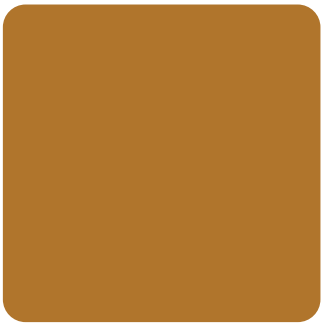
Managing Small Woodlands in the Highlands and Islands

A guide for crofters, communities and small woodland owners



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In memory of Angus MacRae

As Angus did so often, I begin with a story. It dates from 1986 when, on behalf of the then newly-established Scottish Crofters Union (now the Scottish Crofting Federation), Angus and I attended in Edinburgh a session of what was then called the Hill Farm Review – a means of fixing levels of livestock support. Our being involved showed why the SCU mattered – crofters, though the review affected all of them, having never before participated in this forum.

We wanted, Angus and I, to register that the summer of '86 had been a bad one. For months, we stressed, it had rained incessantly in the Highlands and Islands. Winter keep, we emphasised, was scarcely to be had. For weeks, we went on, it hadn't been possible to find – from Unst to Islay – a beast with a dry back. The support regime, we insisted, had to reflect those facts.

When we rose to go, a Borders farmer – a NFU representative – came over. He looked Angus up and down – and Angus was a big, strong fellow, the very picture of vitality. 'I'm sorry,' the farmer said to Angus, 'but you don't have the look of a man whose crofting's doing poorly.' Angus didn't pause for breath. 'Crofters,' he replied, 'are like sitka spruce. We grow better in the wet.'

Angus MacRae was born on his parents' croft in North Strome in 1931 and – apart from his National Service – spent all his 71 years in that locality. For much of his working life, Angus – one of the sharpest, best-informed and most intelligent people I've ever met – combined his crofting (as his sitka spruce comment indicates) with a job with the Forestry Commission. When he and I travelled to the Hill Farm Review get-together in 1986, I was the SCU's director – and Angus, already one of the union's leaders, would shortly become its president. In that capacity, Angus masterminded the battle, and it was a battle, to bring about the legal and policy changes needed if crofters were to be permitted to grow trees for their own benefit on croft land – the previous position being that timber on croft land belonged in law to the land's landlord and not to its crofting tenants. Under Angus's leadership, the SCU won that campaign. The extent to which crofting forestry has flourished, and is still flourishing, shows the campaign was worth winning. It is most appropriate, therefore, that this publication is dedicated to the memory of Angus MacRae, champion of crofting and, above all, a very fine man.

Jim Hunter

Acknowledgements

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Foreword

As well as supplying traditional timber markets woodlands are now expected to deliver a range of other benefits including biodiversity, recreation, renewable energy and sequestered carbon. At the same time the role of the state sector is reducing, and as part of the burgeoning private sector small woodlands have a vital role in meeting society's expectations.

The imperative to reduce carbon footprints and timber miles will lead both to increased use of timber and increased opportunities for local added value and use, creating markets at a scale appropriate to supply from smaller woodlands, particularly wood fuel, but also sawn timber, craft markets and secondary processing.

By their very nature small woodlands are diverse and this gives them the ability to enhance biodiversity and adapt to climate change. Connectivity between woodlands at a landscape scale is an important element of adaptation, and shelterbelts, policy woodlands, riparian woodlands, community woodlands and crofter forestry often have a key role in maintaining this connectivity.

In addition to their ecological and economic importance, because they are often locally owned, small woodlands are potentially valuable recreational, educational and social resources. This publication is not a step by step guide to establishing, managing and using these woodlands. But it is a clear and comprehensive overview of the available options, and the issues which need to be addressed if they are adopted. Most importantly, it gives clear guidance on where to find more detailed information, or technical expertise, when you need it.

We hope this makes it enjoyable and useful to everyone who cares about small woodlands and their contribution to meeting future social, environmental and economic needs.

Cliff Beck
CEO
Highland Birchwoods

How to use the handbook

The handbook is presented in a number of sections covering the creation of new woodland, managing small woods, ways of realising the value, and also providing information on learning and support related to woodland management.

The shared experiences cover a range of situations and illustrate how various people have approached the management of small woods. Readers will hopefully be able to relate to some parts of the case studies.

'The shared experiences cover a range of situations and illustrate how various people have approached the management of small woods.'

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Woodland Management

Background

"...Opportunities to deliver increasing benefits to people in Scotland"
(source: Scottish Forestry Strategy)

Our Scottish Forestry Strategy recognises that there are many mixed benefits from the range of woodland seen in the countryside. The important objective to remember when considering woodland management or a new woodland project is to get the right trees in the right places for the right reasons.
When managing an existing conifer plantation this may require an at least partial change of species to ensure that the woodland better reflects the ecological characteristics of the site.
The seven key themes of the Scottish Forestry Strategy:

- Climate change
- Timber
- Business Development
- Community Development
- Access and Health
- Environmental Quality
- Biodiversity

Climate Change

Climate change is one of the most serious threats the world faces today. Forestry can contribute to climate change mitigation because growing trees takes up CO2 and stores carbon. A further contribution is made if wood fuel is used in place of fossil fuels and timber used to replace high energy building materials such as concrete and steel.

Timber

Timber is an economic resource that is environmentally friendly, versatile and cost effective. Local use can reduce haulage miles on our roads.

Business Development

Woodlands can contribute to achieving economically sustainable rural communities brining much needed economic activity to fragile and remote areas. Woodlands form an important backdrop to the tourism industry and for various opportunities within such as camp sites and cycling facilities.

Community Development

Forestry can contribute to helping improve the quality of life and well-being of people in Scotland. Woodlands can provide a focus for people to work together on for community and small business enterprise, education and life long learning through the likes of Forest Schools.

Access and Health

Woodlands can not only provide for access but can help to improve the physical and mental health of Scottish people through providing a variety of ways for people to enjoy woodlands. Woodlands are a natural therapeutic environment and can have positive effects on our well-being.

Environmental Quality

Forests and woodlands can help protect Scotland's water, soil and air as well as contribute to Scotland's diverse and attractive landscapes. They also help to protect communities by contributing to control of floods and soil erosion.

Biodiversity

Scotland's biodiversity is special and woodland can help prevent further loss and continue to reverse previous losses both within woodlands and at the wider landscape scale. Our native and especially ancient woodlands have high biodiversity and historic value. There can be negative impacts from intense grazing by deer and sheep and from invasive species such as Rhododendron. A number of key species such as Red Squirrel and Capercaillie require special help if they are to survive. There may be opportunities to re-introduce species that have become extinct such as beaver and perhaps lynx.

The SFS is underpinned by the UK Forestry Standard and the various guidelines produced such as The Forest and Water Guidelines. These publications set out the standards and best practice that land managers are expected to achieve. In addition there are the Environmental Impact (Forestry)(Scotland) Regulations 1999 that cover tree planting, tree felling, roads and quarries in the forest and Christmas trees.

'Woodlands enhance our countryside.'

Introduction

Woodlands enhance our countryside. They provide autumn colours and a place for walks, picnics and play sheltered from the wind and rain. Woodlands add amenity to our communities and value to our homes. They screen roads and reduce noise and headlight glare. Trees protect our streamsides, while providing food and shade for river life. Woodlands reduce runoff and erosion, contributing to land stabilisation and flood prevention. For crofters, farmers and land managers, well-situated woodland can help screen buildings, separate activities and provide shelter and seasonal grazing for livestock. At the same time woods produce timber, poles and firewood, cover for game, a network of habitats for much of our wildlife and a wild harvest from venison, mushrooms and brambles.

In the past[1], those who lived and worked on the land were dismayed when local woodland was lost, often to unmanaged grazing. With it went a source of different timbers, each suited to particular uses, as well as supplies of fuel, tan bark, plants, wildlife and good grazing; the heath and bracken that took over as the woods disappeared was considered to be far inferior grazing.

Nowadays an increasing number of people are managing small woods and creating new woods to benefit everyone. This handbook provides an overview of what is involved in creating and managing small woods in the Highlands and Islands of Scotland. It has been written with crofters in mind but is relevant to anyone with responsibility for small areas of woodland. It assumes the reader has little or no experience of woodland management.

The handbook is supplemented by information on the internet which holds a wealth of well-produced and up-to-date guidance on all aspects of forestry. The online version of the handbook www.managehighlandwoods.org.uk links directly to relevant information. If you do not use the internet, the Scottish Crofting Federation can send you printed copies of the references.

Small woods in the Highlands and Islands

The handbook concentrates on the former crofting counties of Scotland which cover Highland, Western Isles, Orkney, Shetland and parts of Argyll - stretching down to Dunoon and the Mull of Kintyre in the south. Within this area there are around 40,000 patches of woodland smaller than five hectares. Another 7,000 woods are less than thirty hectares in size.

These small woods are in the hands of crofters, farmers, businesses, smallholders, public agencies and communities. Because they are small and often

- **Many of the small woods are semi-natural. They include the oak, birch and ashwoods of the uplands, willow, alder and birch that grow on the wetter sites and the 'Caledonian' or native pinewoods. Many are remnants of much wider swathes of woodland; fragments that have survived on the steeper slopes or wetter sites where there was less burning and grazing. In recent years there has been a concerted effort to conserve and extend semi-natural woods and to plant new native woodlands.**
- **Woods of oak, elm and ash remain on the better soils in the sheltered valleys. Most were cleared for farming long ago, but some were retained and have become amenity woods, game coverts and shelterbelts. On the larger estates they were sometimes transformed into designed landscapes of parklands and policy woods, often with the introduction of ornamental species.**
- **About twenty percent of the small woodland area is conifer plantations of species such as Scots pine, Sitka and Norway spruce, lodgepole pine and larch but also, on occasion, firs and western red cedar. Some were planted within semi-natural woods or old policy woods leaving a mix of species. There are, of course, many larger plantations managed by Forestry Commission Scotland, private estates and forest management companies.**

remote from markets, they tend to be less well served by the mainstream forest industry. Few are deliberately looked after, many are neglected and some are gradually being lost.

With a little attention paid to them, small woods can contribute much more to our landscape, our wildlife, our communities, and to the local economy. Moreover, those who look after woodlands find it a fascinating and rewarding experience.

Crofter Forestry and Woodland Crofts

Not all small woods are in the hands of crofters but crofting is increasingly relevant to forestry in the Highlands and Islands, particularly as more communities become involved in the ownership of crofted estates.

Since 1992, crofters have been offered grant support to plant trees on common grazings, if they have the landowner's permission, while retaining ownership of the trees. Around fifty crofting townships have planted over 3000 hectares of new, mostly native broadleaved, woodland. In addition many individual crofters have protected and extended small areas of existing woodland. With a decline in croft income and lower levels of grazing, woodland provides an opportunity to diversify. Most woods have been designed to deliver a mix of benefits such as improvements to shelter, conservation and recreation, while the new fences help to improve stock management.

With so many woodlands successfully established, thoughts are now turning to how they can be managed to best advantage. Woodfuel offers a possible new market while demand for social and educational activities in woodlands suggests the potential for greater community use.

The crofter forestry experience has had wider benefits. More than one township purchased their croft land when landowners were not supportive of woodland planting: achievements that contributed to the legislation for land reform. These days the National Forest Land Scheme[2] gives communities the opportunity to buy or lease land managed by Forestry Commission Scotland and to manage the woodland for community benefit. Forest land can also be acquired by registered social landlords for affordable housing.

Crofting law has changed too[3], enabling new crofts to be created and allowing wider uses of croft land. Coupled with the National Forest Land Scheme, this provides the basis for creating woodland crofts.

Woodland Crofts

Throughout the 20th Century the area of forest in Scotland increased significantly, especially in the Highlands. Many people from rural communities worked for 'The Forestry', planting hillsides and harvesting trees, first by handsaw and horse, then by chainsaw and tractor. Nowadays, a smaller proportion of people are involved in forest management. Woodland crofts are seen as one way of increasing the link between rural livelihoods and woodland management, rekindling a broader woodland culture and, at the same time, contributing to the provision of affordable, sustainable housing.

Woodland crofts can be created by an individual landowner or where communities are able to purchase forest land, either from the national estate or from private landowners. Individual tenants can be allocated parcels of woodland but in larger woodlands it is expected there will be a significant element of shared responsibility and that the whole forest would be managed cohesively to deliver community benefits. Both individual crofters and community groups may be elgible for grant support for woodland management under the Scottish Rural Development Programme. Where housing is an element of woodland crofts, measures should be taken to ensure the needs of the community are met. House construction on woodland crofts should aim to make the maximum appropriate use of timber and timber products, ideally using locally sourced timber, and woodfuel for heating.

The Embo Trust

One of the first communities to investigate the potential of forest crofts was the coastal village of Embo in Sutherland. Jim MacGillivray has been at the forefront of the development of The Embo Trust and here he describes what they are working to achieve.

Embo came into existence as a Clearance village in the middle of the 19th century, housing those who had been driven from their lands by Sutherland Estates. Livelihoods were poor and when I was a boy, there were very few men in the 15-55 age group - nearly all were working away. Houses in the village sold for as little as £50.

In recent years, there has been a major turnaround. There are now some twenty independent businesses in the village and a resident population of around 212. In the summer, holiday makers increase the number of people dramatically and cottages sell for £200,000 - "outsider money". The young people, although in full-time employment, simply cannot afford them.

Not far from the village, is the Forestry Commission plantation at Fourpenny. Much of the plantation was previously croftland - the old township of Cruibhan Mor. The idea has been to buy the plantation through the National Forest Land Scheme and establish a number of four hectare woodland crofts.

Houses would be built on each holding making use of local skills and locally harvested timber. The woodland crofts will be made available to young people who are members of the Trust, have expressed an ambition to take up a croft tenancy, and are prepared to undergo any necessary training.

The agencies, including Forestry Commission Scotland and the Crofters Commission, have been encouraging and, following a series of open meetings The Embo Trust has been established to take the project forward.

References

1. A History of the Native Woodlands of Scotland 1500 -1920 by T.C. Smout, Alan R Macdonald & Fiona Watson, Edinburgh University Press, 2005.

2. National Forest Land Scheme Guidance, Forestry Commission Scotland 2008.
This booklet describes the National Forest Land Scheme which provides the opportunity for communities to acquire forest land to manage for public benefit and also to acquire land for forest crofts and affordable housing.
http://www.forestry.gov.uk/pdf/fcfc118.pdf/$FILE/fcfc118.pdf

3. Crofting Reform etc. Act 2007.
http://www.opsi.gov.uk/legislation/scotland/acts2007/asp_20070007_en_1

'New Woodland should be designed to fit into the landscape'

New Woodland

Creating new woodlands

In Scotland where much of the original woodland cover has been lost, woodland management often involves creating new areas of woodland. Whether you are starting from scratch on open land, extending existing woodland or re-planting an area that has been felled, the new woodland will be around for many years to come so consider carefully what you are creating and why.

Woods can provide shelter for stock, cover for game, as well as firewood, poles and timber. At the same time woods can create privacy, a place to walk and play, habitat for wildlife and protection for soils and rivers. All woodlands provide many benefits but you will get most satisfaction from the wood if it is designed to meet your needs and interests. Think about your priorities and take advice from professional foresters[4] and woodland advisors[5].

> *'When asked what motivated them to get involved in crofter forestry, the crofters' reasons ranged from the practical ('reduced sheep numbers meant land was available') and financial ('to bring significant income into the township') to environmental ('to create a large-scale habitat for wild animals, maybe even bears!') and social ('the idea of a community woodland appealed', 'gifting a valuable asset to the next generation of crofters')'*
>
> Crofter Forestry in Assynt

Other sections of the handbook consider in more detail the management of woodlands to deliver different benefits, this section provides an overview of what is involved in establishing new areas of woodland.

Choosing the site

Where there is a choice of sites for woodland, many factors can have a bearing on the selection. The location may be critical in delivering particular benefits; shelterbelts for example need to be positioned with respect to the prevailing winds and wildlife will make best use of new native woodland where it expands existing woods or develops linked networks of woodland habitat[6]. Hardwood trees grown for high quality timber will be most suited to richer, sheltered sites and easy access will make harvesting timber more feasible in the future. Options will be more limited on steep, exposed and less fertile sites. In all cases new woodland should be designed to fit into the landscape taking account of the local landscape character[7] and historic patterns of land use. Good guidance on locating and designing small woods has been produced by Forestry Commission Scotland[8].

Selecting species

The appropriate tree species[9] will depend on the land available and on your objectives for the wood[10]. If you use locally native species, then nature should be on your side. Native species include Scots pine, sessile oak, downy birch, silver birch, hazel, alder, crab apple, wych elm, aspen, ash, holly, hawthorn, rowan, gean, bird cherry, elder, juniper and willows - though not all will be suitable in every locality.

The sustainability of new woodlands depends on using tree species that match both the site[11] and your objectives. Using appropriate native species which naturally occur locally will ensure compatibility with the site. If longer term objectives include timber production and utilisation commercial conifer species should be considered. Of these only Scots Pine is native, but if managed appropriately Douglas fir, larch, and both Norway and Sitka spruce, can produce timber with local added value potential as a component of a mixed woodland.

Tree spacing

The spacing between planted trees influences their growth. Trees grown close together create a closed canopy more quickly, shading out weeds and lower branches. They usually grow straighter and with fewer branches and knots, while the mutual protection provided by the trees reduces the stress on the tree trunk; all of which contribute to improved timber quality. Woods grown for shelter or screening will tend to include dense planting, but

may also need more open areas where an under-storey can develop. Wildlife habitats also benefit from variety, with clumps of dense woodland and open areas with more ground flora and sunlit patches.

Public grants for planting trees require a minimum number of trees per hectare - usually between 1100 and 3100. Trees planted two metres apart give a density of 2500 trees per hectare. Closer spacing is used where the site is particularly exposed. The spacing can vary across the site, within limits, and some of the area (10-25%) can remain unplanted.

Preparing the ground

A good planting site that is well-drained and free of weeds will improve survival of the seedlings and make planting and future weeding easier. This may be as straightforward as scraping vegetation from where you want to plant the tree, or turning a turf with a spade[12]. Machines can help on all but the most sensitive sites and difficult terrain[13]. On free-draining upland soils, tractor-mounted scarifiers can clear vegetation, leaving a patch for planting. On wetter sites, excavators are used[14] to create individual upturned mounds, providing a drained and (initially) weed-free planting site. Agricultural tractors and ploughs can be used to cultivate[15] in bye or ex-arable land. There are now a number of rotary cultivators that provide better mixing of soils which can be important on some sites. Traditional covered drains may become blocked by tree roots and need replaced by open drains. Where drains are required, you should follow the advice in the Forest and Water Guidelines[16].

On unimproved ground, the emphasis should be on designing the woodland to suit the site, thereby reducing the amount of ground preparation required. The deep ploughing, typical of the upland plantations of the 1970s and 80s, is not now generally considered appropriate. Where wildlife conservation is a primary objective, drainage should be avoided or kept to a minimum, since the soils contain wildlife too.

Fences and protection

Planted or naturally regenerating trees will need protection from browsing and grazing until the trees are well established and have outgrown the vulnerable stage. Livestock will need to be excluded or very closely managed while deer, rabbits and voles may all require control[17]. Vole populations fluctuate and in certain years can cause significant damage, stripping the bark of trees less than 2cm in diameter at ground level[18]. If possible, it is a good idea to reduce deer and rabbit populations before planting and remove any that trespass within the fences.

A combination of protection methods may be appropriate[19]. Tree shelters[20] can be used over small areas on less exposed sites, but if sheep are not excluded from the area, the shelters need to be very well-staked to prevent them from being pushed over. Tree shelters are unlikely to provide sufficient protection from deer. Individual wooden enclosures may be more appropriate for widely-spaced trees in an amenity, wood pasture or parkland setting.

Fencing is normally cheaper for areas over one hectare but a number of environmental factors have to be considered. Fences should be designed to minimise the impact on the landscape[21]. Deer fences need to be routed to allow the wider movement of deer across the hills[22], and sited or constructed in such a way as to reduce collisions by

birds. Where badgers are present, special gates can be installed that allow them access, and prevent them from causing damage to the fence. Gates may need to be installed to maintain public access. The provision for access will need to be considered carefully and the Scottish Outdoor Access Code provides useful information.

Where voles pose a substantial threat, vole guards and spiral guards may be required. Tree shelters need to be very well-fitted just below ground level to prevent voles getting to the trees.

Growing Trees

Natural regeneration

Woodlands regenerate naturally, where conditions allow, and this is the preferred method for restocking semi-natural woodlands or expanding native woodlands especially on ancient woodland sites[23 24]. The surrounding woods need to be able to provide a seed-source of appropriate species. Some preparation of the regeneration site may also be necessary; scarifying the vegetation by machine to expose the soil, or possibly using cattle or pigs to do a similar job. Grazing and browsing[25] will need to be controlled and seedlings may require weeding to improve their chances of survival. Even so, this establishment process can take continued effort over several years. Some work has been done to identify where natural regeneration is a realistic option[26]. Collecting seed and sowing it directly into the ground is not generally considered to be effective[27] . The alternative and most traditional approach is to raise or buy seedlings for planting.

Donald and Maggie Kennedy have run an organic, native tree nursery in Morvern since 1986.

Each year we produce 50-80,000 plants - a mixture of species and sizes depending on seed crops, weather and demand. Some species, like juniper and aspen, we only grow in small numbers, but we usually manage decent crops of downy birch, sessile oak, ash and alder; with wych elm, wild cherry and various willows in most years. Rowan, holly, hawthorn and blackthorn, hazel, bird cherry, elder and a few other fruity shrubs (even wild roses and some gorse and broom) make up the mix of understory species - or plants for hedges and windbreaks. We have little demand for Scots pine, but there's no better work than roping-up into the crowns of the granny pines above Loch Sheil on crisp spring days - gathering cones and renewed inspiration.

We like to keep bureaucracy simple. All our plants are from our local area (provenance Zone 10537) although we're not averse to making special collections if customers want.

Most plants end up on the west coast, where they are best adapted to the environmental conditions.

Everything is supplied bare-rooted, between early December and late March. We usually know our stock availability for the forthcoming season by about the end of August and it helps to have advanced notice for larger orders. We have found the postal service as good as any carrier; very efficient and completely reliable. Occasionally we deliver direct, when it makes sense.

For both of us, the nursery is part-time. I'm also a dry stone waller and general woodland contractor. Maggie works as a carer in the community... and, frankly, does most of the caring for the trees. She's now both the boss and the main worker in the nursery. It is a lot of work. I don't know how she does it.

Donald Kennedy, Organic Trees

Sourcing seeds and seedlings

Native species planted primarily for wildlife conservation are expected to be grown from seed collected close to where they will be planted. A system is in place to enable this and guidance is available.[28] Where trees such as pine, ash, birch, and the introduced conifers are being planted for timber, it is worth considering varieties that have been bred or selected for improved timber properties[29].

Seedlings can be supplied bare-rooted or grown in containers with a small plug of earth. In exposed sites, smaller trees tend to survive better and container grown trees of 15 cm, or even smaller, are often used. On more fertile, sheltered sites, larger trees up to 60cm can be planted. In either case it is important to plant healthy, well-proportioned trees with a strong root system. There are a number of tree nurseries within Scotland ranging from large centralised growers to small remote nurseries. With the smaller nurseries, in particular, you may need to place an order a couple of years in advance.

It is possible to collect seed from local trees, raise them in your garden and plant them out[30 31]. Be prepared though; collecting seed and growing 2000-3000 seedlings for a hectare of mixed woodland takes forward planning and considerable work. Another option is to contract a nursery to raise planting stock from seed you have collected. A few species such as aspen and willow can be grown from cuttings[32].

Planting Trees

Planting a tree is relatively simple, but planting even a small area of new woodland is hard work,[34] particularly on upland sites[35]. Most small-scale and upland areas will be planted by hand[36]. Planting machines are only suited to larger-scale, single-species planting on previously cultivated land.

Prepare a planting plan showing spacing and species mixtures and identifying areas of open space. Planting native trees on a variable site will require an understanding of the particular site requirements of the different species.

Seedlings should be handled gently and stored in a sheltered, shaded place for as short a time as possible before planting. Some species such as birch and larch[37] are particularly sensitive to rough treatment. Keep container-grown seedlings[38] well-watered and bare-rooted stock covered up. Avoid allowing the roots to dry out[39] as it is the fine delicate roots that keep the plant alive in its early days after planting. Plant the seedlings carefully[40] ensuring the roots are spread out and that bare-rooted seedlings are planted to the depth of the root collar - as they were in the nursery. Poorly planted trees will often fail and need to be replanted the next year.

A small application of rock phosphate can help stimulate root growth and activity, but may not always be necessary on very fertile sites or on restocking sites. On infertile sites low levels of phosphate and potassium can limit growth. Small application of slow release fertiliser can overcome this. Nitrogen can cause unsustainable growth rates and should be avoided on establishment and restocking sites except in extreme conditions.

Weeding and maintenance

Planted trees need to be looked-after for a few years to ensure that they become established and grow out of reach of browsing animals. Weed control is critical, especially on more fertile soils[41]. On upland sites, a well-prepared planting site will help to keep weeds to a minimum in the early years.

Grasses, in particular, compete vigorously for nutrients and moisture. Mowing or strimming around the trees will simply make the grass grow faster and enable it to compete better. Bracken and other tall weeds can smother young trees and make it difficult to find and tend them.

Herbicides are sometimes used on larger areas of planting, and may be an effective method of weed control when planting improved grassland sites or areas of dense bracken. The use of herbicides should be kept to a minimum[42]. Alternatives, which are practical on a small scale, include mulches of loose bark or woodchips, or mats of various materials. Aim to maintain a weed-free circle of one metre diameter around each tree. As the canopy closes, the trees start to shade out the weeds and the closer the trees are planted, the quicker this stage is reached.

It is not unusual for a small proportion of planted trees to die and these should be replaced the next year. Tree shelters and fences require regular monitoring and maintenance.

References

Creating new woods

4. **The Institute of Chartered Foresters has a list of professional foresters. http://www.charteredforesters.org/**

5. **The Farming and Wildlife Advisory Group (FWAG) is a charitable farmer-led organisation and Scotland's leading independent provider of environmental and conservation advice to farmers and crofters. Members pay a small membership fee and thereafter for particular services. Initial scoping of opportunities is generally free. http://www.fwag.org.uk/scotland/.**

   The Scottish Agricultural College http://www.sac.ac.uk/ and

   Scottish Native Woods http://www.scottishnativewoods.org.uk/ both provide management advice on woodlands. Local staff may provide some initial scoping of opportunities without charge.

   North Highland Forest Trust http://www.nhft.org.uk/index.htm provides a similar service to community groups and smallholders in the area north of Inverness. NHFT services are free though they will recover costs if subsequent grant applications are successful.

   Forestry Commission Scotland staff http://www.forestry.gov.uk/forestry/HCOU-4U4J23 help administer the grant systems available for forestry and can explain the priorities for different types of woodland in your area and relevant sources of information.

   Scottish Natural Heritage http://www.snh.org.uk/about/ab-hq.asp should be consulted regarding management of woodland within Sites of Special Scientific Interest.

6. Forest Habitat Networks Forest Research
http://www.forestresearch.gov.uk/habitat-networks
Habitat Networks for Wildlife and People
Scottish Natural Heritage and Forestry Commission Scotland 2003.
This publication is not available online but can be ordered through the Forestry Commission website, http://www.forestry.gov.uk

7. *Landscape Character Assessments*
Scottish Natural Heritage.
A series of landscape character assessments has been produced covering much of Scotland. These describe the dominant land characteristics in a locality and discuss the appropriateness of landscape changes.
http://www.snh.org.uk/pubs/results.asp?Q=landscape+character+assessment&rpp=10

8. *The Creation of Small Woodlands on Farms*
Forestry Commission Scotland 2006.
This very useful book describes in simple terms the benefits of small woods and provides advice on location and design.
http://www.forestry.gov.uk/pdf/Text.pdf/$FILE/Text.pdf

Selecting species

9. *The Ecological Site Classification Decision Support System* Forest Research.
This is a PC-based system helps guide forest managers and planners to select species that are ecologically suited to sites.
http://www.forestry.gov.uk/esc

10. *The Site Requirements and Uses of Selected Tree and Shrub Species* Bernard Planterose and the Scottish Crofters Union
This table has been extracted from Appendix 4 of the Crofting Forestry Handbook 1993
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11. *Creating New Native Woodlands*
Forestry Commission Bulletin 112 1994.
This book describes the selection of the appropriate type of new native woodland for any particular site and gives guidance on the species composition, design and silvicultural methods to promote overall development of the woodland ecosystem. This publication is not available online but can be ordered through the Forestry Commission website.
http://www.forestry.gov.uk

Preparing the ground

12. *Woodland Establishment and Maintenance in the Western Isles.* Comhairle nan Eilean Siar, Woodland Information Note.
http://www.cnesiar.gov.uk/woodlands/documents/woodlandsEnglish.pdf

13. *Forest Ground Preparation* Forest Research Information Note Odw 10.01.
This leaflet outlines the suitability of various machines for ground preparation in different situations.
http://www.forestry.gov.uk/pdf/ODW1001.pdf/$FILE/ODW1001.pdf

14. *Excavator Mound Spacing on Restocking Sites*.
Forest Research Technical Note 2004.
http://www.forestry.gov.uk/pdf/FCTN008.pdf/$FILE/FCTN008.pdf

15. *Site Preparation for New Farm Woodlands*.
Scottish Agricultural College Technical Note 590.
This note concentrates on site preparation for planting on better quality land – previously arable or improved pasture.
http://www.sac.ac.uk/mainrep/pdfs/tn590sitefarmwoods.pdf

16. *Forest and Water Guidelines 4th Edition*
Forestry Commission 2003.
This book gives guidance to forest managers on how forests should be designed and operations planned, and to practitioners on how field operations should be carried out in order to protect and enhance the water environment.
http://www.forestry.gov.uk/PDF/fcgl002.pdf/$FILE/fcgl002.pdf

Fencing and protection

17. *The Prevention of Mammal Damage to Trees in Woodland* Forestry Commission Practice Note 1998. This note is designed to help woodland managers to diagnose mammal damage, to evaluate its severity, to consider management options and to determine the appropriate action to take.
http://www.forestresearch.gov.uk/pdf/fcpn3.pdf/$FILE/fcpn3.pdf

18. *Protecting Young Woodlands from Vole Damage*
Scottish Agricultural College Technical Note 566.
http://www.sac.ac.uk/mainrep/pdfs/tn566woodlandsvoledamage.pdf

19. *Fences and Protection* Scottish Agricultural College Technical Note 591 2007.
A practical guide to establishing farm woodlands, concentrating on protecting newly planted farm woods from rabbits, deer and farm stock.
http://www.sac.ac.uk/mainrep/pdfs/tn591woodlandsfences.pdf

20. *Tree Planting and Aftercare – a practical handbook* BTCV.
The section on tree protection provides advice on damage to trees and detail on tree guards and shelters.
http://handbooks.btcv.org.uk/handbooks/content/section/3580

21. *Forest Fencing*
Forest Research Technical Guide 2006.
This comprehensive booklet provides details on the best materials, techniques and practice for forest fencing.
http://www.forestry.gov.uk/PDF/fctg002.pdf/$FILE/fctg002.pdf

22. *Best Practice Guide on Planning Deer Fences*
Deer Commission Scotland.
http://www.bestpracticeguides.org.uk/crop_fencing.aspx

Natural Regeneration

23. *Restoration of Native Woodland on Ancient Woodland Sites* Forestry Commission Practice Guide 2003. This book is about how to restore and expand remnants of ancient woodland to conserve their ecological value.
http://www.forestry.gov.uk/PDF/fcpg014.pdf/$FILE/fcpg014.pdf

24. *The Conservation and Restoration of Plantations on Ancient Woodland Sites; a guide for woodland owners and managers* Woodland Trust 2005.
This booklet describes management approaches to maintaining and enhancing remnant features of ancient woodlands.
http://www.woodlandtrust.org.uk/SiteCollectionDocuments/pdf/policy-and-campaigns/woodland-restoration/paws-guide-09.pdf

25. *Natural Regeneration in Broadleaved Wooodlands: Deer Browsing and the Establishment of Advance Regeneration* Forestry Commission Information Note 35 2000.
http://www.forestry.gov.uk/pdf/fcin35.pdf/$FILE/fcin35.pdf

26. *Predicting Site Suitability for Natural Colonisation: Upland Birchwoods and Native Pinewoods in Northern Scotland* Forest Research Information Note 2004.
This note describes situations where natural colonisation may be a possible means to establish new areas of native woodland.
http://www.forestresearch.gov.uk/pdf/fcin054.pdf/$FILE/fcin054.pdf

27. *The Potential for Direct Seeding of Birch on Restock Sites* Forestry Commission Information Note 2007.
http://www.forestry.gov.uk/pdf/FCIN084.pdf/$FILE/FCIN084.pdf

Seeds and seedlings

28. *Seed Sources for Planting Native Trees and Shrubs in Scotland* Forestry Commission Scotland Guidance Note 2006.
This guidance note sets out Forestry Commission Scotland policy for selecting suitable origins, provenances and categories of planting material for planting native species of trees and shrubs in Scotland.
http://www.forestry.gov.uk/pdf/seedsourcefcfc151.pdf/$FILE/seedsourcefcfc151.pdf

29. *Choosing Provenance in Broadleaved Trees*
Forestry Commission Information Note 2006.
This Information Note reviews evidence from trials and provides recommendations and advice to growers seeking to select the best broadleaved provenances for British conditions.
http://www.forestry.gov.uk/PDF/fcin082.pdf/$FILE/fcin082.pdf

Selecting the Right Provenance of Oak for Planting in Britain Forestry Commission Information Note 2005.
This Information Note summarises the data from two series of oak provenance trials established in Great Britain in 1990 and 1992 and provides recommendations for provenance selection.
http://www.forestry.gov.uk/pdf/fcin082.pdf/$FILE/fcin082.pdf

30. *Raising Trees and Shrubs from Seed* Forestry Commission Practice Guide 2007.
This is aimed principally at people interested in raising small numbers of trees to plant in the garden. It describes some of the basic properties of tree seeds, principles of seed handling, and explains how to avoid or overcome common problems. It covers approximately 120 woody species which are either native to, or commonly grown in, the British Isles.
http://www.forestry.gov.uk/PDF/fcpg018.pdf/$FILE/fcpg018.pdf

31. *Native Woodlands in The Western Isles: A guide to their restoration* Western Isles Council, Comhairle nan Eilean Siar.
This booklet describes the tree species native to the Western Isles, the site conditions that suit them and how they can be grown from cuttings or seeds.
http://www.cnesiar.gov.uk/woodlands/documents/NativeWoodlandBooklet.pdf

32. *Advice on Rooting Cuttings of Aspen.*
http://www.treesforlife.org.uk/tfl.aspen_propagation.html

Planting trees

33. *Seed Sources for Planting Native Trees and Shrubs in Scotland* Forestry Commission Scotland Guidance Note 2006.
This guidance note sets out Forestry Commission Scotland policy for selecting suitable origins, provenances and categories of planting material for planting native species of trees and shrubs in Scotland.
http://www.forestry.gov.uk/pdf/seedsourcefcfc151.pdf/$FILE/seedsourcefcfc151.pdf

34. *New Planting of Farm Woodlands: Output Guidance* Forest Research Technical Note 4/98.
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http://www.highlandbirchwoods.co.uk/userfiles/file/publications/Forest%20Research%20Reports/TN0498%20New%20Planting.pdf

35. *Woodland Regeneration in the Far North: The challenges of growing trees in a marginal Highland environment* North Highland Forest Trust Annual Forum 2006.
This describes some examples of small scale planting in Highlands.
http://www.nhft.org.uk/documents/Forum%20Report%202006.pdf

36. *Tree Planting* Forest Research Information Note Odw 10:02.
This note provides a simple guide to hand planting trees.
http://www.forestry.gov.uk/pdf/ODW1002.pdf/$FILE/ODW1002.pdf

37. *An Update on Nursery Propagation and Establishment Best Practice for Larch in Britain* Forestry Commission Information Note 2006.
This summarises the results of a series of experiments, including a synthesis of data from previous Forest Research publications. The optimum time for handling, cold storage and planting is described.
http://www.forestry.gov.uk/PDF/fcin080.pdf/$FILE/fcin080.pdf

38. *Advice on Container Grown Seedlings* Alba Trees.
This website includes advice from a nursery on handling and planting container grown seedlings
http://www.albatrees.co.uk/downloads/alba_trees_handbook.pdf?view=674

39. *Plants & Planting Methods* Scottish Agricultural College Technical Note 592.
This provides information on selecting seedlings and planting trees on farm land.
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40. *Tree Planting and Aftercare – a practical handbook* BTCV.
The section on planting methods provides advice on the following types of planting: Notch planting of bare-root plants, planting cell-grown plants, pit planting of bare-root plants, planting container-grown plants , direct planting of cuttings and sets
http://handbooks.btcv.org.uk/handbooks/content/section/3579

Weed control and maintenance

41. *Maintenance of Young Farm Woodlands* Scottish Agricultural College Technical Note 593.
This provides details on herbicides for weed control and maintenance of tree shelters.
http://www.sac.ac.uk/mainrep/pdfs/tn593youngfarmwoodlands.pdf

42. *Reducing Pesticide Use in Forestry* Forestry Commission Practice Guide 2004.
http://www.forestry.gov.uk/pdf/fcpg015.pdf/$FILE/fcpg015.pdf

Managing Small Woodlands

Left to themselves, woods will grow and develop as best they can. Management is the process of helping the woodland to deliver more of what we want. Sections of this handbook provide information about managing woodlands for various benefits.

Planning ahead

It is worthwhile making some effort to learn about your woodland; its history[43]; the species in it and how it has been managed in the past[44]. Spend time in it; find out who and what uses it; observe it through the seasons and look at other woodlands in the locality to compare composition and influences of previous management.

> *'One of our first steps was to carry out a full inventory of the wildlife, with maps showing the locations of particular species'*
>
> A smallholding by a Highland river

Local staff of some public agencies and Non Governmental Organisations may provide a degree of free, informal advice to point you in the right direction[45]. A professional forester[46] will give you a considered overview of the realistic opportunities. A formal survey[47] of the wood may be appropriate to determine its commercial, ecological and other values.

It is a good idea to talk to non-professionals as well; neighbours with opinions about the wood, locals who shoot the rabbits and deer, the dog walkers, the mushroom collectors and the local children who enjoy the rope swing over the stream. Most of all, consider your own interests. How much of your time, effort and money are you prepared to commit, and in what respects?

A management plan describes the woodland, considers the options and opportunities available and relates these to your interests. It sets out what you want to achieve and how you intend to do it[48]. A management plan for a small wood need not be complicated; at its simplest it may be no more than a page or two. If you are applying for a grant you will need to prepare a management plan in an acceptable format[49], having discussed this with your adviser or local Forestry Commission Scotland office[50]. There are likely to be certain conditions that need to be met for grant support.

A simple management plan will include the following:

Woodland Description

- The name, location and area of the wood
- The existing woodland type (e.g. birchwood, ancient oakwood, spruce plantation) and the tree species present.
- The structure of the wood - the range of sizes and ages of the trees and the extent of regeneration of young trees.
- Constraints that restrict what can be done with the wood, such as difficult access, steep slopes, sensitive wildlife or habitats, water courses and water supplies, wayleaves for power lines, rights of way or conflicting uses of the site, landscape considerations, scheduled monuments or areas of land that are designated for conservation.
- Opportunities to develop particular aspects of the wood such as timber, public access, shelter, amenity, wildlife or riparian protection.
- Threats such as overgrazing, flytipping of rubbish or windthrown trees.
- Maps showing the site, the woodland types and constraints

Management aims and objectives

- Describe the benefits you would like to enhance and how you would like to see the wood develop.
- Work Programme - show how you are going to make the most of the opportunities and reduce the threats, set within a 5 year plan of operations
- Maps that show where different work will take place.

'It is worthwhile making some effort to learn about your woodland; its history; the species in it and how it has been managed in the past.

Trees take many years to grow, making it necessary for a management plan to look well into the future. Markets and priorities will change however, so it is sensible to keep options open. A long-term vision needs to be supported by a more practical management plan covering the next five years or so.

Management may involve making changes to the woodland itself: altering its size and structure, encouraging diverse regeneration or adjusting the mix of tree species and other plants to produce harvestable material. Habitats can be encouraged for particular species, grazing managed, views opened-up and shelter for livestock or game improved. Management might also involve improving access: creating roads or tracks for harvesting, or constructing paths and shelters for public use.

Deciding what you want to achieve and how to go about it may seem complicated. A professional forester can help you to set out some simple, clear, short-term objectives. You will need to describe clearly what you expect to see happen. In a few years you can look back and judge whether your management is working or if it needs to be adjusted.

Making changes to a landscape, by planting trees, harvesting trees or building paths and tracks can attract public concern, often related to the visual impact. Native woodlands designed on ecological grounds will tend to suit the landscape but there may still be particular features of a site that need to be considered. [51] Provided changes take account of the local landscape character[52] and the available guidance on landscape, woodland improvement should enhance the landscape in the long term. Nevertheless, it is a good idea to inform local people about proposed works in advance and to explain the changes being made.

Managing woods

Silviculture is the art and science of growing trees in forests. In the past, trees were used for a myriad of everyday items and management systems were developed to produce particular products and to ensure that woods regenerated after harvesting. These traditional systems still form the basis of our approaches to woodland management, although they are always being refined and developed to suit new products and uses of woodland.

Broadleaved trees can be coppiced[53]; cut back to a low stump from which multiple stems will grow again quickly, if protected from browsing. For a period in the 18th and 19th centuries, oak was coppiced on an industrial scale; the stems were harvested every twenty years or so for the bark, which was used for tanning, and to make charcoal for iron smelting. Many other broadleaved species including ash, alder and hazel, can also be coppiced to produce poles and firewood. In the past, trees in open pasture were sometimes pollarded, cut back to high stumps which could regenerate out of the reach of grazing animals.

Trees for sawn timber[54] are best raised from seedlings, grown close together. As the trees grow, smaller or mis-shapen trees are thinned out[55] to allow better trees to grow on with less competition. This is done on a regular pattern perhaps once every five years, starting when the trees are 15-25 years old. Different species might require different styles of thinning; ash and larch for example need more space for each tree and need thinned before their crowns get too congested. As the trees mature and thinning progresses more light reaches the forest floor and ground vegetation and seedlings become established. Thinning may not be recommended for all sites exposed to frequent strong winds because of the risk of windthrow. Stands of trees growing in windy environments develop wind-firm edges of robust, well-rooted trees. Thinning or harvesting can expose trees in the centre of the stand to levels of wind they are not used to and this increases the risk of trees being

blown over or snapped in the wind. Clearing areas of windthrown trees is dangerous and expensive work.

Many of the large plantation woodlands we see today were planted to offset timber shortage following the two world wars. These are often conifers planted in a uniform pattern and managed on a 40 - 60 year rotation before being clear felled and replanted. The process of forest planning both in private woodlands and in the National Forest Estate is ensuring that restructuring is taking place to increase diversity, create areas of varied age and species, manage some areas for continuous woodland cover and retain some areas of old growth as long as possible.

In more sheltered areas, woods can be managed under a continuous cover system[57]. Individual trees or small groups of trees are harvested carefully in areas where an under-storey of young trees is ready to take their place and where seed from surrounding trees can be blown into the gap. Some tree species lend themselves better to this approach than others. Alternatively larger areas are cleared, leaving a few 'seed trees' to repopulate the site. The approach taken will depend on whether the future generation of trees is 'light demanding' or 'shade tolerant'. The costs of harvesting may be higher under a continuous cover system but on the other hand income from sales will be more regular. If natural regeneration is successful some of the costs of replanting should be avoided.

For woodlands that are particularly valuable for wildlife, a minimum management approach is often taken. Threats to the wood are dealt with, such as preventing excessive grazing or removing rhododendron that is displacing native species, and steps are taken to ensure regeneration. Once such things are under control, nature is allowed to take its course. For inaccessible woods growing on steep slopes, river gorges or wetlands, minimum management may be the only sensible option. In other situations, even though a wood

may be valuable for wildlife it may still be possible to manage it sensitively [58] for timber and other benefits[59] [60].

Small woods are often used for sheltering and grazing livestock. There has always been a balance to be struck between allowing grazing and enabling periodic regeneration of the trees. At a certain level, seasonal grazing (particularly by cattle) actually helps woodland regeneration, scarifying the ground and creating pockets for seed germination. However, constant high levels of stock will degrade and eventually decimate woodlands. The art of managing grazing in woodlands to benefit the trees, wildlife and livestock, is gradually being re-learned[61].

Deer are a natural feature of woodlands. Red and roe deer are native to Scotland and a valued part of our wildlife. There are also two species of introduced deer: Sika, which are present throughout the mainland, and fallow deer, which occur in certain areas within the Highlands and Argyll. Lacking any natural predators, deer populations can reach a level where they cause damage to the economic or habitat value of woodlands and require control. At the same time, people enjoy seeing deer; and venison sales can provide a source of income to woodland owners.

Deer range over large areas and therefore it makes sense to work with neighbouring landowners to agree a common approach to their management. Deer management groups[62] already exist over much of highland Scotland. SNH's Deer Panel arranges training courses and publishes best practice guides[63] on subjects such as fence and crop protection, assessing the impacts of deer on woodland, and planning forests in relation to deer.

References

Planning ahead

43. 1st Edition of the Ordnance Survey maps
These show woods around c1850 and are an excellent starting point.
http://www.nls.uk/maps/early/os_scotland_oneinch_1st_list.html.

44. National Archives of Scotland
Any historical records will likely be online here: Search using the name of the wood - but you will have to go to Edinburgh to see actual documents.
http://www.nas.gov.uk/catalogues/default.asp.

45. The Farming and Wildlife Advisory Group (FWAG) **is a charitable farmer-led organisation and Scotland's leading independent provider of environmental and conservation advice to farmers and crofters. Members pay a small membership fee and thereafter for particular services. Initial scoping of opportunities is generally free.**
http://www.fwag.org.uk/scotland/

The Scottish Agricultural College
http://www.sac.ac.uk/ and

Scottish Native Woods
http://www.scottishnativewoods.org.uk/ both provide management advice on woodlands. Local staff may provide some initial scoping of opportunities without charge.

North Highland Forest Trust
http://www.nhft.org.uk/index.htm provides a similar service to community groups and smallholders in the area north of Inverness. NHFT services are free though they will recover costs if subsequent grant applications are successful.

Forestry Commission Scotland **staff http://www.forestry.gov.uk/forestry/HCOU-4U4J23 help administer the grant systems available for forestry and can explain the priorities for different types of woodland in your area and relevant sources of information.**

Scottish Natural Heritage
http://www.snh.org.uk/about/ab-hq.asp should be consulted regarding management of woodland within Sites of Special Scientific Interest.

46. The Institute of Chartered Foresters **has a list of professional foresters.**
http://www.charteredforesters.org/

47. *Native Woodland Condition Surveys* **Forestry Commission Scotland Guidance Note No 7 1996.**
This guidance note explains the formal survey process used for surveying the ecological value

(condition) of native woods.
http://www.forestry.gov.uk/pdf/NatWoodCondSurv.pdf/$FILE/NatWoodCondSurv.pdf

48. This website has a template for a management plan designed for English woodlands but is relevant nonetheless.
http://www.forestry.gov.uk/forestry/infd-6dccn3

49. *Management Plans For Semi-Natural Woodlands Under WGS* Forestry Commission National Office for Scotland, Guidance Note No 12.
This sets out a template and an example of a management plan for semi-natural woodland. It is in the format required for a previous grant scheme and may be superseded in due course.
http://www.forestry.gov.uk/pdf/guidancenote12.pdf/$FILE/guidancenote12.pdf

50. Forestry Commission Scotland offices
The website provides contact details.
www.forestry.gov.uk

51. *Forest Design Planning: A Guide to Good Practice* Forestry Practice Guide 1998.
This guide is primarily about managing larger plantations, changing their structure and design over time so they fit better within the landscape. The ideas and practical approaches suggested are also relevant to smaller plantations.
http://www.forestry.gov.uk/PDF/fdp.pdf/$FILE/fdp.pdf

Landscape Design And Presentation For Small Woodlands Forestry Commission Guidance Note No 23 2003
The intention of this guidance note is to give practical advice on the design and presentation of small woodland proposals submitted to the Forestry Commission. It looks at the level of written and visual information which Forestry Commission staff would like to see to help them evaluate the possible visual and environmental impacts of the proposals.
http://www.forestry.gov.uk/pdf/guidancenote23.pdf/$FILE/guidancenote23.pdf

52. Scottish Natural Heritage has produced a series of landscape character assessments covering much of Scotland. These describe the dominant land characteristics in a locality and discuss the appropriateness of landscape changes.
http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/lca/

53. *The Silviculture and Management of Coppice Woodlands* Forestry Commission Management Handbook. This publication is not available online but can be ordered through the Forestry Commission website. www.forestry.gov.uk

54. *Growing Broadleaves for Timber* Forestry Commission Management Handbook No 9 1993.
This handbook is not available online but can be ordered through the Forestry Commission website. www.forestry.gov.uk

55. *Thinning In Atlantic Oakwoods; assessing options at the stand scale* Highland Birchwoods 2005
http://www.highlandbirchwoods.co.uk/UserFiles/File/publications/CoreReports/AtlanticWoodlandsLR.pdf

56. *Forestry Practice* Forestry Commission Management Handbook 6.
This handbook is the main text on plantation management. It is not available online but can be ordered through the Forestry Commission website. www.forestry.gov.uk

57. *What is Continuous Cover Forestry?* Forestry Commission Information Note 1999
http://www.forestry.gov.uk/pdf/fcin29.pdf/$FILE/fcin29.pdf

58. *The Sunart Oakwoods: A Guide To Their Sustainable Management* Highland Birchwoods 2005
http://www.highlandbirchwoods.co.uk/UserFiles/File/publications/CoreReports/SunartOakwoods.pdf

59. *Managing the Pinewoods of Scotland* Forestry Commission Management Handbook 2004.
This handbook is not available online but can be ordered through the Forestry Commission website. www.forestry.gov.uk

60. *The Birch Woodland Management Handbook* Highland Birchwoods 1999.
This provides detail on managing birch woodland for various benefits including timber, wild harvests, stock and game, fisheries and conservation.
http://www.highlandbirchwoods.co.uk/UserFiles/File/publications/Birchhand/Birchhandbook.pdf

61. *The Woodland Grazing Toolkit*
This describes how to plan for managed grazing in woodlands.
http://www.argyllbute.gov.uk/biodiversity/Biodiversity%20in%20Argyll_files/Grazing%20Plan%20Toolkit%20ver%20June%202006%20(low).pdf

62. *Association of Deer Management Groups*
http://www.deermanagement.co.uk/dmg1.php

63. *Best Practice Guides* SNH's Deer Panel
http://www.bestpracticeguides.org.uk/

'Much of our wildlife - plants and animals - tend to be derived from woodland ecosystems'

Woods for Wildlife

Scotland was much more extensively wooded in the past with woodland cover as high as 60%. Much of our wildlife - plants and animals - tend to be derived from woodland ecosystems. Only 1% of our original forest remains and these ancient semi-natural woodlands provide a last refuge for less adaptable species. Native woodlands and plantations of introduced species offer suitable wildlife habitat, especially where they are part of a wider habitat network. Linking woods through glens, along rivers or around lochs is important. Enlarging native woodland to suitable sites and diversifying plantations allows for the plants and animals that live in them to thrive. At some point the reintroduction of species that were once part of these woodlands may be considered.

Semi-natural woods

More than two-thirds of small woods in the Highlands and Islands are semi-natural remnants of our native woodlands. All would have been used in the past for wood products, grazing and shelter. Most have suffered in recent centuries from heavy grazing so that the diversity of tree species has been much reduced. Despite this, they still provide a vital habitat for our wildlife[65]. Birds, mammals, insects, amphibians, plants, lichens, fungi, rare butterflies[66], snakes, spiders and ants[67], all depend on them[68]. A few of the larger semi-natural woods are protected[69] as Sites of Special Scientific Interest or Special Areas of Conservation.

The priority for managing semi-natural woodlands is to improve their diversity. Usually this involves encouraging natural regeneration or limited planting to bring back the range of native species and develop a more natural structure[70]. Particular types of semi-natural woodland can be distinguished and a series of Forest Practice Guides provide management guidance for each type.

Across much of the Highlands and Islands, it is birchwoods[75] that dominate. In the less sheltered parts of the west and north, downy birch grows with rowan, willows and hazel in low-canopied, scrubby woodlands. In the east and central highlands the more elegant silver birch forms almost pure stands, gradually becoming part of the native pinewood communities. Birch trees are common to all our native woods. As a pioneer tree, it is usually the first tree to regenerate when grazing

The western coastal fringes of Scotland are home to the Atlantic oakwoods;[71] slow growing woods of oak, birch, rowan, hazel and holly, their canopies strewn with lichens. The forest floor has blaeberries, mosses and ferns. Many were coppiced in the 18th and 19th centuries for firewood or for tanning bark and most have been grazed. Some are now choked by rhododendron, others were under-planted with spruce trees in the heady days of plantation forestry; these are now being removed.

Ashwoods[74] grow on patches of better soils, though many were long ago converted to pasture or land for cultivation. The ash grows alongside wych elm, hawthorn, rowan, birch and often stands of sycamore. On the ground in spring there are primroses, violets, wood avens and bluebells.

In some exposed coastal sites, patches of hazel occur in thick, dense stands.

Rhododendron[72] is an evergreen shrub, varieties of which were introduced to gardens and parks in the 18th century and sometimes planted within woods to improve cover for game. It has spread easily within the woods of the Highlands and Islands and in some cases completely dominates the understorey, which could otherwise be filled by native species, such as holly and hazel, and young trees. Rhododendron shades out the ground flora and reduces the wildlife value of the woods. Controlling Rhododendron and other invasive shrubs, such as cotoneaster, snowberry and knotweeds, is often a first step in improving the wildlife value of woodlands but takes a sustained and deliberate programme of control[73]. A single rhododendron bush can produce a million windblown seeds and so cooperation with neighbours is essential if eradication is to be effective in the long term.

is reduced and one of the last to disappear if the wood is harvested or over-grazed. It can survive exposure and will grow further up the hills than oak and ash.

Where it gets wetter on the edges of bogs and mires, wet woodlands[76] of birch, alder and willow grow with a ground flora of sphagnum moss and purple moor grass and occasional patches of yellow flag irises. Alder is common in strips along the highland rivers and in a few areas it still forms dense woods of multi-stemmed trees - the 'black woods', coppiced in the past for fuel wood.

The remnant native pinewoods[77] have been a focus for conservation since the 1950s. The larger pinewoods are found around the Cairngorms and in Glen Affric, although smaller patches extend south and westwards. Most are already under careful management. In the 1990s, many new native pinewoods were planted, often in small areas remote from other woods. As these mature there will be opportunities to improve their conservation value and make use of the timber.

The richest habitats tend to be where woodland has been present continuously over many centuries maintaining a rich diversity of flowers, ferns, lichens and mosses. The soils in these ancient woods can contain woodland-specialist fungi and other wildlife lost from much of the landscape. Reliable records only go back into recent history and so 'ancient woodlands'[78] are defined as those that appear on 18th century maps. Many ancient woodlands were planted with introduced conifers in the 20th century. In time, the conifers shade out the native species and the irreplaceable habitat is degraded or lost. The government has set targets for restoring native species to ancient woodland[79]sites with action plans and partnerships at national80 and local authority[81] levels to promote this.

The small ancient and semi-natural woods are fragments of what were once much wider swathes of woodland. As the habitat was divided up fragments have become isolated, separated from one another by fields, plantations, roads and houses. In the process the wildlife populations they support also diminish[82]. The wider strategy for woodland conservation is to expand the semi-natural woods and in the longer term to begin to link them into networks of habitat[83], creating bigger, more robust areas of woodland and other open habitats. In the longer term such networks may also help some species to move in response to a changing climate.

'Four near-contiguous schemes form a substantial area of new native woods of around 500 hectares, and many of the new plantings connect up fragments of remnant woods, so the ecological benefits will be significant'

Crofter Forestry in Assynt

Riparian woods[84] can play a key part in developing woodland networks. Woods of alder, willow, birch, ash, and hazel grow on the banks of burns, rivers and lochs. They are often the last refuge for native woodland and its dependent wildlife. They help maintain the health of our rivers, stabilising banks and providing nutrients, shade and cover. Many of the wider floodplain woods have been cleared for pasture or agriculture and often only a thin strip of trees is left on river banks or hidden in the steeper gullies cut by the burns. Re-establishing the semi-natural woods along our rivers is a priority for the Highlands[85].

Along the coast line, exposure to salt-laden winds limits the growth of most trees. Salt-burnt foliage can be seen on trees several hundred metres from the coast, appearing weeks after storm winds. However a coastal scrub of birch, willows, hazel, aspen, juniper and blackthorn can survive right down to the shoreline, as windswept clumps of trees. It provides cover for otters and birdlife, and shelter for sheep, coastal roads and houses. Some introduced species such as sycamore and lodgepole pine are known to be fairly salt resistant.

Higher up the hills, native woodland would have graded from a natural treeline into montane scrub[86]. At these altitudes, the lower temperatures mean a shorter growing season and icy winds prune varieties of juniper, willow and birch into low-

spreading shrubs. Montane scrub has survived in only a few places but those that remain are important for alpine plant and birdlife. It is being restored in some places[87] and, in time, a more robust scrub habitat could benefit wildlife and game and add diversity to the landscape.

There has been a long history of grazing in Scottish woods and evidence of wood pasture[88] survives throughout the Highlands: open-grown trees scattered across the hillside or in grazing parks along what used to be old drove roads. Some no doubt arose by chance, when periods of reduced grazing allowed tree regeneration, but some may have been deliberately maintained as wood pasture. Lacking competition, the trees that remain can endure for centuries, becoming 'veteran trees'. With sparse crowns, hollows and fissured bark they become a living generator of deadwood habitat, home to specialist fungi, lichens and insects, while providing roosts for birds and bats[89]. Many wood pastures have been grazed out, others have regenerated as more dense woodland. Areas of wood pasture were often planted up with introduced conifers that quickly shade out and displace the ancient trees. Veteran trees should be maintained, by gradually removing competing trees and through managed grazing. Bringing on another generation of mature trees nearby is crucial for the survival of the associated species.

'Growth rings on the fallen alder scattered throughout the woodland shows the trees are between 50 and 75 years old, although there are a few broad-crowned "veterans" that are probably much older'

A smallholding by a Highland river

Semi-natural open habitats including bogs, heaths, coastal grasslands and wetlands are also important[90] and, in a few situations, wildlife may be better served by removing trees. In such cases advice should be sought from Scottish Natural Heritage.

Invasives

An invasive non-native species is one that has been transported outside of its natural range and that threatens environmental, agricultural or economic resources. Non-native invasive plants are the second most important threat to our native plants after habitat destruction. The problems they cause are very significant for and expensive to address - in 2007 the Minister for Biodiversity stated that non-native invasive species cost Britain £2 billion every single year.

In the past, natural barriers such as oceans, mountain ranges and inhospitable climates have allowed unique ecosystems and species to evolve. Increasing levels of activities such as global trade, tourism and travel have resulted in an unprecedented dispersal of species into new habitats throughout the world.

When transported to new habitats these species are without their natural competitors or predators and they are able to dominate or out-compete native species.

In woodlands some of the tree species (eg Sitka spruce) introduced for economic reasons are invasives that can have a damaging effect on native plant and animal species, but most of the problematic invasive species have originated from gardens (eg Sycamore, Giant Hogweed, Japanese Knotweed, Snowberry and Rhododendron ponticum.

Once established, invasive species are often very difficult and costly to control or eradicate, which is why prevention is so important. Where invasives are already present it is important to carry out an assessment of their potential to spread, options for containment or eradication, and the extent to which the invasive species contribute to, or compromise management objectives. Most importantly, there should be an assessment of their potential impact on biodiversity in general, and priority habitats and species in particular.

In many cases complete eradication will not be necessary. For instance as long as unwanted regeneration is controlled and an appropriate assemblage of native species maintained, retention of Sitka Spruce for economic objectives may be justifiable. Similarly, Sycamore can have a valuable role as a nurse crop, and will not present a risk if it is felled before sexual maturity.

In other cases removal will always preferable. For instance Giant Hogweed removal will be essential in any woodland with a recreation objective or with recreation areas adjacent or downstream of it. Giant Hogweed and Japanese Knotweed are two of the plants listed in Schedule 9 of the Wildlife & Countryside Act which it is illegal to plant or cause to grow.

Currently Rhododendron ponticum is one of the species included in the Scottish Natural Heritage Species Action Framework. It was introduced into Britain in the mid 1700s as an ornamental plant. Since then it has become widespread, particularly in woodland habitats on the west coast of Scotland. Although the flowers give a colourful display, it creates dense thickets and shades out native plants. Its root system and leaf litter is also toxic to other plants and it will eventually come to dominate the habitat, to the total exclusion of virtually all other vegetation. As a non-native species it provides few compensating benefits for native birds or animals. As with many invasive species, successful control is dependent on follow up action as required.

For more information on invasive species, see:
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Japanese Knotweed code of practice and control measures
http://www.nonnativespecies.org/
http://www.nonnativespecies.org/documents/Invasive_NNS_Framework_Strategy_GB_E.pdf
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Woods for Timber

Throughout history, local people have made good use of timber from the woods around them; for houses, furniture, fences, ploughs, boats, barrels, carts, wheels and tools. At one time, estates and rural communities had small sawmills adding value to locally grown timber. Most have now closed, but in some areas there is resurgence in traditional woodworking and in small scale or mobile timber processing.

Even on exposed sites with relatively infertile soils, most small woods can produce some useable timber and non-timber products. However, unless there has been deliberate management for timber it is unlikely it will be of a quality, and available in the sort of quantity, that is easily marketable. It may however be possible to add value or use it locally.

There are, of course, plantations of spruce and pine throughout the Highlands and Islands that were planted for timber. The best of these are on sheltered, accessible sites and some have been thinned to improve timber quality and increase the amount of larger logs suitable for sawn timber.

Many, particularly the spruce plantations in the west, have remained unthinned yielding a high proportion of small diameter logs when the crops are clearfelled. In addition, while the mild wet climate favours the fast growth of spruce this makes the wood less dense and suitable for only the lower-grades of structural timber, or for pulp or fuelwood. The value of such a crop depends to a large extent on the costs of harvesting and transport, which can be high where forest roads need to be built and the plantation is remote from markets. Economies of scale are important and the returns may be better if the wood can be managed as part of a wider plantation resource.

Timber crops

Woodland owners who are considering growing timber for future markets should aim to produce timber to which value can be added locally, because haulage costs to distant markets can significantly reduce returns.

There is a range of species that grow well in the Highlands and Islands and have properties that suit

'...most small woods can produce some useable timber and non-timber products.'

local markets[91]. Hardwoods include ash, birch, oak, elm, alder and cherry as well as sycamore and beech. Conifer such as Scots pine, larch and Douglas fir meet various needs and are all marketable for local use.

Regardless of the primary objective it is worth considering future timber potential when planting or managing woods. The key to producing timber is to plant the trees close together, regularly thin out the weaker trees and provide space for the best trees to produce a final crop. Initial wide spacing encourages larger branches and large crowns, which in turn create knots and stresses that reduce the value of the sawn timber and the length of the main stem suitable for sawmilling. Consider planting clumps of closely-spaced oak, elm, or ash, for example, in sheltered patches within a wider woodland scheme.

When restocking existing woodlands, a mixture of species may result from natural regeneration. Different species grow at different rates and thrive on different levels of shading, making stands of intermixed species[92] more complicated (and more interesting) to manage. On new sites, planting a mosaic of different species in groups of 50-100 trees of each species, may be more appropriate than creating a monoculture or an intimate mix of species.

A more intensive approach to growing timber may be possible on better quality (probably previously cultivated) land. The larger nurseries can provide planting stock grown from genetically improved seed or from cuttings selected for better quality timber. Trees would be planted at a close spacing (2m by 2m or closer), protected from browsing animals and weeded until the canopy closes. Once the trees are established (1.5-2m tall) trees can be pruned to ensure there is a single stem taking the lead. Model prescriptions have been derived for some species setting out the most appropriate planting densities and thinning schedules[93].

Typically the first thinning will take place when the trees are 15-25 years old, removing up to a third of the trees. Thereafter regular gradual thinnings should be undertaken, favouring the trees with the best form. The aim is to reduce competition between the remaining trees while maintaining a reasonably closed and windfirm canopy. Recently thinned stands are less stable in the wind and there is an increased risk of windthrow, broken stems or damaged crowns[94]. The edges of stands should be left unthinned maintaining a windfirm edge that is less likely to blow over.

To reduce knots in the future timber, trees that are likely to make the final crop can be pruned to a reasonable sawlog height of 6-9 metres. Follow guidance for pruning trees[95] to minimise the risk of rot. Avoid bark damage to the remaining trees when felling or extracting timber as this can allow rot to get into the trees.

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'Grazing and browsing is a natural feature of woodland ecosystems'

Woods for Grazing and Shelter

Grazing and browsing is a natural feature of woodland ecosystems and for centuries woods have been used for sheltering and grazing livestock. Small woods are still used for sheltering farm animals but not always in a sustainable way. Many woods have been lost or degraded because of unmanaged grazing. Heavy, continuous use of the ground by livestock, especially where animals are given winter feed, can cause poaching, erosion, and compaction of the soil. Hungry animals strip bark from trees in the winter and young regenerating trees are browsed and prevented from becoming established.

However, experience of protecting semi-natural woodlands has shown that woodlands can also suffer when livestock are completely excluded; grasses become rank, displacing wild flowers and preventing further regeneration of trees. The benefits of grazing in semi-natural woodlands are gradually being relearned with the emphasis on managed grazing to improve the condition of the wood.

Animals graze, browse and forage in different ways and some trees such as oak, willow, pine, birch and ash tend to be browsed more heavily than others. The number of animals in a given area, their type and breed and the periods when they have access, will all have an effect on the wood[96]. Autumnal, low-intensity cattle grazing is generally considered the most benign and, if managed well, will help to maintain the ground flora and encourage natural regeneration. Ducks, geese, hens and game birds can also make use of woodlands with minimal impact.

The amount of shelter and grazing a wood can sustain will depend on its size and its current condition. Large diverse woods with good structure and strong established regeneration will be more robust and can provide good forage in the autumn, shelter in the winter, and perhaps an 'early bite' in the spring, though not perhaps in succession. The priorities for small, isolated degraded woods will be to secure regeneration and encourage diversification. Temporary grazing may contribute to this, reducing coarse grasses, trampling bracken and breaking up the sward to allow tree seed to germinate. Temporary grazing by cattle and ponies can help to open up dense plantations, and pigs[97] can be used to turn over the ground to promote ground layer species diversification and encourage natural regeneration. If appropriate, a management plan[98] should be prepared, showing the current level of use by herbivores, setting out the conservation objectives of the proposed grazing regime and showing how grazing will be managed and monitored.

'Five limosin-luing cross, heifer calves were purchased and experimentally grazed using electric fencing to restrict them to particular areas at different times of year. The dense bracken was targeted in the late spring and early summer, when the bracken fronds were beginning to unfurl, in an attempt to control the bracken by breaking up the rhizomes'

A smallholding by a Highland river

Woods that contain veteran or ancient trees may reflect pastoral traditions from more than 200 years ago, and need special attention[99]. Veteran trees host rare fungi, lichens and insects which require sensitive management. Even the worm treatments given to livestock can be shown to have a negative effect on the trees and the soil, particularly where animals congregate around individual trees. Organically-reared stock may be more appropriate in these situations.

Woods for shelter

In the Highlands and Islands the main concern is shelter from the wind. Buildings, roads, gardens and paths can all benefit from the shelter provided by woods but for many, the priority is sheltering livestock. Wet and windy weather can threaten the survival of lambs and calves and reduce the productivity of grazing animals. Shelter woods reduce the wind speed and the wind chill effect and thereby improve animal welfare. Many crofters and farmers have planted shelterbelts with various degrees of success. Understanding the principles of shelter[100] can help ensure a well-designed wood that will provide shelter for years to come.

The effectiveness of a shelter wood depends on its orientation with respect to the prevailing winds (or the 'problem wind'), and on its height and the porosity - how much wind can pass through it. The width or thickness will affect the porosity of the shelterbelt. Also, the wider a shelterbelt is, the easier it is to complete a phased restocking without either removing all shelter for a period, or establishing a new shelterbelt on adjacent land. Much of the wind will curl over the top and around the sides of a shelter wood, so it needs to be long and tall enough to provide sufficient sheltered area behind it. A dense wood will form a windshield which will slow the wind dramatically on the leeward side for a short distance (up to 5 times the tree height), beyond which there will be increased turbulence before the wind speed quickly picks up again. A taller more porous windbreak will allow some air to pass through the wood, partially reducing wind speed but over a greater distance (up to 30 times the tree height). A hybrid approach would be to have dense cover at lower levels and more porosity higher up.

When establishing a new shelter wood it is worth thinking about how it will develop over the longer term. As the trees grow, the height will increase but so too may the porosity at ground level. A very gappy wind break may create a funnel effect and increase wind speed beyond it. Two rows of conifers will be an effective windbreak in the short term but may eventually blow down leaving no shelter. A few rows of different species, a mix of conifers, broadleaves, small trees and shrubs, will provide flexibility to adjust and rejuvenate the shelter. Porosity can always be increased by careful thinning or pruning, or reduced by coppicing or hedging. Wider shelter woods will take up more land and be more expensive to create, but may also provide other benefits such as firewood, Christmas trees, wildlife and managed woodland grazing.

'The shelterbelt is a haven for birds, with several nesting blackbirds and many migrants using it as a hostelry. We even had a pair of redpolls bringing up families for two years running. A local beekeeper keeps hives in a glade and we get delicious honey in return'

Shelter in Shetland

Shelter wood species can include the introduced conifers, such as Norway or Sitka spruce, along with scots pine, ash, beech, oak and sycamore. In very exposed coastal areas, alder, willow, sycamore and lodgepole pine tend to withstand exposure to salt spray better than other species. There may be circumstances where a more native mix is appropriate.

Fig 1

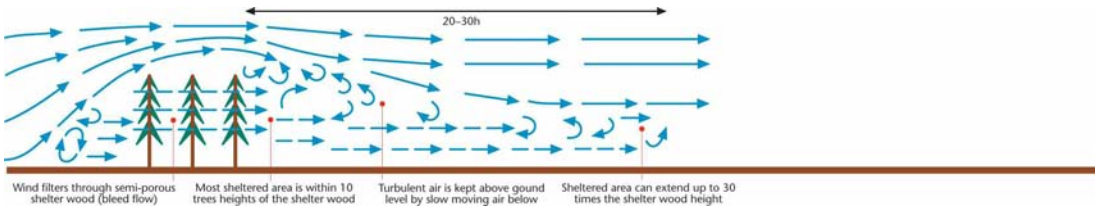
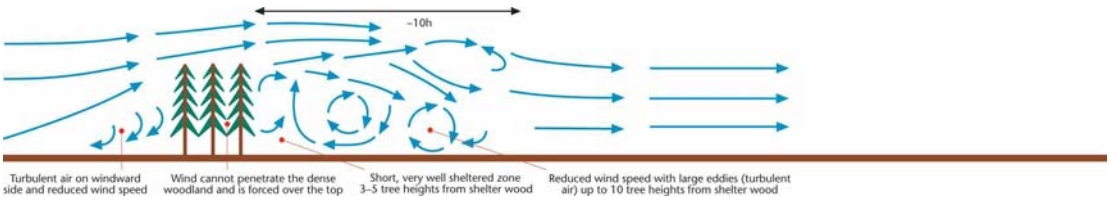


Fig 2



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Woods for People

Managing woods is largely about meeting the needs and interests of people. These days that covers all manner of things from mountain biking to green wood working as well as education and play. It is important that we build on the strong human attachment to trees and woodland by strengthening our woodland culture.

One expression of this is the growth of the community woodland sector[101]. Across the Highlands and Islands, dozens of community groups are becoming involved in woodland management. A few groups purchase their own woods; others are working in partnership with public[102] or private[103] woodland owners to develop recreational, educational and amenity aspects and, in some cases, more practical or commercial interests.

'Two "open days" have been held, featuring chainsaw carving, wood-turning, storytelling and a woodland orchestra, each attracting about 400 people to the forest'

Restructuring Dunnet Forest

Woodland owners can work in partnership with local people for example by allowing a community group to develop paths and other recreational facilities.

The demand for outdoor recreation is huge; many millions of visits are made to woodland each year[104] and there is widespread encouragement for promoting healthy, physical outdoor pursuits. Even in the Highlands and Islands it is not always easy to find places to exercise the family or the dog, safe from cars and livestock. Woodlands can provide a perfect setting for running, walking, picnicking, riding horses or mountain bikes and making dens. Small woods may have a limited capacity but could still be a significant local resource contributing to wider networks. Where paths are developed in woods it is worth thinking about how any physical barriers may be reduced to provide a level of access for people of all abilities. Guidance is available on the Disability Discrimination Act.[105]

In Scotland there is a right of responsible access. People may choose to visit and walk in your woods and you should not obstruct them from doing so.[106] The land manager has a duty of care to people coming onto their land, identifying any hazards and taking steps to mitigate them. Guidance is available on occupiers' legal liabilities [107], on liabilities relating to public access[108] and on assessing the risk of hazards from trees[109].

In our predominantly urban culture many young people are growing up with limited first-hand experience of the countryside. Forest Schools[110] is a burgeoning initiative which brings young people into woodlands where they learn aspects of the school curriculum through woodland-related activities. Most children respond well to outdoor education and for some, particularly those who have difficulties with more mainstream schooling, the forest environment can help improve social interaction with adults and with their peers. Some initiatives, under contract to statutory agencies, specifically target people who are excluded from society in one way or another, providing vocational training in woodland work[111].

Forestry Commission Scotland is promoting the use of local woods for learning[112], in an initiative where schools are linked with woodlands nearby for use as an outdoor classroom. Repeat visits enable children to develop a closer relationship with the site, gaining confidence and gradually experiencing new aspects of the natural environment.

'Education plays an increasingly important role and we have worked with many local schools. Through the eco schools initiative we have worked on buddy benches, picnic tables, storytelling chairs, outdoor classrooms and stages, living willow sculpture, orchards and notice boards'

Making the most of an oakwood

'It is important that we build on the strong human attachment to trees and woodland'

Heritage[113] and community groups may also be interested in learning more about their immediate environment and local countryside rangers may be willing to lead visits to woodland. Owners of recently acquired woodlands will no doubt glean interesting information from the locals.

Some people are keen to take part in woodland work - something that few in urban or rural areas have the opportunity to do. Hosting volunteers to help out with light work is an option. It may not work out any cheaper than hiring contractors but it should make for a more involved approach.

'... the Dounreay apprentices, Caithness Countryside Volunteers and the local Scouts, have helped with tree planting, path building, the tree nursery, pond restoration, control of invasive vegetation and replacing fences'

Restructuring Dunnet Forest

Managing volunteers does require some planning and administration. It is important to provide a positive experience for the volunteer, to be rigorous about health and safety and to ensure that volunteers are not being paid. Real expenses can be reimbursed but anything else constitutes payment, meaning that employment legislation and the minimum wage come into play. If unaccompanied young or vulnerable people are involved, the person managing the volunteers will need to go through 'Disclosure'. This is the process by which the Criminal Record Bureau provides information on people in positions that involve regular contact with children or vulnerable adults. Volunteer centres[114], which are distributed across the country, can help recruit volunteers and will provide clear advice on how volunteers should be managed. There are also charities and other organisations which manage volunteers who are on the lookout for suitable woodland projects[115].

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'Niche markets can offer good prices for small volumes of high quality timber.'

Realising the Value

Woodlands that are valued for one reason or another tend to be better looked after. This section of the handbook provides information on harvesting and making use of woodland products and, where practical, marketing them and adding value.

Woodland Certification Schemes

People are aware of the importance of forests being managed sustainably and expect products from Scotland to come from well-managed woods. Various independent organisations[116] offer a certification process against management standards. The UK Woodland Assurance Scheme[117] is a single common standard for use by certification programmes that operate in the UK. If a wood is certified, any product can then be advertised and sold as coming from sustainably managed forests. There are other standards and schemes, some of which also offer organic status[118] for non-timber forest products. All of these schemes are voluntary and there are costs involved. Woodland managers may decide that the costs of certification are outweighed by the value added to marketed products.

The Scottish Working Woods[119] label scheme distinguishes and promotes woodland products that are grown and made in Scotland.

Gathering a Wild Harvest

Woods can provide a bountiful harvest of foods, flowers, plants and other materials and, despite Scotland's urbanised culture, many people (up to a fifth of us) enjoy collecting forest products[121]. Mushrooms, brambles, blaeberries, raspberries, rosehips, sloes, rowan and elderberries are waiting to be picked. Lichens can be used for natural dyes, tree foliage for garlands and displays, elderflowers and leaves are used for wine and tea, hazel nuts, wild garlic, sorrel and nettles can all be eaten. Nettle stems were traditionally used to make linen, and rushes woven into mats. Hazel and willow[122] are still used in basketry. People also collect cones, fruits, bulbs, resin, flowers and medicinal plants. In fact, the list of wild harvests includes about 200 different products from 173 species of plant and fungus.

Most gathering is for personal use and at a scale that has little impact on the wood or the harvested resource. Gathering wild harvests is an enjoyable and rewarding way of using woods and learning more about wildlife.

Often the effort involved in collecting and marketing makes commercialisation difficult. A few enterprises produce honey, beeswax and essential oils, or make wines from leaves, sap and berries. There are established markets for mosses, fungi and foliage. Guidance on sustainable harvesting has been prepared for the more popular products such as mushrooms, moss and bulbs[123]. Commercial collectors require the landowner's permission and there is legislation that prohibits collection of some protected species and from some sites.
There is scope to promote or cultivate plants and fungi within woods. Shitake[124] and oyster mushrooms, for example, can be harvested from inoculated logs while berries, foliage and coppice products can all be 'encouraged'.

'With over 100 fruit and nut trees, lots of soft fruits, polytunnels, chickens, mushroom logs and vegetable beds, Michaela and I eat well, preserve plenty and distribute the excess'

Making the most of an oakwood

Woodfuel

Most woodland owners will expect to collect firewood from their woods. Those that do will recognise that it takes considerable effort to keep a fireplace supplied with dry logs. However, concern about rising fuel prices and the impact of fossil fuels on the environment is directing interest and investment towards the use of wood for fuel. Providing logs for wood-burning stoves is one option but there are also modern boilers that burn

wood chips or pellets. Many such woodfuel boilers are already operating at the small business scale and several companies specialise in their installation.

Woodfuel is less energy-dense than oil or gas and must therefore be used close to where it is produced; it makes no economic or environmental sense to use large quantities of oil to transport woodfuel around the country. Local fuel suppliers will be looking for long-term supplies of suitable material from existing or restocked plantations, from native woodlands or from new plantations deliberately designed to provide woodfuel.

'A biomass plantation on unused croft land in Kyles Scalpay takes a modern approach to the traditional "lazy bed" system with trees planted in 4 metre wide beds'

Woodland development by the North Harris Trust

Historically oak coppice was managed on a commercial scale for woodfuel and there may be situations where this can be revived. Short rotation coppice is being tried out in lowland arable sites, growing willow on two-three year cycles but this high-input system requires fertilisers and specialised harvesting machinery. A more appropriate approach in the uplands may be short rotation forestry, harvesting fast-growing species such as alder, ash, birch, poplar and sycamore after 10 -20 year rotations. Such stands would be wildlife-friendly and useful as shelter. They could also be adapted to produce timber, pulp or board material should markets change[125].

Increasingly, community groups[126] and local contractors provide firewood for both domestic wood stoves and for larger, semi-automatic log-fed boilers that are used to heat farms and buildings. Processing and supplying logs has a minimal carbon footprint[127]. It does however require some planning and investment. Trees have to be harvested efficiently and safely, logs cut to size and then split, stored and dried. Specialised firewood processing equipment is available; hydraulic splitters and cross-cutting machines as well as various methods of bundling and transporting logs. Drying the wood is vital, as burning wet wood is very inefficient and frustrating. It will take at least a year in a rainproof shelter with good air circulation to air-dry softwood logs - even longer on the west coast. Some people advocate 'forced' solar drying in polytunnels. Log drying can be done by the buyer, but supplying dried logs allows the supplier to find additional markets and charge more for the logs. Dry or wet, firewood has to be delivered reliably to customers in manageable quantities.

In certain situations there may be a niche market in 'top end' supplies of firewood sold through garages and supermarkets. A few well-dried hardwood logs neatly bundled[128] for the weekend visitor could allow for a significant mark-up in value

Harvesting Trees

Harvesting trees for timber or woodfuel can be a challenge. Most owners of small woodlands in the Highlands and Islands will be harvesting on a relatively minor scale, removing individual trees, or small groups of trees. Manual felling (using a chainsaw) and cutting up smaller trees is hard and high-risk work[129], but is within the scope of the part-time woodland manager. Training courses of a few days are available and are strongly advised. Protective clothing and equipment is also essential when using power tools. Anyone contracted or employed to use a chainsaw must have a certificate of formal training, insurance and protective equipment[130], and should not normally work alone. Additional training is required for clearing large and windthrown trees.

Almost all harvesting of conifer plantations is now done by machinery. Mechanical harvesters have a felling head that holds the tree and cuts it at the base. Processers also delimb and crosscut the trees. Forwarders are large tractor-trailers with hydraulic loaders that transport the logs across rough ground to the roadside. These machines are efficient and can cope with rough terrain. Anyone contemplating harvesting on a significant scale should talk to a specialist contractor about the best option.

Extracting all but the smallest of material from woodland will usually require machinery and development or improvement of tracks[131]. However, trees felled to improve recreational access or habitat, or to thin timber stands, do not need to be removed. It may be simpler, and more cost effective, to leave them in the wood to decompose and naturally recycle, providing 'deadwood habitat'[132]. Alternatively they can be used as material for sculptures, or to build woodland 'furniture' or dens.

Smaller portable sawmills[133] can be brought into the woods to cut trees into more manageable pieces that can be extracted by hand but, even then, freshly cut timber, especially hardwoods, can be very heavy. Adapted agricultural tractors[134] and ATVs (all terrain vehicles or 'quads'[135]) can be used for extraction, but specially designed timber trailers and mini-forwarders[136] are available that can negotiate steep, rough terrain with little damage to the ground vegetation. Conifer branches are often used to create 'brash mats'[137] to reduce the impact of extraction equipment on softer ground. Portable winches[138] that attach to trees, tractors or ATVs, can drag (or 'skid') logs out of the wood.

> *'...12 hectares of forest was clearfelled by contractors and the roundwood transported to the board manufacturer at Ardersier, at a considerable loss. Since then felling and thinning work (and almost all other work) has been done by the Dunnet Forestry Trust's forester and forest workers, using chainsaws and ATV extraction'*
>
> Restructuring Dunnet Forest

Mobile chippers can chip smaller logs and branches for use as fuel, path material or mulch, while hydraulic splitters and firewood 'processors'[139] make the production of firewood safer[140] and faster. All such equipment requires a degree of training and experience to use safely and effectively and regulations are becoming stricter. Few small woods will warrant investment in a mini-forwarder or other specialist equipment but these items can be hired, and local machinery rings[141] can be encouraged to invest if there is sufficient demand.

In the days before mechanisation, timber was felled by axe and crosscut saw, and extracted by horse or flushed down purpose-built timber chutes. There are still people working horses[142], generally on the most sensitive sites, and the Glenfinnan chute[143] is a modern, plastic version of the old timber constructions, suitable for extracting smaller logs from sloping ground.

Marketing Wood Products

Most woodlands produce useable wood in some form but it may not be easy to find a market for small quantities of lower quality timber unless there is strong local demand for firewood. Look into possible markets before you consider harvesting[144]. If markets are poor and the trees are not liable to windthrow, it may pay to wait a few years leaving the trees to grow, or to find local outlets and onsite uses for the timber.

Marketing timber from the Highlands has always been difficult, due to the dispersed woodland resource and the distance to markets. Nowadays it is easier to purchase imported softwood building timber than locally grown wood and many smaller rural sawmills have closed.

The softwood mills that process the timber from conifer plantations are looking for large quantities (100s) of straight trees, with a diameter at the base of between 25cm and 60cm and a minimum diameter of 12cm. Commercial quantities of timber are sold 'standing' - as trees growing within a wood - or at 'roadside' after they have been harvested, extracted and stacked. Measuring and valuing standing timber on a commercial scale is a professional job. Bringing machinery on site and preparing extraction routes and forest roads for harvesting can be a significant investment and economies of scale come into play. It may be possible to join with neighbouring woodland owners to package a reasonable quantity for harvesting or to piggy-back on a larger operation nearby.

New markets for small diameter timber to feed medium and large scale woodfuel energy schemes are now available in even quite remote areas of the Highlands. Where they are available these markets will usually be more profitable than distant markets for small dimension timber owing to reduced haulage costs. Supplying to these schemes will usually be through a timber buyer who will help coordinate felling and transport of the timber.

Hardwood mills can process a wide variety of logs. The Association of Scottish Hardwood Sawmills provides guidance on what may be of interest to them[145] but it is still worth talking to sawmillers well in advance. Generally they will consider half a lorry load of large logs at least 1.8m long (but the longer and straighter the better) with a minimum log diameter of 30cm. 'Burry' elm fetches a premium and other large mis-shaped trees may also be of interest. Sycamore, ash and beech need to be reasonably good quality - straight and with few branches - while oak and elm can be more mixed. Timber is best cut in the winter and even then, it should be extracted and stacked quickly. Some timbers, including sycamore, pine and beech, will stain if the sawn surface is not dried, considerably reducing their value.

There are a growing number of businesses providing specialist products for architects, furniture makers, and crafts people. If buyers can be found, niche markets such as these can offer good prices for small volumes of high quality timber. Large dimension Douglas fir, larch and Scots pine are in demand, partly because it is not easy for industrial sawmills to adapt their machinery to process them. Smaller hardwood mills can usually be more flexible. There may also be markets for ash poles and hazel wands or craft markets for less usual timbers such as yew, holly, lime or maple. Websites[146] are available that provide a free market place for small volumes of woodland products.

Mobile Sawmills

For the owner of a small woodland, with minor quantities of mixed quality timber, it may make sense to add value before sale or to produce sawn timber for the croft. Modern chainsaw mills can be purchased at modest sums. These are fairly inefficient but can cut rough planks from smaller amounts of timber and make extraction easier. Another option is to hire one of the several mobile sawmills[147] operating in the Highlands and Islands to convert logs into planks in, or close to, the wood. All the produce is retained including slabwood and sawdust. The timber can be visually graded as it comes off the mill; the marketable timber sent off-site to be kiln dried, while the lower grade material can be air dried for local use. Consider using home-grown timber for fences, gates, paths, steps, bridges, benches[148] , sculptures, shelters or other temporary structures.

> *'After seven years pushing a chainsaw mill, I bought a Lucas Mill, which cuts dimensionally accurate timber and is much more efficient. It is lightweight and easily transportable; we carry it up into the woodland and mill the logs where they lie, or close by'*
>
> Making the most of an oakwood

Further processing of timber is required for many uses and facilities can be few and far between. If wood has to be transported large distances for processing, it may be more appropriate (and cheaper) to locate a supplier/processor[149] nearer to timber sources.

Many local sawmill and joinery businesses will have a planer or thicknesser and some have profiling machines. However, not all sawmills have facilities for kiln drying wood, as the majority of locally sawn timber is used in external applications such as fencing. A small solar kiln can be made using polytunnels, or a dehumidifier unit[150] can be set up[151] in an old shipping container or refrigerated lorry unit, but the cost of handling equipment and subsequent dry storage space should not be underestimated.

Building with Local Timber

In recent years, a number of houses, sheds and other structures in the Highlands and Islands have been built entirely from home-grown timber. The approach is promoted in local authority policy guidance[152] and a growing number of small businesses make a speciality out of designing[153] and building using local timber[154]. While it is possible to construct entire buildings from home-grown material, in most cases the desire will be to use at least some local timber where it is available, cost-effective and fit for purpose.

Building Regulations, Structural Engineering and Certification

Before embarking on any construction project, it is essential to have some understanding of statutory Building Regulations[155] and wide-ranging British or European Standards. Most structures - certainly all public buildings and dwellings - require building warrant and structural engineering certification. This effectively means that the design will be professionally executed, and structural (and some other) timbers must be specified by an engineer. As a general rule, all structural timber should be both well dried (to around 12% moisture or lower) and stress graded[156] by a certified individual, or by machine (as used in larger sawmills). Timber can be dried by kiln or by air drying if it is to be used for single-skinned, unheated buildings. The potential to make use of home-grown timber may be limited where these facilities are not available.

In some cases, sheds, agricultural and forestry buildings, as well as a variety of unheated, unserviced structures, can be built under Permitted Development Order and, on occasions, without Building Warrant but it is essential to check this out thoroughly with the Local Authority. This small 'exempt' category lends itself particularly well to self-build and the use of local timber.

> *'Working with my brother Rob, we learned to fell and slab trees with a home-made chainsaw mill. Using the timber, we built the workshop, founded on tree stumps of untreated Sitka spruce. We built a seasoning tunnel, carried slabs down out of the forest and stacked them to season. We made picnic tables and rustic furniture, built summer houses and stables...'*
>
> Making the most of an oakwood

It is helpful to consider timber in buildings in three categories; structure, cladding and joinery, each of which have different requirements.

Structure

Even where certification of the structure is not required, consulting a structural engineer will help to give you assurance of the dimensions[157] and the joint types required. For simple stud-wall framing, joists and rafters, the most suitable timbers are spruce and Scots pine, although only the better quality home-grown material is likely to give the dimensional stability required. For all but the roughest work, the timber will generally need to be run through a planer or thicknesser to ensure accurate dimensions.

Post and beam structures have been traditionally favoured for farm and estate buildings throughout Europe and America and there is growing interest in this framing method in Scotland using home-grown timbers such as Douglas fir, larch and oak. All these timbers have relatively high structural strengths and all plane-up well for internally exposed situations. The pink heartwood of Douglas fir is particularly attractive and the species is locally available on the Highland mainland. Resurgence in green oak framing[158] has centred on the available resource in Argyll[159] and may be considered where the skills and timber are both available. For outbuildings, and applications where the structure may be subject to damp or direct precipitation, only the heartwood of larch or oak can be used without preservative treatment.

Cladding

The upsurge in the use of timber cladding is partly a response to the growing recognition of its excellent environmental footprint along with a new acceptance by planners of its appropriateness[160]. The majority of timber cladding is imported Canadian cedar or Siberian larch, but home-grown larch and durable hardwoods such as oak, chestnut and elm can be used untreated, straight off the mill. The broadleaved species are mostly in short supply or absent from many parts of the crofting counties. Timber for cladding should be visually graded and, in the case of untreated larch, it is important to grade out all boards with sapwood on the face. Boards with loose knots will usually be rejected. Other home-grown softwoods will require pressure treatment with preservatives, and/or surface coating, repeated at regular intervals. Scots pine takes pressure treatment

particularly well and is much used as cladding on outbuildings.

Internal Joinery

Home-grown timbers may be considered in non-structural, internal situations, but good dimensional stability is essential and material should therefore be kiln dried. Skirtings, interior sills, architraves and ingoes can all be made in either hardwoods or softwoods. Flooring and linings have been made from home-grown timber and good examples include the visitor centre at Glencoe with its oak floors and birch ceilings. Douglas fir and larch have successfully been used as flooring in houses in the Highlands[161]. Home-grown hardwood worktops are also available in Scotland. Doors and windows are best made from laminated timbers by specialist manufacturers. Internal timber linings were traditional in both large houses and croft houses before the days of Building Regulations and plasterboard. Modern fire resistant or 'intumescent' coatings make it possible to use timber linings in a contemporary context.

Building Work

A degree of experience and training[162] is clearly of benefit before embarking on construction work: not just for the handling of tools and materials but for the reading/interpretation of drawings and compliance with health and safety regulations. Working alongside an experienced builder is probably the ideal way to learn. Small sheds and outbuildings are within the capability of many practical people but it is advisable to establish the structural principles of even the smallest project with an engineer, architect or experienced timber builder.

Basic stud framing requires relatively few tools and equipment. The more ambitious builder could consider post and beam building, which allows for the possibility of incorporating both roundwood and large section timbers. There are some examples in Scotland of the use of timber in the round - roundpole construction.[163] Some involve sophisticated engineering but other relatively simple structural solutions have been used for bridges and bus shelters. Roundwood playground equipment will be familiar and may inspire ideas for more ambitious use of timber in the round.

A number of community groups[164] have constructed living willow or log cabin structures for use as shelters, toilets, wildlife hides or stores. [165] Some have used the construction process[166] as a training project, bringing in professionals to train local people.

Building a whole house is over-ambitious for the inexperienced but it is worth considering 'compromise' solutions. A standard timber-framed kit could be erected to wind and water tight by a contractor and then externally clad and fitted out on a self-build basis, using some home-grown timber. It will be important however not to under-estimate the skill and time involved even in cladding a house to the standard required to meet Highland weather conditions. Incorrectly installed door and window details could lead to a ruined structural frame in a short space of time.

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Mobile sawmills

147. *A Guide to Hiring a Mobile Sawmill* Highland Birchwoods Information Sheet 2.
This information sheet describes various types of mobile sawmill.
http://www.highlandbirchwoods.co.uk/UserFiles/File/publications/Information-Sheets/Info2(1).pdf

On site sawmilling and timber conversion information pack Chilterns Woodland Project
Covers a variety of small scale mobile machinery for extraction and milling.

http://www.chilternsaonb.org/downloads/publications/On_site_Sawmilling.pdf

148. *Countryside Access Design Guide* Scottish Natural Heritage.
This document provides advice and guidance on design principles and information sheets on structures frequently used by land managers to assist and manage public access to the countryside, including: gaps & barriers, gates, stiles, steps and ramps, fences.
http://www.snh.org.uk/pdfs/publications/heritagemanagement/cadg.pdf

149. Association of Scottish Hardwood Sawmillers
Through ASHS, you can: find your local supplier of Scottish hardwood - sawn timber planking, wooden floors, beams, cladding and structural timbers, bespoke kitchens, handmade furniture, and more; access on-line information about Scotland's native hardwood trees and timber as well as information on the products that ASHS members supply plus technical notes to assist in specification; link up with other people who appreciate and are inspired by Scotland's native hardwoods and support the creation of new woodlands, as well as the sustainable and productive management of Scotland's existing forest resource.
http://www.ashs.co.uk/

150. *Low Technology Kilns and Drying Schedules for Hardwood in Small-scale Operations* Forestry Commission Information Note 24 1999.
http://www.forestry.gov.uk/PDF/fcin24.pdf/$FILE/fcin24.pdf

151. *Drying Timber from Small diameter Logs*, Coed Cymru Information Sheet 7.
http://www.coedcymru.org.uk/dryingtimber.htm

Air Drying of Timber Information Pack
Chilterns Woodland Project.
A comprehensive guide to drying timber including small scale methods.
http://www.chilternsaonb.org/downloads/publications/Air_Drying_of_Timber.pdf

Building with local timber

152. *Designing for Sustainability in the Highlands Development Plan Policy Guidance*. The Highland Council, November 2006.
http://www.highland.gov.uk/NR/rdonlyres/32586135-70EC-40E3-8F7BDE45B158B501/0/designingforsustainabilityinthehighlands nov2006.pdf

153. *Designing with Timber* ARCA the Journal of Scottish Architecture 2001.
http://www.forestry.gov.uk/website/pdf.nsf/pdf/designingwithtimber.pdf/$FILE/designingwithtimber.pdf

New Timber Architecture in Scotland
CTE/FCS/Scottish Enterprise 2007.
This publication is not available online but is available free on request from Forestry Commission Scotland.
http://www.forestry.gov.uk

154. *The Woodstack* North Highland Forest Trust and Forestry Commission Scotland.
A newsletter linking local timber producers, users and woodworkers across Sutherland and Caithness
http://www.nhft.org.uk/pages/publications.html

155. *Scottish Building Regulations : Technical standards*
www.sbsa.gov.uk/tech_handbooks/tbooks 2007.htm

156. *Making the Grade - a guide to appearance grading UK grown hardwood timber* Arcamedia 2005.
The guide provides information on the range of quality available from our sawn hardwood timber and highlights the special features of UK grown hardwoods that are often difficult to obtain from imports. The guide also gives information on timber measurement, the properties and uses of UK hardwoods, and an illustrated technical glossary.
www.forestry.gov.uk/hardwoods

Stress grading timber by visual and mechanical means The Timber Research and Development Association. Various priced publications are available on this subject which can be ordered from TRADA.
http://www.trada.co.uk/

157. *Span tables for solid timber members in dwellings*. The Timber Research and Development Association.
http://www.trada.co.uk/

158. *Green Oak in Construction* The Timber Research and Development Association.
A highly illustrated guide to the use of green oak, written by an expert team. The authors describe the whole process of green oak in construction: the design, framing and enclosing of structures. Comprehensive specifying information, design data and grading rules are also included for reference.
http://www.trada.co.uk/

159. Argyll Green Woodworkers Association
www.argyllwood.co.uk

160. *Timber Cladding in Scotland* ARCA publications Ltd. 2002.
http://www.scotland.gov.uk/Publications/2002/03/15098/8731

Designing the timber façade (in preparation 2008) Arcamedia, Edinburgh

161. *The Production And Marketing Of Scottish Hardwood Flooring* Highland Birchwoods 2001.
Report on markets for low grade home grown hardwood timber for use as hard wood flooring.
http://www.highlandbirchwoods.co.uk/UserFiles/File/publications/marketing/Marketingreport.pdf

162. Walter Segal Self Build Trust
This website provides an introduction to the self build approach of Walter Segal and shows some contemporary designs.
http://www.segalselfbuild.co.uk/home.html

Wood for Good Factsheets on using timber in construction.
Not aimed at home grown timber but otherwise relevant.
http://www.woodforgood.com/resource_centre.html

163. *Round Timber In Construction: An Introduction* Trada Technology 2003.
http://www.trada.co.uk/techinfo/asset/send/830/content/RoundtimbIntro/index.html

Round Timber In Construction: Notes For Structural Design The Timber Research and Development Association.
This sheet gives a technical background to the design of round timber structures. It brings together basic terminology, grading and species selection advice together with suggested simplified design approaches and key references for further detailed information.
http://www.trada.co.uk/techinfo/asset/send/831/content/Roundtimbstrucdes/index.html

Usage of Roundpole in Scotland: A Review of Current Activity
This report details the findings of market research performed in Scotland during May 2000 to assess current levels and modes of roundpole usage, and to identify opportunities for development.
http://www.gaiagroup.org/Research/RI/PAS/roundpole/market/market.pdf

164. *Huts, Hides and Homes: Sustainable structures and shelters for community woodlands* North
http://www.nhft.org.uk/documents/Forum%20Report%202005.pdf

165. *Construction of the Log Cabin* Offwell Woodland & Wildlife Trust.
This website hosts a slide show showing construction of a log cabin shelter by Woodenways, a company that provides training in log building.
http://www.countrysideinfo.co.uk/cabin/log_cabin1.html

166. *Scribe Log Building* North Highland Forest Trust Information Note.
http://www.nhft.org.uk/documents/Log-build%204.pdf

Learning and Support

The online version of this handbook provides links to many sources of information and the Scottish Crofting Federation can send you printed copies of the references relating to particular sections. For some, however, it may be simpler to talk to people. The Scottish Crofting Federation[167], Scottish Agricultural College and local offices of Forestry Commission Scotland, will all provide initial advice to woodland owners, directing them towards suitable sources of support and information.

In addition, there are a few initiatives and charitable organisations working within the Highlands and Islands that can provide support and advice to woodland owners. These include The Sunart Oakwood Initiative[168], North Highland Forest Trust[169], Scottish Native Woods[170], Highland Birchwoods[171], Small Woods Association[172], Scotland FWAG (Farming and Wildlife Advisory Group)[173] and the Community Woodland Association[174].

The Institute of Chartered Foresters[175] has a register of forestry consultants who provide professional advice and woodland management services. The Forestry Contracting Association[176] also has an online directory of companies involved in all aspects of forestry work.

Membership groups[177] provide a way of learning about small woodlands and making contacts. The Argyll Green Woodworkers Association[178] is one such organisation: a registered charity which aims to encourage interest in woodland skills and history, bring native woodlands into sensitive management, co-ordinate woodworking demonstration and training and stimulate the use of local timbers. The Association runs occasional open days or trainings on subjects such as charcoal making, barrel making, basket weaving and milling timber. The Native Woodland Discussion Group[179] is another friendly and informal group of people enthusiastic about the ecology and management of native woodlands. The group holds an annual meeting in early summer with visits to woods and woodland-related projects. The group produces a newsletter and arranges training workshops on particular subjects such as woodland history and lower plants: the mosses, lichens and fungi that tend to be overlooked.

UNIFOREST
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Training

The Scottish School of Forestry[180] is based at a campus near Inverness and provides an array of training from practical skills certificates, to Higher National Diplomas and a degree course in sustainable forestry.

The Scottish Crofting Federation is developing a comprehensive, practical, forestry training programme designed specifically for crofters and small landholders[181]. The programme will include a menu of training modules on subjects such as surveying, fencing, planting, weeding, deer control and habitat management, any of which may be selected to achieve certified levels of competency. Trainees may also claim a level of proficiency gained through their own learning experience or other relevant training. The courses will be delivered through Lantra Awards which specialises in qualifications and training for the environmental and land-based sector.

'An important aspect of crofter forestry in Assynt has been the chance it has given several young people to acquire forestry skills..... between 1996 and 2001, forestry work generated more than three full-time-equivalent jobs and now three local men work full time in forestry around the Highlands.'

Crofter Forestry in Assynt

References

167. Scottish Crofting Federation
http://www.crofting.org/

168. Sunart Oakwoods Initiative
A broad-based partnership initiative working to restore and expand the oakwoods of Ardnamurchan and Morvern.
http://www.sunartoakwoods.org.uk/

169. North Highland Forest Trust
An independent charitable organisation giving free advice and assistance to groups, crofters and individuals within Caithness and Sutherland.
http://www.nhft.org.uk/index.htm

170. Scottish Native Woods
This is a charitable organisation promoting native woods in Scotland. Its main focus is to assist woodland occupiers to look after native woods and it provides help with surveying woodlands, developing plans and proposals and securing funding. Charges are made for some of the more commercial services they provide.
http://www.scottishnativewoods.org.uk/index.asp?tm=42

171. Highland Birchwoods was formed as a partnership of the Forestry Commission, Scottish Natural Heritage, Highland Council and Highland & Islands Enterprise to promote best practice in the management of woodlands and forests.
http://www.highlandbirchwoods.co.uk/

172 Small Woods Association Britain's leading organisation in supporting and promoting the work done by the owners and carers of small woodlands
http://www.smallwoods.org.uk/

173. Scotland FWAG is a farmer-led organisation and Scotland's leading independent provider of environmental and conservation advice to farmers and crofters.
http://www.fwag.org.uk/scotland/

174. The Community Woodlands Association represents Scotland's community woodland groups. The aim of the Association is to help community woodlands across the country achieve their aspirations and potential, by supporting, representing and promoting community woodlands. This includes arranging training events for member groups.
http://www.communitywoods.org/

175. Institute of Chartered Foresters
http://www.charteredforesters.org/default.asp?page=6

176. Forestry Contracting Association
FCA provides an online directory of woodland contractors.
http://www.fcauk.com/

177. Reforesting Scotland
A networking organisation of those active in the ecological and social regeneration of Scotland.
http://www.reforestingscotland.org/

178. Argyll Green Woodworkers Association is a membership organisation, and a registered charity, which aims to encourage interest in woodland skills, research woodland history and ecology, bring native woodlands into sensitive management, co-ordinate woodworking demonstration & training, stimulate the use of local timbers.
http://www.argyllwood.co.uk/AGWA/agwahome.htm

179. The Native Woodland Discussion Group
A friendly and informal group of people who are enthusiastic about the ecology and management of native woodlands. The group holds an annual meeting each May or June with visits to woods and woodland-related projects. The group produces a newsletter and arranges training workshops.
http://www.nwdg.org.uk/

180. The Scottish School of Forestry
http://www.school-of-forestry.org

181. Highlands and Islands Crofters and Small Landholders Training Programme Scottish Crofting Federation
http://www.crofting.org/index.php/training/62

'Forestry grants will be part of an integrated system for supporting rural development'

Grant support for woodlands

The Scottish Rural Development Programme[185] (SRDP) delivers forestry grants in Scotland as part of an integrated system for supporting rural development.

The SRDP programme contributes to the following three objectives:

1. Improving the competitiveness of agriculture and forestry by supporting restructuring, development and innovation (axis 1)
2. Improving the environment and the countryside by supporting land management (axis 2)
3. Improving the quality of life in rural areas and encouraging diversification of economic activity (axis 3)

The SRDP is available to land managers (farmers, crofters, foresters, sporting estates), other individuals, rural businesses and community groups. It aims to provide a simplified approach for businesses by providing a 'one stop shop' for applicants.

Land Management Contracts (LMCs) have three tiers of support:

- Tier one is the Single Farm Payment and Cross Compliance
- Tier 2 is the LMC Menu Scheme (non-competitive)
- Tier 3 is the Rural Priorities (competitive)

The LEADER[186] initiative is a community-led approach to development managed by partnerships of local stakeholders (Local Action Groups). This is for innovative projects from community groups to address development needs at a local level.

Up to date information on grants available for woodland work and on the application process can be found on the internet. The Scottish Crofting Federation[187], Scottish Council for Voluntary Organisations[188] and local offices of Forestry Commission Scotland can also provide help and advice.

References

185. Scotland Rural Development Programme
http://www.scotland.gov.uk/Topics/Rural/SRDP

186. LEADER
http://www.scotland.gov.uk/Topics/SRDP/Farmingrural/LEADER

187. Scottish Crofting Federation
http://www.crofting.org/

188. Scottish Council for Voluntary Organisations
http://www.scvo.org.uk/

Rules and Regulations

Felling Trees

A felling licence[189] is required to cut down more than 5 m^3 of growing trees in any calendar quarter. If the felling is done as part of a management plan with government grants, a licence will be issued with the grant. Woodland cannot normally be cleared of trees for another use unless the development has planning permission.

The Environment

Any change in woodland cover may require an environmental impact assessment[190]. This includes creating new woodlands, felling woodland that will not be re-planted, or building forest roads. Not all work will need this but in some situations even small changes involving only a hectare or so may require consent. The proposer must apply to Forestry Commission Scotland for a formal opinion on whether consent is required.

Where a grant is being requested or when a felling licence or environmental statement is required, the proposed project is listed on a public register[191] for four weeks. The local authority and other organisations with a statutory interest in land use are consulted[192]. The public can also comment on what is being proposed.

Some land is covered by conservation designations or other arrangements which can restrict what you are able to do. The Forestry Commission's Land Information Search[193] facility is an online map that shows where land has an existing forest management agreement in place, is designated as important for wildlife or cultural heritage or is otherwise considered environmentally sensitive. It also shows recognised rights of way.

Woodland operations can affect people, wildlife[194] and the wider environment. The UK Forest Standard[195] sets out the regulatory framework for forestry and the environment, taking account of various laws and regulations and setting out principles of best practice. It is supported by a series of helpful guidelines covering landscape, biodiversity (wildlife), the historic environment, soils, water, and forests and people.

Health, Safety and Employment

The health and safety of people working in or using woodland is another important area of regulation[196]. An 'occupier' of land has a duty to show care towards people on that land and should assess the risks and take steps to address them. There is guidance on occupiers' legal liabilities,[197] on liabilities relating to public access[198] and on assessing the risk of hazards from trees[199].

Contractors and professional advisors should demonstrate they have appropriate qualifications and experience, as well as public and professional liability insurance. If you employ someone directly then employment law applies, relating, for example, to conditions of employment, tax, national insurance and employers' liability. As an employer you also need to ensure employees are suitably skilled and trained to do the work safely[200].

Consulting with local people

When planning woodland operations it makes sense to consult with neighbours, or others who may be affected, and to keep a note of the discussions. Where the woodland forms part of a larger area of forest or semi-natural habitat, it is particularly useful to discuss the impacts on the area as a whole and to collaborate over access, wildlife management and deer management. More formal consultation processes[201] will be appropriate where there is a particular interest from the local community.

'Woodland operations can affect people, wildlife and the wider environment.'

References

189. *Tree Felling: Getting Permission* Forestry Commission 2007.
This booklet tells you what you need to know about getting permission to fell any trees for yourself or for someone else.
http://www.forestry.gov.uk/pdf/treefellingaugust.pdf/$FILE/treefellingaugust.pdf

190. *Environmental Impact Assessment of Forestry Projects* Forestry Commission 2007.
This booklet describes the EIA process.
http://www.forestry.gov.uk/pdf/wgseia.pdf/$FILE/wgseia.pdf

191. *Public Register* Forestry Commission Scotland
This webpage directs you to information on the register of grant schemes and felling and the register of Environmental Impact Assessments.
http://www.forestry.gov.uk/forestry/infd-5zadt9

192. *How we consult about woodland planting and tree felling* Forestry Commission 2002.
This booklet describes the process the Forestry Commission takes to consult with local authorities and other organisations before deciding whether to approve applications for woodland planting and for tree felling.
http://www.forestry.gov.uk/pdf/consult.pdf/$FILE/consult.pdf.

193. *Land Information Search* Forestry Commission.
This webpage provides links to the Land Information Search facility on the Forestry Commission website.
http://www.forestry.gov.uk/forestry/infd-645j4t

194. *Forest operations and badger setts* Forestry Commission Forest Practice Guide 9.
This sets out legal requirements and best practice with regard to minimising the impacts of operations on badgers.
http://www.forestry.gov.uk/pdf/fcpg9.pdf/$FILE/fcpg9.pdf

Forest operations and wildlife protection Forestry Commission Scotland Guidance Note 31 2006.
This note summarises current wildlife species protection law in Scotland in relation to forestry operations and gives general guidance on best practice to minimise adverse effects on protected species.
http://www.forestry.gov.uk/pdf/Guidancenote31wildlifeprotection.pdf/$FILE/Guidancenote31wildlifeprotection.pdf

Forest operations and European protected species in Scottish forests Forestry Commission Scotland Guidance Note 34.
The main European protected species which are likely to be affected by forestry in Scotland are bats, (all species), great crested newt, otter and wildcat. Natterjack toad and some of the plant species, such as yellow marsh saxifrage may rarely occur in woodlands or be affected by forest operations.
http://www.forestry.gov.uk/pdf/Guidancenote34protectedspecies2.pdf/$FILE/Guidancenote34protectedspecies2.pdf

Forest operations and birds in Scottish forests Forestry Commission Scotland Guidance Note 32 2006.
This note gives further advice on how best to plan forestry operations and recreational activities in woodlands to avoid causing damage or disturbance to protected wild birds in Scotland.
http://www.forestry.gov.uk/pdf/Guidancenote32Birddisturbance.pdf/$FILE/Guidancenote32Birddisturbance.pdf

Forest operations and red squirrels Forestry Commission Scotland Guidance Note 33 2006.
This note sets out further advice on how to plan and carry out forest operations and recreational activities in woodlands to minimise the possible impacts on red squirrels.
http://www.forestry.gov.uk/pdf/Guidancenote33Redsquirrel.pdf/$FILE/Guidancenote33Redsquirrel.pdf

Forests and wood ants in Scotland Forestry Commission Information Note 2007.
This Information Note provides information on the northern wood ant Formica lugubris, the Scottish wood ant Formica aquilonia and the narrow-headed ant Formica exsecta.
http://www.forestry.gov.uk/pdf/fcin090.pdf/$FILE/fcin090.pdf

195. *The UK Forestry Standard: The Government's Approach to Sustainable Forestry* Forestry Commission 2004 This book sets out the context for the regulatory framework for forestry in the UK concerning the environment and is supported by a series of guidelines.
http://www.forestry.gov.uk/pdf/fcfc001.pdf/$FILE/fcfc001.pdf

196. *Managing Health and Safety in Forestry* Health and Safety Executive 2003.
This booklet describes the roles of woodland owners, managers and contractors with regard to health and safety.
http://www.hse.gov.uk/pubns/indg294.pdf

197. *A Brief Guide to Occupiers' Legal Liabilities in Scotland in relation to Public Outdoor Access* Scottish Natural Heritage 2005.
http://www.snh.org.uk/pdfs/publications/heritagemanagement/occupiers.pdf

198. *Public Access and Land Management (PALM)* Scottish Natural Heritage 2007.
This guide is designed to help farmers, crofters, estate managers and their advisors think about how to integrate access and land management following the introduction of the Land Reform (Scotland) Act 2003 in February 2005.
http://www.snh.org.uk/pdfs/publications/heritagemanagement/palm.pdf

199. *Hazards from Trees: A General Guide* Forestry Commission Practice Guide 2000.
This Practice Guide indicates the responsibilities of owners and managers for assessing the risk of hazards from trees, and considers what inspection procedures might be appropriate.
http://www.forestry.gov.uk/PDF/fcpg13.pdf/$FILE/fcpg13.pdf

200. *Arboriculture & Forestry Advisory Group Leaflets* Health and Safety Executive.
These leaflets provide advice about safe working practices and the use of equipment related to forestry operations.
http://www.hse.gov.uk/pubns/forindex.htm

201. *A toolbox for public involvement in forest and woodland planning* Forestry Commission.
This book of information sheets describes practical ways to include people in forest or woodland planning.
http://www.forestry.gov.uk/forestry/infd-5xmds8

Shared Experiences

Crofter Forestry in Assynt

by Bill Ritchie, Assynt Crofter

The Assynt Crofters Trust planted 800 hectares of native woodland on the North Assynt Estate in the north-west highlands. The woodland helps to diversify the land use and improve wildlife habitat while providing income and community interest. Bill Ritchie, one of the driving forces behind the Assynt Crofters Trust, describes how it came about.

Crofter forestry has been one of the big successes of the Assynt Crofters Trust (ACT) following their historic buyout of the North Assynt Estate in 1992-3. The buyout undoubtedly generated energy and enthusiasm for working together, which was a great stimulus for the crofters to seize the opportunity presented by crofter forestry.

Encouraged by a couple of keen directors of ACT, more than half of the 13 crofting townships on the estate have established native woods, involving 85 out of the 120 or so crofters. Around 800 hectares, almost 10% of ACT's land, has been planted with native trees - one of the highest levels of take-up by the crofting communities.

When asked what motivated them to get involved in crofter forestry, the crofters' reasons ranged from the practical ('reduced sheep numbers meant land was available') and financial ('to bring significant income into the township') to environmental ('to create a large-scale habitat for wild animals, maybe even bears!') and social ('the idea of a community woodland appealed', 'gifting a valuable asset to the next generation of crofters').

ACT had a strong commitment to retain as much of the economic benefit as possible within the parish. A study[202] showed that the forestry establishment grants generated £193,000 to Assynt's economy, a further £191,000 to Highland contractors, with less than £70,000 of the funding leaving the Highlands. Over 15 years, the Farm Woodland Premium scheme will bring another roughly £450,000 into the local economy. The majority is distributed among the grazing shareholders according to their shareholding, although in some townships part is held back by the grazing committee for community projects such as fence repairs and livestock pens.

Before the planting began, there were little if any forestry skills in the community, but there was a local family connection to a manager with one of the larger forest management companies, who was keen to support the crofters. In exchange for taking on the management of forestry schemes, the company offered to carry the cashflow, which could be a significant obstacle, because all the costs of fencing need to be borne before the first forestry grant payment is made. The one township that decided to go it alone did run into cashflow problems, which were resolved by a grant from the Highland Fund and a bank loan for which shareholders had to offer personal guarantees.

An important aspect of crofter forestry in Assynt has been the chance it has given several young people to acquire forestry skills. The crofters negotiated with the management company agreeing that local people would receive training and be given the first option of work in seed collection, fencing and planting. As a result, between 1996 and 2001, forestry work generated more than three full-time-equivalent jobs and now three local men work full time in forestry around the Highlands. Two others are involved in ongoing deer management and fence maintenance work in Assynt. The ferociously windy climate, severe gales in recent winters, deer pressure and muirburn have all challenged the establishment of the new woods, but they have also ensured a steady trickle of replanting work for the local tree planters!

One criticism levelled at the Assynt Crofter Forestry Schemes is that they all focus on native woods and with one exception there is no provision in the schemes for commercial quality timber, from Douglas fir, for example, which has been shown to grow well in the right location even in windswept Assynt. The one exception is a scheme where Scots pine has been planted on a suitable site with reasonable access.

References

202. Community Land Ownership and Land Tenure: Activities, Impacts and Outputs: Eight Case Studies I. MacPhail, 2003.

'...it has been transformed into a vibrant community asset, providing recreation and education facilities for the local community.'

So how does crofter forestry sit next to more traditional uses of grazing land? Trees have been planted in spaces created by declining sheep numbers, but the landscape is still predominantly pastoral. Efforts have been made to ensure that the forestry benefits livestock management: judicious positioning of some plantation fence lines has reportedly made sheep gathering easier, and some crofters point to the shelter and improved habitat, particularly for cattle, that the woods will provide when the fences come down. There are also risks, however. In 2003, a muirburn went out of control and entered two adjacent forestry schemes, causing severe damage in one and significant loss of trees in the other. Fortunately both were fully insured so the costs of replanting were covered.

The North Assynt Crofters were followed by two other township schemes elsewhere in the parish, so by 2007 Assynt crofters had created around 1,100 hectares of new woods, all native broadleaves and pine. Three private landlords followed and have added a further 1300 hectares of new woods to the Great Wood of Assynt, around 1,000 hectares of which have since been taken into community ownership. Four near-contiguous schemes form a substantial area of new native woods of around 500 hectares, and many of the new plantings connect up fragments of remnant woods, so the ecological benefits will be significant. Other future benefits the crofters say they expect are shelter for cattle, sheep, pigs and deer, improved grazing, some timber and woodland walks. The Assynt crofters can be proud to have bequeathed a valuable asset to future generations.

A smallholding by a Highland river
by Tim Clifford

Tim and Alice Clifford purchased Coille na Fearna in 1998, a smallholding of riparian woods, meadows and improved grazing on the banks of the River Glass near the village of Struy. They have built a home using local timber, and started to manage the woodland and pasture in an integrated way for low intensity cattle rearing, wildlife and firewood. Tim is no stranger to woodland management having been warden at Beinn Eighe nature reserve with responsibility for the native pinewoods. Subsequently he managed large-scale woodland conservation projects for Highland Birchwoods. Here he describes the approach they took to the woodland.

Our smallholding covers the river floodplain and the first river terrace, with two small lochans and one kilometre of riverbank. There are about 5 hectares of alder woodland, 3 hectares of small sheltered woodland meadows, half a hectare of wetland, and one larger field (the "winter" field) where cattle have been regularly grazed. Growth rings on the fallen alder scattered throughout the woodland shows the trees are between 50 and 75 years old, although there are a few broad-crowned "veterans" that are probably much older.

The first edition Ordnance Survey map suggests that prior to this the area was mostly unwooded, with only occasional trees along the riverbank. The woodland includes small numbers of sessile oak, ash, downy birch, rowan, grey willow, hazel, hawthorn, elder and bird cherry, although there is no real "shrub" understorey. Bracken dominates in open areas on the drier river terrace, and the floodplain woodland has a profusion of bluebells during early summer. Two small lily-covered lochans provide habitat for frogs, toads, palmate newts and many species of dragonfly. Badger, stoat, brown hare and roe deer are also present as well as common lizard, sloe worm and eight species of butterfly.

Prior to purchase, the land had been part of a larger cattle-ranching enterprise in the process of conversion to organic status. We inherited a very diverse smallholding with a high conservation value. One of our first steps was to carry out a full inventory of the wildlife, with maps showing the locations of particular species. The overall aim was to maintain and improve the wildlife interest while rearing a small number of cattle and building a house and byre using locally-sourced materials.

By April 2002 a timber-framed and timber-clad house had been completed, using a local contractor and locally-sourced and milled timber. The Clifford family moved in! Following a site visit by the local Forestry Commission Scotland Woodland Officer and discussions with the Scottish Agricultural College Advisory Service, some simple management objectives were set out:

- Regenerate woodland over half the area of woodland meadow.
- Use cattle to maintain sheltered, open woodland-edge habitat for butterflies and dragonflies in the remaining meadows.
- Eradicate the bracken and provide a seedbed suitable for woodland regeneration through controlled cattle grazing (and trampling).
- Coppice two areas of dense mature alder to provide woodfuel for heating the house and to improve the ground flora.
- Experiment with controlled summer grazing of cattle to enhance the woodland ground flora, (particularly the bluebells).
- Produce beef of known quality and provenance for home consumption.
- Build a post and beam byre for the cattle and to provide space for timber drying, feed storage and office facilities.
- Plant native landscape trees in the winter field along the roadside edge.

The first task was to deer fence the garden and the winter field. I made the fences using reclaimed stobs and hydro pole strainers. Following this, a

large polytunnel was erected for super-drying the firewood for heating the house.

Five limosin-luing cross, heifer calves were purchased and experimentally grazed using electric fencing to restrict them to particular areas at different times of year. The dense bracken was targeted in the late spring and early summer, when the bracken fronds were beginning to unfurl, in an attempt to control the bracken by breaking up the rhizomes. In the later summer and early autumn the areas of woodland with coarse grasses were targeted in the same way. From late autumn onwards the cattle were restricted to the winter field where they were fed on organic hay and nuts in order to avoid poaching of the wetter wooded areas. Preliminary observations suggest that the low intensity cattle grazing (0.43 livestock units/ha) has the potential to both reduce the vigour of the bracken and provide a naturally fertilised seed bed for woodland regeneration. It is too early to say whether it has had any effect in reducing coarse grasses and expanding the bluebell population.

The timber frame of a post and beam byre has been made using local Douglas fir and the byre should be completed before next winter.

No public grants or subsidies were used in the early phases of the project but we are hoping to use new grants to take forward the cattle grazing and coppice management within the woodland. We will be monitoring the effects using fixed-point photography.

Restructuring Dunnet Forest
by Jon Hollingdale

Since a Community Trust took on the management of a conifer plantation in Caithness, it has been transformed into a vibrant community asset, providing recreation and education facilities for the local community. Jon Hollingdale, Forest Manager for Dunnet Forestry Trust 2003-7, describes what has happened.

The 104 hectare Dunnet Forest was planted in the 1950s by the Forestry Commission and acquired by Scottish Natural Heritage in 1984 after it became part of the Dunnet Links SSSI.

Since 2003, the forest has been managed by Dunnet Forestry Trust, a charitable company with around 500 community members, which aims to 'safeguard and sustain the forest as a community asset with rich and varied wildlife, as a place where all may study, respect and enjoy the natural environment'.

When first planted in the 1950s, drought, exposure and rabbits hindered establishment and the area was repeatedly replanted. The resulting forest was dominated by lodgepole pine, Corsican pine, mountain pine and Sitka spruce - with a few Scots pine and sycamore and about 10% open ground. Growth rates varied, creating more structural diversity than is usual in conifer monocultures. Together with the sandy soil, easy access and gentle topography, this gave the forest considerable potential for recreational development.

As there are few areas of publicly accessible woodland in Caithness, the forest grew in importance for local recreation and became used as an educational resource for schools and by the Highland Council Ranger Service. An EU-funded project in the late 1990s upgraded an informal path network, and created an all-abilities trail.

By 2000 some of the stands were reaching maturity and trees were starting to blow over. SNH had little management capacity and a proposal for

community management was well received. After wide consultation Dunnet Forestry Trust was formed and a management plan prepared. Funds were raised to employ a forest manager and the process of "restructuring" the forest began - clearing windthrown areas, and "at risk" stands, and restocking them with a mix of conifers and broadleaves.

Initially 12 hectares of forest was clearfelled by contractors and the roundwood transported to the board manufacturer at Ardersier at a considerable loss. Since then, felling and thinning work (and almost all other work) has been done by the Dunnet Forestry Trust's forester and forest workers, using chainsaws and ATV extraction. The Trust has developed a local market for firewood selling over 200m^3 each year, along with small volumes of spruce roundwood for jumping poles and pergolas etc.

The on-going restructuring of the forest has been mirrored by a restructuring of the meaning and purpose of the forest - a gradual process of transforming an even-aged, low value, conifer monoculture into a multi-age, multi-species woodland delivering social, environmental and economic benefits for the local community.

The trust has created 6km of new paths, including an extension to the all-abilities trail, a 2km horse riding trail and a mountain bike "technical trail". A further 4km of paths have been upgraded with better bridges, drainage and surfacing. The car park has been enlarged, the bird hide renovated, interpretation boards enhanced, and more benches and picnic tables have been provided.

The forest is home to over 100 flowering plants (including Scottish primrose), lots of fungi and numerous beasties (notably the small blue butterfly). The Trust has enlarged wetland areas, which are particular biodiversity hotspots and established a tree nursery, growing planting stock from locally-collected seed.

The Trust aims to interest as wide a range of the local community as possible. Two "open days" have been held, featuring chainsaw carving, wood-turning, storytelling and a woodland orchestra, each attracting about 400 people to the forest. Orienteering events for schools and Scout groups have been held, and the forest provides a venue for other community activities, including training events for the Caithness and Sutherland Search Team and the Casualties Union.

As a contribution to the Highland 2007 Year of Culture, the Trust commissioned a number of wood and stone sculptures including the very popular (6m long) xylophone. Environmental art workshops were held, and the forest hosted a visit from the Dark Sky Scotland team from the Royal Observatory and a performance from the tePOOKa theatre group.

Local volunteers and organised groups, such as the Dounreay apprentices, Caithness Countryside Volunteers and the local Scouts, have helped with tree planting, path building, the tree nursery, pond restoration, control of invasive vegetation and replacing fences.

The Trust was assisted in the early stages by North Highland Forest Trust and the Community Woodlands Association and received funding from public agencies and in-kind goods and services from a number of local businesses.

Making the most of an oakwood

by David Blair

Dunbeag Woodland is 12 ha of steeply sloping ancient oak woodland just above the village of Tighnabruaich in Argyll. It was under-planted with conifers by the Forestry Commission in 1963 and acquired from them in 1995. David Blair became custodian of the woods. He had a training in permaculture design and a desire to live sustainably, but no previous experience of woodland management. His primary objective was to restore the ancient Atlantic oak woodland, encourage its natural regeneration and to make best use of the conifer being extracted from the wood by learning to use it locally. Here, he tells us more:

I lived in a tent, a caravan and then a workshop before finally building a house. Working with my brother Rob, we learned to fell and slab trees with a home-made chainsaw mill. Using the timber, we built the workshop, founded on tree stumps of untreated Sitka spruce. We built a seasoning tunnel, carried slabs down out of the forest and stacked them to season. We made picnic tables and rustic furniture, built summer houses and stables, and supplied firewood and Christmas trees in the wintertime. After seven years pushing a chainsaw mill, I bought a Lucas Mill, which cuts dimensionally accurate timber and is much more efficient. It is lightweight and easily transportable; we carry it up into the woodland and mill the logs

where they lie, or close by. Combined with a log chute for extraction, this technology is appropriate for the situation and for the scale of woodland management. The house was constructed entirely out of timber cut from the woodland. It took about 2 months of felling, milling and site preparation a day to extract the timber and four months to build the house. When the reclaimed sofa arrived we moved in and we love it; built from the wood, heated by the wood - totally cosy.

For six years I collected water every day from the Eas an Duin burn until we installed a gravity flow water pipe which supplied the house and polytunnels. A pit toilet, with a fine view over the Kyles of Bute, has served well for many years. Dunbeag is off-grid and, over the years, a renewable energy system has developed from a 12 volt solar panel, which could not keep a light bulb on in the winter, to a 48 volt micro-hydro / photo-voltaic combination which supplies sufficient energy for power tools and all our basic domestic needs (though not all at once).

The soil here was very poor. After watching skip-loads of garden waste leave the village each week I established a community composting scheme that is now processing about 80 tons a year and is supported by Argyll & Bute Council. The compost, rock dust and charcoal have improved the soils and a productive organic garden has been established in a clearing created by an electricity wayleave. With over 100 fruit and nut trees, lots of soft fruits, polytunnels, chickens, mushroom logs and vegetable beds, Michaela and I eat well, preserve plenty and distribute the excess.

Ecobiz is a small diverse ecological business that supports Dunbeag. Established in 1996 it has supplied picnic tables, rustic furniture, gourmet mushrooms, freshly picked salads and vegetables, firewood and charcoal. Ecobiz also offers rhododendron control, ecological restoration and bespoke garden structures, and manages the composting scheme. Education plays an increasingly important role and we have worked with many local schools. Through the eco schools initiative we have

worked on buddy benches, picnic tables, storytelling chairs, outdoor classrooms and stages, living willow sculpture, orchards and notice boards. We have also run workshops in apple tasting and pressing, mushroom cultivation and composting. Michaela and I are now trained to offer Forest School[203], which is a great opportunity to give children access to the best kind of classroom.

The intention at Dunbeag is to develop a relationship with this woodland where there is mutual benefit - a symbiosis. We get what we need to live and the woodland habitat is improved and restored for all the species that would naturally live here.

It takes people working together to make a sustainable future possible. I have been fortunate to have worked and learned with many good people over the years as friends, volunteers, 'Wwoofers' (an organic farm volunteering initiative)[204] and employees.

Dunbeag has given me place, purpose and asylum, a beautiful evolving relationship and a rich and varied lifestyle. I am learning a good living and I love it!

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Grazing woods in Argyll
by Bob Black of Argyllwoodlanders

Barrandroman Wood is a moss and lichen-rich woodland of oak, hazel and birch overlooking Loch Feochan, just south of Oban. With a history of coppice management and grazing, the owner is now modifying the grazing regime to ensure regeneration of the trees, promote wildlife and allow continued grazing on the site.

Barrandroman is not large, about 20 hectares in all, though native woodland continues westwards long the loch-side and a conifer forest adjoins it on one side. Above the wood is a mosaic of semi-improved grassland, heath and young native woodland, mostly of birch.

Barrandroman has a long history of management. Clues can be found in the ruined enclosure dykes and circular charcoal hearths still visible within the wood. The charcoal hearths are typical of woods managed in the 18th and 19th Century to supply charcoal to the iron furnace at Bonawe, near Taynuilt.

The wood is part of a farm that has been in the same ownership since 1928. The present owner's grandfather planted small groups of conifers through the wood in the 1930s. These trees have now grown up and become a landscape feature, though the wood remains essentially native woodland. The wood forms part of a 36 hectare enclosure that includes some of the open ground habitat above.

Up until 2007 Barrandroman was grazed by both sheep and cattle with a winter average of around 40 ewes and five cows. There could be as many as 60 ewes or 20 cows with calf, depending on the amount of available grass. Stock was on the ground for most of year, though sheep were taken off during lambing from mid April to mid May. Stock was also rotated onto other parts of the farm for some of the time between July and December. This grazing pattern resulted in well-grazed grassland and wet heath but also well-browsed and suppressed seedling trees.

The owner, who is also the grazier, was concerned that the mature woodland lacked established tree regeneration and that sooner or later it would start to decline. He was also very aware of the wildlife on his farm and had identified areas where scarce butterflies and moths breed. In particular, there are good populations of marsh fritillary butterflies and transparent burnet moths, the former a UK Biodiversity Action Plan[205] species with a declining population, the latter a scarce species restricted in the UK mainly to the Hebridean islands and to a few localities on the mainland.

Both species benefit from habitat that is grazed. The owner had observed that another part of the farm, from which stock had been excluded for woodland regeneration, had become rank, despite low levels of deer browsing. As a result, the foodplants of the butterfly caterpillars were becoming scarce.

Barrandroman was entered into a pilot woodland grazing scheme in 2007. The aim was to reduce the grazing pressure within the woodland, and in nearby areas of heath and open bracken where regeneration could be expected. Sufficient grazing

was to be maintained to keep the heath and wetland habitats in a condition favourable to the breeding colonies of scarce butterflies and moths.

The sheep were taken off but grazing has continued with five Aberdeen Angus Cross cows with calf, grazing throughout the year.

Invasion of the better grassland by rushes, thistles and bracken is an ongoing problem. Low intensity cattle grazing and trampling may slow the spread, but additional cutting and weed-wiping will be undertaken to maintain the grassland area.

The effect on the habitat will be monitored by the owner and the grazing regime modified as necessary. A different owner may well have needed help to identify the key species and their habitat requirements, though after the project is set up habitat monitoring should be fairly straightforward.

It is hoped that tree regeneration will become established under the initial regime. The cattle are concentrating their attention on the areas of better grassland and, in winter, around their feeding areas. However, they move around the whole enclosure, maintaining clearly defined tracks through the woodland and lightly grazing the less palatable heath, wetland and woodland field layer species.

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Woodland development by the North Harris Trust

by Steven Liddle

When a pioneering community woodland was planted in North Harris in 1999, some local crofters were sceptical about the project. However, when the wider community subsequently purchased the estates where they lived, the experience of woodland creation gave them confidence to develop the woodland resource. Steven Liddle, previously woodland officer for Comhairle nan Eilean Siar, tells the story.

The purchase of the North Harris Estate by a community trust in March 2003 brought 22,000 hectares and 13 townships into community ownership. In 2006 the estate was enlarged through the purchase of the 3000 hectare Seaforth Estate, with four more townships.

The North Harris Trust were keen to manage the estate to its full potential, taking advantage of the spectacular upland and oceanic habitats, and species such as golden eagles, sea eagles, fresh water pearl mussels and corncrakes. However, years of sheep grazing and sporting estate management had left little in the way of woodland cover. The one notable exception was the 110 hectare Ardvourlie Community Woodland, completed in 2001 with funding from the Forestry Commission and the Millennium Forest for Scotland Trust. Initially some crofters were sceptical about the loss of so much grazing to forestry but the forestry fence made gathering easier and by the time of the community buyout, the trees were well-established around a network of footpaths. This coincided with the launch of a new woodland grant scheme targeting the Western Isles and the employment of a woodland officer by the local authority to help with education, scheme design and delivery on the ground.

The community woodland demonstrated woodland as a viable form of land management for the crofting community and proved to be a catalyst for future activity. Between 2004 and 2007, seventeen

new woodland schemes were established in Harris. Each has been well-designed to enhance the landscape, which is designated for its wildlife and scenic values. Many of the woods are close to townships with a few riparian schemes situated on in-bye land. Tree species were chosen to suit the sites - mostly native species such as downy birch, sessile oak, rowan, hazel, common alder, holly, juniper, sallows, grey willow and ash. With training and advice, the local residents have become skilled in establishment techniques and created high quality woodlands which provide improvements to biodiversity and amenity.

The rapid change in attitudes to woodland in Harris would not have seemed possible at the turn of the Millennium. These days however, woodland development is at the core of community activity. In 2007, the North Harris Trust planted two riparian woodlands at Glen Mhiabhaig and Glen Langadale amounting to 18hectares. Since then a biomass plantation has been created on unused croft land in Kyles Scalpay taking a modern approach to the traditional "lazy bed" system with the trees planted in four- metre wide beds. The combination of short rotation coppice and woodfuel plantations demonstrates the growth rates that can be achieved on typical "black earth" sites and aims to help address fuel poverty in the area.

Modern 'lazy-beds' prepared for biomass planting on the North Harris Estate
Photo: Steven Liddle

The Trust has also started to restore remnant native woodland around Loch Seaforth and has surveyed and mapped other woodland remnants as a basis for native woodland expansion in the future.

Shelter in Shetland

by James Mackenzie of Shetland Amenity Trust

James Mackenzie planted a shelterbelt on his croft in Shetland in 1993 with a grant from Shetland Islands Council. Here he describes how it was planted and its subsequent value, providing shelter for animals and crops.

Shetland has little land suitable for woodland, because of the large areas of blanket bog and the oceanic climate. No part of the islands is further than three miles from the sea and much of the in-bye crofting land fringes the coastline. Most plantations are less than two hectares in size. There is no semi-natural woodland, but a few isolated relict trees of aspen, birch, hazel, rowan and willow are found in inaccessible locations.

Our croft is very small, only 3 hectares, and we wanted to see if a small, narrow belt of six or seven metres wide would be sufficient to provide shelter for livestock and crops. After fourteen years, there is no doubt in our minds that it has proved its usefulness, although we were told it would be far too narrow to be effective.

The belt is in the form of a dogleg and the park within its "knee" measures about 30 x 30 metres. The east-west section on the lower ground was planted with common alder and willow in a wetter area, and with downy birch, Japanese larch, rowan, Swedish whitebeam and one or two wych elm at the drier end. Where the ground rises on the north-south axis, the main species is shore pine (of Alaskan origin), with some shrubs on one side and willow, whitebeam and rowan on the other. The trees were planted with 11/2 metres between trees and rows. Initial shelter was provided by windbreak netting, while wire netting augmented the Rylock fence, to keep the rabbits out.

The whole belt got a nasty hammering in June 2000, when a 24 hour dry westerly Force Ten - basically a prolonged salt storm - blackened most of Shetland's vegetation. Despite that, most species have thrived and the canopy height is presently 4-5m. Only the southeast corner, which is very exposed to winds, has a wind-pruned profile and a lower canopy height.

Knowing what we know now, and considering what is available, our choice of species and provenance would be somewhat different. We would have used the Alaskan willows Salix alaxensis and S. hookeriana, and the Sitka alder, Alnus sinuata, for front line defence, as these species are very wind and salt resistant and not so prone to dieback as their British or European cousins. As for the birch, we would choose a more maritime provenance than was available in 1993.

The park that is in the lee of the belt has a fine mix of grasses and wild flowers. We have mown it for meadow hay for many years and then used it for back-end grazing. Last year it became an emergency lambing park for a couple of ewes, and this winter it is home to some small hill lambs. Having reduced our stock levels significantly we have increased the area of woodland to over one hectare, to provide more shelter. We are using more land for horticulture and plan to trial short rotation coppice for biomass and for craft use - a revival in basketry having begun in the islands.

The shelterbelt needs little management now. In the first few years the trees required weeding, and a few needed to be replaced. Some brashing of the inner rows of trees has improved access, and a little judicious thinning will soon be required. The shelterbelt is a haven for birds, with several nesting blackbirds and many migrants using it as a hostelry. We even had a pair of redpolls bringing up families for two years running. A local beekeeper keeps hives in a glade and we get delicious honey in return.

A new electricity line was installed over the shelterbelt a few years ago. "Don't worry," said one of the linesmen. "When your trees get too high we'll come back and prune them." I thought at the time that he was joking, but I might even see the day in my lifetime; that wych elm is certainly reaching for the sky...

Laid
by Kenneth MacKenzie Hillcoat

Having a croft is a great privilege and we thought for a long time about what to do with our crofts. They had traditionally been used for sheep but the farming was not particularly viable since the land is exposed and windswept and, apart from a few areas of improved ground, it is mostly rocky peat and heather.

With encouragement from Jon Priddy of the then North West Sutherland Native Woodlands Project (now the North Highland Forestry Trust) and Willie Beattie of the Forestry Commission we decided on planting a native woodland under the Crofter Forestry Scheme. Three crofts were put together, with a total of 50 acres. The first planting of 21,500 trees, mostly birch and oak, took place in February 1998. We have continued to plant about 1000 trees each year, filling in gaps and trying to establish windbreaks. Later planting concentrating on the species that are doing well, such as alder, willow, whitebeam and aspen.

Noticing that that we had most native trees represented we decided to complete the suite and now have all of them growing, as well as many native shrubs. Natural regeneration of birch and especially rowan has been prolific. All along we have been experimenting, trying different species, different sizes (we have found that, contrary to accepted wisdom, planting a larger tree pays dividends in the trickier spots in the heather) and learning from the many mistakes made at the beginning when many trees were planted in the wrong places. The initial planting was made in a grid at some 3 metre intervals, a mistake which at least showed us the good and bad spots. Subsequent planting has been in tight groups. We have also learned the need to burn off the heather and to make a good windbreak along the south and west sides of the woodland. Various fertilizers have been tried but none beats the traditional seaweed, which is in good supply as the crofts run down to Loch Eriboll. Some areas require annual fertilizing.

After nearly 11 years of hard work the woodland is taking shape, growing well in areas sheltered from the wind and making progress in the windier areas where heather and rock dominated. It has been tremendously worthwhile seeing the woodland develop, but also seeing the wild flowers and birds which were not there before. The birch on the improved ground are now needing thinned, providing firewood for the winter - and we can see that we will never want for firewood again! But the main satisfaction is walking through the trees in the knowledge that future generations will benefit from a varied native woodland in a part of Sutherland where trees are few and far between.
If we can do it here in Laid, it can be done anywhere!

Forsinard
by Sandy Murray

I have four west facing crofts, on the east side of Strath Halladale with large apportionments following the dissolution of a sheep stock club. I also have shares in two common grazings. All in all, there is 360 hectares of enclosed land which includes 20 hectares of arable land, 20 hectares of re-seeded hill, and 83ha hectares of forestry. The remainder is rough grazing.

I currently run 400 North Country cheviot ewes and 22 beef cows and harvest around 2000 Christmas trees. I have have also just converted an old mill into a Bunkhouse.

At the time of the Crofter Forestry Bill, I was employed as a Crofting Development Officer with Caithness and Sutherland Enterprise. With a remit covering crofter forestry, I felt that the best way of gaining practical experience was to start with my own croft.

I started with a 1 hectare shelterbelt with CCAGS assistance, followed the next year by a 24 hectare plantation of conifers under the Woodland Grant Scheme. After deer- fencing 50 hectares of hill I

went on to plant three 2ha blocks of Christmas trees and 7hectares of broadleaves - leaving plenty of open spaces. After seeing how well they were doing (and receiving a "Scotland's Finest Woodland Award") I had the bug!

I went on over the years to plant a further 7 shelterbelts (from 0.1ha to 5ha), carried out amenity tree planting under the Countryside Premium Scheme, established a further three blocks of Christmas trees, a 3 hectare regeneration scheme and more broadleaved planting around the lambing park.

I have enjoyed my venture into forestry and feel that it has been of great benefit to my crofting activities and to the Strath. It has increased the diversity of habitat and enhanced the environment, not to mention the provision of shelter for the stock and income from the Christmas trees. It would not have happened without the grant assistance. I have not finished yet and am now looking at funding from the new Scottish Rural Development Programme for the next project.

Orkney Woodland Group
by Jenny Taylor

Orkney conjures up many different images - standing stones, windswept cliffs, lush farmland, abundant wildlife and whisky ... but perhaps 'woodlands' comes pretty far down the list. Nevertheless, there are many small woodlands on the islands and a great interest and enthusiasm for planting trees.

The Orkney Woodland Group has been active, in a variety of ways, for over 15 years. From its early days as a discussion group, it has evolved and, since 1998, it has been acting as the steering group for the Orkney Woodland Project. The project provides advice on tree planting and management, assistance with grant applications and works with schools on all tree-related matters.

Prior to this, very few new woodlands were being created in Orkney, but the combination of advice and grants has seen the biggest phase of tree planting in the islands since the beginning of the twentieth century (when wealthy landowners planted around their large houses).

The reasons for planting are varied but include shelter, for people and livestock, screening and privacy, wildlife interests and variety. Significant economic benefits are rarely assumed here, although there are definite opportunities for small-scale sustainable use of wood for fuel and craft work. The majority of Orkney's new woodlands are planted on private land by farmers and other landowners, by community groups, schoolchildren and even monks! Sites are generally small, often 0.5 hectare or less. There seems to be little desire in the islands to plant huge woodlands and this is understandable given the love for the beautiful, open landscape that most residents have.

The project has always concentrated on encouraging appropriate species on appropriate sites. Ideally, all planting stock would be grown on the islands and, indeed, there are a number of good, small-scale, usually part-time growers on the islands. However, to obtain the volume of plants, the range of species and a keen price, many plants are brought into the islands. Local seed is sent to a north-of-Scotland nursery, so that genetically native stock can be returned to the islands.

Some sites are unpredictable, and the advice of the Orkney Woodland Project has not always been perfect - there is always more to learn. Feedback from the owners of the young woodlands is, therefore, essential and always interesting and welcome.

The consistent 'essentials' for successful tree establishment in Orkney seem to be:

- a high density of planting, giving mutual shelter against the winds
- vigilant and thorough weed control, by chemical or mechanical means, to prevent competition from grasses and encourage early growth
- the use of good plants of appropriate species and of local or northern (coastal) provenance

- a high level of grant, without which most people cannot afford to take on a project
- and huge quantities of hard work and enthusiasm

In such exposed maritime conditions, there is just no leeway for cutting corners, so the amount of time and money put into schemes is proportionally high. On the plus side, Orkney has large amounts of rich, fertile soil and it appears that good ground conditions go some way towards mitigating the affects of our salt laden gales, short, cool growing season and the large variation in day length between the seasons. The most important factor of all is, without a doubt, the people involved. Their passion and commitment is clearly the most essential ingredient of all!

Over the past ten years 100 new woodlands, amounting to about 60 ha, have been planted and ten mature woods brought into management. The project has advised many hundreds of people. It may not sound like much but a high proportion of the population have, during that time, been involved in some aspects of tree care and planting. As a result, there is now a confidence and belief in the community that there are ways to make trees thrive here. Skills are developing and being passed on from neighbour to neighbour, from generation to generation. People rarely now say 'Trees won't grow in Orkney'.

Orkney Woodland Group consists of representatives from Forestry Commission, the Hoy Trust, Orkney Field Club, Orkney FWAG, Orkney Islands Council, RSPB, Scottish Natural Heritage and local woodland owners and nurseries.

OWP is funded by the Forestry Commission, Orkney Islands Council, Scottish Natural Heritage and the Heritage Lottery fund. It is staffed by a part-time officer who can be contacted by emailing jenny@jtlarch.co.uk

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Scottish Building Regulations
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Forestry and Rural Development Organisations

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(0131) 666 2474
http://www.soilassociation.org/forestry

Institute of Chartered Foresters
59 George Street
Edinburgh
EH2 2JG
(0131) 240 1425
http://www.charteredforesters.org/

Highland Birchwoods
Littleburn Road
Munlochy
Ross-shire
IV8 8NN
(01463) 811606
http://www.highlandbirchwoods.co.uk/

The Timber Research and Development Association
The e-Centre
Cooperage Way Business Village
Alloa
Clackmannanshire
FK10 3LP
(01259) 272143
http://www.trada.co.uk/

Association of Scottish Hardwood Sawmillers
http://www.ashs.co.uk/

The UK Woodland Assurance Scheme
59 George Street
Edinburgh
EH2 2JG
United Kingdom
Tel: +44 (0)131 240 1419
http://www.ukwas.org.uk/index.html

Small Woods Association
Green Wood Centre
Station Road
Coalbrookdale
Telford
TF8 7DR
(01952) 432769
http://www.smallwoods.org.uk/

North Highland Forest Trust
Alba
Main Street
Golspie
Sutherland
KW10 6TG
(01408) 633 986
http://www.nhft.org.uk/

Scottish Working Woods
http://www.scottishworkingwoods.org.uk/

Forestry Contracting Association
Tigh na Creag
Invershin
Lairg
Sutherland
IV27 4ET
(0870) 042 7999
http://www.fcauk.com/

Argyll Green Woodworkers Association
Gordon Gray Stephens
Old Poltalloch
Kilmartin
Argyll
PA31 8RQ
(01852) 500366
www.argyllwood.co.uk

Forest Harvest
58 Shandwick Place
Edinburgh
EH2 4RT
Tel : (0131) 2202500
http://www.forestharvest.org.uk/

Conservation Organisations

The Woodland Trust
Woodland Trust Scotland
South Inch Business Centre
Shore Road
Perth
PH2 8BW
(01738) 635829
http://www.woodland-trust.org.uk

Scottish Native Woods
1 Crieff Road
Aberfeldy
Perthshire
Scotland
PH15 2BJ
(01887) 820392
http://www.scottishnativewoods.org.uk

British Trust for Conservation Volunteers
Balallan House
24 Allan Park
Stirling
FK8 2QG
(01786) 479697
http://www2.btcv.org.uk/

Reforesting Scotland
58 Shandwick Place
Edinburgh
EH2 4RT
Tel : (0131) 2202500
http://www.reforestingscotland.org/

The Native Woodland Discussion Group
http://www.nwdg.org.uk/

Trees for Life
The Park
Findhorn Bay
Forres
IV36 3TZ
(01309) 691292
http://www.treesforlife.org.uk

Butterfly Conservation
Balallan House
Allan Park
Stirling
FK8 2QG
(01786) 447753
http://www.butterfly-conservation.org/

Offwell Woodland & Wildlife Trust
Yew Tree Cottage
Offwell
HonitonDevon
EX14 9SD
(01404) 831881
http://www.countrysideinfo.co.uk/

Community Groups

Community Woodland Association
69 St Valery Place
Ullapool
Ross-shire
IV26 2TD
(01854)613737
http://www.communitywoods.org/

Dunnet Forestry Trust
Castlehill Heritage Centre
Harbour Road
Castletown
Caithness
KW14 8TG
(07770) 697711
http://www.dunnetforest.org/

Other

World Wide Opportunities on Organic Farms
WWOOF UK
PO Box 2154
Winslow
England
MK18 3WS
http://www.wwoof.org.uk/

UK Biodiversity Action Plan
http://www.ukbap.org.uk/

Alba Trees
http://www.albatrees.co.uk/

Glasu
http://www.glasu.org.uk/

Scottish Outdoor Access Code
http://www.outdooraccess-scotland.com

Heritage North
Suites 4&5
Fourth Floor
Ballantyne House
84 Academy Street
Inverness
IV1 1LU
(01463) 797091
http://www.heritagenorth.org.uk/

Volunteer Centre Network Scotland
c/o UnderCOVER
56 Kelburn Street
Barrhead
G78 1LR
(0141) 876 9555
http://www.volunteerscotland.org.uk/

UK-based woodland management certifying organisations
http://www.fsc-uk.org/certification-bodies/

Northern Woodheat
Highland Birchwoods
Littleburn Road
Munlochy
IV8 8NN
(01463) 811606
www.northernwoodheat.net

Machinery ring for conservation-related equipment
http://www.hbsring.co.uk

British Horse Loggers
Heavy Horses
Hill Farm
Stanley Hill
Bosbury
Ledbury
HR8 1HE
http://www.britishhorseloggers.org/index.htm

Ecolots
The Stockton Cross
Kimbolton
Leominster
Herefordshire
HR6 0HD
(01568) 612039
http://www.ecolots.co.uk/

Chilterns Area of Outstanding Natural Beauty
Chilterns Conservation Board
The Lodge
Station Road
Chinnor
Oxon
OX39 4HA
(01844) 355500
www.chilternsaonb.org

Coed Cymru
The Old Sawmill
Tregynon
Newtown
Powys
SY16 3PL
Tel 01686 650 777
http://www.coedcymru.org.uk/

Walter Segal Self Build Trust
http://www.segalselfbuild.co.uk/home.html

Wood for Good
http://www.woodforgood.com/

The Gaia Group
The Monastery
2 Hart Street Lane
Edinburgh
EH1 3RG
(0131) 557 9191
http://www.gaiagroup.org/

Sunart Oakwoods Initiative
http://www.sunartoakwoods.org.uk/