

Native Woodland Habitat Action Plans in Scotland

(Draft) FCS Guidance Note

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Introduction

The UK Biodiversity Action Plan was first proposed in 1994 in response to the Convention on Biological Diversity and has been developed and taken forward by government and non government organizations throughout the UK.

The plan tackles four main areas:

1. Action plans for key species and habitats
2. Better management of biodiversity information
3. Improved public awareness and involvement
4. Systems for monitoring biodiversity

The UK Biodiversity Action Plan is not a statutory plan so delivery will require that priorities and actions are built into existing plans wherever possible. It therefore needs the involvement of a range of people, organizations, businesses and land-uses in positive action for biodiversity.

Since 1994 much has been achieved:

- 391 Species Action Plans and 45 Habitat Action Plans are being delivered across the UK.
- The UK Biodiversity Partnership co-ordinates action required at UK level.
- Country partnerships deliver the plan at a national level.
- Research and reporting groups have been set up.
- A central website <<http://www.ukbap.org.uk>> gives information on all species and habitat action plans and links to country forums and reporting structures .
- In Scotland the Scottish Biodiversity Forum has produced the *Scottish Biodiversity Strategy* which sets priorities and detailed actions in each three year period. Action is also being taken at a local level through 26 Local Biodiversity Action Plans.

The Forestry Commission, together with the Forest Service in Northern Ireland, is closely involved in the delivery of a number of habitat and species action plans and acts as the lead partner for the native woodland habitat action plans and for a few species. Forestry Commission Scotland jointly chairs a steering group called the UK Native Woodland Habitat Action Plan (UKNWHAP) Group which co-ordinates overall UK implementation. Native woodland partnerships/networks have been set up to co-ordinate delivery of targets in each country.

This paper describes:

- the structures which have been put in place to deliver the native woodland habitat action plans in Scotland;
- definitions of what is involved in the *improvement, maintenance, expansion* and *restoration* of native woodlands;
- the Scottish targets for each native woodland type;
- the role of Local Biodiversity Action Plans in delivering native woodland plans;
- associated with forestry and the native woodland plans.

The Native Woodland Partnership for Scotland

The Native Woodland Partnership for Scotland is chaired by the Forestry Commission Scotland and membership includes representatives of:

- The Forestry Commission Scotland / Forest Enterprise Scotland
- Forest Research
- Scottish Natural Heritage
- Scottish Executive Environment and Rural Affairs Department
- Deer Commission for Scotland
- Scottish Landowners Federation
- National Farmers Union (Scotland)
- Forestry and Timber Association
- Royal Society for the Protection of Birds (also representing Scottish Environment Link)
- Scottish Native Woodlands (also representing the Scottish Native Woodlands Initiative Network)
- The Woodland Trust Scotland
- Scottish Local Biodiversity Action Plan Co-ordinator

This partnership provides co-ordination and advice on implementation of the native woodland habitat action plans and the relevant species plans, while developing monitoring, reporting procedures and policy ideas and communicating best practice. As well as covering the action plans the group also helps deliver other parts of the Scottish Forestry Strategy and Scottish Biodiversity Strategy relevant to native woodlands.

Through the Local Biodiversity Action Plan Co-ordinator, the partnership maintains contact with those involved in the production and implementation of Local Biodiversity Action Plans. These now cover the whole of Scotland and almost all include native woodlands in their lists of priorities.

The Native Woodland Habitat Action Plans

There are eight habitat action plans covering the range of native woodlands in the UK. They are collectively known as the Native Woodland HAPs. Seven apply in Scotland. FC is the lead partner for all but one.

- Upland oakwoods
- Native pine woodlands
- Upland mixed ashwoods
- Wet woodland
- Upland birchwoods in Scotland*
- Lowland mixed deciduous woodland*

- Lowland wood-pasture & parkland (led by Scottish Natural Heritage)

*The action plans for upland birchwoods and for lowland mixed deciduous woods in Scotland are still not official but in practice are being implemented alongside the others.

The eighth HAP is for lowland beech & yew woodland which is confined to England and Wales.

Although there are some differences between the individual plans their main objectives are to:

- **Maintain** the extent of the existing habitat, ensuring especially that areas of *ancient semi-natural woodland* and *genuinely native pinewood* are not lost.
- **Improve** the ecological condition of existing areas of woodland, ensuring that necessary management is undertaken to achieve *favourable condition* over a much higher proportion of sites.
- **Increase** the area of each type through:
 - **restoration** of some non-native plantations on ancient woodland sites back to native woodland ecosystems;
 - **expansion** (including a combination of *creation* of new native woodland and *conversion* of non-native plantations outside ancient woodland sites to native woodland).

All the plans contain measurable biological targets to ensure that we focus on assessing results rather than just the effort and resources which go into conservation.

How do HAPs relate to forestry policies?

The HAPs are consistent with policy aims and priorities set out in the Scottish Forestry Strategy, and best practice guidance for semi-natural woodlands in the UK Forestry Standard and Forestry Practice Guides. The Scottish Biodiversity Strategy also endorses and aims to help deliver all HAP and SAP targets relevant to Scotland.

Native woodland HAP targets are recognised in the Scottish Forestry Strategy as 'existing commitments', and are therefore implicit in the priorities for action to *improve the management of semi-natural woodlands*, and to *extend and enhance native woodlands by developing Forest Habitat Networks*.

Some aspects are still being developed, particularly local targets and monitoring procedures for woodland condition. Targets for all the habitat and species action plans in the UK BAP will be reviewed formally in 2005/6 at country and UK level.

Key concepts and terms

In order that we can follow progress against the targets, prioritise resources and plan management, and link work to grant assistance, it is important that:

- We can be clear about the relative importance of the categories of the woods we have (e.g. ancient semi-natural woodlands are more important for biodiversity than newly planted native woodland)
- We can clearly define the woodland types, e.g. when does an oakwood with lots of birches become a birchwood with a few oaks?
- We can distinguish the difference between the terms *maintaining*, *improving*, *restoring* and *expanding*.

This means setting sometimes arbitrary boundaries within the complex spectrum of native woodland . Where possible the boundaries and definitions are linked to existing categories, classification systems, inventories and survey methodologies. It also requires definitions relating to woodland antiquity, continuity, naturalness, nativeness, and ecological types.

Nativeness and Native Woodland

A **native species** is one which evolved or arrived in its current range without human assistance. This is sometimes hard to tell but we can be fairly confident which trees spread naturally in the UK during the post-glacial era. Widely *naturalised* species such as sycamore and sweet chestnut are not considered truly native anywhere in UK, whilst some species such as beech, hornbeam and Scots pine are considered to be native in only part of Britain. The natural range of native species may change in response to climate change, and this will be kept under review.

Site-native species are those native species which are found naturally in a given locality and site type (they can colonise and complete their life cycle on these sites). Composition of semi-natural woodlands indicates site-native species. In general site-native species have high biodiversity value because of a long history of co-adaptation with the local environment. Use of site-native species will help to conserve *regional distinctiveness* which is a key part of biodiversity. The best guidance on site-native status for trees and shrubs in Britain is still that by Soutar and Peterken (in the Forest Nature Conservation Guidelines, 1990), although work is underway to produce a refined decision support tool.

Nativeness could be assessed for the whole woodland ecosystem but the most practical application is the degree to which a woodland canopy is composed of site-native trees and shrubs. The canopy has a dominant role in ecosystem processes and is also the component most easily assessed and most likely to be influenced by woodland management. For the Habitat Action Plans the term **native**

woodland includes all woodland in which the canopy is mainly composed of site-native species (over 50% of canopy cover). As the shrub and field layers are not used to define native woodland, an upland oakwood with a 100% shrub layer of rhododendron would still be classed as native woodland, whilst a spruce plantation overlying a remnant ancient woodland ground flora would not.

Naturalness and Continuity

Naturalness refers to both the species present and the natural ecological processes and structures. It is possible to have different degrees of naturalness of all of these. For example, some planted upland oakwoods may have an oak monoculture in the canopy but a full range of species regenerating naturally in gaps, whilst a diverse semi-natural oakwood canopy may have no natural regeneration due to artificially high grazing pressure.

Semi-natural woods: Considered more valuable in general for biodiversity than equivalent planted woods of similar age and type. In the UK no truly **natural** woods remain and the term 'semi-natural' reflects past human influences. A semi-natural woodland is one where the current stands are predominantly composed of trees and shrubs that are native to the site and are not obviously planted (i.e. they appear to have arisen mainly from natural regeneration or from coppice/pollard growth from naturally regenerated individuals). In practice it can be very difficult to tell whether stands which appear semi-natural in structure and composition were actually planted or naturally regenerated, and doubtful cases have often been included as semi-natural in inventories such as the Ancient Woodland Inventories.

Planted woodlands: Planted woods or stands usually have a simpler structure and composition than semi-natural stands. With sufficient time and sympathetic management they can develop a semi-natural character as associated species colonise and the structure becomes more complex. Biodiversity at the genetic level may be less well conserved.

Ancient woodland: This refers to woodland where the site is believed to have been continuously wooded for several hundred years, and is believed to have been of semi-natural origin when first wooded. This long continuous history is important for nature conservation and cultural values. Such woodlands are provisionally identified by the Scottish Ancient Woodland Inventory. This identifies three distinct categories; ancient woods, long established woods and 'Roy woods' depending on the records which identify them. All these antiquity categories of woodland can currently support either a semi-natural stand or a planted stand (of non-native or native species).

Ancient semi-natural woodland (ASNW): This refers to semi-natural stands on an ancient woodland site. They are in general the most important woodlands we have for biodiversity and cultural values.

Other semi-natural woodland (OSNW): Semi-natural stands on non-ancient sites. Older woods can acquire similar value to ASNW.

Planted woods on ancient woodland sites (PAWS): These occur where former ancient semi-natural woodland has been replanted, often with non-native species. The degree of loss of biodiversity varies markedly depending on the species planted and subsequent management. Further loss can be prevented, and some losses eventually reversed, through removing non-native species, restoring native trees and shrubs and by sensitive management.

Native woodland types

Each Habitat Action Plan describes the type of woodland to which it refers. Figure 1 provides a brief summary of each type and its relationship to the most commonly used classification systems, namely the National Vegetation Classification (NVC), Peterken Stand Types and FC Forestry Practice Guide types. Further detail is given in JNCC report 288 (Hall & Kirby, 1998) including the relationship between NWHAP types and European woodland classifications.

Fig 1a

Fig 1b ECOLOGICAL CLASSIFICATION OF NATIVE WOODLAND HAP TYPES

(table largely follows Hall & Kirby, 1998)

HAP type (=BAP Priority Habitat)	Brief description/notes	Forestry Commission Guide Types	NVC Types	Stand Types
Lowland Beech and Yew Woodland	A variety of beech dominated woodlands within the beech zone of southern to central England and southern Wales and yew dominated woodland mainly restricted to southern England.	1. Lowland acid beech and oak woods (beech dominated stands) 2. Lowland beech-ash woods (all stands)	W15 W12 W13 W14	8A, 8B 8C No direct equivalent 8D, 8E
Lowland Mixed Deciduous Woodland ^{*1}	A wide variety of native broadleaved woodland throughout the lowland regions of the UK on acid and base-rich freely drained soils.	1. Lowland acid beech and oak woods (oak & birch dominated stands) 3. Lowland mixed broadleaved woods (all stands)	W16 W8a-d (e-g) W10a-d (e),	6C, D 1(A), B, 2, 3A, B, 4, 7C, 9, 10 5, 9, 12
Upland Mixed Ashwoods	Woodland within the "upland region" of UK generally dominated by ash though locally, oak, birch, elm, small-leaved lime or hazel may be prominent. Yew can be locally prominent within upland ashwood (for example on limestone pavements). Alder can occur in transitions to wet woodland.	4. Upland mixed ashwoods.	(W7c), W8(a-c)d-g, W9 W13	1A, C, D, 3C, D, 4C, 7D No direct equivalent.
Upland Oakwoods	Woodland within the "upland region" of UK generally dominated by oak or, in Scotland with at least 30% of the canopy cover comprising oak (cf. Scottish Upland Birchwoods below). Small areas of other communities may occur, for example along streams (W7) or towards the base of slopes which experience flushing (W9).	5. Upland oakwoods. (6. Upland birchwoods; in England, Wales, N Ireland)	W10(a-d)e, W11, W16b, W17	6A, 6B (8A, 8B) (12)
Scottish Upland Birchwoods ^{*1}	Restricted to birch dominated woodland in Scotland of two distinct types: <ul style="list-style-type: none"> birch dominated woodland on mineral soils where the current (or potential) cover of birch is greater than 50% of the canopy and the cover of oak is/will be less than 30%. birch woodlands on shallow peat/peaty gley soils. (Note that the typically small birch-dominated woods elsewhere in UK are to be grouped under other HAP types, though managed as birch stands)	6. Upland birchwoods. 8. Wet woodland	(W10e), W11, W17 (W19) W4a, b	Mainly stand group 12, (also 1D, 3C, 7A, D) 12,
Native Pine Woodlands	Relict indigenous forests of Scotland dominated by native Scots pine often with a strong element of birch, rowan, alder and/or bird cherry.	7. Native pinewoods	W18, (W19), (W4 (a), b, c)	11, (12)
Wet Woodland	Woodland occurring on poorly drained or seasonally wet soils usually dominated by alder, birch or willows but sometimes including ash, oak, pine or beech on the drier riparian areas. Note that some stands of W4 in Scotland are treated as upland birchwood – see above, Ashwoods within floodplains are also best described as this HAP type.	8. Wet woodland.	W1, W2, W3 W4(a, b), c W5 – W7 (W8)	No equivalent (12) 7
Lowland Wood pasture and Parkland ^{*2}	Refers to mosaics of woodland and open habitat under a pastoral management system.	Referred to particularly in Lowland acid beech and oak woods and Lowland mixed deciduous woods (guides 1 and 3) but no real equivalent.	W14, W15 W10, W16	8 6

^{*1} Now agreed as a priority habitat: HAPs will be prepared during 2002.

^{*2} Lowland wood pasture and Parkland includes some non-woodland habitats as well as overlapping with various other Priority Habitats.

Note: Scrub communities are often found at native woodland margins and should often be integrated with the management of the woodland, although extensive areas of scrub may not be eligible to be counted towards targets. Consult individual HAP co-ordinators for clarification.

Defining the Targets

Using these definitions and classifications we can set out the categories of woods which relate to the different targets - e.g. to maintain, improve, restore or expand. We can estimate the size of the existing resource that we need to maintain and the area within that where we can improve condition. We can also define which woods are suitable for restoration and what thresholds need to be met before they can count towards targets.

The current resource has been defined very broadly for the broadleaved woodland types and includes all native woodlands as defined above (over 50% site-native species in the canopy), of the following categories :

- ancient semi-natural woodland
- other semi-natural woodland
- mainly native planted stands on ancient woodland sites
- other planted native woods (outside ancient woodland sites)
- new native woodlands designed to mimic natural woodland composition and structure (as described in UK Forestry Standard Note 3 and FC Bulletin 112)

In each case the criteria used in the National Inventory of Woodland and Trees for counting areas as woodland apply, ie

- Canopy cover must be at least 20%
- Areas of open ground within woods of less than 1ha or linear features less than 50m wide should be counted as part of the gross woodland area.
- All areas of native woodland, or distinct areas of one type, which are over 2ha in extent should be included. Smaller thresholds should be used where inventories allow.

The approach is somewhat different for the pinewoods. At present the plan applies only to the native pinewoods listed in the published Caledonian Pinewoods Inventory and also the new native pinewoods created since the 1980s within the natural range of the species. The scope of the native pinewood HAP is likely to be extended in the future to include other areas of pine woodland as part of the current resource on a similar basis to broadleaved woodland types.

Targets for maintaining existing native woods

The Scottish targets for the area of existing woodland that needs maintained are detailed in Table 1. The areas are based on estimates made by the UK group using various sources. In general we are looking to:

- maintain ASNW woods within current boundaries wherever possible, allowing some minor fluctuations at the margins where this reflects natural dynamics;
- maintain the total area of other semi-natural woodlands, allowing for fluctuations for natural dynamics and any need to restore important open habitats which have been recently colonised by trees;
- maintain the current areas of native planted stands on ancient woodland sites;
- maintain the existing gross area of planted native woods (outside AWS), whilst recognising that this category is generally less important than the first three, and many of these woods may not be managed to meet HAP targets for improvement for biodiversity;
- maintaining as native woodland those areas added to the native woodland area under *expansion and restoration* targets without trading them for areas in the other categories above.

Table 1: Scottish Targets to Maintain Native Woodlands

NW HAP type	MAINTAIN	Target (ha)
Native pinewoods	Maintain the current wooded area in the 'core areas' listed in the CPI	17882
Upland oakwoods	Maintain the current extent and distribution of the upland oakwood system	42000
Upland mixed ashwoods	Maintain the total extent and distribution of upland mixed ashwood	22275
	Maintain the current extent and distribution of ASNW upland mixed ashwood	12000
Wet woodlands	Maintain the total extent and distribution of wet woodland	35000
	Maintain the current areas of ASNW wet woodlands	12000
Upland birchwoods	Maintain the total extent and distribution of upland birchwoods	(45000)
	Maintain the total extent and distribution of ASNW upland birchwoods	(36000)
	Maintain the total extent and distribution of seminatural lowland mixed deciduous woodlands	(20000)
Lowland mixed deciduous woodlands	Maintain the area of lowland ASNW mixed deciduous woodlands	?
Lowland wood pasture and parkland	Maintain the current extent and distribution of the total area of wood pasture and parkland	?

	Maintain the current extent, distribution and condition of wood pasture and parkland that is in favourable condition	?
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Targets for improving condition of native woods

The 'improvement' targets for the broadleaved plans are generally to:

- initiate by 2004 measures intended to achieve favourable condition in all Sites/Areas of Special Scientific Interest (SSSIs / ASSIs) and an area equivalent to 80% of the total semi-natural area of the woodland type;
- achieve favourable condition over 70% of SSSIs/ASSIs and an area equivalent to 50% of the total semi-natural woodland area of each type by 2010.

The upland birchwoods plan was drafted more recently so the *initiate* date is set at 2010 and the *achieve* date for all SSSI woods is 2015. For the lowland mixed deciduous woodlands plan the target for achieving favourable condition in SSSIs is for 95% by 2010.

For practical purposes the figures used to set the target area for improving condition are based on the total semi-natural area, but it is intended that planted native woods should also be able to contribute to the targets. Priority for action, after the designated sites, should in general be given to the three most important categories for biodiversity (ASNW, OSNW and native PAWS) before considering other planted woods, but each site should be assessed on its merits and the owners

Examples of actions which can contribute towards *initiating* the improving condition target include:

- an agreed site management plan identifying clear objectives and prescriptions for management towards attaining favourable condition at both a site and landscape scale;
- appropriate removal of non-site-native species from both the canopy and shrub layers;
- use of sympathetic restocking techniques such as natural regeneration, coppicing or planting site-native species, preferably using local origin planting stock;
- control of deer or stock grazing;
- restoration of natural drainage regimes (for wet woodland);
- application of minimal intervention regimes where appropriate.

Undertaking such actions will constitute 'milestones' towards the improvement target.

The targets for *achieving* favourable condition are very demanding given the short timescale and may need to be reviewed in the light of better information on current

status and progress. We currently have limited information on extent and condition of native woods outside designated sites and less than half of native woodlands are presently under formal management plans or grant schemes of any kind. There is also likely to be a limit to how fast many woods could be brought fully into favourable condition. If for example there are no old trees or dead wood present it may take many decades.

A system to assess condition in designated sites throughout the UK (Special Areas of Conservation (SACs) and SSSIs/ASSIs) has been defined. Work is going on to adapt this for wider use in assessing individual sites and for possible inclusion in sampling schemes such as the Forestry Commission's National Inventory of Woodlands and Trees (NIWT). The system is likely to be based upon defining key targets for each of various attributes at the woodland scale, e.g. area, structure, regeneration, composition, and other quality indicators. Landscape ecology measures will also need to be considered to enable an overall assessment of condition.

The approach is intended to yield a statistically sound overview of the condition for the native woodland resource as a whole, as well as providing an adaptable system for use by managers.

Targets for restoration of native woods

For broadleaved woodland types, this target focuses on the restoration to native woodland of around 10% of the area of *plantations on ancient woodland sites* (PAWS) which are dominated by non-native species in the canopy. Most of these woods were converted from ASNW to plantations of introduced conifers between the 1930s and 1980s causing large losses in biodiversity.

Restoration may also apply as a target in a few situations where ancient semi-natural woodlands have become dominated by naturally regenerated non-native species such as sycamore. Restoration targets do not apply to native PAWS (with more over 50% site-native species in the canopy). In such cases the 'maintain' and 'improve condition' targets may apply.

Restoration to native woodland should be aimed at the sites where the greatest benefits will result. Restoration methods, including the prioritisation of sites, are the subject of a FC Forestry Practice Guide *Restoration of Native Woodland on Ancient Woodland Sites* (2003).

Ultimately the aim of restoration is to create relatively natural woodland of appropriate composition and structure and with ecological processes and associated species evident. This will often be a long-term aim, perhaps taking 50-100 years or more. *For the Habitat Action Plans the restoration target is therefore defined in terms of restoration to site-native composition*, on the assumption that

this usually can be done over a shorter period of perhaps 10 to 30 years. Although sometimes single stage felling and regeneration may be the most effective approach, on many sites restoration will best be achieved by a number of light thinnings or selective fellings and the gradual regeneration of site-native species. This may help to maintain woodland conditions to conserve those ancient woodland flora and fauna which remain. In some cases complete restoration of native stands may not be possible or desirable by the target date.

Therefore the following approach is used in setting targets and monitoring:

- Restoring to a mainly native (over 50% site-native canopy) composition should be seen as an initial target, and this should be achieved for at least the total area of the restoration target as set out in Table 2.
- Some of these should proceed to full restoration within the period of the targets, whilst others will need a later completion date. A third group of sites might not proceed further than partial restoration for the foreseeable future.
- Once individual woods have achieved the initial 50% stage they can be included within inventories of the overall resource of native woodland, and included in sampling for condition targets. A wood is very unlikely to achieve favourable condition before it has achieved the full restoration target, so counting the same wood twice is only a theoretical problem.

Theoretically a completely site-native composition of trees and shrubs is desirable to achieve the restoration target. But there can be a number of situations where this may not be appropriate, and where a small proportion amount of non-site-native trees and shrubs may be retained in restored stands provided they are not invasive and do not compromise the development of the native woodland ecosystem.

These exceptions include:

- individual non-site-native trees and species with high historical/cultural or scenic value;
- veteran non-site native trees with high biodiversity value;
- trees which are impracticable to remove e.g for safety reasons.

A site-native canopy cover of at least 90% is suggested as a threshold for monitoring achievement of the restoration target in national inventory systems, but this does not justify routine retention of up to 10% non-native species: the exact proportions should be set in management plans.

Table 2: Scottish targets to restore native woodland on PAWS sites

HAP type	Brief Description of Target	Scottish target (ha)
Upland oakwoods	Complete the restoration of 10% of the former upland oakwood that has been converted to PAWS - by 2010	3000
Upland mixed ashwoods	Complete restoration of upland mixed ashwoods PAWS (400ha by 2010, 400ha by 2015)	800
Wet woodlands	Complete restoration of wet woodlands PAWS (500 ha by 2010, 500ha by 2015)	1000
Upland birchwoods*	Complete restoration of upland birchwoods PAWS (900ha by 2010, 900ha by 2015)	(1800)
Lowland mixed deciduous woodlands*	Achieve full restoration of lowland mixed deciduous woodlands 560ha by 2010, 560ha by 2015	(1120)
Lowland wood pasture and parkland	Initiate a programme to restore favourable ecological condition in areas of wood pasture and parkland	150

Native pinewoods

There is currently no *restoration* target for native pinewood because the action plan is based on the Caledonian Pinewood Inventory sites where little planting of non-native species is thought to have taken place. Where other species have been planted there, restoration actions contribute towards the *improve condition* target. Similar actions in other former native pinewoods could be valuable, especially where the sites are adjacent or close to existing pinewoods, though they would not currently count against HAP targets.

Targets for expansion of native woods

The action plan targets for the expansion of the area of each type of native woodland are set out in Table 3. Expansion should preferably be located where it will enlarge or link to existing native woodland areas. It can involve either:

- The creation of New Native Woodland (NNW) by planting or natural colonisation on bare ground; or
- The conversion of established non-native planted woods (outside ancient woodland sites), to native woodland. Conversion to native woodland may be achieved by;
 - removing non-native species by several successive thinnings ;
 - selective felling of non-natives and promotion of natural regeneration of site-native species;
 - larger-scale felling and restocking and/or natural regeneration with site-native species.

Table 3: Scottish targets to expand native woodland

HAP type	Brief Description of Target	Scottish target (ha)
Native pinewoods	Expand the wooded areas of the pinewoods predominantly by natural regeneration, mainly in the 'regeneration zones' of the CPI areas, (though some will occur in the core areas) - by 2005 <i>N.B.</i> Regeneration within the unwooded areas of the core areas (<20% canopy cover) would count towards the target.	5600
	Create the conditions for a further area to be naturally regenerated over the next 20 years by 2005. e.g. by control of grazing/browsing; removal of non-site-native species and pine of non-local origin; burning and ground preparation.	5600
	Establish new pinewoods on suitable sites within the natural range of native pinewoods by 2005. All pinewood areas being established under the new native pinewoods grant scheme can count against this target. Future schemes should focus more on buffer zones to reinforce remnant pinewoods.	25000
Upland oakwoods	Avoiding other habitats of high conservation value expand the area of upland oakwood (by about 10%) by planting or natural regeneration on currently open ground and by conversion from non-native plantations - by 2005	3000
Upland mixed ashwoods	Complete the establishment of upland mixed ashwoods on unwooded sites, or by conversion of non-native plantations (1000ha by 2010, 1000ha by 2015)	2000
Wet woodlands	Complete the establishment of wet woodlands on unwooded sites, or by conversion on non-native plantations (1100ha by 2010, 1100ha by 2015)	2200
Upland birchwoods*	Complete the establishment of upland birchwoods on unwooded sites, or by conversion of non-native plantations (2250ha by 2010, 2250ha by 2015)	(4500)
Lowland mixed deciduous woodlands*	Complete the establishment of lowland mixed deciduous woodlands on unwooded sites, or by conversion of non-native plantations (1000ha by 2010, 1000ha by 2015)	(2000)

Lowland wood pasture and parkland	No Scottish target	
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The predicted NVC community should guide planting composition (or the target species for natural regeneration), based on UKFS Standard Note 3, FC Bulletin 112 and tools such as the FC Ecological Site Classification system (ESC <<http://www.forestry.gov.uk/website/Oldsite.nsf/ByUnique/KIRN-5LDMHL>>).

When planting new native woods it is important to get the species composition and design as close as possible to the target woodland type from the start, with the full range of species, because future interventions to add or remove species cannot be assured. But sometimes the initial composition may need to be biased towards the pioneer species on difficult sites.

New or converted native woods should ideally be completely site-native to meet the target as an addition to the area of priority habitat. Sometimes this might not be possible (e.g. where other species regenerate in the mix and cannot be completely removed). And, as for restoration, there may be sometimes be a case for retaining a small amount of non-site-native species on conversion sites to provide specific public benefits provided they do not undermine the potential character and value of the wood as a priority habitat.

A site-native canopy cover of at least 90% will be used as a threshold for monitoring achievement of the restoration target in Scotland in national inventory systems, but this should not justify routine retention of up to 10% non-native species: the precise intentions for each site should be set in management plans.

Native pinewood expansion

For native pine woodland, there are three targets relating to expansion. The first two are for successive 5,600 ha phases of a combination of regeneration and expansion into un-wooded ground within the core, regeneration and buffer zones of the CPI sites. This should be achieved primarily by natural colonisation in response to the measures outlined under improving condition, with planting of local-source native pine only as a “last resort” (see Forest Practice Guide 7). The third expansion target is for 25,000 of new native pinewoods to be planted or naturally colonised in areas outside the CPI areas but within the native pinewoods range. Planting should follow the NNW principles above.

Stocking density

The initial stocking density for woodland must be sufficient to establish the agreed type of woodland and comply with the grant scheme and other requirements. Irregular spacing and inclusion of open ground are strongly encouraged. Lower

average densities may also be suitable in certain circumstances such as historic wood-pasture and parkland sites, some open pinewoods, bog woods, treeline areas and at sites managed specifically for other priority habitats/species requiring open woodland conditions.

Monitoring progress against NWHAP targets

The Native Woodland Partnership for Scotland, led by Forestry Commission Scotland, is responsible for monitoring progress against action plan targets in Scotland and reporting to the UKNWHAP group, The Scottish Forestry Forum and the Scottish Biodiversity Forum.

At present the data collected is inadequate and initial estimates of the overall resource and subsequent monitoring may need to be rather crude. Work to develop inventory and monitoring systems is going on on three main fronts:

- The Forestry Commission Scotland aims to collate robust annual estimates of achievements towards each target in each NWHAP for both Forest Enterprise and Scottish Forestry Grant Scheme action by recording appropriate activities at milestone and completion stages.
- A system of periodic national sampling under the National inventory of Woodland and Trees will give quantitative estimates of changes to the native woodland resource and progress towards targets,
- Proposals for a national survey and map of native woodlands in Scotland are being developed to provide a consistent picture of the location and status of native woodlands and a firm baseline for future planning and monitoring.

Progress to date

The Forestry Commission produced a report in (MacKenzie and Worrell 2003) estimating progress towards Native Woodland Habitat Action Plan targets (including the proposed targets for birch and lowland mixed broadleaves) throughout Britain. The study was based on sampling sites with reported management activity and for less-commonly managed types like wet and ash woods it was difficult to get reliable results. In Scotland, acceptable progress towards the following targets was estimated, assuming that initial management actions would be successfully followed up:

- **Maintain / Improve Condition:**
 - Native Pinewoods
 - Upland Oakwoods
 - Upland Birchwoods

- **Expand:**
 - Native Pinewoods (outside CPI sites)
 - Upland Oakwoods
 - Upland Birchwoods

- **Restore:**
 - Native Pinewoods
 - Upland Birchwoods

The poorest progress was being made towards the following targets:

- **Maintain & Improve Condition:**
 - Upland Mixed Ashwoods
 - Wet Woods

- **Expand :**
 - Upland Mixed Ashwoods

- **Restore :**
 - Upland Oakwoods
 - Upland Mixed Ashwoods
 - Wet Woods
 - Lowland Mixed Broadleaved Woodland

The more successful examples reflect the considerable investment in native woodlands through, for example, native woodland initiatives, various FC grants for new and existing woodlands, the Millennium Forest for Scotland Initiative and a number of large EU-funded native woodland projects focusing on designated sites.

Work is continuing and there are opportunities to address the areas where progress to date has been limited.

The Scottish Forestry Strategy includes as priorities for action creating and extending native woodlands in forest habitat networks (Forestry Commission 2003), improving semi-natural woodlands and restoring native woodlands on ancient sites.

The Scottish Forestry Grant Scheme introduced in 2003 provides incentives specifically targeted at these priorities.

The state forests managed by Forestry Commission Scotland are now the subject of a well-established framework of forest design plans which cover improving, expanding and restoring native woodland and creating networks of habitat within the wider forest resource). Partnerships have been formed with other agencies, conservation groups and communities to take forward native woodland work. A considerable restoration programme has developed since 1992 (Forestry Commission Scotland 2004).

The UK Woodland Assurance Scheme (which provides independent certification of sustainable forest management) requires that woodland owners identify native woodland habitats and ensure they are safeguarded or enhanced. The UKWAS <<http://www.forestry.gov.uk/ukwas>> also requires contribution towards the restoration targets for plantations on ancient woodland sites where appropriate.

Local Biodiversity Action Plans

The UK Biodiversity Action Plan recognised that biodiversity is ultimately lost or conserved at the local level. It envisaged a process that encouraged suitable partnerships of organizations and people to develop to produce locally specific plans. These became known as Local Biodiversity Action Plans (LBAPs).

Local Biodiversity Action Plans have been prepared for the whole of Scotland led, in most cases, by the local authorities or the national parks. Details of the various plans and the contacts for each are available on the Scottish Biodiversity Forum <<http://www.scotland.gov.uk/about/ERAD/CANH/CF/00014504/home.aspx>> website.

The local plans aim to:

- Translate national targets for species and habitats into effective action at the local level.
- Raise awareness of the need for, and responsibilities for, biodiversity conservation and enhancement in the local context.
- Identify biodiversity resources and priorities in the local area.
- Identify targets for species and habitats important to the local area, including both the rare and the common, according to local circumstances.
- Provide a local basis for monitoring progress.

The Forestry Commission Scotland as lead partner for the Native Woodland Habitat Action Plans, contributes to the development of LBAPs through conservancies and district offices. The LBAPs are represented on the Native Woodland Partnership Scotland.

Almost all the plans have native woodlands in their lists of priorities. In some instances local priorities will be for local distinctiveness, or biodiversity valued for its cultural, aesthetic or recreational value rather than for simply ecological considerations. Some plans have adopted targets which relate directly to the Scottish targets for each native woodland type. In others, little distinction is being made between the different types of native woods.

To assist local organizations in setting appropriate priorities and goals, the Scottish targets for the native woodland action plans have been broken down into indicative local targets (Table 4). These figures provide guidance at a strategic level on the likely potential scale of contributions to HAP targets within a particular local authority area. The background to how the indicative targets were developed is given in Jones *et al* (2002).

Table 4. Indicative local targets (ha) for delivering native woodland habitat action plans

Local Authority Area	Upland Oakwoods		Upland Ashwoods		Wet Woodlands		Upland Birchwoods		Lowland Mixed Deciduous Woods		Native Pinewood	
	expand	restore	expand	restore	expand	restore	expand*	restore*	expand*	restore*	expand CPI area	expand in range
Aberdeen City	10										20	
Aberdeenshire	360	120	50	10	60		50	40	490	160	1180	3520
Angus	110	10	10		30		30		160	30		1320
Argyll& Bute	190	700	500	530	190	220	880	370	10	20	60	1720
Clackmannanshire	10	10			10					30		
Dumfries& Galloway	300	250	210	60	440	190	430	20	310	610		
Dundee City									10			
East Ayrshire	60	30	160	10	70		70		10			
Dunbartonshire	10	10							10			
East Lothian	30	60			10				90	130		
East Renfrewshire	20		30						10			
Edinburgh, City of	10				10				20			
Falkirk	20	10	10		20				20	30		
Fife	80				40				160	50		
Glasgow City									10	30		
Highland	440	890	410	120	730	530	2370	1200	80	160	3940	12610
Inverclyde	10		20						10			
Midlothian	40	40	10		10				10	80		
Moray	100	80	70		70	30	50	10	70	50		1640
North Ayrshire	60	10	40	30	10		50		10			
North Lanarkshire	50	10	40						10	30		
Perth & Kinross	280	350	30	10	180		170	50	140	160	400	3210
Renfrewshire	20	10	10	10								
Scottish Borders	360	60	90	20	130		170	10	230	270		
South Ayrshire	120	90	50		50		40		10			
South Lanarkshire	110	30	210	10	50		60		10	50		
Stirling	140	240	10		80	30	120	70	50	80	20	980
West Dunbartonshire	20		10						10			
West Lothian	40	10	30				10		10	30		

Total	3,000	3000	2000	800	2200	1000	4500	1800	2000	2000	5600	25000
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Review of the HAP and SAP targets 2005/6

The targets for all habitat and species action plans will be reviewed by 2006 in the light of progress so far. Lead partners will propose country targets which will need to be agreed by the Scottish Biodiversity Steering Group for Scotland and will be integrated into the Scottish Biodiversity Strategy.

Forestry and the Species Action Plans

Alongside the Habitat Action Plans, the UK Biodiversity Action Plan also includes a number of Species Action Plans <<http://www.ukbap.org.uk/species.htm>>. These are led and promoted by a range of different organizations across the UK including government agencies and conservation groups. Work towards the species action plans should be undertaken in consultation with the relevant lead partner which is noted in the plan. The Forestry Commission acts as lead partner for two species: Wilson's pouchwort and the Scottish wood ant; and plays a strong role for a number of others such as red squirrel, capercaillie, twinflower, juniper, black grouse, chequered skipper butterfly.

Woodland-related species action plans

There are 87 species action plans that are relevant to forestry activities in Scotland including plans for moths, butterflies, amphibians, vascular plants, beetles, flies, ants, bees, birds, lichens, mammals, liverworts, fungi and mosses.

Of these, 64 species are woodland species, many of which are highly adapted 'woodland specialists' associated with one or two of the semi-natural native woodland types. Some of the others are found in different kinds of woodlands, or are forest edge species which make use of both open ground and woodland habitats. The rest (23) are non-woodland species where afforestation or other forestry activity has been mentioned in the action plan as adversely affecting the population size or distribution. In many cases the threat posed may be largely historical. Table 5 lists the species and the habitats with which they are associated.

The Species Actions Plans include actions and targets aimed at arresting current overall decline and restoring the population or the species' range to pre-determined and hopefully self-sustaining levels. In many cases the plans include continuing research, survey and monitoring to improve the information available.

Many of the relevant targets can be achieved through relatively small fine-tuning of general woodland management measures, e.g. ensuring the short-term continuity of niche habitats and woodland conditions (shade, microclimate, etc.), coupled with judicious restoration and expansion on to adjacent sites in the longer term.

In some places however hard choices may need to be made, e.g. restricting the expansion of areas of large-seeded broadleaves to safeguard red squirrels core areas from the spread of grey squirrels.

The links between particular woodland-related species and the native woodland habitat action plans have been identified to help identify potential conflicts, focus resources and achieve maximum benefit through woodland management. In most cases action to benefit one species will usually benefit other associated species occupying the same habitat but there will also be situations where the needs of certain species warrant specific attention.

Table 5 UKBAP Species related to native woods and forestry

Species	Native pinewood	Upland oakwood	Upland ashwood	Wet woods	LWPP	Other woodland	Non- woodland
ANTS							
Formica aquilonia <i>Scottish wood ant</i>	✓	✓					
Formica exsecta <i>Narrow-headed ant</i>	✓						
Formica lugubris* <i>Hairy wood ant</i>	✓	✓					
Formicoxensus nitidulus* <i>Shining guest ant</i>	✓	✓			✓		
BEEES							
Osmia inermis <i>(a mason bee)</i>							✓
Osmia parietina <i>(a mason bee)</i>							✓
Osmia uncinata <i>(a mason bee)</i>	✓						
WASPS							
Chrysura hirsuta* <i>(a cuckoo wasp)</i>	✓						✓
BUTTERFLIES							
Aricia artaxerxes* <i>Northern brown argus</i>							✓
Boloria euphrosyne <i>Pearl-bordered fritillary</i>	✓	✓	✓			✓	
Carterocephalus palaemon <i>Chequered skipper</i>		✓					✓
Eurodryas aurinia <i>Marsh fritillary</i>							✓
MOTHS							
Epione paralleria <i>Dark-bordered beauty</i>				✓			
Paradiarsia sobrina* <i>Cousin German moth</i>	✓	✓					
Rheumaptera hastata <i>Argent and sable moth</i>		✓				✓	
Semiothisa carbonaria <i>Netted mountain moth</i>							✓
Trichopteryx polycommata <i>Barred tooth-stripe</i>			✓				
Xestia rhomboidea <i>Square spotted clay moth</i>		✓				✓	
Zygaena loti scotica <i>Slender Scotch burnet</i>							✓
BETLES							
Cryptocephalus decemmaculatus* <i>(a leaf beetle)</i>				✓			
Cryptocephalus sexpunctatus <i>(a leaf beetle)</i>		✓					
Melanapion minimum <i>(a weevil)</i>		✓		✓			

Species	Native pinewood	Upland oakwood	Upland ashwood	Wet woods	LWPP	Other woodland	Non- woodland
Procas granucollis (a weevil)				✓			
Rhynchaenus testaceus (a jumping weevil)							
SPIDERS							
Clubonia subsultans* Caledonian sac spider	✓						
HOVERFLIES							
Blera fallax (a hover fly)	✓			✓			
Hammerschmidia ferrungina (aspen hover fly)				✓			
Lipsothrix ecucullata (a crane fly)				✓			
Lipsothrix errans* (a crane fly)				✓			
Lipsothrix nervosa (a crane fly)				✓			
AMPHIBIANS							
Triturus cristatus Great crested newt						✓	
REPTILES							
Lacerta agilis Sand lizard							✓
MOLLUSCS							
Margaritifera margaritifera Freshwater pearl mussel							✓
BIRDS							
Caprimulgus europaeus Nightjar						✓	
Carduelis cannabina Linnet						✓	
Jynk torquilla Wryneck	✓				✓		
Loxia scotica Scottish crossbill	✓						
Melanitta nigra Common scoter	✓						✓
Muscicapa striata Spotted flycatcher		✓	✓			✓	
Passer montanus Tree sparrow					✓	✓	
Pyrrhula pyrrhula Bullfinch					✓		
Streptopelia turtur turtle dove	✓					✓	
Tetrao tetrix Black grouse	✓					✓	
Tetrao urogallus Capercaillie					✓		
Turdus philomelos Song thrush							

Species	Native pinewood	Upland oakwood	Upland ashwood	Wet woods	LWPP	Other woodland	Non- woodland
MAMMALS							
Lutra lutra <i>Otter</i>				✓			✓
Pipistrellus pipistrellus <i>Pipstrelle bat</i>						✓	
Sciurus vulgaris <i>Red squirrel</i>	✓	✓	✓			✓	
FUNGI							
Boletopsis leucomelaena* <i>(a poroid fungus)</i>	✓						
Hydnoid spp. (x 14) <i>Tooth fungi (northern group)</i>	✓	✓					
Hypocreopsis rhododendri <i>(Bracket/ascomycete)</i>		✓	✓				

LICHEN

Arthothelium dictyosporum (a lichen)	✓			
Arthothelium macounii (a lichen)	✓			
Bacidia incompta (a lichen)			✓	
Biatoridium monasteriense (a lichen)			✓	
Caloplaca luteoalba Orange-fruited elm lichen			✓	
Catapyrenium psoromoides Tree catapyrenium			✓	
Cladonia botrytes Stump lichen	✓			
Collema dichotomum River lichen jelly				✓
Gyalecta ulmi Elm's gyalecta				✓
Opegrapha paraxanthoides (a lichen)	✓		✓	✓
Pseudocyphellaria norvegica (a lichen)	✓	✓	✓	
Schismatomma graphidioides (a lichen)			✓	
Thelenella modesta Warty wax lichen			✓	

MOSESSES

Bryum neodamense Long-leaved thread moss				✓
Bryum warneum Sea bryum				✓
Buxbaumia viridis Green shield-moss	✓		✓	✓
Ditrichum plumbicola Lead moss				
Orthotrichum gymnostomum* Aspen bristle-moss			✓	
Orthotrichum obtusifolium Blunt-leaved bristle moss			✓	
Orthotrichum pallens Pale bristle moss			✓	
Orthotrichum sprucei* Spruce's bristle moss			✓	✓
Sphagnum balticum Baltic bog-moss				✓

LIVERWORTS

Arcobolbus wilsonii Wilson/s pouchwort	✓			
Lejeunea mandonii Atlantic Lejeunea		✓		

STONEWORTS

Nitella gracilis Slender stonewort				✓
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VASCULAR PLANTS

Epipactis youngiana			✓	✓
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<i>Young's helleborine</i>					
Gentianella uliginosa					✓
<i>Dune gentian</i>	✓				
Juniperus communis					
<i>Juniper</i>	✓				
Linnaea borealis					✓
<i>Twinflower</i>					
Luronium latans					✓
<i>Floating water-plantain</i>					
Lycopodiella inundata					
<i>Marsh clubmoss</i>	✓	✓			
Melampyrum sylvaticum					✓
<i>Small cow-wheat</i>					
Najas flexilis					✓
<i>Slender naiad</i>					
Salix lanata					✓
<i>Woolly willow</i>					
Saxifraga hirculus	✓	✓			
<i>Yellow marsh saxifrage</i>			✓		
Trichomanes speciosum					
<i>Killarney fern</i>					

Sources of further advice

- **UK Native Woodland Habitat Action Plan Group:** Gordon Patterson, Environment and Heritage, Forestry Commission Scotland, 231 Corstorphine Road, Edinburgh EH12 7AT. Tel. 0131-314-6464.
Email : gordon.patterson@forestry.gsi.gov.uk
- **Native Woodland Partnership for Scotland:** Peter Quelch, Environment and Heritage, Forestry Commission Scotland, 231 Corstorphine Road, Edinburgh EH12 7AT. Tel. 0131-314-0303
Email : peter.quelch@forestry.gsi.gov.uk
- **Individual HAPs**
 - Native pinewoods:**
 - Upland oakwoods:**
 - Upland mixed ashwoods:**
 - Wet woodlands:**
 - Lowland beech and yew woods:**
 - Lowland wood pasture and parkland**

References and further reading

ECO TECH, 1999: UKBAP Native Woods Inventory and Reporting: A Needs Assessment and Review of Current Resources and Future Opportunities. Unpublished report to the Forestry Commission.

Forestry Commission, 1994: Forestry Practice Guides 1-8, Management of Semi-natural Woodland. Forestry Commission, Edinburgh.

Forestry Commission 1998, revised 2001. The UK Forestry Standard. Forestry Commission, Edinburgh.

Forestry Commission, 1999. The Caledonian Pinewood Inventory. National Office for Scotland, Forestry Commission, Edinburgh. (Available as An IBM 3.5" floppy disc).

Forestry Commission, 1999/2000: Biodiversity Briefing Note series. Available on FC website (www.forestry.gov.uk) or from Policy & Practice Division, Forestry Commission, 231 Corstorphine Road, Edinburgh EH12 7AT.

Forestry Commission and Scottish Natural Heritage?? (2003) Forest Habitat Networks..

Forestry Commission (2004) Realising a Vision: Native Woodlands on the Forestry Commission Estate in Scotland.

Hall J E and Kirby K J, 1998: The relationship between BAP Priority and Broad Woodland Habitat types and Other Woodland classifications. Joint Nature Conservation Committee Report No. 288. Joint Nature Conservation Committee, Peterborough.

Jones, A. T., Gray, H. and Ray, D. (2002) Strategic Application of Modelling Forest Potential: Calculating Local Targets for Native Woodland Habitat Action Plans in Scotland. Scottish Forestry Vol. 56 No 2

MacKenzie, N. and Worrell, R (2002) Contributions to native woodland habitat action plan targets in private and Forestry Commission woodlands. Forestry Commission (unpublished)

Rodwell J S and Patterson G S, 1994: Creating New Native Woodlands. Forestry Commission Bulletin 112. HMSO, London.

Soutar R and Peterken G F: Native Trees and Shrubs for Wildlife, In: Forest Nature Conservation Guidelines, 1990 published by Forestry Commission, Edinburgh.

UK Native Woodland HAP Group papers and minutes of meetings available on request to Policy & Practice Division, Forestry Commission, Edinburgh.