we have woodland refugia surviving in the upland landscape often in inaccessible places, but often wood pastures survive alongside those refugia. This is a subject where some detailed landscape ecology work needs to go hand in hand with historical studies to help explain why there is this pattern of woodland types today. Why have the wood pasture areas survived, especially when they are accessible to stock? It seems likely that throughout historic times they were either:

- managed high forests
- managed coppices
- managed wood pasture

or a mixture of any of these. Either way, traditional practices were sustainable enough to protect these woods from complete loss before say 1800. After that date, some then survived two hundred years of intense sheep grazing to give us today's open wood pastures with veteran trees and simple species composition.

Field Evidence

As I showed at the beginning of the talk, some woods have a historic and open character that would qualify them for entry into an inventory of wood pasture, while others are seen as just grazed woodlands.

Therefore it is important that surveyors, managers and owners are given guidance as to the evidence that helps decide whether we are looking at a historic wood pasture or not. Evidence can be in five main forms:

- **Documentary** evidence of continuity, e.g. as a royal forest
- **Cartographic** evidence of continuity and structure eg pasture woodlands shown distinctively on the 1st edition OS maps (*but not all wood pastures are shown on modern 1:10000 maps*)
- **Vegetation** and wildlife surveys which identify certain plant species (or lichens, fungi or invertebrates) which indicate a long history as open wood pasture
- **Woodland archaeology** field evidence, ie old settlements, dykes, shielings
- **Veteran trees** themselves and their growth features which take us back to pre-improvement traditions

As an example of the last topic, which is my speciality in these five areas of evidence, let us look at a range of examples of the low birch pollard, comparing the typical shape they develop over a range of sites from

Finland, to the Lake District, to Assynt. Typically these trees were cut for leaf fodder for winter feeding of livestock. The practice is well written up for Norway (Austad, 1989). I will be writing an illustrated guide to these historic field evidence features, which can be added to in years to come, and which will I hope be useful in helping us learn more about the ancient wood pastures of Scotland.

Reference:

Austad, Ingvild, (1989), Tree Pollarding in Western Norway, pp 11-29, in *The Cultural Landscape- Past, Present and Future*, ed HH Birks et al, CUP, Cambridge.

WOOD PASTURE IN THE FAR NORTH - THE EVIDENCE FROM ASSYNT

ROBIN NOBLE

(Please note that this will be very much the "account of the talk", and, missing the slides which are the core of the talk, may well communicate less than it should!).

- 1) This talk derives from a study of the Assynt Woodland, carried out for, and sponsored by, the Assynt Crofters' Trust, funded by the Millenium Forest for Scotland Trust, Caithness and Sutherland Enterprise and Leader II, to whom many thanks are due.
- 2) Assynt is better known for mountain scenery than for woodland, but on the coast there are significant areas of trees, which most people, in passing, would describe simply as "birch scrub". If you go into these woods, you might initially be forgiven for falling into the trap of describing them as "natural", (or even "semi-natural"?); there are jungles of trees, dead wood all over the place, old trees falling around, and wonderful mosses and lichens.
- 3) These woods are, however, always quite close to habitation, and common-sense suggests they were always utilised, so the number of trees with signs of recent sawing should come as no surprise. There are, too, older, more substantial coppices and pollards of most species, including birch, willow (hybrids?), an enormous goat willow, and a number of good oaks which make it clear that such woodland utilisation can be seen to go back at least five hundred years.
- 4) I became interested in the various shapes assumed by the many hazels; there are some of the ordinary, "basket of twigs" style, some which look very like coppices (one has enough space in the centre for at least four people to meet), and quite a number, often in groups, of single stemmed trees. We have had some discussions about these; it was suggested that they might be the result of heavy grazing, but they could equally be the result of utilisation, and the presence of the coppices, and some "triple-topped" stems (for which Peter Quelch sees parallels in Glen Finglas), suggests to me that management may well be the cause for this style of growth.
- 5) Looking at the woods, there are plenty of clues that areas of them have always been utilised for "non-wood" purposes; a somewhat canalised burn, a very substantial clearance cairn, and the ridges of "lazybeds" indicate some of the sheilings which John Home mapped in his 1775 Survey of Assynt. He stated that while some were in grass, others grew crops, such as barley. Between these areas of cultivation Home described trees growing on the "rocky baulks", where trees still grow. In the wooded areas around these areas of cultivation, a number of the bigger birches have a distinctive shape: Peter has suggested they may be fodder-pollards, but in any case, they have a very different shape, (and therefore, history), from the younger trees which grow around them and, often, *on* the old sheilings.
- 6) That, I hope, gives an idea of how things looked in 1775. The woodland sheilings (which are really detached portions of the in-field), are often not completely surrounded by walls (but there may have been wooden fences?), and I am inclined to think that we underestimate the very real importance of the herding of stock, and, in particular, the utilisation of upland grazings in the summer, which is what we normally think of when we talk of sheilings. I think that the inevitable impact of grazing of domestic animals within the woods would, in the winter, have been limited by herding, and in the summer, lifted altogether by the movement up onto the open hill.
- 7) The account of what has happened to these places since the Clearances of about 1812 is interesting and not perhaps what might have been expected. Many areas of former cultivation, like the sheilings previously referred to, and substantial areas of in-field, have slowly disappeared under woodland, in perhaps two or three phases. The oaks, wych elms, hazels, even to a lesser extent the rowans, have not played much part in that movement; the first phase at least seems to have been almost solely

birch. I do not have a simple explanation of this regeneration, although the early flocks of sheep may also have been strictly herded (something of this management survived at least until the early 1960s when I saw it for myself). There were, however, areas of loss; woodland disappeared from some of the remotest and most exposed locations (NOT from the places closest to settlement!) and I can only believe that a climatic factor was involved in this. It is notable that Home refers to woods with ash and *oakfacing north*, where you would not now find these trees. Reading the 1775 Survey, I get, consistently, the impression of a landscape that was at least drier, and probably somewhat warmer, than it is now.

- 8) I am clear that there has also been a phase of strong regeneration since about 1950. I *can* tell you about some of the factors which may have been involved; horses, which are very heavy grazers, were generally put off the land in the early 50s, when the tractors began to appear, and "the electric" arrived in about 1952, which reduced significantly the amount of wood that was cut for fuel. (But there may have been other causes). I can also tell you the presence or lack of sheep really does not actually seem to have mattered much, and that the waves of regeneration which have swept through the coastal crofts (where the sheep actually were by this time), can be quite clearly seen today. Most of this is birch, and there is a perceptible movement to the *east* (which seems to make complete sense in an area where the prevailing winds are from the west).
- 9) But one other species has equally regenerated very well since 1950, and I really am not quite sure why. *Aspen* has come shooting up precisely in the coastal crofts where roe deer and sheep have been grazing, and in some places it has achieved quite a remarkable presence. *There is certainly a lot more to the Assynt woods than "birch scrub "and I hope I have given you a little bit of their fascinating history in this talk.*
- 10) The full report, on which this talk has been based, will be appearing shortly.

ENGLISH WOOD-PASTURE: WHERE HAS IT COME FROM AND WHERE IS IT GOING?

KEITH KIRBY

Introduction

Wood-pastures of various sorts are of major nature conservation importance in many parts of England. Origins are reviewed briefly, including consideration of how they relate to the former 'wildwood'; how they evolved during the medieval period, and their decline (for the most part) during the nineteenth and twentieth centuries. Our appreciation of their significance for biodiversity has increased dramatically over the last decade and this is reflected in them being identified as one of the priority habitats under the UK Biodiversity Action Programme. Examples are given of what is being done in England to deliver the actions and targets within the Wood-pasture and Parkland Habitat Action Plan.

Origins

Until recently the conventional view was that the former natural woodland that covered much of Britain was predominantly closed-canopy high forest. There is developing a school of thought that suggests that open parkland or savanna may be a better model, because of the influence of large herbivores such as auroch and bison (Vera 2000). Undoubtedly open areas did exist but I believe that these would have been within a predominantly forested landscape. Old trees would have been common; not necessarily just the sort of squat open grown type of specimen that we are familiar with now, but also tall forest-grown individuals such as have been found in bogs and old buildings. The flora and fauna that we associate with wood-pastures may have been dispersed among a number of different types of situations: assemblages and communities as we see them today did not necessarily evolve together.

As humans and their populations (and those of their grazing animals) spread, so there developed what we recognise as wood-pasture systems. By the early medieval period these were sufficiently well-developed to have accepted customs and laws attached to them. In England three distinct types are generally recognised: parks, commons, and royal hunting Forests, with a less well-defined fourth category of scattered trees in farmland.

The parks tended to be relatively open with scattered trees, though compartmentalised parks also occurred. The commons and royal Forests were more likely to contain some areas of closed canopy woodland, albeit this was grazed. Deer were less common as grazing animals on commons compared to in Forests and parks.

What has happened to such areas, particularly during the nineteenth and twentieth centuries? Some have disappeared completely; a few survive more-or-less in forms that would be recognisable to medieval eyes; many have been transformed in various ways, but retain at least some of their distinctive characteristics and associated flora and fauna.

Many parks were landscaped and altered through amenity planting. Old trees might be kept as attractive "primeval" features, but they have often been removed as unattractive, untidy eyesores. The ground between might have been previously unimproved grassland or heath has often been ploughed or reseeded. Parks might also be neglected and allowed to scrub-up, or they might be deliberately planted. The combination of open space and old trees, one of the characteristics of many wood-pastures is then lost.

Former royal Forests and commons that have survived have perhaps more often gone towards increased tree cover over the last century as deer numbers went down in the nineteenth century and rough grazing by stock became less economic in the twentieth century. As with parks, the open ground might be improved (in agricultural terms) or be planted up.

Because of the different degrees of modification that have happened to wood-pastures as well as their variety of origins it is not possible to say how much is left in England. However it is extensive. Yet until about 10-15 years ago it was hardly recognised as important even in much of the nature conservation movement.

Recognition and development of wood-pasture conservation

The Nature Conservation Review in 1977 (Ratcliffe 1977) did list some parkland; wood-pasture was described by Oliver Rackham (1976, 1980) and listed as one of the forms in which ancient woodland survived by Peterken (1977). Major surveys of what were then called sites for mature timber habitat were carried out for the Nature Conservancy Council by Francis Rose and Paul Harding, and led to their landmark 1986 book. However, for much of the 1980s relatively little interest was paid to them; the emphasis was much more on the young growth species and coppices. In the late 80s however there were signs of a revival: Peter Mitchell (1989) proposed the term 'veteran' for old stands and did a brief review of re-pollarding. Ted Green at Windsor Great Park and the staff at Burnham Beeches started promoting awareness of how veteran trees might be managed.

The breakthrough was the 1991 meeting at Burnham Beeches and the proceedings from that. Since then there have been other conferences, such as the British Ecological Society's one at Dunham Massey, the growth of the Ancient Tree Forum and English Nature's Veteran Tree Initiative.

Interestingly there appears to have been something of a parallel increase this last decade in interest in, and recognition of, wood-pastures and veteran trees on the continent.

So where is wood-pasture conservation going in England?

Examples of work in England are considered under three broad headings: survey and recording, site management, and tree management. We also need programmes of publicity and awareness.

There are many well-known sites, but equally many that have not been identified as wood-pastures. Others have been identified as wood-pastures but have not been surveyed in detail for their biological and historical interest. We need to improve our understanding of the ecological requirements of the different sets of species particularly associated with veteran trees.

Four different projects illustrate how we are tackling these survey issues.

- A national (UK) data-base is being developed, to be linked to the National Biodiversity Network, that will enable someone to find out what is known (and where the data are held) about different sites.
- The Staffordshire Wildlife Trust have put together their experience of running a county-wide wood-pasture survey and the report from this will be available early in the new year..
- CABI have been contracted to examine the requirements of a suite of saproxylic invertebrates.
- A PhD student is looking at ways of sampling saproxylic invertebrates and likely effects of within and between site habitat fragmentation.

As far as site management is concerned notable projects include the following:

- clearance of plantations from around veteran trees at Castle Hill (North Yorkshire) (Forest Enterprise);
- restoration of grazing being considered or underway at Felbrigg Hall (Norfolk), Ebernoe Common (Sussex), Savernake Forest (National Trust, Sussex Wildlife Trust, Forest Enterprise respectively);
- use of Countryside Stewardship to fund restoration and expansion work at various sites across the country including at Moccas Park (English Nature plus landowner).

Tree management work includes ongoing programmes of pollard restoration and creation at Burnham Beeches and Epping Forest (Corporation of London), Hainault (Woodland Trust) and holly pollarding in the New Forest (Forest Enterprise).

As far as publicity and publications are concerned, the publications from the Veteran Trees Initiative have been well received and the Ancient Tree Forum have been carrying on with the sort of workshop days that were started under the VTI. There needs, however, to be further thought given to how we get messages about wood-pasture out beyond those already interested.

The Habitat Action Plan - July 2000 review of progress

A meeting to review progress on the UK Wood-pasture and parkland habitat action plan was held on July 7th this year. The notes from this will be available shortly as English Nature Research Report 396 *Wood-pasture and parkland habitat action plan: progress report 2000*, from English Nature's Enquiry Service (telephone 01733 455101) email enquiries@english-nature.org.uk).

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GRAZING AND WOOD PASTURE IN HIGHLAND SCOTLAND

FIONA WATSON

The highlands of Scotland have, comparatively speaking, the largest and most numerous remnants of semi-natural forests (this would seem to have been the case at least since the middle ages), and a long-standing tradition of animal husbandry, especially black cattle. And yet, there is a complete silence in the sources regarding wood pasture (I would have to add that this silence, with regard to the highlands refers, so far as I know, only to sources in English).

There are a number of potential reasons for this silence. It may be (and this is so often the case when dealing with the highlands) that long-standing practices were just so mundane as to not warrant a mention in a culture which tended to preserve traditional rights orally. This part of the country was never really 'feudalised', ie. placed within the legal mould of Norman culture and terminology (the nobility often were, but not the tenantry). This contrasts with the lowlands of Scotland, which underwent a more profound redefinition of legal rights from the 11th century onwards. Thus we do find potential references to wood pasture, though they are still thin on the ground – the Latin word *nemore* may well be the correct term for the practice and we know that grazing was allowed in the Torwood and other places around Stirling.

It is, to be honest, almost beyond belief that grazing wasn't a regular occurrence in the highlands, not least because of the need to protect animals from the elements. However, most of our insight into grazing practices from the historical evidence is derived from controversy concerning animals in the forests. This was not by any means a result of a concern for the well-being of the trees, but rather, as ever, because of the need to preserve deer stocks. This is particularly true of the 16th and 17th centuries.

However, by the 18th century, there was far less emphasis on the preservation of forests for the hunting of deer (not least because the time when the Stewart kings of Scotland indulged passionately in this pastime was long gone). Now there was the beginning of a new concern for the property rights of landowners, according to written record and the adjudication of the courts, which might have just as much of an effect on those tenants wishing to continue ancient pasturing practices. I will consider this general picture before tackling two case studies: the Forests of Mamlorne and Corichiba, looked after by the earl of Breadalbane, and the Forest of Glenfinglas.

Grazing

From the later 17th century we find evidence from many parts of the north of the country indicating, firstly, that shielings (traditional low-grade Scottish dwellings associated with the summer pasture of animals) were a common enough phenomenon in the vicinity of forests and, secondly, that this was seen as detrimental to the state of the deer in particular, and also the trees which were part and parcel of the hunting experience. What is not 100% clear is the extent to which this was a new (or renewed) interest in the state of what are sometimes royal forests (ostensibly managed by a nobleman) and private concerns.

In October 1668, for example, Patrick Stuart of Kincardine granted the forest of Glenmore and its sheilings to McIntosh of Coonadge. Now, it may be that we should revise our definition of sheilings to just mean a hut, or else we must conclude that such a grant implies a common enough phenomenon of wood pasture.

However, ten years previously the inhabitants in the barony of Glenisla, belonging to the earl of Airlie, were explicitly prohibited from, among other things, pasturing their cattle in the forests of the area. This is despite the fact that each individual forest is also explicitly described as a pasturage. This would seem to be a break with tradition, though unfortunately I don't have the evidence to conclude how successful he was. Examples from elsewhere suggest that it took a considerable amount of time, and sanctions, to break such habits.

This can also be contrasted with a grant of 1686, where Chisholm of Knockfin granted Duncan MacKenneth and his tenants 'to the right of the burn' the right to pasture their cattle in 'the whole woods of Cromer' between 1 November and 5 May (ie. outwith the growing season). The owner himself then put his yield ewes in to graze between 1 May and 8 September. One can only hope that they had reckoned correctly on the impact of these admittedly much smaller sheep than today on the growing potential of the woods. However, this certainly makes clear that grazing was one of the main functions of the woods of Cromer. Of course, it is not described as a forest, implying that deer were not the primary *raison-d'être* of the trees.

A year later, the forest of Corriba in Glenorchy (Gaelic for corrie of the cattle), looked after by the earl of Breadalbane, was the subject of a firm edict demanding that the forester fulfil the obligations of his job properly. This included using the sheilings on the edge of the forest to police it in the interests of the protection of deer. Again, however, this implies that grazing by the local population may well have been entirely standard practice.

As we move into the 18th century, some landlords are becoming increasingly aware of, and certainly upset by, the effects of large numbers of animals, usually cattle, being fed up in their woods. Breadalbane reacted with typical outrage in the early 18th century when he initiated a survey of his woods in Glenorchy. As a result, he found out that 'the whole grass of the forest is eaten by all the country', implying that he was only now finding out that his tenantry were making good use of this resource. His reaction doesn't necessarily make much sense to us, but perhaps reflects the particular economic priorities of this particular time and this particular part of Scotland. He ordered that the drovers (ie. those who moved the cattle around, particularly to market) be given the tack of the forest because they 'will keep the others out'. He also ordered all the beasts in the forest to be seized. Now, it is not at all clear why Breadalbane should actively encourage the drovers to take over the forest, unless they were his own men who would be taking Breadalbane's beasts to market. But the rest of the tenantry would now have to find somewhere else to pasture their cattle. At the same time, the earl noted that the wood of Barrs (Glenetive) should be immediately fenced, as it had been in his father's day 'so that it be not eat'. This clearly indicates that inclosure to protect particular woods was not a new phenomenon on the Breadalbane estates at least in the early 18th century. Unfortunately references to inclosure rarely mention grazing and so it is not possible to conclude from them that animals were explicitly being excluded.

Elsewhere, such as Braemar, the earl of Mar was also complaining about summer grazing. Here the interests of the trees may well be being given some priority – he's not necessarily against grazing per se, but knows fine well the effects of hungry mouths on young trees in particular in the growing season. However, Mar showed himself increasingly determined to ensure his own rights in the woods over the following decades, trying to bring some kind of order to the pinewoods of Mar, and the sheilings within them, as well as using the force of law to favour his own needs when tacks came up for renewal where servitudes on surplus grass in parts of the forest of Mar favoured vassals.

However, a telling statement from 1808, on the Breadalbane estates, notes that cattle had been found in a wood enclosure admittedly 'herded where there is no wood growing'. We should always remember that edicts on the part of the landowners is one thing. Action on the part of the tenants, who often faced a far more basic economic necessity, was quite another.

Control

The mechanisms of control which certainly existed through heritable jurisdictions up until the aftermath of the 1745-6 Jacobite rebellion afforded a much greater degree of control on the part of Scottish nobles than their English counterparts. However, as already mentioned, an edict is not the same thing as a change of behaviour. Nevertheless, looking at the attempts to exert control on behalf of a particular management policy can help us to identify what the current situation might have been. Unfortunately, letters of free forestry, granted for the prosecution of the non-specific crime of 'destroying woods' (we have examples of these from the 16th century), are not much help in identifying the extent to which wood pasture formed part of these activities. They could, of course, merely refer to those who cut timber.

However, as already seen, by the late 17th century and certainly into the 18th century, things are becoming a little more explicit. Or, most likely, given that we have to wait till now to get any references, grazing is only now seen as a problem. This may be associated with an increasing sense of possessiveness about property of all kinds. However, it is probably more likely that the black cattle trade, which was so much a part of the expansion of both the Scottish, and particularly the highland, economy in the 17th century, was now obviously having an effect on another resource: trees. In 1708 John Stewart, presumably an officer of Thomas Stewart of Kinnaird, noted the customs which the latter's tenants were used to, including the 'damage to young wood sustained by the bestial'.

However, these are the only references in my database to the problems caused by animals in the forests; by far the greater concern was with tenants actually cutting timber. Yet again, we should note that this does not necessarily reflect the seriousness of the 'crimes' with regard to trees – economic considerations, especially the lucrateness of the black cattle market in these years, as well as perhaps an understanding of the difficulties that tenants would face in switching to another activity, were most likely to play a key role.

Tacks

Tacks – the leases granted by the landlord to his tenants – usually indicate the rights and responsibilities of both sides in this arrangement. Up until the 17th century, there is no reference to grazing (though this by no means implies that it wasn't happening). In 1612, however, a tack relating to the forest of Mamlorne mentions pasturage, and other evidence relating to that forest indicate that this would appear to be pasturage in the forest, rather than elsewhere. Bear this tack in mind when we come to look at the forest more specifically. However, this is the only tack referring specifically to pasturage for the rest of the century. In 1708 tenants in Glen Fyne and Glenaray were warned not to allow goats to pasture in the woods there, but that does imply that it was perfectly okay to let other, less destructive, animals graze there at will. Apart from one other example, which we'll come to in a minute, the rest of the tacks don't mention grazing. However, we should recognise in principle at least that increased references to inclosure might effectively imply the exclusion of animals. Unfortunately, the evidence as it stands at the moment does not allow us to draw any conclusions.

The Forest of Mamlorne

By the later 16th century (and quite possibly earlier), the Campbells of Glenorchy (later of Breadalbane) were keepers of the royal forest of Mamlorne (among others). In July 1596 Sir Duncan Campbell of Glenorchy decided to take action against 'certain individuals who each summer go into the forest, build shielings and stay there most of the summer'. Their crimes were two-fold: the destruction of growing trees, and the killing of lots of deer. Unfortunately this does not make clear whether it was the cattle or the occupants of the shielings, or both, who were responsible for the destruction of the trees. The remedy was the same: the shielings were to be destroyed.

To be honest, the evidence suggests that it was uncontrolled entry into the Forest that caused Glenorchy difficulty. As we have already seen, in 1612 he was quite prepared to allow a tack of part of the forest with grazing to a tenant, so long as the latter was diligent in preserving it, or more particularly the deer, from damage.

However, taking action against what was established practice (albeit not one we know the full history of) was clearly an uphill battle. In 1623 Glenorchy ordered a fold to be built to put confiscated animals in. The forester was to impound cattle (worth 40s.), mares and horses (worth much more at 5 merks) found in Mamlorne and extract the fines. Not an enviable task!

Seven years later, he had clearly recognised that it was the activities of the inhabitants of neighbouring lands that were causing the problem. However, it would also appear that there was a legal justification for pasturing in the forest and, as a result, Glenorchy petitioned the royal Exchequer to have these lands resigned 'without the pasturage or intromission of the Forest of Mamlorne'.

References to Mamlorne die out for the rest of the 17th century. However, it would be quite wrong to presume that this was because the situation, from Glenorchy's point of view, had been sorted out

satisfactorily, possibly because the black cattle trade continued to be lucrative. A century later, around 1738, it was reckoned that there were 1200 beasts, both large and small, in the forest. But what worried Breadalbane, as he now was, was the fact that so little rent was being paid for the privilege of grazing, clearly suggesting that his predecessors hadn't won the debate in the Exchequer (or, more likely, on the land). The solution was an interesting one: that a couple of good sturdy hinds should be kept 'to be going daily through the beasts to frighten them'. All those confiscated were to be killed.

May 1738 saw a further series of initiatives taken to get to grips with the situation in Mamlorne, which was clearly viewed by Breadalbane at least as quite out of control. An investigation of the cattle belonging to a neighbouring laird, Kenknock, was ordered and 26 men were sent to check the bounds of the forest. Six herdsmen were employed soon after to protect the forest, though they were ordered not to use violence, presumably a tacit admission of the likelihood of resistance. The next day (25 May) Breadalbane noted that things were hotting up, fearing that cattle would now be deliberately driven into the forest. He said that he couldn't believe that would happen, but reiterated his duty, as the king's heritable keeper, to maintain the bounds of the forest. We should not, of course, take this at face value, though it's not at all clear exactly what's going on (the problem of just studying woodland history). It is certainly tempting to conclude that this earl of Breadalbane, who had only recently begun to allow the large-scale commercial exploitation of his own timber, was unlikely to be motivated only by concerns about his royal master, who was certainly not going to arrive unexpectedly to go hunting.

Meanwhile the fight over the forest was definitely taking a turn for the worse. Between the end of May and 10 August 1738, 10 men were employed to keep the forest. Some of the local tenantry were also paid for helping the forester and the herds in turning out Angus Macdonald's cattle and Glenlyon cattle. That was the end of the hyperactivity in 1738, but, yet again, it's clear that it didn't necessarily work. In 1744 an inspection was ordered of the tenants' cattle and any over the numbers agreed were seized. That amounted to a mare and filly, plus 8 cattle.

But all this increased interference clearly was not going down well. In 1751 the Glenlyon people, who seem, from the evidence above, to have been particularly targeted, rioted in the forest, pulling down the forester's house as the symbol of this new form of management. Breadalbane clearly invested a lot in this important office: in 1768 the forester was paid £40 per annum, an impressive sum by the day's standards, and £2 was also paid to an under-forester.

The evidence from Mamlorne indicates clearly that the grazing of cattle and horses was permitted, but was supposed to be carefully regulated. It would also appear that Breadalbane's attempt at regulation from the 18th century met with strong resistance, presumably because he was, with legal backing or not, interfering with long-standing practice. The issue, as is so often the case with woodland history, was not so much about the complete denial of the rights of tenants to access, but the question of regulation and control. But this is not the whole story either, because landowners like Breadalbane tended to get steamed up about their control, or perceived lack of it, because of a complex mix of concern about the whole issue of their rights and the enforcement of it, and the changing economic world in the highlands.

Glenfinglas

It could be argued, with some justification, that one particular example of one forest under the control of one particular landowner, is far too limited a sample to make any generalised statement. However, many of the issues raised in Mamlorne can also be seen in Glenfinglas, another royal forest. By the 17th century, control of Glenfinglas passed to the earl of Moray, though technically, as with Mamlorne, it still belonged to the crown. As a royal forest, its primary *raison-d'être* was, of course, to maintain deer. But after 1603 the likelihood of a royal hunting trip became far less likely.

In 1673 the documentary evidence indicates that the Glenfinglas estate was divided into quarters. The leases for each quarter included the right to pasture horses (5 or more 6 horses or mares were specified) within the

forest itself (the tenants actually lived outwith the bounds of the forest). At the beginning of the 18th century, another new management regime (probably a new manager based at nearby Doune, since the earl himself lived at Darnaway in the north-east) prompted a similar kind of flurry of activity as Breadalbane

initiated at Mamlorne. The main focus was, of course, the state of the deer and the current state of oversight (the two foresters who were one of the 4 tenants) was supposedly to blame and they were suspended. As a result of the subsequent inquiries, it was noted that one of the foresters had received payment from a widow on a neighbouring estate (Glenbuckie) 'as a reward for the grassing of beasts in the Forest and for getting timber out of it', a privilege which, presumably, was extended to others. However, while this activity was certainly not strictly by the book, so far as the earl was concerned, the payment indicates a degree of control. Even if the profits went straight into the forester's pocket, it cannot be said that the local inhabitants were allowed to graze their animals in the forest at will.

The above evidence does not, unfortunately, tell us anything about what kind of animals were being grazed. However, other evidence indicates that, in compliance with the leases, horses were the only type of animal actually allowed in the forest itself. In 1666, for example, two of the tenants were most upset that their horse and six mares had been stolen by some reprobates from Lochaber. In 1743 the situation as mentioned in the leases of 1673 was still apparently the case: 5-6 horses were permitted to be grazed in the forest, which comprised the two valleys, Glen Finglas itself, and Gleann nam Meann for which they paid, in total, £200 Scots (£16 13s 4d.). However, in 1716, an inventory taken of one of the tenant's possessions after his death indicates that he was pasturing no less than 22 mares, with their followers, in the forest. So part of the lease was being adhered to, but not all, despite the supposed clean sweep that took place in the early 1700s.

Conclusions

The evidence, as it stands so far, should lead us to examine royal hunting forests rather more carefully. Their distinct advantage lies in the fact that, as a result of this status, they could not be turned into arable (an unlikely eventuality given where many of them were situated anyway, but possibly important). Though the deer were the main concern right into at least the 18th century, the management regimes initiated for their protection could also be interpreted as helping the trees up to a point – fewer hungry mouths at least. But it should also be pointed out that it's not as simple as that. It would be untrue to suggest that tenants themselves exerted no control over the grazing that they practised within the forests; on the other hand, they certainly did not adhere to the regulations apparently laid down.

The evidence so far (a reasonable amount, but certainly nowhere near the whole story), suggests that the grazing of animals – especially cattle and horses – was a common occurrence in highland Scotland. It is also clear that attempts were made both to exert more effective control and to redefine what that control should be in the 18th century particularly. This corresponds to similar changes in landlord/tenant relations in other areas of estate management.

However, we need to know more. In particular, we don't really know much at all about the crucial period over the last few centuries when the larger sheep were introduced to the Scottish hillsides. However, we do know enough to indicate that wood pasture is most definitely a part of our history.

PARKLAND AND PLANTING ON LANDSCAPED ESTATES

CHRISTOPHER DINGWALL

Introduction

I think it's probably apparent to anyone who has contributed to the discussion of 'wood pasture' in Scotland so far, that there is still a good deal of debate about the precise definition of descriptive terms such as 'lowland wood pasture' and 'park', and about where one draws the boundaries between these and other similar land use types - 'lowland woodland' and 'ornamental parkland', for example. As a garden historian, I am conscious that I am in something of a minority here, in a room full of ecologists and foresters, who are probably inclined to think that gardens and designed landscapes are somewhat marginal to today's discussions.

However, I should like to take this opportunity to put in a strong word for what I am tempted to call 'domesticated wood pasture' as an important component of many of the landscaped estates which are to be found scattered across the length and breadth of the lowlands and around the glens of Scotland. I intend to do three things in the time which has been allotted to me - firstly to consider some of the early historical evidence which we have for the extent and character of wood pasture and parkland associated with country houses and designed landscapes in Scotland; secondly to look briefly at the history of woodland and planting in one particular area in rather more detail, to illustrate my point; and finally to conclude by considering how this old type of land use was reflected in the style of parkland planting which characterised so many 18th and 19th century designed landscapes, both north and south of the Border.

Historical Evidence

I would suggest that there can be no doubting the existence of a considerable extent of what I am calling 'domesticated wood pasture' in late medieval Scotland - whether in royal hunting parks, on abbey lands or within private demesnes. Evidence for its existence comes from a variety of sources. We can usefully draw, for example, on the mass of material assembled by John Gilbert in his study of **Hunting and Hunting Reserves in Medieval Scotland**. Gilbert describes in some detail the regulations governing pasturage within both royal and non-royal hunting forests, to do with such things as the cutting of different types of wood, the number and type of animals which could be grazed in them, and the periods during which grazing stock was to be excluded.

In another quite separate example, reference is made in the **Register of Cupar (Angus) Abbey** to pasturage in what are described as the '*open woods of Campsie*', which are distinguished both from enclosed woods and from what are referred to elsewhere as 'parks'. A third example is to be found in an anonymous 17th century description of Berwickshire published in **Macfarlane's Geographical Collections**, which refers to Eggerhope in Lauderdale where the Duke of Lauderdale was reported to have created a '*large park ... for the haining of some appearing oaks, which were growing upon several little hills like juniper bushes, and now six years space, since they were guarded from beasts, are risen to the height of forkshafts and oxgoads*'. This same account talks of the '*gentlemen's houses at Burncastle and Park of the Mains of Lauder where there is a considerable bush of wood with planting upon Lambing Edge on the west side*'.

[THE LATTER PART OF THE TALK WAS ILLUSTRATED WITH SLIDES]

Amongst the most important primary sources for any student of the Scottish landscape in the late medieval period is the remarkable collection of surviving manuscript maps by the Scots surveyor and chorographer Timothy Pont, dating from the last decade of the 16th century. Although there is only partial coverage of Scotland, his surviving maps of a large part of the Central Valley can give us a fairly clear picture of the lowland landscape at this time. The area between Falkirk and Cumbernauld is probably fairly typical of

late medieval Scotland, containing as it does three substantial wooded parks at Callendar near Falkirk, at Torwood near Denny, and at Cumbernauld. It is interesting to see that, in naming the features of the estate of Cumbernauld, Pont is careful to distinguish between 'wood' and 'park', though both appear to be shown as wooded. This impression of well-wooded hunting parks is seen elsewhere on Pont's maps, as in his depiction of the King's Park at Stirling overlooked by Stirling Castle - a landscape which is easy to recreate in one's mind as one looks at the view from the castle today (though the old paling fence has long gone, and the park has been shorn of its planting and turned into a municipal golf course!). It does not take much imagination for one to envisage it studded with ancient oaks similar to those which we are all familiar with from the parks at Dalkeith or Cadzow.

Among the very small number of contemporary images of hunting parks which we have is one of the royal palace, gardens and hunting park at Falkland Palace in Fife, painted by the Flemish artist Alexander Keirinx in about 1630, not long before its paling was torn down and the park deforested - reportedly by Oliver Cromwell's troops. To my knowledge, not one of the original trees survives today.

I would suggest that a study of the surviving Pont maps, together with those published in the mid-17th century in Johannes Blaeu's **Atlas Novus**, may give us an indication of where we ought to be concentrating our search for examples of older plantations, veteran trees and remnants of domesticated wood pasture. Blaeu's map of Lothian, dating from 1654 but based on Pont's original (now lost), contains some forty-five wooded estates of various shapes and sizes.

Strath Tay and Taymouth Castle

I should like to use Highland Perthshire more generally, and the landscape of Taymouth Castle in particular, to illustrate the difference between parkland planting and what might best be described as lowland-or-hill-pasture-with-trees. Timothy Pont's map of part of Strath Tay of c.1595 has survived, and includes images of both Castle Menzies (then referred to as Castle of Weem) and nearby Grandtully. It is interesting to note the considerable extent of woodland which is shown, both inside and outside the enclosures associated with these two properties. What we cannot know with any degree of certainty, however, is whether these two types of woodland were different in character, or to what extent they were of plantation, rather than natural, origin.

Of more use in gauging the nature and extent of the different land use types to be found in the area, albeit at a much later period, is the **Military Survey of Scotland** undertaken by soldiers under the command of General Roy in about 1746. There is a well-known sketch by Paul Sandby, depicting a survey party near Kinlochranoch in Strath Tummel. Tantalising fragments of woodland are glimpsed on the hill-slopes in the background. While Roy's maps are in no way comparable in their accuracy to the more modern Ordnance Survey, they are useful in drawing a distinction between plantation woods (usually coloured dark green), areas of enclosed parkland (usually coloured pale green, sometimes with tree symbols superimposed) and areas of natural and semi-natural woodland (indicated by a fairly random scatter of single trees). Of particular interest to today's proceedings, I would suggest, is the large extent of this third type of woodland on the south side of Strath Tay from the Braes of Taymouth eastwards, much of it intimately mixed with areas of pasture and arable on the lower slopes. It is also interesting to note that by 1746 the western part of this woodland was already enclosed within stone dykes on the Braes of Taymouth, perhaps an indication of the process of enclosure and agricultural improvement which had been begun in the 1720s by the Second Earl of Breadalbane, whom we know to have been a founder member of the Honourable Society of Improvers in the Knowledge of Agriculture in Scotland.

It would be nice to imagine that the single veteran tree on the left hand edge of the panoramic View of Taymouth c.1735 attributed to James Norie was an actual depiction of one of the old chestnuts '*of vast bulk and height*' described by the poet Thomas Gray in 1765 as standing close to the park gates - most likely a survivor from the first phase of planting at Taymouth which had begun at the hands of Sir Duncan Campbell, who had inherited the property from his father in 1583. I suspect, however, that it probably has more to do with the artistic conventions of the period, and the need to create a foreground in the picture and

a frame for the view. In this painting, we would probably do better to concentrate on the differences between the small patches of rather scrubby-looking woodland seen on parts of the valley floor and the surrounding hills, and the carefully tended grazing park, ornamented with single standard trees, which lies between the castle and Loch Tay.

Further and extensive planting and remodelling of the landscape around Taymouth Castle went on throughout much of the 18th century under the watchful eye of the third Earl of Breadalbane, the results of which are well seen in two panoramic views of the landscape painted by the artist John Sanger c.1765. In this view from the north, it is not difficult to distinguish between those trees which are a product of the process of plantation and enclosure and the less structured woodland to be seen on some of the surrounding hills.

A quite separate documentary source from this same period which can usefully be read alongside these mid-18th century views is the Survey of Lochtayside commissioned by the third Earl and drawn up by two land surveyors, John McArthur and John Farquharson, over a period of some ten months in 1769. John Farquharson gives the following account of Stroan Fearnan of which he remarks that '*the oak wood, seemingly would have been more extensive if well-kept. There is besides a great deal of hazel, alders [alders] etc., but as these seem not to be regarded as wood, I have included them in grass*' or of nearby Achlea where there were said to be '*a good number of fine old natural oaks thro' the grass, which he described as 'wearing out'. At Laggan he describes 'very fine grass through the woods, which consist of birch for the most part, and a few oaks and ashes, but as these are not bounded but scattered up and down, I am obliged to reckon them in with the grass'. I wonder, could he have been describing areas of former wood pasture then in decline ?*

By the end of the 18th century the remnants of the pre-improvement landscape had been largely superseded by, or absorbed into, a new landscape of enclosures, plantations and ornamental parkland, with the result that later views of the landscape around Loch Tay - of which there are a great many - probably have less and less to tell us about what may have been surviving fragments of wood pasture.

18th and 19th Century Parkland Planting

In drawing this brief presentation to a close, I should like to point to the 'naturalistic' style of landscaping which characterised the late 18th and early 19th centuries, when the surroundings of many country houses were carefully planted, supposedly in imitation of nature. Amongst the principal practitioners in this style in the late 18th century was Thomas White, whose plan for Cairness House in Aberdeenshire is typical of this style (echoing that of his one-time associate and employer Lancelot 'Capability' Brown in England), and who, together with his son, is known to have worked on upwards of seventy estates in Scotland. Taymouth, incidentally, (not one of White's landscapes) was roundly criticised by Dr. John Macculloch in the early 19th century for being planted too regularly - '*the base offering of a Capability man ... reduced by the clump and the cabbage line to the standard recipe for beauty*'. A better example of White's style of planting is the park at Blairquhan in Ayrshire where standard trees are carefully planted, apparently at random, in well-kept pasture, intended to be viewed and admired both in their own right and as a frame for longer views across the park towards the mansion house.

The landscape architect William Sawrey Gilpin sought to define and illustrate this style of landscaping in the early 19th century, in his book **Practical Hints upon Landscape Gardening**, in which he criticised the clumpy and artificial appearance of much contemporary landscaping, and sought to promote a more natural effect by varying the scale and intricacy of his planting - what William Marshall, another contemporary landscape designer, had characterised as '*nature touched by art, and rendered intelligible to human perception*', as opposed to '*neglected [i.e. uncultivated] nature*'. An illustration of parkland planting taken from Edward Kemp's book **How to Lay out a Garden** (first published in the 1850s) shows that it was the continuously changing, criss-crossing views, with glimpses and vistas across the park, towards and away from the mansion house, which were a key feature of this style of planting.

Other typical and more or less contemporary examples of the style were to be found on lowland estates such as Allanton, near Motherwell, laid out and planted by Sir Henry Steuart in the early 19th century, or at Blair Adam near Kinross, laid out by the grandson of the architect William Adam at about the same time.

Conclusion

I shall leave you with a final view of the mixed parkland planting in the Whim Park at Blair Castle, not far away from here, and a plea that, when you are studying the history of lowland wood pasture, you do not forget the aesthetic element in the planting which has been done in the demesnes which surround so many of Scotland's country houses. Management prescriptions for these landscapes should recognise this and - dare I suggest it in this such company ? - allow a place for the planting of ornamental exotics such as beech, sycamore and chestnut.

APPENDIX : SOME OBSERVATIONS ON PARKLAND PLANTING

from REMARKS ON FOREST SCENERY & OTHER WOODLAND VIEWS, Rev William Gilpin (1791)

PARK SCENERY ~ The park ... is one of the noblest appendages of a great house ... The beauty of park scenery is undoubtedly best displayed on a varied surface, where the ground swells and falls ; where hanging lawns, screened with wood, are connected with the valleys ; and where one part is continually playing in contrast with another ... Nature seldom passes abruptly from one mode of scenery to another, but generally connects different species of landscape by some third species which participates of both. Thus, as the house is connected with the country through the medium of the park, the park should partake of the neatness of the one, and of the wildness of the other ... As the garden or pleasure ground approaches nearer to the house than the park, it takes of course a higher polish. Here the lawns are shorn, instead of being grazed ; the roughness of the road is changed into the elegant gravel walk ; and knots of flowers and flowering shrubs are introduced, yet blending with clumps of forest trees, which connect it with the park.

from **PLANTING AND RURAL ORNAMENT**, William Marshall (1796)

PRINCIPLES ~ Before we proceed further, it may be necessary to explain what it is we mean by 'nature' and 'natural'. If, in the idea of 'natural state' we include 'ground', 'water' and 'wood', no spot in this island can be said to be in a 'state of nature' ... Wherever cultivation has set its foot - wherever the plow and spade have laid fallow the soil - Nature has become extinct.; and it is in neglected or less cultivated places, in morasses and mountains, in forests and parochial wastes we are to seek for anything near a state of Nature ... The objects of our imitation are not to be sought for in uncultivated Nature ... Our idea of 'natural' is not confined to 'neglected' nature, but extends to cultivated nature, to nature touched by art, and rendered intelligible to human perception.

WOOD ~ In forming ornamental plantations, two things are to be considered - the species of plantation and the species of tree. The different species of plantation are the Wood, the Grove, the Coppice or Thicket, the Border or Skreen, the Mass Clump or Tuft, the Group and the Single Tree. Woods, groves and extensive thickets are more particularly adapted to the sides of hills and elevated situations, detached masses, groups and single trees to the lower grounds. A naked hill gives an idea of bleakness; as a valley filled with wood does that of dankness ... In the choice of trees, four things are observable - the height, the form, the colour and the use ... Immediately under the eye, the gaudy shrub and the ornamental though useless exotic may be admitted; but for more distant objects, and in less embellished situations the timber tree ought to prevail. We should endeavour to make such a choice as will gratify the present age, and benefit the future.

from **PRACTICAL HINTS UPON LANDSCAPE GARDENING**, William Sawrey Gilpin (1832)

TREES IN GROUPS ~ It may be sufficient for our purpose to class the composition of landscape under the two leading characters of cheerfulness and grandeur. With the former of these, the elegant and pendant

branches of the ash, or the light feathery extremities of the beech are in unison; while the close formal outline and deep toned foliage of the sycamore assimilate with the latter ... the solemnity of the sycamore may be relieved by the light playful birch, or the more masculine, yet elegant limbs of the Spanish chestnut

... In planting groups of trees, the number should not be the same in each group. A thorn or two, occasionally introduced, gives variety to the character ... With the view of imitating the accident of Nature, trees should not be set at equal distances. Two may be nearer and one considerably more remote... The character of the ground, the situation of some mass of wood, or some other local circumstance will frequently suggest occasions for variety in their disposal.

from **HOW TO LAY OUT A GARDEN**, Edward Kemp (1858)

THE PARK, FIELD OR Paddock ~ To form and plant a park effectively, requires almost greater care and attention than designing a garden; inasmuch as the trees used are of a grander character than the plants employed in the garden, and if placed improperly, become more offensive and obstructive ... It is principally of consequence to regard a park as a link between the dressed parts of a garden and the wilder and freer characteristics of nature. In its furniture, it ought to assimilate to the garden about the parts where they unite, and with the more general features of the country towards its outer edges ... Very dressy or very rare and exotic plants will be entirely out of character as specimens in a park. Ornamental trees that are not conspicuously peculiar may be admitted, though not liberally; and scarcely at all if they flower much.

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GRAZING IN WOODLANDS: A FORESTER'S PERSPECTIVE

ANDREW BARBOUR

Introduction

The perspective of the author comes from someone who has been involved in woodland management on a North Perthshire Estate which has been under his family's ownership since the 15th century. As well as managing this property (Bonskeid Estate) the author is the current woods manager for Atholl Estates. The main grazing animals that impact in this part of the world are deer and domestic stock, and so the main terms of reference relate to this type of grazing.

Coming from such a background, the traditional view of woodlands is that they split into two broad types: commercial woods in which there is no systematic grazing and semi-natural woodlands which form a part of the farm's unimproved rough pasture. Consideration is given separately to these two categories.

Commercial Woodlands

The traditional approach on private estates has been to fence any restock areas with dedicated fencing (deer, stock and possibly rabbit) and once the fence's useful life is past, no systematic attempt to control grazing is then made, the trees being considered safe from grazing damage. The result on many properties is that woods, following restocking, are heavily grazed by an uncontrolled deer population and, in certain circumstances, by marauding sheep stock. Although the prevention of a field layer of any significance being developed may present the timber in its best light to a timber merchant, there is a biodiversity cost to this approach which foresters are now having to pay more attention to. There can also be a significant cost through damage to older crops, particularly with norway spruce, as has happened on both Bonskeid and Atholl.

In many parts of the Highlands, this biodiversity consideration is forcing private foresters to grow their trees without the protection of internal forest fencing. Avoiding fence strike by woodland grouse is the main reason for this, but there can also be financial considerations which will promote this approach. The use of lower impact silvicultural systems with their associated small coupe size on a property like Bonskeid means that fencing these small areas becomes prohibitively expensive. Whatever the driving force behind it, foresters are now being encouraged to resort to grazing control by culling deer and excluding unwanted domestic stock rather than through the use of internal fencing.

As we get the numbers of deer down to levels at which regeneration of trees becomes possible without the use of fencing, it is very likely that certain areas of open ground within the forest will become undergrazed. This may matter where the open ground is serving a particular biodiversity need, although it may matter less where the open ground serves a landscape function. An example of this may be the needs of the pearl bordered fritillary on Bonskeid, or the Northern Damsselfly at Logierait Mires on Atholl. Even the areas of deer glades may lose their grazing value as bracken, coarse grasses or broom invades. This has happened on Atholl in the past. On Bonskeid, there will have to be broom cutting by hand where it is now invading an SWT listed site within a forest area, previously heavily grazed by deer but now unchecked due to the removal of the deer pressure.

Given these conflicting interests, it seems wise to consider the use of controlled grazing in certain commercial woodlands where there may be such a biodiversity interest. The use of grazing stock to manage vegetation gives obvious advantages over a dependence on wild animals, and so it could be sensible to plan the management of these areas with stock grazing in mind. However, foresters are not in the habit of including such grazing management in their forest design plans and they should maybe be considering the woodland structure around these areas of biodiversity interest with this in mind. To this end, a fragmented woodland structure lends itself to grazing control better than the use of the large continuously afforested areas we are all familiar with in production forests. Bonskeid has such a

fragmented woodland structure in its woodlands, although there is good interconnectivity between the blocks. This certainly helps the deer

control, and should lend itself to the management of domestic stock too. Some parts of the Bonskeid commercial woodlands were grazed by domestic stock until the 1970s when stock management and feeding practices changed. It is certainly the intention to re-graze those parts of this woodland area where there is a biodiversity need once consideration of the young tree stock allows it.

On any property, whether a fragmented woodland structure is financially viable will depend largely on the type of road network present. However, such a structure should carry a lower deer control cost, something that foresters in both the private and state sector are finding is quite high and where appropriate, may prevent, through enabling proper grazing control, the biodiversity loss we are all striving to avoid.

Semi-Natural Woodlands

Whereas in commercial type woodlands there may be a need to plan for controlled grazing in those woods that have clearly defined biodiversity interests, many of the semi-natural woodlands in North Perthshire would benefit from a controlled grazing management once their regeneration needs are met. These woodlands, usually dominated by birch, are likely to have botanical or other biological interest which will be maintained by a certain level and type of grazing. Although we are accustomed to look at these woodlands as predominantly over-grazed, there is also a danger in both biodiversity and landscape terms of undergrazing them following attempts at regeneration. Although grazing management within these woodlands should be contained within a management policy which treats the areas as woodland first and foremost, rather than farmland which happens to have trees on it, it is important that the woodland regeneration plans take account of grazing needs. Planning for controlled grazing within these woods is often ignored because the foresters or land managers have not thought past the initial regeneration activity in the woodland and the management of the surrounding pasture. In such woodlands, fenced off areas should be designed to be useful grazing management units rather than odd shapes or sizes simply designed for the woodland regeneration phase.

It is important to realise that the current approach commonly seen in upland semi-natural woodland where there is apparently uncontrolled grazing by domestic stock or deer does not necessarily mean that the owners, past and present, do not appreciate the value of these woods. The open woodland structure often seen in these grazed woodlands has long been appreciated on Bonskeid for its contribution to landscape – a type of savannah woodland landscape - and is reason enough to try and maintain the open nature of these woodlands in North Perthshire. The management difficulty lies in perpetuating this type of woodland structure.

Conclusions

Given that there is a case for controlled grazing within certain commercial and many semi-natural woodlands, as foresters or land managers we should be seeking to integrate grazing into our management plans for these woodlands. Domestic stock may give much better control of grazing, but the integration of woodland and agricultural policy is very poor and often the grants do not allow for the approach to grazing management outlined above. Brief examples of problems are as follows:

1. The FWPS rules state that grazing animals must be excluded from the regenerating woodland for a period of 15 years in the case of broadleaves. Where regeneration has been successful following the initial exclusion of grazing animals, there may be a case on biodiversity grounds to re-introduce controlled grazing well before that time limit expires. A good example is Dalginross in Glen Tilt, where herb rich grassland within the fenced woodland areas would benefit from grazing, given that regeneration of the birch has been very successful and even though only 5 years old is safe from light grazing by sheep. However, no grazing is allowed for another ten years by which time the herb rich grassland interest may be lost.

2. Although so important for landscape, the recreation of open woodland of the savannah type is not encouraged by the current WGS rules. In semi-natural woodland of this type such as is found in Glen Tilt on Atholl, the favoured approach to restock these woodlands as outlined by the UK Forest

Standard is by natural regeneration. The discretionary payments forming part of the WGS aimed at helping natural regeneration would normally contribute 50% of the fencing costs. This is reduced on a pro-rata rate once the open ground element in a scheme increases above 20%. As a target woodland cover in these open pasture woodlands may only be 30% to 50%, there is a very poor grant contribution towards their management. The result is a loss in landscape terms, as well as in biodiversity terms as the financial barriers to manage woodland on this basis becomes very high.

3. The move towards area payments in the HLCA away from headage payments has one main weakness in environmental terms. The calculation of available forage area will determine grant support levels, and will act to deter the temporary removal of stock from semi-natural woodland whilst regeneration activity in the woodland takes place. Bonskeid Estate with its small farm sizes will be penalised in this respect, whilst the bigger units with more forage area may feel this restriction less.

As a plea to policy makers, it is important that the positive role that domestic stock can make to woodland management is recognised. As foresters, it should be easier for us to plan the incorporation of controlled grazing into those areas where biodiversity and landscape issues form an important part of our management objectives. Whether woods that are then grazed in a controlled manner for such ends are known as wood pasture or something else can be discussed until the cows come home.....

Note: FWPS: Farm Woodland Premium Scheme, WGS: Woodland Grant Scheme, HLCA: Hill Livvcestock Compensatory Allowance

THE HILL SHEEP AND NATIVE WOODLAND PROJECT: RESULTS FROM THE FIRST YEAR.

**IAN HULBERT
TONY WATERHOUSE & CLAIRE MORGAN-DAVIES**

Introduction

Current systems of extensive sheep production cover approximately 40% of the land area of Scotland and are vital to the economic viability of rural areas. However, such systems of hill sheep production present harsh environments and challenges to animal welfare. The final product (lamb) has limited market potential, the economics are extremely fragile and such systems often have a detrimental impact on the environment. However, hill sheep systems are extremely important economically to many regions of Scotland and, in the LFA, sheep and cattle farms comprise the largest category of farm types (Scottish Office 1997). However, much of the income and infrastructural support for LFA farming communities depends on a range of agri-environmental measures as income from the market place is low. Agricultural employment is also declining. Hill farms are at risk of being downsized or of partial or complete abandonment due to low incomes, lack of alternative enterprises and the sensitivity of upland sheep farming to policy changes at national and European level.

Although it is now generally accepted that grazing systems in the uplands perform an important role in sustaining semi-natural habitats and landscapes (Milne et al 1998), there are still considerable pressures and constraints placed on animal production in upland Britain for nature conservation objectives. Indeed, both the current ESA (Environmentally Sensitive Areas) and SCPS (Scottish Countryside Premium Scheme) programmes includes measures to reduce the agricultural production potential in an attempt to achieve environmental benefits by crude reductions in sheep numbers. However, outwith these schemes, any uncompensated reduction in stocking rates (extensification) requires considerably greater reductions in labour inputs resulting in lower individual ewe productivity and poorer animal welfare (Waterhouse 1996, Ashworth et al 1995, 1997).

Large scale planting of exotic conifers or native woodland schemes are currently the only other commercially viable land use in the uplands of Scotland. However, agriculture and forestry are often perceived to be mutually exclusive land use enterprises. Farm stock, in particular hill sheep at high grazing pressures, can inhibit the establishment or regeneration of woodlands (Hester et al 1996) and every effort is made to exclude wild and domestic stock from commercial woodlands and current forestry incentives insist on stock exclusion (Forestry Authority 1997). There are, however, considerable penalties associated with the removal of sheep farming. Social and economic changes occur due to the changing nature and geographical location of employment and result in a considerable reduction in land based economic activity both upstream and downstream of the lost farm enterprise. Grazing is an essential component in the maintenance of many semi-natural grazed habitats and afforestation usually results in a decrease in the floral and faunal biodiversity. Landscape change will also be significant both in terms of the loss of wide-open spaces and the cultural mosaic of field boundaries, farm steadings and livestock. Major changes in the population of upland breeding sheep are also likely to have a significant impact upon the structure of the British sheep industry which relies upon the hills for much of its breeding stock.

Rural development and diversification opportunities outside agriculture are limited where sheep farming is a core activity. In the late 1990s, the challenge was to find a positive means of achieving change that fulfil social, economic and environmental goals. This paper describes the first two years of an approach that is currently being tested to integrate hill sheep farming and native woodland establishment on the same area of land.

Integration of hill farming with native woodlands.

At SAC's Hill and Mountain Research Centre at Kirkton and Auchtertyre, by Crianlarich, a research programme was developed to test and demonstrate an innovative system of sheep husbandry that was intimately integrated with the establishment of extensive and diverse native woodlands (Hulbert et al 1999).

The aim was to combine sheep production and woodland establishment within the same block of land and combine the benefits of both enterprises for the farmer and for the local economy. The proposed system aimed to encourage diversification within two land-based industries that could complement each other rather than diversify outwith agriculture altogether.

The aim of the project is to–

1. Maintain a broad based sheep industry and associated upstream and downstream links.
2. Improve the resource base of upland farms by investing in new (predominantly native) woodland without penalising the current system.

Project Design

At the Hill and Mountain Research Centre, the systems scale project utilises two adjoining catchments extending to 1600 hectares of hill land to test and demonstrate the approach at a full systems scale. Rather than working with small hectare plots, systems scale studies examine the relationships and interactions at the individual plant/herbivore level and follow those impacts through the flock/farm level up to the economic impact at the regional and national scale. One catchment (Auchtertyre Glen) provided a control with traditional sheep husbandry and no tree planting. Approximately 900 ewes are present in this glen all year round and are fed during winter using a combination of supplementary feedblocks and hay. A second catchment (Kirkton Glen) comprising 850 hectares was allocated as a block to the new system. Approximately, 250ha was planted with native species of tree and sheep were excluded from the planted area. The remaining 600ha were left unplanted and were grazed by the 600 ewes and their lambs. However, as the trees had been planted on the land below 600m altitude, which is used by sheep during winter for grazing and shelter, the ewes had to be removed for the winter period.

The planted woodland is a patchwork mosaic at various planting densities designed to mimic native pine and birch woodlands (Figure 1). Within the first few years, grazing by sheep in the woodland has been prevented, but within a few years sheep will have access to the woodland under controlled conditions. Therefore, success in the short term, in terms of sheep husbandry, depended on the removal of the sheep from the hillsides to higher quality off farm pastures during winter. Ewes and lambs therefore only had access to the wood and adjacent hillsides during the summer months, a time when pasture production is not limiting (Holland in prep).

Measurements recorded

Productivity and economic indicators have been measured and financial models produced to allow predictions of the outcomes under different price and support payment scenarios. Biomass productivity, grazing utilization, grazing behaviour and biodiversity parameters were recorded prior to planting and are currently being recorded through the establishment and maturing phases to understand the biological implications of the new system. The views of the farming community (Morgan-Davies et al 2000) and the public to the changing landscape are currently being quantified.

Potential Impact

During the summer immediately after tree planting and the enclosure of the land including the 250ha of woodland, lamb growth rates and ewe body weight changes were monitored in the catchments. No significant differences were observed in both parameters of ewes and lambs occupying the two different catchments (Table 1).

Table 1. Weight of ewes in the different catchments in years prior to tree planting and in 1999 after planting.	Kirkton Glen previous years	Auchtertyre Glen 1999	Kirkton Glen (woodland system) 1999
Weight pre-mating (Nov.) (kg)	48.4	48.0	50.4

Various modelling exercises predicted that increased returns would be expected if the ewes were mated on good quality lowland grass (rented on dairy farms) to increase numbers of lambs. Furthermore, because of the predicted increase in lambing performance, a high proportion of ewes could be mated with a terminal sire breed that would produce lambs directly for the market. Of the 600 ewes in the new system, half were mated to Texel rams, the remaining ewes were mated with pure Blackface rams.

The results of this approach in the year 2000 were highly successful. Manageable numbers of twins, high numbers of Texels and much improved early winter nutrition resulted. From March onwards, twins were housed and singles supplemented with feed on their own ground and then lambed in fenced areas below the main hill and allowed to drift out to the open hill after lambing. Ewes with twins went to the hill in mid summer. Feeding costs were surprisingly low in the winter period and levels of ewe performance excellent. Table 2 below shows some of the key results comparing performance with that previously in the Kirkton Glen hirsle, and that on an adjoining hirsle with traditional management.

Table 2: Performance for the new system in 2000 with that in previous years and with that of adjoining catchment.	Kirkton Glen previous years (traditional)	Auchtertyre Glen 2000 (traditional)	Kirkton Glen (woodland system) 2000	
Lamb birth weights (kg)			BF	Texel
Single	3.8	3.9	4.3	4.7
Twin	3.3	3.0	3.4	3.5
Marking time (June):				
No. lambs/ewe mated	0.92	0.76	1.21	
Lamb weaning (Aug.) weight (kg)			BF	Texel
Single	28.1	26.1	28.5	28.4
Twin	24.2	24.8	25.3	23.7
All	27.3	25.8	26.2	27.3
Average lamb weaning weight per ewe	22.0	21.4	29.9	

Levels of performance have been higher than predicted (Table 3). Lamb quality, from both Blackfaces and from Texels grazed on the hill have been as good, or better, than previous years. Levels of both lamb and ewe mortality have been well below average and better than previous years.

Table 3: Overall flock performance levels compared to those in the business plan	Previous Performance In Kirkton Glen	Business Plan Predictions	Actual Results
No. lambs born	684	744	837
No. lambs weaned	552	620	724
Weaning weight per lamb (kg)	27.3	29.3	26.6
Weaning weight for flock	15,070	18,166	19,258

Towards the future

A full financial analysis is currently being undertaken after the first full year. However preliminary results show only a small difference in margin between the new system (selling many more lambs and many more Texel cross) and the old system (producing only good quality Blackface lambs). However, the overarching aim was to retain a productive sheep system and plant out a significant area of woodland and in this project we have been able to demonstrate that at a systems scale this is possible. At the farm level, the benefit will

flow from the economic value of the woodland establishment and from future benefits for the flock from woodland grazing and from tourism-related benefits. At the level of the local economy, there has been a massive injection of cash through the woodland establishment. The agricultural supply trade and services (hauliers, feed and animal health suppliers and the auction market) have all seen large benefits through the new sheep system because of its higher inputs and outputs.

Conclusions

The new system has encouraged diversification within two land-based industries that complement each other rather than diversifying outwith agriculture altogether. In addition to the farm economics, several potential additional opportunities arise from considering such an approach. In the future, woodland products would eventually include timber, firewood, potential for recreation (hunting) and alternative products, which could support forestry and tourism jobs at the local level. Furthermore, such an integrated system of sheep husbandry and woodland development would be environmentally and ecologically beneficial. Considerable areas of native woodland could be enhanced or established and in many places the natural altitudinal transition from woodland, through treeline habitats to montane scrub re-created. With a summer grazing system at relatively low stocking rates, research elsewhere has shown that the new woodland would begin to regenerate itself (Hester et al 1996). Consequently the agricultural and woodland base of the uplands would both be strengthened and the environmental fabric of the landscape enhanced in a sustainable fashion.

Whilst revolutionary within a UK context, the integration of woodland and upland sheep farming is similar to the transhumance pastoral systems practised throughout much of Europe. Demonstration of this approach is starting to remove current stumbling blocks that existing land managers foresee in establishing more woodland on their farms. Sheep farmers, whether owners or tenants, do not want to stop sheep farming, nor can they afford to. The woodland therefore becomes an investment for the future, without penalising the present.

Acknowledgements

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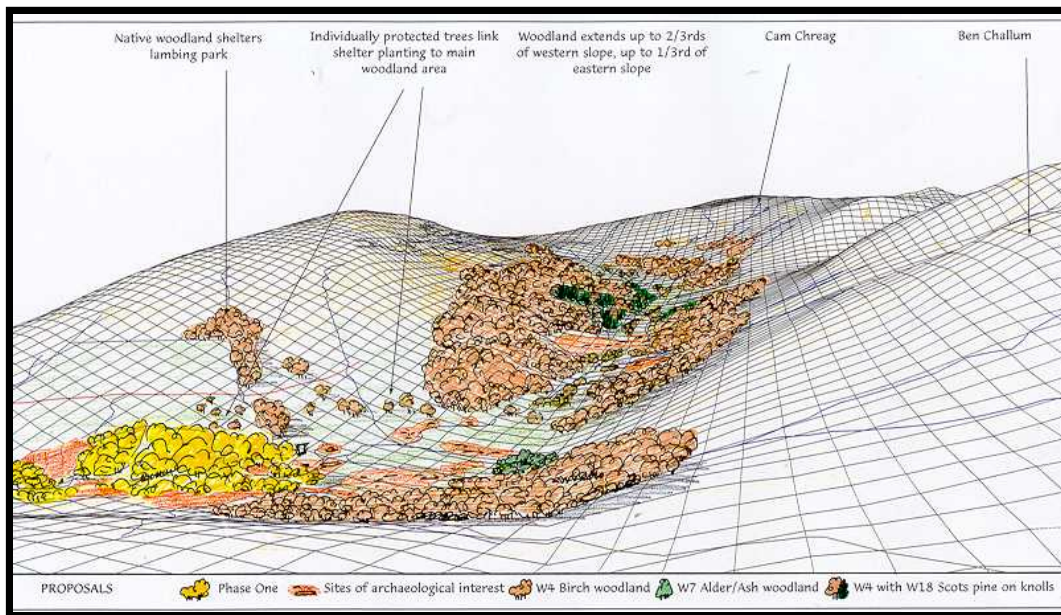
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Figure 1.

Schematic diagram of woodland © Forest Design Services.



THE RELEVANCE OF SOME EXAMPLES OF WOOD PASTURE IN EUROPE TO THE SITUATION IN SCOTLAND

BOB BUNCE

Introduction

A given wood pasture must be seen in the context of the landscape unit in which it is situated, otherwise it can neither be understood or managed appropriately. This is in part because the management of the unit is dependent upon the objectives of the landowner, who usually integrates wood pasture into his overall work plan and in part because of its relationship to the surrounding land. In the long term any management support must take this into account, otherwise it is bound to fail. Wood pastures in Scotland have largely lost their function because they are relicts of largely medieval systems which have disappeared under modern agricultural management systems. This contrasts with some parts of Europe, eg Spain, where low input/output systems have remained because of socio-economic factors. If grazing is removed from the systems, then colonisation by trees and shrubs takes place and the old trees with evidence of past management disappear into a matrix of young standards, as in the Windsor Great Forest and Burnham beeches. This paper describes examples from some European countries and compares their status with those in Scotland.

Scandinavia

The comments below are from personal experience but there is a large literature e.g. Austad and Norderhaug (Norway) and Ihse and Skanes (Sweden). In Norway functional systems have largely now disappeared for the same reasons as Scotland. The evidence of former management can be seen in many places and the use of trees for wood, fencing and fodder was extensive, with probably every tree originally used because of the pressure of population. Locally some examples are now being restored and lessons could be learnt from their experience. There is much convergence with practices elsewhere in Europe e.g. the use of Juniper for fencing, which is still taking place in Spain, although it involves a different species. In Sweden there has been much expansion of forest at the expense of traditional systems with polarisation of land use similar to that happening in the Pyrenees. A difference with Scotland is the recognition of traditional practices and the notification of sites of historical importance, linked to habitats. There are also major programmes to produce registers of significant sites.

Poland

One of the most famous European forests is Bialowieja on the borders with Bealorussia. This forest has the reputation of being one of the most primaeval sites on the continent, yet until about the mid nineteenth century it was heavily grazed by domestic stock as an integral system with the surrounding hay fields. Since then it has been protected from domestic stock, although bison have been re-introduced and there are many deer. The structure of the forest is thus comparable with the Windsor Great forest in that there are very old trees with younger ones between. The surrounding meadows are now in decline and much land is reverting to forest. So here again there is a picture of change with the original wood pasture system now largely abandoned. Elsewhere in Eastern Europe the situation is probably more complex with some countries, such as Romania and Bulgara, still having functional systems but more details are needed. In southern France in the Massif Central viable systems still exist, especially in relation to nut orchards but further details are required to find out if there are comparable situations to Scotland. In the Eastern Pyrenees open pastures still exist with pollards and managed trees but are very dry in summer. In the more Atlantic sections there has been widespread abandonment of traditional patterns. For example in the Gavarnie valley in the Centre of the French Pyrenees old photographs show classic wood pastures with pollards and lopped trees. These have now virtually disappeared in colonising forest and old terraces are now covered by trees 15 meters high. Some lopping still takes place along the edge of fields. By contrast, in the Picos de Europa in north-west Spain there is still much active management of the trees using traditional methods, mainly for feeding the animals directly or for wood, although formerly for fodder as in Norway. The trees are mainly along the edge of fields and were also originally planted beside the high

pastures although the more remote trees are no longer managed. The forests all have evidence of past intensive use although most are no longer managed. The general pattern is remarkably similar to Norway, perhaps because of similar land forms and the high population pressure although the convergence of methods is most interesting.

In central Spain in the mountains just north of Madrid by riversides, there are wood pastures still actively managed that have a similar structure to those in Scotland. They have a rich herbaceous flora that changes very rapidly if the grazing is removed. The Dehesas (open wood pastures of *Quercus ilex* and *Q. suber*) are very different to the Scottish situation.

Conclusions

- there is much convergence between practices i.e. lopping/topping, coppicing, pollards, charcoal and fodder, both twigs and leaves
- a classification of wood pastures is required that needs to be based on rules e.g. presence of pollards, presence of grazing and the proportion of tree cover.
- although wood pastures are in decline there are still examples that can be studied to find out how they actually work
- the key question is: do the systems still function because the people working them are involved only part time and rely on other income or are they functioning as a fully economic system with low inputs and outputs

THE ROLE OF WOOD-PASTURE IN HABITAT NETWORKS CULTURAL LANDSCAPES AS PART OF HABITAT NETWORKS

MIKE SMITH

Before looking at the role of wood pasture in habitat networks it is important to look at the cultural landscape in which they are found.

Cultural landscapes are those in which the component ecosystems have developed over many centuries by the interaction between man and the environment (Bunce 2000)

It is important when looking at landscape not to look at habitats in isolation from the other habitats that are found in the wider ecological and cultural landscape. The development of catchment based management strategies should be developed as these catchments have a range of habitats that interact with each other. This interaction has often been masked as a result of more recent agricultural practices but can still be occasionally seen. In most cases it is the transitions between the habitats that have disappeared leaving on the face of it isolated unrelated habitats. From looking at remnants of these interactions it is possible to start to build a picture of what the intact cultural/ecological (eco-cultural) landscape may have been and, using field and documentary evidence, develop a model for restoration as part of a habitat network. The restoration of cultural landscapes and their related catchment based habitats is also likely to have a large positive effect on nature conservation and should be linked to the Biodiversity process.

Valleys of the Borders Hills

The example of cultural landscape investigated here are valley systems of the Tweed upstream of Selkirk including the Etrick and Yarrow, in which Borders Forest Trust amongst others are developing a Habitat Network. These valleys contain a wide range of upland and lowland habitats.

The Blanket bog and Upland heath habitats, (Blanket bog and Upland Heathland HAPs) 'Muir's', can be looked at as a single management unit within the eco-cultural landscape though there are important differences between them ecologically. These habitats that are found on the hilltops, saddles and upper valley slopes are heather dominated and are differentiated by the depth of peat on which they are found. These have been modified through management both as grouse moors and for summer grazing.

The dry grasslands and scree slopes (Upland Calcareous Grassland HAP) found on the unenclosed valley slopes have developed as a result of the past grazing management. Heavily grazed acid grassland dominates much of these valley slopes which tends to be species poor. Where base rich parent material is found at or near the surface or around base-enriched flushes and soakaways a species rich calcareous grassland develops. Interesting plant communities, often botanically diverse, have developed on the many scree slopes found on these valley slopes. This is thought to be in a successional relationship with both woodlands and grassland communities.

The Upland Hay Meadows and rush pastures (Upland Hay Meadow and Purple Moorgrass and Rush Pasture HAPs) would once have been common on the haughs of the valley floor. Agricultural improvement has resulted in a dramatic decline in these hay meadows and rush pastures with an impoverishment of the plant communities found within them and this has been augmented by drainage and the uniformity of treatment that these enclosed fields have undergone. The communities that are found in these habitats are largely dependent on the grazing regime and level of agricultural improvement the particular site has undergone. The rush pastures and fen meadows found at the wetland edge were previously widespread and also cut for hay and were known as 'watter meddes' where meadowsweet was an important crop. Both would then undergo aftermath grazing in the late summer and autumn.

Fens (Fens HAP) found on the valley floor are associated with willow carr and can be varied and have often been affected by a range of management practices. They range from open water and carr complexes

to drained remnants with seasonally inundated marshy grassland. Moving away from the wetlands the transition to drier ground has often vanished as a result of agricultural improvement over the last few centuries. Reeds were once cut as a fodder crop.

Woodland Habitats; There is a wide range of woodland communities in a number of different habitats found in the Ettrick and Yarrow valleys over a very short distance. These range from upland oakwoods in cleughs to the west to more lowland ash/elm woodlands in the east as well as willow Carr and alder dominated riparian woodlands.

Cleugh Woodlands; (Upland Oakwood Habitat Action Plan) these woodland refugia can be very diverse in themselves with a wide range of communities and species depending on the base status of the soils. Juniper and Scots pine (native?) on the acid heath dominated soils to ash/elm ground flora where there is base enrichment. There is currently a programme of fencing of many of these woods in the Ettrick and Yarrow valleys to allow regeneration of tree species as well as a juniper-planting project.

Riparian alder woods; (Wet woodland HAP) along the rivers and streams of the Ettrick and Yarrow valleys there are often alder dominated burnside compartments which usually amount to little more than a single line of alders, often coppiced, on either side of the stream. The Tweed foundation through Heritage Lottery Funding is fencing much of the length of the rivers to allow natural bankside processes to occur for the development of the river habitat. This also has the additional benefit of allowing regeneration of these riparian alderwoods.

Gorge woods; (Wet woodland, Upland ash/elm and Upland Oakwood HAPs) where more extensive areas of woodland have persisted in gorges and occasional on valley slopes a range of woodland types are found together in transition with each other. The distribution of the woodland communities found is largely dependent on the edaphic conditions prevalent on the site. On the deeper more base rich soils on the valley sides ash/elm woodland is found. There is a zonation with this community and the alder woodland on to the flat waterlogged soils of the valley floor and also where there is flushing. The more base-poor soils on the valley sides support mosaics of oak-dominated woodland communities. These woods are being fenced for expansion through regeneration. On the larger valley-sides it is interesting to note that south facing slopes tend to support ash elm woodland while oakwoods are more frequent on the facing north.

Willow carr; (Wet Woodland HAP) This habitat is found on the larger fen complexes where willow dominated wet woodland has developed on the flat valley floor. The ground vegetation ranges from wet swamp species, with stands of *Glyceria maxima* through to drier *Filipendula ulmaria* mire.

Plantation woodland; examples of plantation and policy woodland are more common at the eastern lowland end of the Ettrick and Yarrow valleys and they should be included as part of the habitat network. In many case woodland processes have over time been established in these woodlands or maintained where these occur on ancient woodland sites. Here the diversification of the woodland is the priority.

Wood pasture (Wood-pasture and Parkland HAP)

The exact definitions of wood pasture are at present imprecise and are currently being reviewed. The most important feature that defines them is their structure.

Long established wood-pastures are a grazing maintained habitat that should be comprised of veteran trees with old-growth features of open grown character (with wide deep crowns and short tapered stems). These will not have developed within a woodland canopy and have a wide but irregular spacing, with clumping at times often with an uneven age structure. (PQ 2000)

There are other features of wood-pasture, which are useful in helping to define this habitat.

History

The history of wood-pasture in the Borders is unclear but is believed to have been widespread on the valley sides of the Borders Hills and historical research is currently in progress. Prior to agricultural intensification, the industrial revolution and the Highland clearances, when more pastoral-based agricultural practices were prevalent throughout much of Scotland some grazed woodland is likely to have evolved into wood pasture. Here there may have been some active silviculture, which may have been carried out on an ad hoc basis, (unlike the more well developed pollarding systems documented throughout parts of England) with the end result being well-spaced open grown trees. The trees that are found at remaining wood-pasture sites are very likely to be veteran trees since the origins of these sites are likely to pre date the industrial revolution and the accompanying changes in agricultural practices.

Biodiversity interest associated with Wood-pasture

Wood element;

Wood pasture containing veteran trees and associated dead wood habitats provide biological interest for a range of species lichens, bryophytes and fungi which provide micro-habitats for specialist insects which are in turn important for larger predators.

Pasture element

In long established wood-pasture, stable grazing-maintained plant communities are likely to have developed as a result of this management where elements of both woodland and grassland communities would be found. The complexity of grassland structure and species along with the red ant mounds, fungi typical of unimproved and undisturbed pasture and other indicators of long-term grazing is one way to differentiate these wood-pastures from grazed woodland. As with most habitats, post war intensification of farming will have resulted in the degradation of wood-pastures, where there is no regeneration of tree species and the ground flora has lost much of its interesting character and associated species.

Wood-pasture types

If we use structure as wood-pastures most important defining criteria then it is possible for any woodland type or community to have a wood-pasture derivative including the minor woodland types. The following are found in the Ettrick and Yarrow valleys.

Ash/Elm areas of ash/elm wood pasture are generally found with on south facing valley slopes and can also be associated with scree slopes and hawthorn savannah. These wood-pastures can be derived from more lowland examples of the ash/elm woodland communities and this is reflected in the ground flora. These tend to be found in less intensively managed unenclosed sites.

Slope alder wood pasture tends to be found on flushed slopes or valley floors in association with wet grasslands and rush pastures. These alder remnants tend to be found in unenclosed upland sites, which are less intensively managed.

Oak wood-pasture can be found in a wide range of locations from the classic lowland wood-pasture over improved grasslands through species rich neutral grasslands to upland situations over heath.

Hawthorn savannah The grazing maintained Hawthorn savannah is often found in association with the botanically interesting base rich grassland and can contain veteran standards of ash. It is unclear if this is a relic of canopy wood-pasture or not though in a structural sense it fits the criteria for wood-pasture in its own right.

Hazel Coppice is often found as an understorey in other wood pasture communities either with ash/elm or oak standards but can be found as a grazing maintained wood pasture in its own right.

Habitat Networks

The aim of habitat networks is to develop connectivity of habitats to form a landscape of higher biodiversity/conservation value. This would involve the linking of semi-natural habitats with new wood pasture as part of this habitat network. Wood pasture would link the areas of woodland refugia both in terms of ecological connectivity but also aesthetically in landscape terms, as it would allow for gradation from closed canopy woodland to open pasture.

It can also be part of the link of the other semi-natural habitats found in this landscape again through ecological connectivity and also through their management.

Future sustainable land use

This network of semi-natural habitats should be used as a low input low output farming system that would be organic and an alternative land use for landowners. It would restore species-rich grassland covered with traditional broadleaf trees free from pesticides and chemicals, a working habitat not just a degraded remnant. Organic farming methods are compatible to the grassland management techniques required for wood pasture and for the creation and maintenance of species rich grassland under the Rural Stewardship Scheme.

Grazing management on different habitats

	Muir	Wood-pasture	Hay Meadow	Rush pasture	Riparian wood
Spring grazing		x		x	
Summer grazing	x	x			
Aftermath grazing			x	x	
Winter grazing			x		
Hay crop			x	x	
Fodder crop		x			x
Muirburn	x				

This management structure coupled with appropriate habitat restoration techniques for the respective habitats should allow for the development of a truly integrated habitat network. The habitats that are found and the transhumance are inextricably inter-linked. This model offers the opportunity to base future conservation management strategies on traditional sustainable land use methods. In this model a mixed herd of rare/specialty breeds could be utilised through conservation grazing to enhance the biodiversity interest of the range of habitats within the catchment areas.

The wider benefits of this landscape approach to Habitat networks include the restoration of an attractive historic landscape that is good for walking where archaeology preserved and visible. The restoration of wood pasture allows for the continuation of grazing in a woodland environment that favours hill cattle farming with the right type of livestock shelter where the land remains in full agricultural use and tenancy. It will help restore soil health and water quality and is also an excellent deer and game habitat. **Habitat networks with wood-pasture at their core can be seen as a revival of a great Scottish land-use tradition**

THE CURRENT POSITION

KATE HOLL

Following the Earth Summit in Rio in 1992, the UK Government published costed Action Plans for a total of 24 terrestrial and freshwater habitats. These plans have included a HAP for *Lowland wood pasture and parkland*.

In the HAP, Lowland Wood Pasture & Parkland is defined as a matrix of large, open-grown trees, at various densities with grazed grassland, heathland and/or woodland floras. While these sites can have quite different origins, they all have one thing in common – continuity of ancient trees. Thus parks planted in the 19thC or later are specifically excluded from the HAP, unless they incorporate much older trees derived from an earlier landscape. Often they do, since designed landscapes tend to overlay earlier examples on the same sites.

Regardless of origin, the different forms of LWPP share similar biological attributes, and therefore it is logical to lump them together under a single habitat action plan, particularly as a quite different set of management prescriptions applies to them compared to semi-natural woodland. The sites need as much input on the agricultural aspects as they do on the woodland management.

The lowland wood pasture and parkland published habitat action plan details current threats to the habitat, protection measures, survey and inventory requirements, and incentives for management and protection.

In particular, the plan specifies that:

- the current extent and distribution of lowland wood pasture and parkland should be protected and maintained in a favourable ecological condition
- a programme to restore 2,500ha of wood pasture to favourable ecological condition should be initiated by 2010 *and*
- by 2002 the expansion of 500ha of wood pasture in appropriate areas should be initiated.

The HAP lists 29 further actions in a wide range of areas including policy and legislation, site safeguard and management, advisory, international, monitoring and research and communications and publicity; identifies the lead partners responsible for taking forward each action; and specifies a target date for delivery.

LBAPs

In parallel with the national BAP, local Biodiversity Action Plans are being developed at the country or district level. At present a plethora of these are being prepared by local authorities, conservation trusts and other ngos. The degree to which these have taken on board the national priorities in the published plans varies enormously; and has depended to a large extent on the personal interests of the key individuals involved in plan preparation. Wood pasture may not feature significantly in many of the local action plans prepared to date, as the impression given by the published HAP is that this is largely a southern and lowland habitat

Why is the Wood Pasture HAP important in Scotland?

Lowland wood pasture and parkland has been identified as a key habitat in the UK because of its international importance: up to 80% of the total number of veteran or ancient trees in northern Europe are thought to occur in the UK. Many of them are concentrated in the wood pasture and parkland habitat targeted by this HAP. Wood pasture is especially important for a large number of priority species which depend upon the variety of specialised niches which the very big open grown ancient trees so characteristic of this habitat provide.

Lowland wood pastures and parkland are the products of historic land management systems, and are frequently of national historic, cultural and landscape importance, providing a “living link” with the past.

These sites represent a vegetation structure rather than being a particular plant community, and typically consist of large, open-grown or high forest trees (sometimes pollards) at various densities, in a matrix of grazed grassland, heathland and/or woodland floras.

Implementation

The UK Lowland wood pasture and parkland HAP steering group is chaired by English Nature, and is being taken forward at a country level in Scotland by SNH.

SNH is committed to taking forward the wood pasture and parkland HAP in Scotland, and are looking to develop a partnership/advisory group of interested individuals/organisations and funding partners to achieve this.

Definitions

The published HAP focuses on wood pasture in a southern and lowland context but this largely reflects current distribution of expertise, and an incomplete knowledge of the distribution of the habitat in more upland and northern situations. There is a growing awareness of the existence of this habitat in the uplands, as we heard about at last year’s meeting from Jane Beag re Glen Finglas, but since that meeting our knowledge and awareness of similar sites in the uplands has been steadily growing. This has led to a growing conviction that the habitat is not simply a lowland habitat but was once a reasonably widespread land-use in the uplands of Scotland (possibly also England and Wales).

There was then concern that the published HAP did not adequately represent the distribution of the habitat in its full range of manifestations, especially in Scotland. Peter Quelch prepared a paper which was presented at the annual meeting of the UK steering group for lowland wood pasture and parkland in Peterboro in the summer, which made the case for the HAP definition to be expanded to include wood pasture in the uplands. The proposal was accepted by the group, and it has been agreed that in all future references to the HAP the prefix “lowland” should be dropped; what we are looking at is a structural vegetation type of land-use which occurs throughout the country in upland and lowland situations, and with varying amounts of a designed “component”.

One of our first tasks therefore is to produce a clear definition of wood pasture/parkland in Scotland. We need to distinguish very carefully and clearly between wood pasture (which we all love and welcome) and over-grazed woodland (which is something many of us are working to eliminate!) To help with this distinction it is likely that we will need to consider and analyse, amongst other factors: links to cultural landscapes, man’s positive intervention, archaeological remains and differences in the ground flora. One of the keys to identifying this habitat seems to lie in the fact that with wood pasture, man has been involved in deliberately intervening to achieve a particular vegetation structure to suit his ends. This is clearly distinct from over-grazed woodland, which is a product of neglect.

Progress with implementing the Wood Pasture & Parkland HAP in Scotland:

There is much ongoing work which will contribute towards delivering action under the HAP, but I would like to take the opportunity to here outline some new work which is planned for this current financial year, which is targetted at delivering specific actions in the plan.

Wood Pasture Inventory

The relevant action in the HAP is “*produce a comprehensive list of all parkland and wood pasture sites.....by 2002*” There are no reliable statistics on the extent of the overall resource in the UK, but a figure of 10-20,000ha “currently in a working condition” is the current best estimate. The habitat is considered to be most common in southern Britain, but scattered examples occur throughout the country,

and as a result of our incomplete knowledge of the extent of the resource, it is probably more widespread than previously believed.

No survey has yet been carried out of wood pasture over the whole of Scotland. Many wood pasture sites are of course known, mainly through surveys by lichenologists or saproxylic invertebrate specialists. A survey of veteran trees has been carried out in parts of the Borders under Borders Forest Trust, including some upland pasture woodland sites such as 'The Nest' with veteran ash trees. Clearly, in order to be able

to take forward delivery of the targets in the HAP, it is a priority to develop a wood pasture inventory – we need to know how much of this habitat there is in Scotland, where it is and how its distribution is divided

between the uplands and lowlands. SNH will be undertaking a preliminary piece of work to try to bring together in a simple site-linked database the extensive knowledge of distribution of sites currently residing largely in people's heads and personal databases - in particular people such as yourselves. We will be approaching many of you direct over the next couple of months, but if you have information on sites then please get in touch with Mike Smith who will be collecting the information on our behalf.

Promotional Material

The action point in the HAP is: “ *increase awareness of the national and international importance and vulnerability of wood pasture and parklands by promotional literature and events, and encourage the celebration of parkland and wood pasture via the arts and media.*”

There is a major issue now in raising awareness of the habitat, its value for biodiversity, its potential as a land-use system, its archaeological interest, its cultural, landscape, spiritual value amongst land managers and key stakeholders.

As an initial step towards doing this, SNH held the 1st meeting of the Wood Pasture HAP Group in Scotland this summer at Dalkeith Country Park. The primary aim of the meeting was to raise awareness of the habitat in Scotland, its importance for biodiversity, and its potential as an alternative extensive land-use system in especially, the Scottish uplands.

We need promotional/educational material about this habitat, and SNH is planning to publish a booklet on Wood Pasture in its Living Landscapes series later this year to raise awareness of the habitat in Scotland. The booklet will be a small glossy publication which should be published towards the end of this financial year, and it will highlight the importance of this habitat in Scotland for its biodiversity, landscape, cultural, agricultural-economic value; it will define the habitat as it occurs in Scotland and emphasise the distinction between overgrazed woodland and wood pasture, and provide some basic management guidance

There have also been a series of articles in prominent journals and newspapers and conferences over the last few months (there are even more in the pipeline) all serving to raise general awareness of the habitat. E.g. Peter's paper and poster at Restoration of Wooded Landscapes Conference, Mike's articles in Landowner magazine, Glasgow herald, Series of articles in latest NWDG mag

Incentives

One of the actions in the HAP is “*When reviewing existing incentive schemes (e.g. Countryside Stewardship, Woodland Grant Scheme/Woodland improvement grants, ESAs etc.) attempt to ensure they enable and encourage the most appropriate management of parklands and wood pasture, with their ancient trees.*”

SNH hopes later this year, to undertake a review of the current coverage of wood pasture by existing incentive schemes, to look at the situation in England and Wales and to make recommendations which will feed in to forthcoming reviews of WGS and Scotland's agri-environment scheme, for a suite of incentives

to cover the sustainable management of this habitat, and in particular identify incentives for restoration, expansion and management of wood pasture in Scotland to meet the published HAP national targets.

International

One of the action points in the HAP states “*develop links with European organisations and programmes, such as the European Forestry Institute, European Environment Agency and the European Centre for Nature Conservation to obtain estimates of the extent and distribution of comparable habitats, and exchange experience on research and management*”

Preliminary discussion with Bob Bunce and others has identified that there is interest in investigating wood pasture as a land-use system on the continent to look at opportunities for integration into extensive agriculture in Scotland. We will pursue this in a partnership approach with the key players.