

Long term ecological change in British woodland (1971-2001)

SITE REPORTS

***from the 103 sites surveyed in the Nature Conservancy
'Bunce 1971' woodland survey and resurveyed in 2001-3***

Compiled by M. J. Rossall

*from originals by R.G.H. Bunce
and site surveyors*

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*CEH Lancaster,
LEC, Library Avenue,
Bailrigg,
Lancaster,
LA1 4AP*

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SITE 1: WAVERLEY WOOD

Position in the landscape

Waverley Wood is a fairly level site, with a slight rise in ground level to the south-west.

The woodland is predominantly surrounded by arable land. The north-eastern edge is adjoined by a triangular plot of residential housing and gardens, with a smaller section adjacent to an area of restored landfill. To the south, a section of Waverley Wood is contiguous with a further area of woodland known as Weston Wood.

Evidence of the original boundary wood bank and ditch feature survives locally around the margins of the site. For example this is a well-defined feature along the boundary line separating Waverley Wood from Weston Wood. In places, there are post and wire fences present, although other sections are unfenced. To the south-west are some sections of beech hedge, comprising large 'pollarded' trees, where gaps have been repaired with post and wire fencing. A 'new' section of this feature is being created alongside the A445 Leicester Lane.

Broad habitat description

Much of the woodland is now a pine (*Pinus* spp.) plantation. Locally there are small remnants of surviving broadleaved woodland, plus some small areas of broadleaved plantation.

The ground flora is only moderately diverse but with Bluebell (*Hyacinthoides non-scripta*) is well-represented and locally abundant.

The woodland has a well-developed ride system. The majority of these are well-vegetated and support species such as betony (*Stachys officinalis*), pale sedge (*Carex pallescens*), devil's bit scabious (*Succisa pratensis*) and narrow-leaved everlasting pea (*Lathyrus sylvestris*).

Management influences

The site is managed as commercial forestry and contains a well-maintained network of tracks and rides that sub-divide the site into regular compartments.

The plantation areas (mostly pine) have been actively thinned in the past and generally comprise well-spaced mature trees.

There appears to be some management for game (e.g. pheasant feeder noted).

Tree and shrub composition

A major proportion of the woodland is a pine plantation, predominantly Scots pine (*Pinus sylvestris*), with some Corsican pine (*Pinus nigra*).

Occasional self-sown broadleaved species include sycamore (*Acer pseudoplatanus*), beech (*Fagus sylvatica*), birches (*Betula* spp.), ash (*Fraxinus excelsior*), elm (*Ulmus* sp.), aspen (*Populus tremula*) and oaks (*Quercus* spp.).

A few areas of broadleaved woodland survive (e.g. oak, with some elm, plus a large 'stool' of small-leaved lime (*Tilia cordata*); elsewhere sycamore-dominated with ash and birch.

Beside the A445 Leicester Lane, there is a planted fringe of broadleaved trees (e.g. red oak - *Quercus rubra* and beech - *Fagus sylvatica*).

The shrub layer is generally quite sparse, especially within the pine plantation and mainly includes hazel (*Corylus avellana*) and hawthorn (*Crataegus monogyna*), plus saplings of the above broadleaved trees.

The bryophyte flora is very poorly-developed.

Ground flora composition

The woodland as a whole is only moderately diverse, and is especially species-poor beneath the areas of pine plantation.

The most frequently-encountered species (i.e. occurring within 10 or more plots) were bluebell (locally abundant), plus bracken (*Pteridium aquilinum*), broad-buckler fern (*Dryopteris dilatata*), wood millet (*Milium effusum*), greater stitchwort (*Stellaria holostea*), tufted hair-grass (*Deschampsia cespitosa*), bramble (*Rubus fruticosus* agg.), and honeysuckle (*Lonicera periclymenum*). Wood anemone (*Anemone nemorosa*) was also quite frequent (8 plots).

Additional species of interest, noted relatively infrequently (6 or fewer plots), include pignut (*Conopodium majus*), three-veined sandwort (*Moehringia trinervia*), wood melick (*Melica uniflora*), wood sorrel (*Oxalis acetosella*), yellow archangel (*Lamium galeobdolon*), and hairy wood-rush (*Luzula pilosa*).

Fauna

There were local signs of rabbit and badger activity (e.g. tracks and scrapes), plus rabbit droppings. One tree was noted to have been provided with a dormouse nest box. Birds recorded were wren, chaffinch, blackcap, robin, wood pigeon, song thrush, pheasant, chiff-chaff and goldcrest. One plot contained evidence of deer, whilst a single individual of muntjac was noted whilst on-site.

Conclusion

Waverley Wood is a managed pine plantation. The tree, shrub and field layer composition, are only moderately interesting, although some areas of greater interest remain, including some of the ride areas.

SITE 2: PICKREED WOOD.

Position in the landscape.

Pickreed Wood is not a single landscape feature but part of a much larger wooded area to the east of High Hurstwood village.

The eastern section forms part of a wooded dome from which Pickreed slopes gently to the southwest, the altitudinal range of the wood being from 110 - 85m.

The wood is traversed by footpaths and bridleways and displays the remnants of former rides and haul routes.

The surrounding area is also heavily wooded but interrupted by many small meadows, paddocks and the gardens of several sizable houses. The general air is somewhat suburban and recreational with the intensity of agriculture generally low.

Broad habitat description.

The highest part of the wood overlays humic podzols on which the formerly dominant oak has been largely replaced by chestnut coppice though on the lower elevations oak is retained often with ash though the latter is never dominant.

Management influences.

The ownership of Pickreed is complex with four owners identified though the internal boundaries of the wood are incomplete and in places derelict.

Each of the three owners of the western half have cleared parts of their woodland holding for horse paddocks (and possible goat grazing in the past). In places the clearance is incomplete and the grazing areas merge into the woodland without sharp boundaries.

The north central section, encompassing plots 1, 3, 6 and 7, has very recently been sold and is currently being extensively managed through clearance to encourage regeneration; only the larger oak and ash standards are being retained with the hazel completely coppiced and birch together with the smaller oak and ash felled. This drastic thinning appears to be expanding eastwards.

The wood is not completely broadleaved since many elderly conifers, mostly pine, are scattered throughout with the largest concentration occurring along the northern boundary which comprises basically a beech-pine plantation.

The owners and local residents' interviews were unanimous in stressing the effects of the 1987 storm on the wood; many fallen trees remain, a high proportion of which are still alive.

Tree and shrub composition.

In addition to the beech-pine area, two other canopy zones are distinguishable; much of the central and eastern part of the wood is abandoned chestnut coppice lacking standards, the remaining, western, zone is dominated by a mixture of oak and ash and is the only area having a significant understorey, almost totally restricted to hazel.

Sapling regeneration is generally low at present.

Small areas of rhododendron are present throughout but appear only to be expanding in the extreme south-western portion owned by Oldhall Farm.

Ground flora composition.

Over much of the area ground cover is low and species diversity depressed, either due to the influence of chestnut coppice or to disturbance through recent felling operations.

Mean species number (forbs and bryophytes) per plot for the 15 plots with canopy is only 20, with a range of 8 -38. In many of the plots bryophytes are more prominent than vascular plants with a good representation of the more shade tolerant species.

Bracken was only prevalent at two of the 16 sample locations with bramble similarly infrequent and sparse in cover.

Fauna

Both deer and grey squirrel are numerous and may contribute to the generally open understorey of the wood.

Negative effects of deer on tree growth appeared to be much less severe than suggested in interviews. Rabbit activity was moderately common and there was evidence of the presence of both fox and badger. The level of bird activity was generally disappointing.

Conclusion.

Pickreed Wood supports excellent tree growth with many fine specimen trees.

Its potential is considerable and the wood appears to be entering a period of more active management which is likely to be beneficial to the relict ground flora which is rich in species but currently depressed in terms of frequency and cover.

SITE 3: GREENALEIGH PLANTATION

Location and Landscape Context

Greenaleigh Plantation encompasses a varied complex of mixed species plantation woodland and semi-natural heathland scrub of some 10-15 ha extent, on the coast approximately 2 km west of Minehead, Somerset. The site occupies steep north-east facing coastal slopes at elevations ranging from sea-level to roughly 120m asl. The boundaries of the site merge into the surrounding scrub woodland and open semi-natural heathland habitats, with a new wire stock fence in place along sections of the perimeter.

Ecological Site Factors

The site is located on the Lower and Middle Devonian geological strata, giving rise to rather infertile, freely draining sandy and sandy loam soils. In some upper parts of the site the soils appear to be very infertile with an ericaceous vegetation assemblage. The climate is of the warm dry/ warm moist lowland type.

Management Factors

Much of the site is owned by the National Trust as part of their Holnicote Estate property. The upper fringes of the site are publicly owned and managed by the Exmoor National Park Authority. The entire area is open to access by the general public, including users of the South West Coast Path which traverses the site. There is little evidence of recent woodland management with the exception of limited attempts at rhododendron clearance. A small area of sycamore had been felled recently with material left on site, probably to allow light onto a neighbouring private property. Roe deer were observed within the site, and sheep may gain access to the lower part of the woodland from adjoining fields. Physical access to parts of the site is made difficult in summer by very dense bracken, rhododendron and birch regeneration. Parts of the site are served by minor footpaths.

Stand Types

The woodland contains two distinct stand/crop types:-

The lower half of the site is occupied by mixed species woodland dominated by mature and semi-mature sycamore, likely to be former policy plantings. Some of this material has been coppiced, creating very dense stands. Throughout this area there is an admixture of other species including mature oak, beech and a variety of introduced conifers, some being very tall. There is little understorey apart from localized sparse birch and holly. The deadwood component is minor, being mainly small standing stems suppressed by the shade of sycamore.

The upper half of the site is dominated by young semi-natural oak-birch scrub woodland which is expanding onto formerly open heath ground. A small proportion of more mature open-grown oak and birch standards provide the seed source. The oak is of very poor form. In places there are also small blocks of planted conifers of 10-20 years in age, mainly poor larch. In large parts of this area there is a thicket understorey of rhododendron and birch regeneration, compounded by bracken in the growing season. Sweet chestnut is also present.

Ground Vegetation

In the lower part of the site ground vegetation is sparse due to the heavy shade of the sycamore canopy - there is much bare soil and litter even in summer. In the upper part of the site the vegetation assemblage is that of acid oak woodland and dry heath. Much the most abundant species is *Pteridium aquilinum* which occurs throughout the site and is often dominant. A rather diverse variety of other herbaceous species occur with rather low abundances including *Hedera helix*, *Polystichum setiferum*, *Phyllitis scolopendrium*, *Geranium robertianum*, *Vaccinium myrtillus*, *Circaea lutetiana*, *Rubus fruticosus*, *Teucrium scorodonia*, *Dryopteris affinis*, *Dryopteris dilatata* and *Urtica dioica*. Grasses are locally significant with *Deschampsia flexuosa*, *Holcus lanatus* and *Agrostis capillaris* featuring most noticeably. Bryophytes are not particularly abundant but include *Dicranum*, *Thuidium* and *Eurynchium* species in places.

Fauna

Roe deer were observed within the woodland and sheep are kept in fields along the lower coastal margin of the site - these may gain access to the woodland on occasion. Horses are ridden along some of the paths through the site and free-ranging Exmoor ponies may have access, although none were seen during the visit. The avifauna appeared rather poor, with only blackbird, robin, pigeon and tits seen within the woodland. A raven overflew.

Habitat features

The two major habitat elements within the site are the extensive areas of bare soil and litter under the dense sycamore stands and the thickets of rhododendron, birch, gorse and bracken in other parts. Bryophytes and lichens occur extensively on the trees as this is a coastal woodland. There is a network of old walls throughout the site which suggest that it was formerly open pasture land and may only have become wooded, by a combination of policy planting and natural regeneration during the last 50-100 years. The site is bounded on the upper edge by open dry heathland with some heather, which is a valuable habitat in this region. In some such areas it appeared that a previous tree crop, probably coniferous, had been felled in past years, perhaps as part of the National Park Authority's heathland restoration efforts. Rhododendron control is being pursued in places, but with limited success at present. Thought may also have to be given to controlling the spread of oak-birch scrub onto the heathland habitats.

SITE 4 - REINS WOOD

Position in the Landscape

The woodland is on sloping ground which is steep in some sections and difficult to access. Reins Wood directly adjoins Ashberry Wood and is another good example of ancient semi-natural woodland.

The adjoining land is pasture, wet grassland and arable land.

Part of the woodland now forms part of a sheep pasture and set-aside land. Few trees remain on these areas, and very little of the typical woodland field layer.

Management Description and Habitats

This woodland appears to have been managed as coppice with standards in the past.

There are some fine mature trees, predominantly oak and some very old hazel coppice stools. The latter cast a very heavy shade in some sections of the wood which limits the diversity of the field layer.

However, over much of the woodland the field layer is diverse with large stands of bluebell and ransoms. (The cover of bluebell and ransoms was impossible to assess because of the time of year, which means that 'bare ground' is over-represented in some of the quadrats).

Two quadrats in pasture and one in set aside. One within woodland in cleared area dominated by bracken.

Plenty of evidence of roe deer using the wood, and signs of badger were also recorded.

In one area a family of grey squirrel was seen.

SITE 5: LOVE'S COPSE

Position in the landscape

Love's Copse has a complex topography. A plateau feature crosses the site in a roughly north-west to south-east direction. The south-western fringe of the site is gently sloping, whilst the northern edge is marked by a much steeper slope.

The woodland is predominantly surrounded by arable land. Indeed, several peripheral areas of the 1971 wood have now been converted to this land use (affecting several of the plots). There are also smaller adjoining areas of permanent pasture. The narrow Love Lane runs along the south-western edge, which is adjoined by Brickkiln Cottage.

Much of the site has no fenced boundary, although in places, the original bank and ditch feature is still evident along the woodland margin. Elsewhere there is recent post and wire fencing. There are also a number of old bank and ditch boundary features within the wood itself.

The site contains one large grassland glade area where a large 'shed' has recently been constructed.

Broad habitat description

A significant proportion of the remaining woodland has been converted to a larch plantation, mainly upon the level plateau area.

There are surviving peripheral fragments of broadleaved woodland, the largest area of which is to be found on the steep northern slopes. These have largely been managed in the past as hazel coppice with standards.

The remnants of broadleaved woodland support a relatively species-rich ground flora, with some ancient woodland indicator species present.

The ground flora of the plantation areas is generally more species-poor, although some good amounts of bluebell remain.

One of the woodland compartments has been clear-felled in the past and then enclosed with a deer fence to allow natural regeneration.

Management influences

The entire site is privately owned, with the peripheral arable areas let to a tenant.

The main focus of the remaining woodland is forestry management, with a well-developed network of rides.

There has in the past been pheasant-rearing, although the feeders are empty at present, and the chicken-wire fences have collapsed.

A number of smaller rides are well-used public rights of way

Tree and shrub composition

The main blocks of conifer plantation comprise even-aged stands of thinned larch. Locally there is sparse hazel shrub layer, although in general these areas show little regeneration of broadleaved species.

Broadleaved areas comprise a mixture of pedunculate oak (*Quercus robur*) and ash (*Fraxinus excelsior*) standards, with frequent old hazel coppice stools present (these not cut for some time). A range of other smaller trees and shrubs were also recorded.

Regeneration throughout is rather sparse, with no one species being predominant.

The decaying timber component was quite varied, with the most frequently recorded being old, decaying hardwood stumps (>10 cm), sometimes covered with growth of mosses. Larch plantation areas contain much fallen twig and small branch litter, plus the stumps of thinned-out trees.

Ground flora composition

Within the areas of conifer plantation, the main ground flora species are bluebell (*Hyacinthoides non-scripta*), bramble (*Rubus fruticosus* agg.) and bracken (*Pteridium aquilinum*). There is also a significant moss cover on the ground, the most abundant species being *Eurhynchium praelongum*. Leaf litter is also present in abundance.

Ground flora composition tends to be more diverse within the remaining broadleaved woodland areas. Dog's mercury (*Mercurialis perennis*) and bluebell (*Hyacinthoides non-scripta*) are the most widespread and abundant throughout, but with the greatest cover of *Mercurialis* on the NE slope (Plots 8 and 9). Other species of note (some widespread, others rare) include pignut (*Conopodium majus*), wood anemone (*Anemone nemorosa*), common Solomon's seal (*Polygonatum multiflorum*), woodruff (*Galium odoratum*), toothwort (*Lathraea squamaria*), wood spurge (*Euphorbia amygdaloides*), common twayblade (*Listera ovata*) and the moss *Cirriphyllum piliferum*. Leaf litter forms a significant component within most plots.

Fauna

Several badger setts were noted within the wood, with local evidence elsewhere of badger foraging activity. There is evidence of deer throughout (in the form of droppings), and one probable fallow deer fawn was noted. There were also some signs of rabbit activity and a grey squirrel was seen. Numerous 'mammal tracks' were noted.

A variety of common birds were heard calling: chiff chaff, blackbird, wren, goldcrest, robin, blackcap, willow warbler and cuckoo, plus a pheasant was seen.

Conclusion

Love's Copse has lost several peripheral areas to arable, and a major proportion of the remaining woodland has been converted to a larch plantation. However, some good areas of hazel coppice-with-standards still remain, although these areas have not been managed as such for some time. These latter areas support the most species-rich ground flora and lie on the periphery of the site, especially the steep northern slopes. Sections of the original wood bank and ditch survive in places.

SITE 6: LONGLEAT WOODS

Very species rich ancient woodland with elements suggesting old wood pasture, others with long history of coppicing. Small area coniferised around 20 years ago. Quite a lot of the coppice with standards is still being managed as such, with unusual system involving lots of vehicle access rides which have rapidly become overgrown. Unfortunately large numbers of ticks made the field work rather unpleasant!

Comments on plots

1. Managed high forest of *Q. robur*, *Bet. pub* and (formerly coppiced?) *Cor av* understory. *Pteridium* dominates ground flora, with *Hyac. N-s* and *Holc moll* (and abundant *Ilex*). Much deadwood, post storm damage clearance evident - large sectioned *Q. rob* on ground. *Q. robur* of 100cm DBH within 10m of plot.
2. Old field, now *Frax*, *Cast sat* *Acerpp* secondary woodland, with much *Frax* regen. Surprisingly rich ground flora - colonisation from nearby Ancient woodland. Thinned 5-10 years ago?
3. Unmanaged coppice with standards; *Q. rob*, *Frax ex*, *Acer pp* and *Fagus* over *Cor av* coppice. *Merc per* and ferns abundant in field layer. W8b. Path runs through plot.
4. Still managed (?) coppice with standards, *Q. rob*/*Frax* stads over *Cor av*, *Frax* and *Acer camp* coppice. *Loni per* plentiful with *Rubus* in shrub layer, especially over tops left from clearance after storm damage (last year?). Sparse ground flora under *Fag sylv*, otherwise odd mix of calcicoles and calcifuges.
5. *Q. robur* and *Frax ex* standards over *Corylus* coppice - now being managed as high forest? *Rubus* dominates higher drier ground, lower wet ground with *Glyceria* sp.
6. Old *Ilex* (and *Cor av*) coppice with (veteran?) *Q. rob* standard. Much *Ilex* regen. Little ground flora. Brash from clearance associated with new fence line.
7. Managed high forest - formerly more open (wood pasture?) with old *Q. rob*. *Frax*, *Acer pp* and *Sorb auc* now pole stage regen. V sparse ground flora. Ditch/stream runs through plot.
8. Unmanaged oak standards over hazel coppice with occasional *Crat oxy* coppice. *Ilex* in shrub layer - hedge hogged by deer. Sparse ground flora except on old woodbank which is quite spp. rich and mossy.
9. Unmanaged oak standards over hazel coppice with occasional hawthorn. Large *Malus sylv* in plot. Varied field layer reflects different soils and drainage. Old woodbank and ditch. transects plot.
10. Young conifer plantation, not recently managed, though access track passes through north of plot. Ditch runs through centre of plot. Grassy on access track, otherwise dark and spp. poor.
11. Conifers removed recently - *Q. rob* planted ca. 3 years ago. *Rosa arv* dominates shrub layer, rich ground flora of M23 type, with dry acid grassland flora in drier patches.
12. Conifer plantation in process of being cleaned/thinned. More recent *Q. rob* planting. Occasional self sown *Crat mon*. Ground flora mainly grassy spp poor.
13. Young conifer plantation with *Q. rob* planted more recently. Just thinned and cleaned - much brash on ground. Self sown *Bet pub* has been coppiced. Poor field layer, mainly *Holc mol*/*Rhyt triq*.
14. Actively managed coppice with standards - *Q. rob* over *Cor av*, with occasional *Frangula*, *Vib op* and *Crat mon*. Spp rich ground flora with much *Junc eff*.
15. Coppice with standards - *Cor av* recently coppiced/"hacked". Rich ground flora and Pterids. Access track runs through plot.
16. Recently coppiced *Cor av* with *Q. rob* standards and some *Frax* pole stage standards. Dense *Rubus* in places with *Crat mon* and abundant Pterids. *Holc moll*, *Dact glom* and *Stel holo* dominate ground flora.

SITE 7 COMPTON WOOD

Location and Landscape Context

Compton Wood is an area of semi-natural ash-dominated woodland of 25-30 ha in extent, 1 km west of Compton Martin, Somerset. The wood occupies the steep north-east facing scarp slope of the Mendip Hills, ranging in elevation from 90m to 240m asl. It forms part of a chain of comparable woodlands along that scarp. The site is surrounded by permanent pasture, some of a wood-pasture character, into which a few of the sampling plots fell. A field on the upper edge of the site has recently been planted with broadleaved trees and fenced against deer. The remaining boundaries of the Compton Wood are stock fenced, but the condition of that fence is variable. The easterly portion of Compton Wood, including a quarry and Compton Combe, were not included in the survey area.

Ecological Site Factors

The site is located on the Carboniferous limestone strata of the Mendip hills, giving rise to very fertile calcareous loam woodland soils. In places soils are shallow to the limestone bedrock. The climate is of the warm moist lowland type, although the upper edge of the woodland is fairly exposed, being at > 200m elevation.

Management Factors

The woodland is owned by Will Woodlands, a private body with conservation objectives, and managed on their behalf by John Clegg and Co. Since acquiring the property their main focus has been on the establishment of a new area of broadleaved woodland by planting adjacent to Compton Wood on former pasture land. There has been no active management within Compton Wood itself in recent years, other than deer fencing along the upper edge as part of the new planting scheme. It is understood that the current ash stand arose from coppice regeneration after the woodland was cut over during the last war. This is consistent with the stand structure observed. There is some evidence that hazel coppicing has been carried out, perhaps since the war. It is suspected that this site may have undergone a period as open pasture in the past, as there are derelict internal walls and fences. There are few internal paths, making access difficult, especially in wet weather when the soil surface becomes very slippery. There was some evidence of informal access, probably by children, with a shelter having been excavated and covered. The uppermost part of the area surveyed was an open wood pasture grazed by cattle.

Stand Types

The majority of the survey area is dominated by a single stand type, being semi-mature to mature multi-stemmed ash poles (15-20m in height) over a hazel understorey of variable density. There are a variety of other tree species present as minor elements including oak, elm, field maple, hawthorn, sycamore, whitebeam and cherry (some possibly planted in). The understorey is dense in parts and dominated by coppice hazel, field maple and hawthorn. There is little natural regeneration from seed due to the heavy canopy shade, with only occasional holly saplings being noted. There was a fair amount of both standing and fallen dead wood, probably due to density dependent mortality of the ash.

The upper part of the survey area is an open wood pasture with mature widely spaced ash and planted conifer standards over a grassy sward.

Ground Vegetation

The ground vegetation within the woodland is that to be expected on a calcareous site, although in places the coverage is sparse due to heavy canopy shade. The dominant species is *Hyacinthoides non-scripta* which will have achieved over 50% cover in many plots during the earlier part of the season. Other abundant and frequent species include *Allium ursinum*, *Mercurialis perennis*, *Rubus fruticosus* and *Phyllitis scolopendrium*. A variety of other woodland species occur but in only small amounts.

Bryophytes are fairly significant with *Eurynchium* spp being by far the most common.

In the open wood-pasture area the grass sward is mainly composed of *Holcus lanatus*, *Holcus mollis*, *Lolium perenne* and *Dactylis glomerata*.

Fauna

The only signs of animals within the wood were excavations which could have been due to badger or fox activity. Cattle are kept in the adjoining fields and wood pasture areas. It is likely that roe deer will use the wood as it is not effectively fenced against them, but no definite signs were observed. Magpie and woodpecker were noted, as was the call of a sparrow hawk or young buzzard. Occasional spent cartridges were found but there was nothing to suggest regular shooting within the wood, which seemed rather dense for that.

Habitat features

The most characteristic habitat feature of the woodland was the amount of bare soil and bryophyte covered soil and rock present after the annual collapse of the bluebell cover. In places limestone rock and boulders were visible on the surface, usually bryophyte covered. There were also considerable amounts of bryophytes (and, to a lesser extent lichens) on tree stems and dead wood. There are occasional vegetation features such as nettle clumps and moss banks. The woodland overall gives a rather dense and impenetrable feel, especially in the summer months.

SITE 8: SAYS AND SMALLADINE COPSE

Position in the landscape:

Says and Smalladine Copses are situated in the south-eastern corner of Northamptonshire between Towcester and Buckingham, to the south of the village of Paulerspury. They are part of the formerly continuous woodland area of Whittlewood Forest which survives as a series of separate woods on the stretch of gently undulating country between Milton Keynes and Brackley. The geology appears to be calcareous clay, possibly of glacial drift origin.

Although there is no official public access to the wood, the broad track between the two copses is used by horse riders and walkers. A minor road runs along the western side of the site, and on the other three sides the land is arable.

Broad habitat description

The woodland is all W8c, but this includes much variation in the canopy and ground flora. The two copses are bisected by a track usable by vehicles, with broad MG5a grassland fringes. Another broad ride, this time entirely grassland runs along the western edge of Says Copse, the northern part.

Management Influences

In the past this woodland would have been managed as coppice with standards, the major coppice species being *Corylus avellana*. The canopy trees are largely mid-aged, but unusually there are also a number of older, some veteran, maiden and pollard *Fraxinus excelsior* and *Quercus robur*. *Tilia X europaea* has been planted in the north-west, possibly in the 19th century.

There has been a considerable amount of activity in recent years, possibly following damage incurred during the 1987 storm. There seems to have been much clearance of underwood and canopy thinning, resulting in the south-east and elsewhere, in the regeneration of dense linear thickets of *Prunus spinosa* and *Salix cinerea*. This appears to be ideal management for many breeding birds including nightingale. There is evidence of shooting, possibly of pheasants, but there is no sign of intensive management for gamebirds apart from the north-western ride.

Tree and Shrub composition

The canopy is largely mid-aged *Fraxinus excelsior*, but with a scattering of very fine older *Fraxinus excelsior*, *Quercus robur* and *Acer campestre*. Some of these older trees are undoubtedly veteran, and are mainly maidens although some are pollards. These are important in their own right, and also for breeding birds and invertebrates.

The underwood is largely coppiced *Corylus avellana* with *Acer campestre*, *Crataegus monogyna*, and in Says Copse, *Crataegus oxycantha* and *Malus sylvestris*. Where there has been clearance in the past 15-20 years, there has been dense regeneration of linear thickets of *Prunus spinosa* and *Salix cinerea*. In the northern corner and along the north-western edge there is abundant suckering *Ulmus procera* with planted *TiliaXeuropaea*.

Ground Flora composition

The ground flora is very variable within the limits of W8c, and is generally species-rich. The topography varies slightly across the site, and the ground flora reflects the resulting hydrology. The drier areas are dominated by *Mercurialis perennis* and *Hyacinthoides non-scripta*, while in the wetter south-west, *Carex pendula*, *Rubus fruticosus* and *Calamagrostis epigejos* are dominant, particularly where the canopy has been opened. Some less common species including *Orchis mascula* and *Ranunculus auricomus* are present.

Fauna

Deer, probably roe and muntjac appear to be common, and have had some effect on the ground flora. The avifauna seems rich as might be expected from the number of veteran trees and the thicket-like vegetation in the south-west. Most of the typical species were present, several garden warblers were seen or heard, and at least one nightingale was singing.

Conclusion

Overall this is a very fine woodland, despite or perhaps because of the (probable) effects of 1987 storm damage and the subsequent clearance work. The veteran and near veteran trees are outstanding, the canopy and shrub layer is rich and varied, and the ground flora is well-developed and diverse.

SITE 9 - HAWTHORN DENE

Position in the Landscape

- This woodland lies along the slopes of a dene running down to the sea, which cuts through Magnesium Limestone, and the influence of the underlying rock influences the vegetation found there.
- Part of the woodland at the eastern end of the dene has disappeared and this area supports Magnesium Limestone grassland
- The woodland is largely surrounded by grazing pasture.
- Exotic species have been planted in the past including beech and several conifers, this is particularly noticeable at the eastern end.
- Wide paths are maintained at the eastern end of the wood, these are way-marked and appear to be well used.
- One plot now lies on the edge of a garden

Management Description and Habitats

- The woodland is managed by the National Trust and Durham Wildlife Trust using conservation objectives.
- Management of trees is only carried out where there is a danger to the public from falling branches etc. near footpaths.
- One plot had been cleared because of overhead power lines, the felled timber has been left on site.

SITE 10: KITESGROVE, JUNIPERHALL AND HOME WOOD

Very large diverse Wildlife Trust nature reserve. Much Frax merc woodland of W8 b and d (and a little g). Quercus woodland also abundant W10 various sub communities mainly a. W12 and W15 Fagus woodland also present, with a little conifer plantation. Mostly neglected coppice with standards, though some has been recently managed, along rides in particular. Evidence of previous management as wood pasture/parkland, and old walls indicate fields now gone to secondary woodland. Extensive network of rides, some abandoned, some managed with scalloping etc. Ground flora diverse, reflecting different communities and management histories.

Comments on plots

1. *Q. robur* (mostly dead) with *Picea abies* nurse crop. Nettles.
2. W8 spp. poor, no management. *Q. rob* standards over Frax (and occasional planted Carp bet) dominated understorey, with *Acer camp* (+*Ulmus proc?* And *Crat mon*). Some *Acer pp* but sparse. Old pasture woodland? Edge of old ride.
3. Unmanaged *Cor av*, *Acer camp* and *Acer pp* coppice, now going to high forest with *Bet pend*, *Carp bet* and *Q. rob* in canopy (*Acer pp* pole stage). *Merc per* dominates ground flora.
4. *Cor av* coppice with *Bet pend* and *Crat mon*. *Merc per* dominates field layer.
5. *Fag sylv* high forest with large dead *Prun av* and mature *Acer camp* standards. Very little field or shrub layers, *merc per* dominated field layer. Old flint wall along ride to S has collapsed into plot.
6. High forest Frax, light and open. Only *Samb nig* in shrub layer. Abundant *Merc per* in field layer. Large fallen Frax gives much deadwood. Badger track and latrine. No management.
7. Old ride runs NW/SE thru centre of plot. W edge is ruined wall with mature *Fag syl* pollard (?), and old *Acer camp* coppice nearby. To NE Frax and *Cor av* coppice of more recent origin now abandoned. No shrub layer. Ground flora spp poor - low light levels.
8. Old *Cor av* coppice with frequent *Samb nig* and occasional *Bet pend*. Dark spp poor field layer, much dead wood and litter. Adjacent to wood boundary.
9. Dark but open ash high forest, from old (ca 100 ybp) Frax coppice - one large singled (?) frax ex coppice. Frax and *Q rob* maidens 60-80y old. Spp poor ground flora and no shrub layer. No management.
10. 50 years old Frax/*Cor av* (*Q. rob*) coppice with self sown Frax and *Crat mon*. Spp rich ground flora W8a/b transition, good dead wood.
11. *Cor av* coppice, last coppiced around 5-10 years ago, also singled? *Acer camp* coppice. Diverse field layer dominated by *Merc per*. Track/ride runs thru plot.
12. Old *Acer pp* coppice with *Betula regen*. Plot lies across community boundary - half in W8, half in W10. No management.
13. Old Frax/*Cor av*/(*Acer camp*) coppice with *Crat mon* in shrub layer, smallish *Q rob* standards and self sown *Bet pend*. Ride runs E-W through plot. No management except for ride.

14. Actively managed Frax standards over Cor av coppice, early in rotation. Understorey sparse, occasional crat mon. Little field layer - most regen is Frax.
15. Formerly Acer pp, Cor av and Acer camp coppice, then replanted with larch, now standing and fallen dead Mature Acer pp and Bet pend maidens over Acer pp, Crat mon, Acer camp and Cor av understorey V. spp poor ground flora.
16. Plot lies on historic ride, now more or less overgrown. Old Larch plantation now all dead. Cor av coppice and self sown Acer pp. Field layer mainly Merc per and bryos.

SITE 11: OLD PARK WOOD

Old Park Wood appears to have originated from parkland several hundred years ago. Boundary pollards of great age were noted and a massive park pale type ditch and bank runs between Old park wood and the Hermitage, to the West. The wood has been coppice with standards for a long time, with mixtures of ash/maple/hazel and oak coppice, along with downy birch and midland hawthorn as occasional coppice species. Blackthorn thickets indicate wetter areas, and Ash woodland of W8c or thereabouts is quite common, as is a transitional community between W8c and W10. Ground flora on drier areas also suggests some variation in soil ph, with some W8a on drier areas, while elsewhere more acidic species indicative of W10a. Management appears to be mainly for shooting, and the coppice is actively being promoted to high forest. Significant storm damage has affected the wood, from the October 2002 storm, and clearly many trees have been extracted, as indicated by the extraction routes and vehicle ruts.

Comments on plots

1. Derelict hazel/maple coppice with oak/ash standards. Large bare areas under mature oak, otherwise rubus/mercury dominated ground flora. *Q. robur* maiden of 109cm DBH within 10 of plot, on old park pale.
2. Former ash/hazel/maple coppice, with ash/oak standards, now ash/oak high forest over hawthorn/midland hawthorn/hazel/blackthorn shrub layer. Field layer mainly *merc per/des cesp*, sparse *rub frut*. W8c.
3. Oak/ash high forest from former ash/hazel/maple coppice with oak/ash standards. Blackthorn, hawthorn and hazel in shrub layer. *Merc per* and *poa triv* mainly field layer. Large bare area. Deer tracks across plot.
4. Former hazel/downy birch coppice with oak standards, now ash/oak high forest, relict hazel, oak, ash, downy birch maidens. *Rubus* dominates field layer, with nice mix of ferns, otherwise sparse ground flora with much litter. Recent clearance of storm damage.
5. W8c. Oak and ash high forest in damp area with abundant *Des cesp*, *Carex remota*. Sparse shrub layer of hazel.
6. Ash/oak high forest originating from ash/hazel coppice with ash/oak standards. Field layer quite spp rich compared with most of N of wood. No management apparent.
7. Ex ash/hazel coppice now ash/oak high forest, with relict hazel coppice. Half of plot is dominated by *Rubus*, other half bare under mature oak. Some recent clearance of storm damage.
8. Former ash/hazel/maple coppice, now ash/oak high forest, via recent singling of ash coppice. Storm damage cleared. Field layer mainly *rubus*, some *merc per/poa triv*. W8/W10 transition.
9. Formerly Hazel/maple coppice with ash/oak standards. Promoted to high forest by singling. Sparse hazel shrub layer. Much post Oct 02 storm damage clearance; *rubus* now dominates field layer.
10. Ex ash coppice with ash/oak standards, now ash/oak high forest. Little shrub layer, field layer dense *rubus*. Wet vehicle ruts with damp-loving spp. Clearance of storm damage, some singling of old coppice stools.

11. Ex ash (with hazel and midland hawthorn - now more or less gone) coppice with oak standards, now promoted with singling to ash/oak high forest. Oct 02 storm damage recently cleared, but many tops/brash left on ground. Rubus dominant in an otherwise spp poor ground flora.
12. Old ash/maple/hazel/oak coppice, now ash/oak high forest. Large veteran oak coppice stool/stub, perhaps indicating a previous parkland history? Little shrub layer, Rubus field layer. Oct 02 Storm damage cleared, leaving brash and vehicle ruts.
13. Ex ash/maple/hazel coppice with oak/ash standards; now oak/ash high forest. Some very recent storm damage (Oct 2002) and clearance - many tops and brash left. Now dominated by Rubus frut, and a fair cover of Male fern. Transitional between W8(c?) and W10.
14. W8a/c. Recent coppicing/thinning, ash/hazel coppice being promoted to ash/oak high forest. Damp, tending towards W8c. Vehicle tracks from management.
15. Oak/ash high forest, with downy birch. No shrub layer. Rubus dominant in field layer. Damp deer tracks intersects plot. W8/10 transition.
16. Ash/oak high forest originating from ash/hazel coppice with ash/oak standards. Hazel still in shrub layer, with blackthorn. Damp in places, much bare ground, carex remota and filpendula. Other areas drier, mainly rubus/merc per. W8c.

SITE 12: MIDGER WOOD & BACK COMMON

Position in the landscape:

Sheltered valley woodland well below the plateau on wet ground surrounding a stream. Surrounded by arable and grassland and some woodland downstream and upstream bounded primarily by fences but linked to the landscape by mature hedges

Broad habitat description:

Mature and maintained ash woodland with hazel coppicing. Steep slopes throughout and a stream running through from NW to SE

Management influences:

Regular coppicing, maintenance of fences utilisation of brash etc.

Tree and shrub composition: Ash, some oak, with Hazel, some spindle, elder hawthorn and Cornus.

Ground flora composition:

Mercurialis dominated with areas of allium and Bluebell, and some marshy vegetation around the lower areas

Fauna:

Deer, roe and muntjac, and plenty of dormouse boxes. Wide range of birds

Comments on plots

1. Oak, beech, ash with coppiced Hazel understorey, Mercurialis/Bluebell dominated ground flora. Bramble clump and clematis covered hawthorn thicket.
2. Recent coppice, no standards, Q. robur and Fraxinus in tubes. Disturbed Cornus sanguinea in plot with Mercurialis dominated herb layer with Chamnaerion etc.
3. Coppice with standards, though no standards in the plot with Mercurialis dominated herb layer. Some Bracken, nettle and Burdock.
4. Mainly ash (one coppiced) with hazel shrub layer. One large beech close by. A Mercurialis dominated herb layer. Bullfinch, Nuthatch, Chaffinch, Wren, Blackbird
5. Ash dominated (one coppiced) with coppiced hazel under with a varied ground flora dominated by Allium on the slope above and Mentha/Eupatorium and Willow herb on the wet area below. Black cap, Chiff-chaff
6. Ash and oak with coppiced hazel under. Planted trees have died. There is a Mercurialis dominated ground flora
7. Ash dominated canopy with coppiced Field Maple and a Mercurialis dominated ground flora
8. Ash dominated canopy on steep slope below the road. Coppiced hazel under and a Mercurialis dominated ground flora.
9. Ash dominated canopy with hazel and spindle understory with a Mercurialis dominated ground flora

10. Ash canopy adjacent to recently coppiced hazel with brash fence. Mercurialis and Ivy dominated ground flora. Roe Deer
11. Ash in the plot with large Oaks just outside the plot with a Mercurialis and Allium dominated ground flora. Dogwood in the shrub layer with coppiced hazel and Holly
12. Ash dominated canopy coppiced hazel . Very large clematis with a Mercurialis and Bluebell dominated ground flora. Black cap, Wren Blackbird. Dormouse box.
13. Ash over hazel with Allium and mercurialis dominated ground flora. Messy
14. Ash over coppiced hazel and mercurialis dominated ground flora.
15. Much dead wood along with fallen acer campestre, still alive at 17 dbh, otherwise ash over hazel with a Mercurialis dominated ground flora. Blackcap, doormouse box
16. Very old coppice with one large ash. Dead mature Crataegus with Allium under

SITE 13: AUSTY WOOD

Position in the landscape:

A ridge-top oak-ash woodland managed for timber and game set amongst arable pasture woodland plantations, and parkland. Some of the wood in the southern side has been cleared for arable, some has been cleared for conifer plantation.

Broad habitat description:

Probably an ancient w8 Oak Ash with hazel coppice woodland, of which only remnants remain. It has been extensively planted some has been cleared for arable, and some cleared for more recent plantation

Management influences:

Extensive management for timber and pheasant. A couple of well used and maintained tracks throughout the wood. Brash and cut timber around, but also old fallen trees

Tree and shrub composition:

Fine oak and ash in the north-western quarter with an understorey of coppiced hazel. Elsewhere it has been extensively planted with Chestnut, Beech, Birch, Pine, Fir and Larch, some recently some perhaps 50 years old.

Ground flora composition:

Generally depauperate, dominated by bluebells with invasion of Bracken and Blackberry

Fauna:

Extensive badger sets, rabbit droppings, sounds of roe deer and extensive bark browsing

Conclusion:

An extensive oak ash wood managed for pheasant and for timber recently reduced in size by clearing for arable.

Comments on plots

1. Grassy edge to a narrow strip of newly replanted woodland. Partly sprayed off. Now woody species
2. Now an arable field currently in set-aside. All vegetation killed off by herbicide. No woody species
3. Arable field, now sprayed set-aside.
4. Dense pteridium and bluebell under widely spaced Quercus. Much rabbit activity
5. Species poor ground flora dominated by bluebell under old corylus coppice and standard Quercus
6. Pinus sylvestris plantation with dense Rubus understorey. Abundant cut brash.
- 7.
8. Badger sets and deer damage in Beech/birch plantation (Beech unusual). Holly thicket in Q2
9. Open young pine/chestnut plantation. Deer and badger tracks and an old badger set. Most Rubus and Dryopteris has died back leaving just Pteridium and oxalis with 80% dead Hyacinthoides.

10. Old overgrown ride between established W8 to the south and newly planted Picea with regenerating Fraxinus to the north. Tall, dense rubus, cirsium and Carex pendula
11. Larix - Castanea plantation with Fraxinus and quercus. Poor ground flora with Rubus fruticosus. Disturbed by forestry activities and some herbicide damage.
12. Castanea /pinus plantation with a species poor ground flora dominated by Pteridium and hyacinthoides
13. Pinus sylvestris/ Castanea plantation. Very open with Hyacinthoides and little else
14. Remnant ancient coppice - ash/hazel. Unmanaged. 2 large fallen birches to the north. No ground cover.
15. Bluebell patch, not much else - all litter now. A few coppiced hazels under Oak.
16. Oak hazel birch over bluebells. Close by pheasant pen

SITE 14 BIRDS MARSH

Position in the Landscape

The southern part of the wood is on more-or-less level ground surrounded by crops - maize and oats. The northern part of the wood slopes gently down to some fields of old permanent pastures. Much of the wood is surrounded by a bank and ditch, suggesting mediaeval origin.

Management Description and Habitats

- Estate owned.
- Three plots were in relatively undisturbed old oak woodland.
- Seven plots were in rhododendron thickets with large old trees above of oak and pine.
- Two plots were in laurel thickets.
- Four plots were in felled and replanted woodland.
- Some clearings had been cut in the laurel, which was coppicing vigorously.
- Other open areas from fellings were dense *Rubus* clumps.
- Paths were maintained for public access and were intensively used.

Tree Composition and Change

- The number of birch trees in the second size class had increased 1971-2000, reflecting opening up of the wood.
- Birch saplings had declined by 50%.
- Laurel had almost doubled the number of stems in all but one size class.
- Rhododendron was abundant but stable.
- Larger ash decline, saplings down by 5 times.
- Holly had increased 7 times in the lowest size class, but all other classes had also increased.
- Small beech in 1971 had expanded into larger classes.
- Sycamore showed a decline through all size classes but especially the small.
- Many oaks had gone, presumably from felling.
- Fewer dead stems of trees.
- Disappearance of dead saplings and shrubs.
- Ground Vegetation and Change
- Only *Rubus* reaches a high frequency.
- Overall species richness has declined by 29%.
- The other species are all infrequent but even these low numbers have generally declined, especially bryophytes, even relatively shade-tolerant species.
- *Dryopteris dilatata* have declined by 50%.
- Covers are also low and stable.
- These changes suggest increasing shade from shrubs although the low initial figures make it difficult to detect significant change.
- No species increased in frequency and *Rubus* (14-13) and *Dryopteris dilatata* (13-6) have declined.
- *Pteridium* declined in cover from 11.5 to 0.5 but *Rubus* increased from 14.1 to 21.8.

Conclusion

In 1971 laurel and rhododendron already heavily shaded the wood but this has probably increased. Some evidence of regeneration in felled areas both natural and planted.

If the shrubs continue to expand, the wood is likely to gradually lose any natural structure.

SITE 15 - BECK HOLE SCAR WOOD

Position in the Landscape

- Mainly wood pasture on one side of the river and amenity woodland on the other.
- Fairly steep slopes down to the river on both sides.
- Wood pasture open to the road, and obviously widely use by the public, including the lighting of fires.
- Bordered by the railway on the eastern side.

Management Description and Habitats

- The Broadwood estate would like to fence along the roadside to prevent the public using the wood pasture area for recreation because of the damage from fires and the dumping of litter.
- One quadrat was lost due to the fact that a duck house and pen had been erected in the area and no vegetation remained.
- The wood pasture area has a canopy dominated by oak and sycamore. The oaks include some very fine veteran trees. The field layer is poor because of grazing, and some sections have been invaded by bracken.
- There appears to be no management of the trees in the wood pasture area.
- There is a small section on this side of the river, though no quadrat fell within it, that is fenced and here the field layer is dominated by great woodrush (*Luzula sylvatica*). Along the river side the main tree species is alder.
- On the other side of the river there is greater species diversity, the canopy is mainly oak and sycamore, plus alder on the wetter area. Some sections of the field layer are dominated by bracken, particularly in the open areas and there has been no attempt to replant these large glades.
- The woodland along the bank is gradually being eroded due to the heavy use of the footpath on the eastern side of the beck.

SITE 16: ASHAMPSTEAD COMMON

Position in the landscape:

Close to hamlets surrounding local farms the wood is bounded by gardens arable land and woodlands. To the south and west are considerable areas of broadleaved woodland and forms part of an old deer park. A stream and roads bound the wood as well as hedges and banks and ditches.

Broad habitat description:

An ash woodland with fine beech, invading sycamore, and an understorey including holly and hazel, hawthorn and hazel

Management influences:

Tracks are found through the wood but their use seems to be slight. However considerable thinning was undertaken in 2002/3 and 1996/7. The aim seems to have been to cut the sycamore to favour the ash, but the sycamore stumps are regenerating.

Tree and shrub composition:

Mainly Ash, with beech, birch Sycamore and prunus. Some Horse chestnut. The shrubs are dominated by Hazel and Holly with areas of Elder and hawthorn. Regeneration is often restricted by mammal browsing.

Ground flora composition:

Bare ground under the Beech trees with bluebell dominated communities of considerable diversity. Patches of nettles bramble and some areas of dense bracken are present.

Fauna:

Roe deer, muntjac, moles, badgers, rabbits and squirrels

Conclusion:

An actively manages ash woodland with sycamore invasion.

Comments on plots

1. Muntjac. Regenerating trees with severe bark damage - squirrels?
2. Some damage by squirrels. Sycamores cut to favour ash.
3. Goldcrest. Deer damage. Old ridge and furrow?
8. Close to open grassland by old unmetalled road
9. Close to footpath. Muntjac, small rodents, Hybrid bluebells, lots of seedlings
13. Young deciduous plantation with sycamore regenerating from stools with w varied but weedy ground flora
14. Wych elm in plot. Brash
16. Jay

SITE 17 ASHBERRY WOOD

Position in the Landscape

- Much of the woodland on steep slopes and difficult to access.
- Lies adjacent to Reins Wood, another ancient woodland and part of the same SSSI designation.
- Much of the areas surrounding the wood to the east is grazing pasture.

Management Description and Habitats

- Fine example of ancient semi-natural woodland, with large stands of old coppice stools.
- Probably originally managed a coppice with standards.
- Fine mature trees, with very few exotics and a good woodland structure. Very diverse ground flora and good bryophyte flora.
- No evidence of recent woodland management except on paths and roadside.
- Evidence of roe deer throughout the wood, which makes the amount of tree seedling regeneration surprising. Also signs of badger seen in several places.
- A small tarmac road runs through the woodland a some trees and old coppice have been cut along the road edge.

SITE 18: FFRIDD WOOD

Position in the Landscape

Ffridd Wood lies on a south-east facing aspect, with the slope angle ranging from 20- 40°.

A quiet informal road approximately 4m wide defines the woodland's immediate boundary to the north, south and east. An intact wire fence bounds the woodland's western fringe.

The surrounding landscape is comprised mainly of permanent pasture and a few scattered houses. To the east runs the River Severn.

Broad Habitat Description

A mixed broadleaved woodland with a localised dominance of pedunculate oak (*Quercus robur*), ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*). The trees range from semi-mature to mature. Scattered throughout the woodland are a range of other canopy species, including beech (*Fagus sylvatica*), field maple (*Acer campestre*), holly (*Ilex aquifolium*) and wych elm (*Ulmus glabra*).

The woodland on the whole is very structurally diverse with a close intermix of woody scrub species. The ground flora species composition varied in term of its species richness.

Management Influences

The majority of the woodland is privately owned. A small northern section of the woodland is owned by a local timber merchant.

The woodland appears to have been subject to a high level of disturbance, in particular the felling of trees in the past. An old timber extraction track, which cuts through the centre of the woodland, has become overgrown by dense bramble (*Rubus fruticosus*).

Old cut stumps were present within six of the plots and replanting was noted within Plot 1. The main species planted were pedunculate oak and wych elm. However, most of the planted trees had died.

Replanting was also present within other areas to the north of the woodland, although not necessarily located within the sampled plots.

Five old stumps entirely overgrown by grass were located within plot 6. As this plot was located at the woodland's edge, it is possible that past tree removal has taken place to expand areas for pasture.

Domestic grazing was present within plots 6, 8, 15 and 16. An intact wire fence separated these plots from all other plots throughout the woodland.

Tree and Shrub Composition

As the dominant tree, pedunculate oak was present in 11 plots, ash present in six plots and sycamore present in nine plots. Sessile oak (*Quercus petraea*) was also recorded within Plot 4 and, based on observations outside of the plots, oak hybrids were present.

Additional species recorded within the canopy, and which enhance the species diversity of the woodland, include holly, field maple and crab apple (*Malus sylvestris*). Within Plot 15 Scot's pine (*Pinus sylvestris*) and a spruce sp. were present. Horse chestnut (*Aesculus hippocastanum*) was the dominant tree in Plot 16. Within Plot 8, however, no trees were recorded as the bearings consistently fell within an area of grassland.

Within 12 of the plots it was noted that the understorey was well developed. An intimate mix of woody species at different developmental stages was often present. Plot 6 differed to all other plots in that it contained a very large gorse (*Ulex* sp) clump.

Regeneration occurred within 12 of the plots, with the two main species being ash and sycamore.

There was a relatively good proportion of dead wood throughout the woodland. This was mainly in the form of rotten logs, large/small branches and the occasional uprooted/fallen tree. There were several dead branches still attached to the standing trees.

Bryophyte cover was more profuse at the base of trees rather than the trunks and branches. There were also lichens present in the more open areas. The most notable species was *Evernia prunastri*.

Ground Flora Composition

The diversity throughout the woodland was very variable. In Plot 11, for example, 33 species were present, whereas in Plot 2, only eight species were recorded. Within 11 of the plots, bramble was consistently the dominant species, occurring on many occasions as a thicket.

The majority of the plots had a deep litter layer. Moss growing upon the ground equated to a very small percentage throughout the whole woodland.

Fauna

There were several rabbit holes within the woodland, one fox scat in Plot 16 and evidence of badger digging was noted within Plot 10.

Within areas where the plots were more open, a number of butterflies were present, including gate keeper, speckled wood and southern hawker.

The different bird species recorded within the woodland included raven, gold crest, long tailed tit, coal tit, blue tit, great tit, marsh tit, nuthatch, buzzard, robin, jay and magpie.

Conclusion

Ffridd Wood is a structurally diverse mixed aged broadleaved woodland that has been subject to disturbance. The presence of an overgrown extraction track together with a high number of cut stumps indicates that the main form of disturbance has been tree felling. Some replanting has been undertaken within the northern section of the site, although a high proportion of the planted species have died.

SITE 19. LOWER WETMOOR (LOWER WOODS)

Location and Landscape Context

Lower Wetmoor forms one part of the extensive Lower Woods semi-natural woodland complex approximately 2km east of Wickwar, Gloucestershire. The Lower Wetmoor survey area extends to some 50-60 ha and lies on both sides of a small stream on both north and south facing slopes and upper plateau ground. The survey area is surrounded by other parts of the Lower Woods complex which encompasses woodland and rough common grazings. In places there is separation of the survey area by a fence or bank and ditch but for the most part it merges directly into the surrounding woodland and scrub.

Ecological Site Factors

The survey area is located on the geologically important boundary of the Triassic Rhaetic mudstones/Keuper marl series with the Jurassic Lower Lias clays. These strata give rise to heavy clay soils which are fertile but poorly drained. The climate is of the warm dry/ warm moist lowland type.

Management Factors

The survey area has been owned by the Gloucestershire Wildlife Trust since 1967 and is operated as a county nature reserve, subject to SSSI designation. The Wildlife Trust have expanded their ownership of the surrounding woodlands in more recent years. As part of the conservation management programme there has been an experimental restoration of the coppicing cycle in one small part of the survey area - otherwise the management regime is essentially of the non-intervention type. The majority of the standing timber is ancient semi-natural in origin, but there was some planting in of oak in the 19th century. There is open public access to the woodlands facilitated by a good network of mown rides, footbridges and a small car park. Horse riders use the woods and there is possibly some access to neighbouring commoners' livestock in parts of the site, although their impact is low.

Stand Types

The stand structure throughout the survey area is representative of the traditional lowland coppice-with-standards system in semi-natural woodland. The standards are mostly of oak (up to 25m in height), but in some cases there is ash and planted poplar in the canopy as well. The density of standards varies greatly from thicket stands which have virtually none remaining to others which have assumed an oak high forest structure, perhaps as a result of planting in of additional oaks during the 19th century with a view to timber.

The underwood is very diverse and includes birch, hazel, blackthorn, hawthorn, holly, guelder-rose, field maple, wild service, willow, spindle and ash saplings. With the exception of a few small experimental areas the coppice has not been cut in recent years. In some plots the understorey was a dense thicket of hawthorn and blackthorn scrub, and this vegetation type is prevalent in several parts of the survey area. In other plots the understorey was mostly of hazel, with a variety of stool densities observed.

Sapling natural regeneration was observed of ash, hawthorn and holly, but is rather suppressed by the level of shade. One or two plots with a lighter canopy had very dense ash regeneration. Little evidence of oak regeneration was found. Some planted saplings in tree shelters were found among the underwood, but there seemed little chance for these.

There is a significant and diverse dead wood resource due to density dependent mortality.

Ground Vegetation

Throughout the survey area there was a tendency for ground vegetation cover to be sparse due to the shade from the dense understorey. The most common characteristic vascular species were *Hyacinthoides non-scripta*, *Mercurialis perennis*, *Hedera helix*, *Lonicera periclymenum* and *Rubus fruticosus*. Grasses are not a major part of the vegetation assemblage, but *Agrostis capillaris* and *Deschampsia cespitosa* were locally frequent. Bryophytes were locally abundant with *Eurynchium* spp being the most important.

Fauna

A fox and a grey squirrel were seen within the survey area, and evidence was found for the presence of roe deer. The avifauna observed was rather limited, with only pigeon, tits, robin and woodpecker noted.

Habitat features

Within this site the main habitat theme is the contrast between the open spaces provided by the grassy rides and tracks and the dense coppice understorey. There are notable thickets of blackthorn, hawthorn, brambles and tall herb vegetation. Under the thickets there is a great deal of bare soil throughout the season. There is a limited occurrence of mosses and lichens on the trees.

SITE 20 WELLHANGER COPSE

Position in the Landscape

A stable slope to the north, otherwise level or gently sloping.

About half the boundary is adjacent to crops although there is usually a narrow band of trees and a track between the fields and the wood.

Otherwise the wood is against a complex mixture of old fields, scrub, housing and some grassland.

Management Description and Habitats

- Owner with conservation management objectives.
- The upper part of the wood was blown down in the great gale of 1987 but the northern slopes were protected - about four plots.
- About four plots were in old plantations of various species.
- Piles of old cut stems were present throughout the wood but all large stems had been removed - some areas had been left - about three plots.
- Fenced pheasant pens were present in the wood - no plots fell within them.
- Some cleared areas had been planted with beech and oak - about five plots.
- Three plots were in areas which had probably been felled and had laurel growing vigorously.
- Wide rides were maintained through the wood.
- An old railway line ran across the centre of the wood.

Tree Composition and Change

- Birch and hawthorn have disappeared from the site - could be management or wind blow.
- Hazel stems have declined by about 40%, especially concentrated in the smaller classes.
- Saplings have increased fivefold reflecting disturbance.
- Laurel has greatly expanded from zero and represents a real threat to the woodland flora.
- All large beech have disappeared - presumably from the gale although some are left around the periphery. The planted stems are counted in the total for saplings. The smaller stems from 1971 have moved into the larger categories.
- Sycamore saplings have declined but the successful stems have moved into the larger size classes. Either this species was not affected by the gale or it was in a different part of the wood.
- Larch has been felled out.
- Oak has moved into the larger size classes but recruitment is from planting.
- Although ash saplings have increased the smaller trees have declined massively - either by wind blow or management, or a combination.
- As a whole, the site shows a major loss of basal area, in numbers in the smaller classes and size in the larger.
- Dead wood has almost disappeared.

Vegetation Composition and Change

- Increased: Glechoma (6-11).
- Stable: Rubus (12-12).
- Decreased: Mercurialis perennis (14-13); Rhinanthus minor (11-8); Hedera (13-9) and Viola (10-6).
- Although the common species are declining, overall more species are expanding than declining in the site as a whole.
- Overall species richness has increased by 19%.
- This suggests the impact of disturbance has benefited more species than not.
- Most species are from calcareous or neutral soils and the species that are expanding most are typical of open conditions or woodland edges.
- Hedera helix has increased (3.5 - 6.1) as has Rubus (13.4 - 19.3) but Mercurialis has declined (43.5 - 36.0).

Conclusion

This is a highly managed site that has also suffered a major disturbance.

Patterns of change in the tree structure are therefore complex with succession, planting, clearance and mature stands present in the same site.

As with Priestfield, the non-renewable resource consists of the old trees which are few and threatened by management - the structure of the site will continue to be a mosaic of patches.

The mosaic of patches has apparently led to the maintenance of diversity and is probably close to the historical cultural pattern - confirming the short-term benefits of harvesting.

SITE 21: SAPPERTON SOUTH WOOD & PICKWORTH WOOD

Two separate ancient semi natural woodlands, presumably originating from a single large block of woodland several centuries ago. The woodland is mainly ash/maple/hazel coppice with oak and ash standards, but coppicing ceased at least 50 years ago judging by the size of the ash and maple coppice stems. Ground flora is mainly a rather species poor W8a, but occasionally damper areas grade towards but do not reach W8c. Some unusual grassy areas perhaps indicate a previously more open structure, and there is certainly evidence of an old ride network in both woods - most of these have now gone. There are signs of management for shooting, mainly vehicle tracks, a large glade in Pickworth wood, and some signs of layering of coppice shoots.

Comments on plots

1. Derelict ash/hazel/maple coppice with ash standards. Lots of midland hawthorn in shrub layer. Very grassy W8a ground flora dominated by *Poa triv*, with *urtica* clumps.
2. Derelict ash/hazel coppice with crab and midland hawthorn. Very open, possibly site of old ride. Much *Poa triv*, *merc per* and *urtica*. Path intersects N edge of plot.
3. Derelict ash/hazel coppice with ash/oak standards, midland hawthorn in shrub layer. Very grassy *Poa triv* dominated ground flora in old glade perhaps. *Orchis mascula* quite frequent. Rest of plot is *merc/Urtica* dominated.
4. Derelict Ash/wych elm coppice with oak standards. *Urtica* and *Mercury* dominate a spp poor W8a ground flora. Recent layering of ash and hazel coppice poles.
5. Derelict ash, maple, hazel, midland hawthorn coppice with oak standards. Ground flora mainly *Urtica* and *Merc per*, but also wetter spp suggesting W8c. Vehicles tracks and some evidence of small scale cutting of hazel (now dead).
6. Ash, maple hazel with midland hawthorn coppice, now going to ash high forest. *Mercury*, *Poa triv* and *Urtica* dominate a W8a/c ground flora.
7. A large glade probably managed for shooting, on the edge of the wood. Damp tall herb vegetation dominated by *Fili ulm*, *Junc eff.*, *Rubus* and *urtica*. W24/M27b.
8. Derelict ash, maple, hazel, midland hawthorn coppice with oak and ash standards. Much fallen lying deadwood. Ground flora mainly *Urtica*, *Poa triv* and *Merc per* with a little *Allium* to one side. W8a/f.
9. Ride and Derelict ash/maple/hazel coppice with ash and oak standards, and self sown ash maidens, some midland hawthorn in shrub layer. Ground flora richer on ride but now being replaced by *merc per* as canopy closes over ride.
10. Abandoned ash/maple/hazel coppice with sparse midland hawthorn. Field layer sp poor, mainly *Merc per*.
11. W8 spp poor W8a, dominated by *Merc per*. Old ash coppice with hazel and midland hawthorn.

12. W8 with low canopy (ca 25m). Shrub layer of *Crataegus* and *Cor av.* *Merc*, *Poa triv* and *Urtica* in a species poor field layer. Ride intersects plot, kept open by vehicle access (cutting?).
13. Derelict W8a Ash/hazel/maple with midland hawthorn, with oak and ash standards. Grassy bank runs through plot WNW-ESE.
14. Old ash/maple/hazel coppice with oak and ash standards. Self sown Ash maidens, with both hawthorns in shrub layer. Ground flora quite spp poor, a hint of more soil moisture but still W8a.
15. W8a. Ash/maple and oak coppice with oak standards. Eutrophic, dominated by *Urtica*, sparser *Merc per*. Developed A horizon in soil profile (only plot in wood).
16. Derelict ash/hazel/(midland hawthorn) coppice with oak/ash standards and some singled ash coppice (?). Open shrub layer *Urtica* dominated ground flora.

SITE 22. PARK WOOD

Location and Landscape Context

Park Wood is a discrete area of diverse mixed woodland of some 40-50 ha in extent approximately 1 km west of the village of Stoney Stoke, Somerset. It occupies an area of gently sloping west-facing ground ranging from 80m to 120m asl. The woodland contains two large artificially created fishing ponds. The woodland is surrounded on all sides by open land, mainly arable, but with some permanent pasture. The woodland boundary is marked by a combination of stock fencing, stone wall and post and rail fence, which should be effective in excluding livestock from the site.

Ecological Site Factors

The site is located on the Jurassic Great Oolite limestone strata giving rise to heavy textured calcareous clay soils, which are rather wet in places. The climate is of the warm dry/ warm moist lowland type.

Management Factors

The entire woodland has been under the ownership for many years of a private individual who lives locally. It is managed fairly actively for a combination of timber income and sport - both pheasant shooting and fishing. Two large fenced pheasant rearing pens have been created and poults are raised for the annual shoot. Two large artificial fishing ponds have been created and extended over the years, and these carry wildfowl which may be shot. There are high seats within the wood for shooting roe deer. An extensive network of tracks and mown rides has been created to facilitate access to these various sporting locations. Some parts of the woodland have been converted to conifer crops since the last war, and there is evidence that some of the mature standing broadleaves may also be of plantation origin. The remainder of the wood is at least partly of semi-natural origin. Recently, an area of mature broadleaves has been felled and restocked with mixed broadleaves. A minor public road runs along one edge of the wood, but there is no public access within the wood without permission. The wet heavy textured soils and dense vegetation make some parts of the wood difficult to access in wet summer weather.

Stand Types

There are two distinct stand/crop types within the survey area:-

The major part of the survey area consists of mature broadleaved woodland with a high canopy dominated by ash reaching 25-30m in height. There are also mature oaks present, some of which have very large girth and may be remnants of a former wood pasture stand on the site which has infilled with other species over a long period. (An area of open wood pasture on the adjoining field was cleared about 20-30 years ago for arable cultivation). There is also a significant amount of sycamore in the wood, occurring both as large (possibly planted) individuals in the canopy and as a second storey, probably self-sown. A variety of other tree species occur including poplar and cherry (which may well have been planted) and, in one wetter part of the wood, considerable amounts of natural willow, alder and aspen. The understorey comprises abundant hazel, together with elder, field maple, hawthorn and some introduced game cover shrubs. Natural regeneration is of ash, sycamore, holly and hawthorn and is reasonably abundant. Some saplings have been planted in tubes within existing stands as well as in the restock coupe. There is a significant and varied dead wood component, both standing and fallen. The secondary component of the woodland consists of areas occupied by regular semi-mature plantations of mixed conifers and beech, planted since the last war. None of the survey sampling plots were located in these areas.

Ground Vegetation

The characteristic ground vegetation assemblage of the wood is dominated by dense thickets of *Rubus fruticosus* and *Carex pendula* reflecting the wet, fertile soil conditions. *Mercurialis perennis* is also an abundant species. Other frequent species include *Hedera helix*, *Circaea lutetiana*, *Urtica dioica*, *Ribes rubrum*, *Lamium galeobdolon* and *Ligustrum vulgare*. Among the grasses *Deschampsia cespitosa* is

locally dominant with *Festuca gigantea* and *Brachypodium sylvaticum* arising frequently also. Bryophytes can be locally dominant with *Eurynchium* spp the most abundant.

Fauna

Evidence of the presence of roe deer was found and these are being controlled over the restock area from a high seat. Some evidence for the presence of fox was observed and the skeleton of a fox or small dog was found adjacent to one of the sampling plots. Bird observations included jay, wren, sparrow hawk, pigeon, wildfowl and woodpecker. Numerous reared pheasant poults were present together with spent cartridges from last year's shoot. Shots were heard, presumably for pigeon or wildfowl adjacent to the wood.

Habitat features

The aquatic and marginal habitats created with the fishing ponds are a significant feature of this wood, as are the various glades and paths. There are various vegetative features such as bramble and herbaceous clumps. Bryophytes and lichens occur on the trees to a limited extent. On the downside, there is a fair amount of debris and disturbance associated with the pheasant rearing operations and sporting access. In places spiny game cover shrubs have taken hold, making access very difficult. The overall impression is of a dense woodland with heavy vegetation cover and wet ground conditions.

SITE 23: BETTY DAWS WOOD.

Position in the landscape.

Betty Daws is a small (c.10ha) wood separated from the more extensive areas of Dymock, Oxenhall and Greenaways woods by strips of permanent pastures and, to the north, by a minor road and the hamlet of Four Oaks which abuts the wood. The Ross spur motorway (M50) runs a few 100m's north of the site. The wood slopes gently with a south-easterly aspect over deep clay soils totally lacking rocky outcrops or breaks of slope: it is contained within a stockproof post and wire fence.

Broad habitat description.

High forest having pedunculate oak as its principal canopy. Most of the wood is referable to W8e though an area of the western expression of W10b replaces the lowland ash wood over the more elevated, more freely drained, north-western section.

Management influences.

The site is owned by the Forestry Commission and managed in conjunction with the Gloucestershire Wildlife Trust.

Hazel coppicing is practiced and many brash piles (of perhaps 5 - 10 years age) are scattered throughout. Ancient stumps attest to a former period of oak removal.

There is a central rabbit-proof enclosure containing Tully tubes (not recent) with, curiously, evidence of birch planting - the planting appears to have been largely unsuccessful.

The central area is heavily rutted through former extraction vehicle access.

Tree and shrub composition.

The wood is dominated by very tall straight well grown, widely spaced, Pedunculate Oak with ash as the principal subsidiary.

Tilia cordata, *Taxus baccata* and *Sorbus tormentalis* are scattered throughout whilst an area close to the eastern margin supports a stand of mature Beech (probably native).

A hazel understory is present throughout the wood though its density is very variable as is the density of tree regeneration: in some areas seedlings and young saplings especially of ash, oak and wild cherry (*Prunus avium*) are prolific, in other areas regeneration is sparse.

Ground flora composition.

Bramble dominates the lower layers; its density being such that in parts of the north-western portion of the wood the diversity of the ground flora is much reduced: elsewhere a very rich ground flora is present which features large stands of wild daffodil, a characteristic of the woods of this area of south Herefordshire and north Gloucestershire.

The variability in the dampness of the soil and in the level of bramble cover is reflected in the range of plot records for herbaceous species plus bryophytes: 16 - 55 with a mean of 29 species per plot.

Although narrow the path edges support a rich and diverse flora.

Fauna.

There is evidence of badgers, foxes and rabbits.

Small rodents are also plentiful but there was no evidence of grey squirrel.

The scant wreckage of one rabbit was suggestive of a stoat kill.

Bird activity was moderate at the time of survey: Chiffchaff, Garden warbler, Buzzard and Nuthatch were the more notable species.

Conclusion.

Betty Daws is a very attractive wood fully deserving its SSSI status: its overall condition is favourable and the species of note are present as sizable and healthy populations.

SITE 24 HILL WOOD

Position in the Landscape

- The wood is on almost level ground with calcareous clay soils.
- One third of the boundary is occupied by crops.
- One third, permanent pasture.
- One third, short-term grassland.
- Management Description and Habitats
- One private owner.
- Half of the woodland was cleared in the mid-1970s for agriculture and is now short-term grassland used for organic farming.
- The rest of the site is mainly ancient woodland although there is a small plantation of poplars and a few exotics in one section.

Tree Composition and Change

Apart from the poplar plantation, the tree population has remained stable.

Vegetation Composition and Change

SITE 25 PAPWORTH WOOD

Position in the landscape:

Papworth Wood is situated to the west of Papworth village, backing on to the grounds of Papworth Hospital to the west. The wood now is considerably larger than that indicated on the 1:50000 and 1:25000 maps, with well established plantation to the east, and large areas of newly planted woodland to the north-west on former arable land. A broad strip of set-aside arable land extends around the rest of the north-east.

In common with much of the rest of this part of Cambridgeshire, the wood is on flat ground.

The wood is much used by local residents for recreation.

Broad habitat description

The area surveyed here is largely ancient woodland surrounded by a large ditch and bank earthwork, with a small area of secondary woodland outside the bank in the south. The major woodland type is W8c with large areas dominated by suckering *Ulmus*, much of which has died in recent years leaving large quantities of dead timber in places.

Management Influences

Papworth Wood was traditionally managed by coppicing *Corylus avellana* and probably other species such as *Acer campestre* and *Crataegus monogyna*. There appears to have been little recent management. The southern extremity of the wood outside the wood-bank appears to be of relatively recent origin. Rubbish has been dumped here, and it is possible that chickens or rabbits have been kept here. This is reflected in the composition of the ground flora.

Tree and Shrub composition

The major canopy tree is *Fraxinus excelsior* with *Acer campestre* locally, and occasional *Quercus robur* and *Acer pseudoplatanus*. The shrub layer is varied. *Crataegus monogyna* is abundant throughout, *Corylus avellana* is locally well-developed, and other species include *Sambucus nigra*, *Euonymus europaeus*, *Acer campestre*, *Prunus spinosa* and *Crataegus oxycantha*. One of the most striking features of the wood is the abundance of suckering *Ulmus* spp, chiefly *U. minor*, but also *U. procera* and rarely *U. glabra*. Much of this *Ulmus* has died from Dutch Elm Disease, and there are consequently large quantities of dead standing and fallen timber in several places.

Ground Flora composition

Although the wood has a diverse ground flora, it is not particularly species-rich, probably as a result of the lack of management and heavy shading. The most abundant species in the ancient part of the wood include *Poa trivialis*, *Ranunculus ficaria*, *Hyacinthoides non-scripta*, *Geranium robertianum*, *Glechoma hederacea* and *Rubus fruticosus*. *Mercurialis perennis* is uncommon. *Ranunculus auricomus* is locally frequent.

The southernmost part and the extreme western margin have a ground flora indicative of disturbance and nutrient enrichment, dominated by *Anthriscus sylvestris*.

Fauna

There were many signs of deer activity and damage, probably roe and muntjac. Few birds were recorded.

Conclusion

Papworth Wood is potentially of considerable conservation importance. It has however suffered in recent years through lack of management, the ravages of Dutch Elm Disease and the activities of deer. Some opening up of the canopy, re-coppicing and deer control would improve the wood both for wildlife and as a public amenity.

SITE 26 LOOCOMBE WOOD

Location and Landscape Context

Loocombe Wood is a small isolated area of mature mixed woodland of some 10 ha in extent lying 1 km north-east of Stratton-on-the-Fosse, Somerset. It occupies both sides of a small stream valley and hence is predominantly either south-east or north-west facing at elevations ranging from 130m to 150m asl. The floor of the valley contains two artificial fish ponds which are believed to date back to management by the monks of Glastonbury Abbey. The woodland is surrounded by open ground - comprising both permanent pasture and arable land. Some of the pasture has recently been planted with broadleaved tree species in a woodland creation scheme by the owner. The boundary of the woodland is marked by a wire stock fence in varying condition and in places only by a thin hedge.

Ecological Site Factors

The site is located on the Triassic mudstone/ Keuper Marl geological strata giving rise to fine reddish clay and clay loam soils, which are fertile and can be locally calcareous. Some areas in the valley bottom were subject to ground water influence and were moist. The climate was of the warm dry/ warm moist lowland type.

Management Factors

The woodland is jointly owned by the Duchy of Cornwall (Manor Farm property) and by a neighbouring private farmer (Moore's Farm). Both owners manage the woodland primarily for sport - a combination of fishing in the two ponds and pheasant shooting, with both owners maintaining active pheasant rearing pens within the wood. There does appear to have been some occasional felling of trees in the last decade or two, but the material was not extracted due to access difficulties. The standing timber is a combination of semi-natural valley woodland and policy plantings of a variety of conifer and hardwood species.

Rhododendron and cherry laurel have been introduced, probably as game cover, and have come to occupy significant areas of the site. There was no evidence for recent tree planting within the wood, but the Duchy of Cornwall have recently planted a neighbouring field with mixed broadleaves in tree shelters as a native woodland creation scheme. There is public access on foot through the site on designated footpaths, and there is now vehicle access to one part of the site to facilitate pheasant rearing work. The two fishponds were mechanically cleared of marginal vegetation some 15 years ago.

Stand Types

The woodland comprises a rather variable mixed species canopy, the semi-natural matrix of which is dominated by tall straight ash up to 30m in height with some mature oak and alder. Into this have been introduced a variety of other non-indigenous tree species by old policy plantings of Douglas fir, beech, horse chestnut, sweet chestnut etc. One area has been replaced by a regular plantation stand of Sitka spruce of 20-25 years standing which was suffering badly from defoliation, possibly resulting from an *Elatobium* infestation.

The secondary canopy is dominated by elm and sycamore, with the latter likely to stem from planted parent trees. There is then a complex and inconsistent understorey including hazel, holly, hawthorn, elder, apple, guelder rose and also introduced rhododendron and cherry laurel, which have become dominant over significant areas of the site. Natural regeneration was sparse, including occasional ash, hawthorn and holly saplings. There is a significant dead wood component, both standing and fallen.

Ground Vegetation

The ground vegetation is diverse but shows more consistency than the tree and shrub component in that *Allium ursinum* is the dominant species in most parts of the wood, leaving significant bare soil after its seasonal collapse. *Rubus fruticosus* is the other abundant species. Other frequent herb species include *Circaea lutetiana*, *Hedera helix*, *Mercurialis perennis*, *Lamium galeobdolon*, *Dryopteris dilatata*, *Urtica dioica*, *Ranunculus repens* and *Veronica montana*. The poisonous umbellifer plant *Oenanthe crocata* was abundant near the stream side. Grasses are not a major part of the vegetation assemblage in

this woodland, with only *Deschampsia cespitosa* occurring regularly. Bryophytes are locally abundant, with *Eurynchium* spp the most common type found.

Fauna

There was evidence for the presence of roe deer and badger within the wood and also extensive mole diggings on the alluvial flat areas of the site. The avifauna recorded was diverse and included jay, buzzard, wren, grey heron, pigeon, sparrow hawk, wildfowl, magpie, blackbird, robin and woodpecker. There were numerous pheasant poults in the wood and spent shotgun cartridges from previous shoots. Broken clay pigeons were also found.

Habitat features

For a relatively small woodland there are a wide range of habitat features including both slow and fast streams and the two large fishing ponds. There are a number of paths, as well as a ruined building and the pheasant rearing pens and equipment. On the vegetative side there are blackthorn, rhododendron and laurel thickets; clumps of fern, nettle, bramble and umbellifers and tall herb vegetation. Bryophytes on the trees were a more minor feature here than at other sites. The spread of laurel and rhododendron is a worrying feature of this site, as it shades the ground vegetation out and chokes the wood.

SITE 27: RIVEY WOOD

- Areas of mature Frax, Acer camp and Corylus coppice, with one large Q rob coppice, some Prunus avium.
- Ulmus procera dominant in other areas (elm invasion?), including coppice.
- Field layer rather species poor, mainly Merc per, Urtica and Poa triv. Occasional Glec hed, Hyacinthoides, Carex sylv, Stac sylv. Thamno alop/angus locally abundant.
- Recent storm damage and elm dieback.
- No management.
- Heavy recreational use (local kids and dog walkers).
- Some rubbish and fly tipping.
- Evidence of strip lynchets (?) on northern edge of wood.
- Stream arises from shallow valley through centre of wood, exits wood to South.
- Contours on 1st edition OS map are in wrong place, showing valley exiting wood to SE.

SITE 28 SPITAL WOOD

Position in the Landscape

The upper part of the wood is in a narrow strip about 100 m wide along the edge of a dry watercourse. The lower part extends away from the watercourse into a more gently sloping valley side. The wood is surrounded by intensive arable crops and there was circumstantial evidence that the run-off is affecting the ground vegetation because of the high edge to area relationship and local increase in *Urtica dioica*. Some edges of the wood have a bank and ditch with an overgrown hedge on the bank suggesting an ancient origin.

Management Description and Habitats

Estate owned.

The upper 100 m of the wood has a small pheasant pen (one plot).

The central section of the wood consists of collapsed elm, both English and suckering, some of which is re-growing - five plots.

Of the two lower sections, about four plots consist of relatively undisturbed woodland.

Two plots were in a plantation of about 20 years.

The remaining plots are in what appears to be overgrown secondary woodland.

For a small site there is therefore a range of conditions.

Tree Composition and Change

Hawthorn saplings have declined but there is a major increase in all larger size classes - maybe as a result of disturbance and subsequent development.

Suckering elm saplings and trees have greatly declined but have still maintained a significant number of stems in the smaller classes indicating regeneration from suckers despite the elm disease.

By contrast, the wychelm has virtually disappeared, presumably because it cannot regenerate from suckers.

The hazel population has matured losing small size classes.

Sycamore has declined greatly - perhaps because it cannot compete with the vigorous ground vegetation following the opening of the canopy.

The few larch trees have matured.

Small oaks have virtually disappeared otherwise the population has matured.

Ash saplings and small trees have matured into larger size classes.

The overall pattern is dominated by the change in elm, with a massive decline of dead stems.

Ground Vegetation and Change

Increased: *Hyacanthoides non-scriptus* (9-100); *Poa trivialis* (13-15); *Rubus fruticosus* ((10-12).

Decreased: *Hedera helix* (10-8); *Mercurialis perennis* (15-13);

Lamiastrum galeobodolon (15-12); *Milium effusum* (11-7); *Silene dioica* (16-11).

More species have declined than increased both in the most common species and in terms of numbers.

Overall species richness has declined by 13%.

The central area of the wood - the main cause for the massive increase in *Urtica* and the losses are probably in this area.

Different parts of the wood could therefore be following different trajectories.

There has been a great increase in cover of three species: *Urtica* (2.2 - 28.0); *Rubus* (11.0 - 18.5) and *Mercurialis perennis* (11.5 - 12.8) with a decline of *Lamiastrum* from (19.6 - 1.5).

Conclusion

The lower part of the wood is relatively stable, partly because it is not affected by the elm disease and partly because it is wider and buffered against agricultural run.

The upper part of the wood (apart from the pheasant pen) is massively affected by Dutch elm and is now virtually pure *Urtica* and *Rubus* due to light increase.

The site shows the complexity of change at a local level albeit different parts of the wood can follow different trajectories.

SITE 29: MEDMENHAM WOOD

Medmenham wood lies on a hill overlooking the Thames in South Bucks. The plateau area includes an (Iron age?) hill fort with Beech high forest, the shallow upper slopes have Oak/bramble/bracken woodland on clay with flints, some of which is very open and has a parkland feel to it. On the steeper slopes, chalk outcrops and ash-mercury woodland is typically here. 60% of the wood was knocked over in the 1987 storm. Some fallen trees remain on the ground from this event, mainly on the steep slopes. Elsewhere clearance and replanting has happened with varying degrees of success. The current owners do minimal management in the wood, other than tidying up and mowing a permissive path used by local walkers. One plot (1) now lies in the next door garden and was not surveyed. Another (2) lies half in next door garden and tennis court.

Comments on plots

1. Land-use change. Plot 1 now falls within the garden of "The Hermitage". Not surveyed.
2. Half plot lies in next doors garden/tennis court. Planted *Fagus* hedge runs through centre of plot. Otherwise dominated by *Bet pend* and *Urtica* on old spoil heap.
3. *Corylus* coppice (with *Frax* and *Q robur* coppice nearby outside plot) with W8a ground flora. Ca 50y old Corsican pine/cherry/sycamore planting, with more recent self sown *Fagus* and *Sycamore*. Understorey cleared. Some pine thinning in past.
4. Ride (mown daily) intersects plot. To north, *Corylus* coppice with *Sambucus* and some *Bet pend* pole stage. To South occasional *Fagus* and *Frax* standards with dense *Bet pend* regen. Some tree clearance following 87 storm.
5. Very open beech high forest with good deadwood resource.
6. Hillfort ditch and bank with *Fagus* pollards/stubs, from wood pasture? 87 storm damage cleared leaving rootplates and stumps. Post 87 birch regen now at pole stage - some has been thinned. Nettles occupy hillfort ditch.
7. Formerly mixed coppice W8. Spruce/Pine/*Fagus* planted ca 50y ago, with self sown birch and sycamore. Some Pine and Birch now dead (standing and fallen) 87 storm? Thinning has led to Ash/sycamore/birch regen. Management: *corylus* recently coppiced (ca 3 yrs).
8. Very open Beech/oak high forest, bordering on parkland/wood pasture. W10b field layer.
9. Large open glade, regularly cut (twice a year). W25, dominated by *Hy n-s*, with large patches of *Urtica* and *Pteridium*.
10. Replanted post 87 storm (60% of wood was knocked over in storm). Beating up more recently. No weeding apparent.
11. *Fagus* high forest, with *pteridium* and *Hyac n-s* in field layer. Broken *Bet pub*, standing dead. Some old singled *Fagus* coppice stools.
12. Plot on steep S facing slope, exposed chalk rendzina. Recent storm damage - many fallen broken *Bet pend*, uprooted *Fagus* still on ground. *Corylus* coppice and *Ligustrum*. Some replanting with *Frax*, *Prunus* and *Fagus* (post 87?). *Merc per* is only frequent species in sparse field layer.

13. Steep slope above Marlow road. Fagus maidens with Frax pole stage, some struggling Bet pend in understorey. Recent storm damage to mature Ilex coppice just outside plot. Large Fagus felled in 87 left to rot.
14. Old Frax/Acer camp/Cor av coppice, more recently gone to Urtica and Sambucus (nutrients increase). Corylus stools cut around 10 years ago. Frax stools not cut for >50y. Fagus lost in 87 storm? W8a type ground flora, some Pteridium., Surprisingly nettly.
15. Much of plot is dense bramble, much litter. One old root plate and a standing dead Fagus give testament to the 87 storm. Post 87 tree planting, evidenced by many tuly tubes, most now empty, although a few Fagus have survived. Mown path runs thru plot, adjacent to fence line.
16. Probably old Fagus high forest, now young Acer pp dominates - either coppiced or resprouted from fallen stems post 87 storm - large fallen rotting Fagus from 87. Merc per and Urtica dominate field layer. Must exposed soil.

SITE 30: PIDDLERS WOOD, STURMINSTER NEWTON, DORSET

Location and Landscape Context

Piddles Wood is a large discrete area of mixed woodland of some 80-90 ha in extent approximately 1 km south-east of Sturminster Newton, Dorset. It occupies north-facing slopes and undulating plateau ground on the south side of the River Stour valley, ranging from 70m to 110m asl. The woodland is surrounded by a combination of permanent pasture and arable land with some rough grazing. The buildings associated with a chicken farm adjoin part of the wood. The woodland is bounded by a varied combination of wire stock fencing, bank and ditch and thin hedge - however it is essentially open along one side where a minor public road skirts the wood.

Ecological Site Factors

The site is located on the Jurassic Kimmeridge clay geological strata giving rise to relatively fertile clay and clay loam soils. In the upper parts of the site there appeared to be a capping of more acid sandy drift giving rise to lighter, less fertile soils. The climate is of the warm dry/ warm moist lowland type.

Management Factors

The entire site is under the long-standing ownership of the privately-owned Hinton St. Mary Estate, but a management agreement is in place with the Dorset Wildlife Trust over much of the area. The woodland is managed as a county nature reserve and is subject to SSSI designation. There is open public access throughout the woodland on an extensive network of rides and paths, with a public car park at the upper edge of the site. The ongoing conservation management includes the progressive restoration of hazel coppicing under oak standards over large parts of the site. Hazel at a variety of stages of the coppicing cycle is present. Some parts of the woodland were restocked by the Estate during the 1970's and 1980's with a variety of conifers, principally hybrid larch, and it is assumed that these stands are intended to produce a final crop of timber.

Stand Types

There are three distinct stand/crop types present within the survey area:-

Large semi-natural areas with mature spaced oak standards up to 25m in height over a recently re-coppiced understorey of hazel, with some birch and hawthorn also present. Where the hazel understorey is less dense there has been initiation of a dense thicket of birch, bracken and brambles; but in other areas the ground is essentially bare under the more recently cut hazel stools. Natural regeneration of ash, hawthorn and holly was observed.

A semi-natural area along the lower edge of the woodland where the hazel has not yet been re-coppiced and where the oaks are more widely spaced. Here the oak stand is infilled with a dense stand of overstood ash and hazel coppice with some holly, maple and hawthorn also present. There is some dead wood in this area.

Several discrete areas where the semi-natural woodland was replaced in the 1970's and 1980's by regular plantations of conifer species, mainly hybrid larch.

Ground Vegetation

The most abundant species throughout the woodland are *Pteridium aquilinum*, *Rubus fruticosus*, *Hedera helix* and *Hyacinthoides non-scripta*. *Hyacinthoides* mainly occurs in the denser stands along the lower edge of the woodland where the soils are probably more fertile, while *Pteridium* and *Rubus* dominate the vegetation in the upper, more open areas. Other herb species which occur frequently are *Dryopteris dilatata*, *Dryopteris filix-mas*, *Lamiastrum galeobdolon*, *Melampyrum pratense*, *Lonicera periclymenum*, *Luzula pilosa*, *Carex sylvatica* and *Solidago virgaurea*. The more common grasses on the site are *Deschampsia cespitosa*, *Holcus mollis*, *Holcus lanatus*, *Anthoxanthum odoratum* and *Agrostis capillaris*. Bryophytes only occur locally with *Thuidium* and *Eurynchium* the most common along with *Rhytidiadelphus loreus*.

Fauna

A fox was sighted within the survey area, and some evidence was found for the presence of roe deer and rabbit. The bird species observed were buzzard, wren, finches, tits and robin.

Habitat features

The main habitat feature of this site is the diversity in stand structure promoted by the re-coppicing work. This has created a number of glades, together with vegetative habitats such as dense bracken, hazel groves, bramble clumps and tall herbaceous vegetation. There is some occurrence of bryophytes on tree trunks, but not especially abundant. In those more open areas of the site where hazel is sparse and dense bracken has taken hold, it may be difficult to secure regeneration of oak in the future. Care needs to be taken to regulate light levels reaching the forest floor by restricting the size of canopy openings.

SITE 31 BALSHAM

Position in the Landscape

- The wood is on more-or-less level ground.
- Surrounded by a bank and ditch and is therefore probably of medieval origin.
- The wood is surrounded by arable land is close to a small village.
- Management Description and Habitats
- Estate owned.
- The wood consists of different blocks with contrasting management histories.
- Some compartments have been recently felled and replanted with broadleaved trees or left to regrow (6 plots). Exotics have also been removed.
- Other compartments (9 plots) are mature woodland of various ages / structure.
- Wide rides, both old and new are present through the wood.
- The wood is in estate ownership and is managed primarily for game, with a long term management plan. There is also a policy of conversion to hardwoods.

Tree Composition and Change

- Ash shows a typical self-thinning profile with increase in larger size classes and decline in small stems.
- Oak shows stable position, with evidence of removal of large stems.
- Pine, widespread in 1971 now removed except for two stems.
- Sycamore shows increase in large size classes otherwise stable.
- Wychelm quite widespread in 1971 now completely absent.
- Small recovering of suckering elm saplings.
- Small recruitment of beech but loss of hawthorn.
- Understorey of hazel almost identical in 1971 and 2000 reflecting stable matrix of management.
- No ash saplings recorded in 1971 with many recorded in 2000.
- Smaller dead stems stable, larger show small increase, reflecting competition in older stands.

Ground Vegetation and Change

- Ground flora consists of widespread species in lowland woods with *Mercurialis*, *Glechoma*, *Urtica* and *Rubus* most frequent.
- These species have hardly declined in frequency.
- But overall species richness has declined by 19%.
- There are many ancient woodland indicators, some of which have decline slightly.
- Some species are present typical of recently coppiced areas.
- In terms of cover, *Mercurialis* has increases slightly against the overall trend.
- By contrast, *Rubus* and *Urtica* have declined.
- The decline in *Scilla* is probably a seasonal effect.
- Overall however, the situation is stable reflected in the maintenance of species numbers.

Only one species has increased in frequency: *Glechoma hederacea* (9-10). One species, *Rubus* has stayed the same and the following species have declined: *Hyacinthoides non-scripta* (10-9); *Mercurialis* (15-14); *Urtica dioica* (11-10); *Poa trivialis* (12-10); *Primula elatior* (10-5); *Circaea lutetiana* (14-6); *Geum urbanum* (13-4).

The following species have decreased in cover: *Hyacinthoides non-scripta* (11.6 - 1.1); *Primula elatior* (5.3 - 0.2) and *Urtica dioica* (14.3 - 1.9) whereas *Mercurialis* (20.4 - 37.3) and *Rubus* (5.4 - 19.3) increased in cover.

Conclusion

- The contrasts in management have maintained a matrix of different conditions of successional stages favouring a range of species and habitats.
- This type of management reflects the traditional practices in such woods over many centuries - especially following the removal of most exotics.
- The bank and ditch system perhaps protect the wood against external influences, in conjunction with its shape also giving minimal boundaries.

SITE 32: HODDESDON PARK WOOD

Quercus petraea standards with Carp bet coppice over most of the wood, other species e.g. *Ilex*, *Corylus*, *Betula* spp., *Fagus*, *Fraxinus*, *Pop* trem less frequent. Ground flora usually sparse or absent, occasional patches of *Holcus mollis*, rarely *Anemone* on damper ground. Pt aq sometimes quite dense, usually scattered. Occasional pteridophytes e.g. *Dry carth*. Ongoing management by owners Woodland Trust, includes coppicing in small and large areas next to streams and by paths and thinning of *Q petraea* standards. Rides and footbridges maintained for high recreational use, mainly dog walkers.

Comments on plots

1. Coppicing and removal of standards recently. Q pet stds over Carp/Cor av coppice. Sparse ground flora.
2. Recent coppicing of Carp bet and removal of some Q pet standards - large logs still on ground. Sparse Pt aq otherwise little ground flora.
3. Some recent coppicing of Carp bet. Q pet standards over carp bet coppice. Plot slopes down to small stream, slightly damper here. Field layer v sparse, mainly *holcus mol* and bryos.
4. Some coppicing of carp bet in last 5 years. Q pet stds over Carp bet coppice. No ground flora.
5. *Carpinus* recently coppiced on edge of plot. Q rob and Q pet Stds over Carp bet coppice. Sparse field layer - patches of dense bracken.
6. Unmanaged except for very southern edge - part of recently cut coppice coupe. Plot lies south of road in belt of unmanaged woodland. Q pet (many dead) and Carp bet standards over Carp coppice. Very little ground flora, but much Carp and *Acer Plat* regen.
7. Recent clearance (coppicing). Q pet standards over carp bet coppice with occasional *Bet pub* and *B. pend*. Sparse gd flora though *loni per* and *rub frut* occasional.
8. Carp bet and *Ilex* recently coppiced. *Carpinus* coppice with Q pet standards. Occasional *Ilex*. Streams runs through eastern edge of plot.
9. Some Carp bet recently coppiced, dead wood on ground from Q pet felling. Q pet standards over *carpinus* coppice, recently cut. Pt aq, *loni per* *Melampyrun* and *Holc moll* ground flora.
10. Ride side coppicing on northern edge of ride. Plot lies to N of main E/W ride. Ride-side coppice. Inaccessible - Carp/Bet pend/Cor av coppice to 3m. Dense matrix of *rub frut*, *Rosa*, *Loni per*, *Cham ang* and *Car pend* to 2m. Ride surface itself rich in mesophytes.
11. Ride/access track runs through centre of plot. Some recent coppicing of Carp bet on one side of ride. Carp bet coppice with Q pet standards. No ground flora.
12. Ex Q pet standards over Carp bet coppice, now going to high forest, with emergent *Ilex* in shrub layer. Sparse ground flora under fairly dense Pt aq.
13. Q. pet standards over Carp bet coppice. No ground flora, no management.
14. Unmanaged ex-coppice, Carp bet coppice with Carp and Q pet stds. No ground flora.

15. No management. Plot lies in damp Southern part of wood, next to woodbank. Q pet standards over Carp bet and Cor av coppice, with Pop trem. Pteridium and sparse cover of other ferns, over bryos, otherwise little ground flora. Large veteran Q pet maiden.
16. No management. Q pet standards over Carp bet coppice, with occasional Crat oxy and Malus. No ground flora except along edge of bank. One small patch ferns.

SITE 33: DOCKSIGHT WOOD

Position in the landscape:

Predominantly Ash wood on sometimes quite shallow boulder clay. There is a gentle slope, and undulation but the ground falls away to the north west and the stream and pond. It is surrounded by arable, and reseeded setaside grassland meadows with some coniferous and hardwood plantations. On the Western side there is a stream and large pond with interesting charophytes etc.

Broad habitat description:

An ash woodland with Sycamore, a little oak, and some hornbeam and Elm. Some indication that it is ancient

Management influences:

The woodland is sparsely fenced and is the dormitory for a substantial population of Fallow deer. Moles and Badgers are also in evidence. The owner has been prevented from fencing the wood and culling the deer, and there is evidence of only light management in the form of the trimming of some fallen trees.

Tree and shrub composition:

Oak - Ash wood with some Hornbeam, Elm, Beech and Sycamore. Shrub layer almost entirely Elder, but occasional *Crataegus oxycanthus* and *monogyna*.

Ground flora composition:

Dominated entirely by *Mercurialis* and *Urtica*, with some *Rubus*. There are rides throughout the wood in varying levels of use with a more diverse flora, including *Hyoscamus niger*, *Astragalus glycyphyllos*.

Fauna:

Extensive grazing by fallow deer, with many badgers, squirrels, moles and evidence of rabbits.

Conclusion:

Fine trees, ground flora depauperate and lack of regeneration due to deer grazing

Comments on plots

1. Badger city. Much elder brash with *Mercurialis*. Ash all around plot
2. Ancient woodland with mature *Quercus*, *Malus sylvestris* and *Crataegus oxycanthoides*. Ground flora sparse and poor, probably due to deer.
3. Rather better quality ancient woodland next to an old wood bank. *Crataegus oxycanthoides* in plot
4. Bare soil and litter with sparse nettle and *mercurialis* under an oak glade
- 5.
6. Elder over *mercurialis* and nettle, with *Acer ps.* above. Open. Badger set close by and there are plenty of runs. Fallen branches and log
- 7.
8. Hazel in plot. Deer tracks throughout

9. Sambucus regenerating. Rather nice bit of ancient woodland with large mature Quercus and Acer campestre. Dull ground flora dominated by Mercurialis and Poa trivialis
10. Sambucus regenerating. More open than much of the wood with abundant Brachypodium sylvaticum
11. Hornbeam grove with mercury, Two large ashes and a fine adjacent just outside the plot
12. Ash grove with hornbeam nearby. Dense mercury and nettle. No bramble
13. Crataegus oxycanthoides in plot
14. Nice trees, shame about the ground flora
15. Sambucus nigra regenerating, and there are standing moribund Elm trees. Rather disturbed in the past. Some fine Fraxinus and Acer pseud. With a poor ground flora dominated by dense mercurialis
16. Dense mercurialis, sawn branches on fallen logs.

SITE 34 LUN'S HILL WOOD

Location and Landscape Context

Lun's Hill Wood is an isolated block of mature mixed species woodland of some 7-8 ha extent approximately 1 km west of Keinton Mandeville, Somerset. It occupies essentially level ground with only a very slight slope to the south at an elevation of 40-50m asl. The woodland is surrounded on all sides by actively cultivated arable land, with no other significant tree cover within a 1 km range. The site is bounded by a bank and ditch with a light hedge in places.

Ecological Site Factors

The site is located on the Jurassic Lower Lias geological strata, giving rise to very fertile, but rather poorly drained calcareous clay and clay loam soils. The climate is of the warm dry/ warm moist lowland type.

Management Factors

The woodland is wholly owned by the Kingweston Estate who manage it for pheasant shooting (with an active rearing pen and hoppers) and for occasional saw timber. In recent years two small patch clearfellings have removed some mature Norway spruce and possibly also some oak and ash. These areas have been restocked with planted mixed hardwoods in tree shelters, although strong weed growth of sedge and thistle species makes management access to these areas difficult in summer. Evidence of rabbit workings was found in the wood, and it is likely that roe deer will use the site periodically as there is no fencing. There is a network of small unmade rides, but these will become untrafficable in wet weather due to the heavy textured soils present.

Stand Types

The woodland contains two distinct stand/crop types:-

Most of the area is occupied by a mature stand of spaced oak standards reaching 25-30m height, infilled with younger ash, some of which appears to be of overstood coppice origin. Some or all of the overstorey may be self-sown, although it would be difficult to detect past planting of the oaks now. There is an understorey of variable density including light hazel, field maple, birch and hawthorn. In places privet and the game cover species snowberry form a low thicket. There are occasional patches of sycamore and mixed conifers. There was some evidence of past selective fellings of hardwoods. There is a limited deadwood component provided mainly by windfallen hardwood branches.

About a third of the woodland consists of regular stands of maturing planted Norway spruce which is some 25-30 years old and may indeed have been present as young growth at the time of the last survey in 1971. Patch fellings of this material have begun in recent years, probably slightly in advance of the economic rotation, and it is being replaced with mixed hardwoods planted in tree shelters.

Natural regeneration is very sparse due to the heavy canopy shade and consists of scattered oak, ash, birch, holly and hawthorn saplings.

Ground Vegetation

Under the mature canopy the ground vegetation is always dominated by *Hedera helix* and *Mercurialis perennis* either in mixture or individually. A suite of other species occur less abundantly, but rather consistently across the site, including:- *Rubus fruticosus*, *Tamus communis*, *Iris pseudacorus*, *Urtica dioica*, *Geranium robertianum*, *Rumex sanguineus*, *Viola riviniana* and *Circaea lutetiana*. Occasional species include *Listera ovata*, *Arctium minus*, *Arum maculatum* and *Galium aparine*. Grasses are limited by shade to occasional *Agrostis capillaris* and *Brachypodium sylvaticum*. Mosses do not occur significantly other than on specialist habitats, with *Eurynchium* being the only species worthy of note. In those areas where the canopy has been felled a dense and impenetrable thicket of *Carex pendula* and *Cirsium arvense* has developed, reaching 2-3m in the summer season, with some expansion of the grass species as associates.

In some areas there is a considerable amount of bare soil, especially where pheasant rearing activities have increased traffic on foot.

Fauna

Rather few signs of animal life were found with scattered rabbit diggings and the sighting of a mouse or vole being recorded. A variety of birds were noted including:- jay, buzzard, thrush, wren, pigeon and blackbird. No pheasants were present but there was a well maintained rearing pen with satellite feeders and evidence of previous years' shooting.

Habitat features

Within such a small woodland the variety of habitat features was rather limited. The development of thickets of the game cover shrub snowberry was worrying as was the tendency to such thick herbaceous weed growth whenever the canopy was broken. A particularly notable feature of this wood is the exceptionally strong growth of ivy and honeysuckle on mature oaks, with the stems sometimes reaching several centimetres in diameter. There is a limited amount of deadwood within the system due to timber management. Bryophytes and powdery lichens occur on mature tree trunks and branches, but are not especially abundant.

SITE 35 WHITBARROW

Position in the landscape

The site lies on a west-facing limestone scarp slope, with gradients increasing from 0-10° in the west to 60° or more in the east of the site. Stretches of vertical limestone cliff run along parts of the eastern boundary.

The north-western boundary merges via stock fencing into permanent pasture and scattered woodland remnants. The site is defined to the west by a country lane, and to the south merges directly into woodland. The eastern margin of the site is marked by the top of the scarp slope, with a mosaic of woodland, grassland, limestone pavement and scree to the east.

Broad habitat description

A highly diverse woodland ranging from open glades and recently cut hazel coppice beneath well-spaced standards, to dense even-aged stands of yew and blocks of mature conifers. Understorey and ground flora diversity varies across the site. Substrate pH varies from deeper acid soils to shallow, free draining basic soils, overlying Carboniferous Limestone and Silurian slates.

Management influences

- Three different owners; Cumbria Wildlife Trust, Lake District National Park Authority, and one private owner.
- The site lies within the much larger Whitbarrow SSSI, a NCR site, and within Morecambe Bay Pavements SAC. Part of the site is also managed as a nature reserve by CWT, and as a Local Nature Reserve by the LDSPB.
- All plots were lightly to moderately grazed by deer, hare and rabbit.
- Much of the site has long been managed as coppice with standards, with eight plots containing old hardwood or conifer stumps, and ten plots containing coppice stools, three cut within the last five years.
- Three plots were sites within mature exotic conifer plantations.
- Much of the site is actively managed for nature conservation, with fenced exclosures, selective felling, recent coppicing and bird and bat boxes.

Tree and shrub composition

Fifteen plots contained canopy trees, including oak, ash, birch, gean, alder, yew, sycamore, willow, wych elm, hawthorn, yew, Scots pine, Douglas fir and Sitka spruce. Eleven plots contained an understorey component of young trees, hazel or blackthorn. The site as a whole is mainly even-aged upland ashwood with areas of oak-birchwood, yew groves, and alder carr, with other scattered tree and shrub species including small-leaved lime, common whitebeam, spindle, buckthorn and wild privet.

All plots contained dead wood, mainly in the form of fallen branches or old stumps.

Bryophytes and lichens were mainly established on tree bases and trunks.

Ground flora composition

Ground flora diversity was generally moderate to species poor, with plots often sited beneath moderate to dense canopies.

Grass species diversity and coverage was generally low, apart from one plot in a windblown spruce plantation where grass cover was 80%.

Bracken occurred in five plots in total, and in two as the dominant species.

Bare ground and rocks were frequent, particularly on steeper slopes and beneath dense yew or conifer canopies.

Bramble was dominant in two plots, and stinging nettle in one.

A poor to moderate litter layer occurred in six plots, and mosses occurred in all plots, exceeding 50% cover in two plots.

Fauna

A typical range of bird and animal species were noted including great spotted woodpecker, raven above the canopy, and field signs of roe deer, fox and badger.

Conclusion

Whitbarrow exhibits a great structural and species diversity of tree, shrub and ground flora. Grass, bracken and litter layer cover is variable and generally low. There was a good diversity and coverage of bryophytes and lichens, and an abundance of deadwood.

The site has been managed in the past as coppice with standards, and areas have been converted to conifer plantation. Whitbarrow is now managed for nature conservation and amenity objectives, and active management includes the provision of nest boxes, recoppicing of hazel stools and maintenance of a network of footpaths.

SITE 36: PIKE GILL WOOD

Position in the landscape

The site is a narrow riparian strip lying on moderate slopes on both sides of the Hunt's Gill Beck, which drains to the north-west into the River Roeburn. Small rock outcrops occur at the northern end. The north-western tip of the site is defined by a country lane, and the south-eastern tip merges into further open riparian woodland lining Hunt's Gill Beck. All other boundaries grade abruptly into permanent pasture via sheep fences in various states of repair.

Broad habitat description

Even-aged, dense-canopied, upland ashwood, with small areas of alderwood, upland oak-birchwood at either end of the site, and a variable understorey and ground flora. The substrate is mildly base-rich heavy clay, with small areas of more acid influence, overlying Millstone Grit and Culm Measures. The upper slopes are generally dry, and the lower slopes damp or flushed.

Management influences

- One private owner.
- One plot lies within a formally grazed pasture of improved grassland and marshy grassland. All other plots were woodland, often heavily grazed by encroaching sheep and cattle, and by deer. Three woodland plots were heavily poached by sheep and cattle.
- Five plots contained old hardwood stumps, and eleven plots had old coppice stools, suggesting the site was formerly used as a source of coppice material.
- *Rhododendron ponticum* is invading at the northern end of the site.
- Tree and shrub composition
- The fifteen woodland plots generally had a moderate to dense even-aged canopy, with dominants including ash, oak, sycamore, birch and alder. The shrub layer ranged from absent in four plots, to a sometimes dense understorey of blackthorn, elder, young hawthorn, rowan, wych elm, ash, and holly, and stands of hazel.
- Fourteen plots contained dead wood, mainly in the form of small fallen trees and branches.
- Bryophytes and lichens were well established on tree bases, trunks and branches in all but two plots.

Ground flora composition

Ground flora was variable, ranging from species-poor plots beneath dense canopies and on poached riverside benches, to species-rich basic flushes.

Grass species occurred in all plots, but approached dominance in only four.

Bracken occurred in only three plots as a minor component.

Only five plots had a significant litter layer. Moss cover exceeded 30% in five plots.

Fauna

Birds, animals and signs encountered were mainly limited to crows, rooks, pigeons, sheep, cattle, grey squirrel and rabbit, with dipper seen in Hunt's Gill Beck.

Conclusion

Pike Gill Wood is a largely even-aged riparian woodland remnant, threatened by ongoing heavy grazing pressure and by invasive species including *Rhododendron ponticum* and sycamore. Ground flora diversity, understorey cover, grass species diversity and moss cover are all variable. Bracken and litter cover are low. Small dead wood is generally abundant.

Past management has included the informal use of the site as livestock shelter and as a source of coppice material and small timber.

SITE 37: BIRKS BROW

Position in the landscape

Aspect ranges from northerly to southerly, but is predominantly easterly. Much of the site occupies an undulating plateau of gentle slopes less than 25°, with a series of narrow ridges running north-east to south-east across the site, with steep slopes, 25° to 45°, falling away to the east. A number of small streams drain the site to the east and south.

The north-eastern and south-eastern boundaries are defined by small country lanes, with the site grading into semi-natural broadleaved woodland to the south-west, and changing abruptly at a stone dyke and wire fence to permanent pasture to the west and north.

Broad habitat description

The site is essentially high forest of straight-stemmed and narrow-crowned oak, sycamore and birch, with a dense canopy, poorly developed understorey, a variable ground flora and often a heavy leaf litter cover. The distribution of plant communities reflects the topography and the underlying geology of Silurian slates and grits. Soils vary from thin or absent on rocky scree to shallow rendzinas on podzols, with deeper brown earths in hollows or gentler slopes.

Management influences

- One private owner
- All plots were moderately grazed by deer and/or sheep.
- Two plots contained recently coppiced ash and willow. One plot was bisected by a new deer fence, and other parts of the site contained deer-fenced exclosures. Much of the woodland has been managed as coppice with standards in the past, with hardwood stumps in nine plots and coppice stools in thirteen plots.
- Deer-fenced exclosures have been erected to promote woodland restoration via limited planting of native broadleaves, and natural regeneration of tree, shrub and ground flora species. Selective felling has created small regeneration coupes.

Tree and shrub composition

The woodland is generally an even-aged high forest, with oak dominating the canopy in ten plots. In the other plots showing a canopy, sycamore, birch and/or ash were dominant. Other occasional tree species included sweet chestnut, holly, rowan, alder and yew. The understorey was generally sparse, and largely limited to coppiced hazel, with occasional coppiced ash and willow.

Dead wood habitats of fallen trees or branches were abundant in twelve plots.

Lichen and bryophyte growth was diverse and abundant, occurring on most tree bases, trunks and branches.

Ground flora composition

- Ground flora species diversity was generally moderate to poor, with only three plots showing a good range of species.
- Grasses cover was generally high, exceeding 50% in five plots.
- Bracken occurred in eight plots, and was dominant in four plots.

- Leaf litter was variable in occurrence, but abundant in areas of dense canopy. Bryophyte cover was also variable, and occasionally high.

Fauna

A typical range of bird species was noted. The site is used for game management, especially as pheasant cover.

Signs of roe deer, sheep, badger and occasional anthills were encountered.

Conclusion

Birks Brow is predominantly even-aged high forest, previously managed as coppice with oak standards. Understorey and ground flora species diversity has therefore been compromised and is generally moderate to low. Grass species are abundant and a number of woodland clearings are dominated by bracken. Litter and bryophyte cover is variable according to site, substrate and canopy density. Current management is seeking to restore parts of the woodland via selective felling to create gaps, and by small-scale planting of native broadleaves, and encouraging natural regeneration of tree, shrub and ground flora species within deer-fenced exclosures.

SITE 38 CRAIGHALL GORGE

Position in Landscape

Spectacular steep sided, in parts precipitous river valley woodland which forms part of a designed landscape associated with Craighall Estate. The surrounding area is relatively intensively managed agricultural land. The valley is of the River Ericht which is a highly prized salmon river. Part of the west margin of the site is bounded by the A93.

Broad Habitat description

Much of the accessible woodland is planted but ground and shrub layers are relatively semi natural with much multi-stemmed hazel. Less steep areas which have been planted in the past are typical of estate plantation woodland with large mature hard woods and conifers with little or no shrub layer. Species rich areas occurred by wetlands and streams and particularly on the east bank of the River Ericht. As much of the woodland has been planted the trees are relatively even aged and being mature casting very dense shade in places. Several plots had frequent seedlings but few with saplings. Rhododendron dominates in some areas.

Management Influences

The site is essentially a plantation woodland with highly significant plant communities on steeper slopes which could be regarded as semi natural. There are remnants of a system of paths and tracks in parts of the wood and some paths are well used providing access for the salmon fishery. The site is under multiple ownership and is an SSSI and cSAC. The owner of Craighall notes that the greatest change is the loss of elms, some of which can still be seen as standing dead timber. A management plan has recently been prepared for the woodland which aims to strike a balance between the return to native species and the designed landscape. Rhododendron and exotics have been recently surveyed and a programme of selective removal is in progress.

Tree and shrub composition

Oak is the dominant hard wood probably mostly of plantation origin with a mix of mature ash, beech, rowan, sycamore, birch and exotic conifers. Due to the density of the canopy there is little regeneration although seedlings are frequent. Hazel is the predominant shrub layer appearing in 7 quadrats. Elm has persisted in the woodland although sparsely.

Ground flora composition

A varied site in terms of ground flora. Five quadrats in the middle of the site are dominated by *Luzula sylvatica*. *Mercurialis perennis* forms a significant community in five quadrats at both ends of the site, bryophytes are significant throughout with a maximum of 50% at Q3. Bracken dominates at Q13 - 60% and rhododendron predominates at Q4 - 75%.

Fauna

A badger sett was noted by Q8 with paths throughout the east side of the river. Red and grey squirrels are reported to be present on site with report by the owners son of grey squirrel with red squirrel kit in mouth. The river is renowned for salmon and there were a number of fishermen at the time of the survey. Salmon are an Annex 1 species. Deer browsing was noted in five quadrats. Greater spotted woodpecker were seen during the survey.

Conclusion

Old estate woodland in dramatic location with some magnificent specimen trees noted. The cSAC is partially designated for its bryophyte interest. The cliffs at Q9 precluded safe access perhaps partly due to high river levels at time of survey. Landslips have occurred recently and it may be that land has slumped since the 1970's at this location with saplings of ash, elm and sycamore indicating relatively recent disturbance.

SITE 39: HAVERIGG HOLME

Position in the landscape

The site lies on north and west facing slopes, varying in steepness from 10° on the upper slopes to 30° to 45° at the base. Low rock cliffs, blocky scree and glacially smoothed rock exposures are scattered throughout the site. A fast flowing shallow stream runs along the north-western boundary of the site. The site is bounded on all sides by dry stone dykes in good repair. To the north and west the site merges abruptly into improved, semi-improved and marshy grassland on lower ground. To the east and south on higher ground, the site merges into a mosaic of dry heath, wet heath, acid grassland and extensive stands of bracken.

Broad habitat description

A former upland oakwood site, largely degraded by woodland clearance and conversion to grassland. The site is now broken up into a mosaic of open wood pasture, open rocky acid grassland, and in the north of the site, an even-aged oak-dominated woodland with dense canopy, little understorey, a species poor ground flora, and occasional mature larch. Occasional springs and small flushes occur along the lower slopes, and a small basin mire has developed in a hollow on the upper margin of the site. The substrate is largely acidic.

Management influences

One private owner.

Two plots were woodland grazed only by deer. Of the remaining unwooded plots, nine plots were semi-improved grassland, two plots were open woodland pasture, and two plots were grassy scree, all seasonally grazed by sheep. The final plot was ungrazed mire.

The presence of larch in the remaining woodland area suggests management of the woodland for fencing materials.

Ten plots contained old hardwood stumps, nine of these in unwooded plots, indicating relatively recent woodland clearance.

Tree and shrub composition

Only four plots contained trees or shrubs. The two woodland plots were high forest dominated by oak, sycamore, larch and alder, with no understorey. Two plots on blocky scree contained small oak and hazel. Two plots in open woodland pasture contained no trees but lay in a matrix of scattered mature oak. Only two plots contained dead wood.

Bryophytes and lichen cover on trees was limited to the wooded plots.

Ground flora composition

Most plots were moderately species rich. Plot 7 exhibited the greatest species diversity, being partly sheep-fenced and lying on very steep and rocky ground on the lower margin of the wood.

Grass cover exceeded 50% in all but three plots.

Only one plot contained bracken as a minor component.

All plots showed a sparse litter layer, while moss cover exceeded 25% only in Plot 7.

Fauna

The site supported a good mix of bird species including buzzard, great spotted woodpecker and a range of tit species.

Animal field signs included grey squirrel, roe deer and occasional anthills.

Conclusion

Haverigg Holme has been severely degraded over the last few decades by piecemeal woodland clearance to make way for upland sheep grazing. Much of the surviving woodland remnants, including woodland pasture, show little or no understorey or natural regeneration, and are threatened by sustained grazing

pressure from sheep. Grass species are dominant across much of the site, and ground flora diversity is moderate, although bracken is scarce. Deadwood, litter and moss cover are generally low in abundance. Frequent hardwood stumps indicate an ongoing policy of woodland clearance.

SITE 41: COED YWENALLT

Position in the Landscape

- The woodland lies on the east-facing slope of a U-shaped valley. The topography is very steep, exceeding 45° in some areas.
- There is no clearly defined boundary to the woodland as the area adjoins other woodland and merges into scrub.
- The immediate surrounding landscape features include permanent pasture, a large lake and a high, mountainous terrain with several vertical rock out-crops.

Broad Habitat description

- An ash (*Fraxinus excelsior*) and alder (*Alnus glutinosa*) dominated woodland, which ranges from having a good to a less well developed understorey. The ground flora is also variable, with some plots recorded as being more species- rich than others. There are several open glades throughout the woodland and at the foot of the slope the woodland extends onto an area of floodplain.
- Four fast flowing streams filter down the slope and feed into a river, which lies at the foot of the valley.

Management influences

- Coed Y wenallt is privately owned and has large fenced areas within the central part of the woodland utilised for domestic grazing. Whilst sheep were noted to be present within nine of the plots, the woodland was not overgrazed. No other form of management appears to have been undertaken throughout the woodland.
- A public footpath, which appears regularly used, runs along the entire length of the bottom of the slope.

Tree and shrub composition

- Throughout all sixteen plots, both ash and alder were equally abundant. The presence of alder reflects the wet conditions of the woodland.
- Hawthorn (*Crataegus monogyna*) and hazel (*Corylus avellana*) were the characteristic shrub species, occurring consistently across most of the plots.
- Ash is the main regenerating species and was present within five of the plots.
- The woodland had a good proportion of dead wood, which included several fallen and uprooted trees.
- Bryophytes were more abundant at the base of trees and scattered up the trunks.

Ground flora composition

- The ground flora composition throughout the woodland was variable, with all plots representing an intimate mix of grasses, ferns and herbaceous plants.
- There was a high percentage coverage of rock within five of the plots, reflecting the boulder strewn nature of the woodland.

Fauna

Faunal species present within the woodland included squirrel and rabbit. There was a varied bird assemblage including raven, wren, robin, long tailed tit, blue tit, great tit, blackbird and magpie.

Conclusion

Coed Ywenallt is an upland ash and alder dominated woodland, with an understorey characterised by hawthorn and hazel. A diverse ground flora is characterised by an intimate mix of grasses, ferns and herbaceous plants. Regeneration throughout the woodland is generally very poor.

Other features of the woodland include boulder-strewn slopes and a number of streams filtering down through the site.

With the exception of light grazing there is no other evidence of past or present management within the woodland.

SITE 42 CALLENDER

Position in the Landscape

- The wood is in two sections:
 - Below the road (5 plots)
 - Directly adjacent to River Spey.
 - Steep slope and c. 50 m level ground.
 - River forms lower boundary, fertile grass upper.
 - Above the road (11 plots)
 - Mainly a steep, often boulder-covered slope.
 - Some flush lines and open ground.
 - Fertile grass below wood, open moorland above.

Management Description and Habitats

- Estate owned
- Woodland open with low basal area.
- No evidence of recent management of either blocks.
- Birch trees looked moribund.
- Large oaks in lower section looked originally as if planted.
- New (within 3 years) fence in upper section with no obvious purpose.
- Local management for game but no evidence for this objective in the site.
- The steep slopes make access difficult which may be why the wood is not utilised for game at the present time.

Tree Composition and Change

- Over 90% of stems recorded at both dates were birch.
- Otherwise there was some rowan and a few oak, alder and birch cherry.
- There was no understorey except for a few hazel recorded in 2000.
- The loss of stems of birch from almost all classes between 1971 and 2000 suggests natural mortality followed by wind blow, although there could have been some local harvesting.
- The number of saplings had greatly declined and from observation these were mainly old multiple stems.
- The number of dead stems has also declined, virtually to zero confirming the above comments.

Ground Vegetation and Change

- Dominated in frequency by widespread calcifuges especially *Calluna*, *Pteridium*, *Vaccinium myrtillus*, *Festuca ovina* and *Galium saxatile*.
- Few ancient woodland indicators present - mainly species from open grasslands and moorlands.
- With the exception of *Pteridium*, virtually all these species have declined.
- The increase in canopy of *Pteridium* (almost 40%) provides the probable explanation
- Many other species also show decline over the period.
- There is a significant overall loss of species.
- The following species have increased: *Pteridium aquilinum* (13-14). The following species have decreased: *Agrostis canina* (10-7); *Agrostis capillaris* (10-7); *Deschampsia flexuosa* (13-10); *Galium saxatile* (13-10); *Viola riviniana* (14-11); *Calluna vulgaris* (10-8); *Axthoxanthum odoratum* (12-7); *Blechnum spicant* (12-7); *Veronica officinalis* (10-5); *Potentilla erecta* (14-8); *Vaccinium myrtillis* (10-4); *Festuca ovina* (13-6).
- The average ground cover has almost doubled with *Calluna* (7-8) and *Deschampsia* (4-5), *Carex echinata* and *Pteridium* (14-52) all increasing whereas no species have declined.

Conclusion

The site is representative of open birchwood in the north of Scotland.

Little recruitment of trees is taking place and the tree population is declining

The dense *Pteridium* cover means that regeneration is unlikely. There is also deer grazing.

Such woods are likely to continue to decline in tree cover under present conditions.

SITE 43 SEATOLLER WOOD

Position in the landscape

The site lies on a steep, predominantly south-east facing hillside, with gradients of 15° to 60°. Rock outcrops and loose scree occur throughout the site. A number of fast-flowing shallow streams drain the site, including Newhouse Gill and Sourmilk Gill.

The northern boundary is bordered by semi-improved grassland fields. To the west and south lies open hill ground of wet heath, dry heath, rock and bracken. The south-eastern boundary is defined by the River Derwent and a country lane. Much of the northern part of the site is bounded by stone dykes in variable states of repair, and the southern part of the site merges into open hill grazing.

Broad habitat description

Predominantly upland Atlantic oakwood, with areas of upland mixed ashwood and wet birch and alder woodland, a sparse understorey, and a variable but often species-rich ground flora. The soils vary from acid to basic, and overlie tuffs and lavas of the Borrowdale Volcanic Series.

Management influences

- Owned by the National Trust and leased to a local farming tenant.
- Seatoller Wood forms part of a woodland NCR site, a biological and geological SSSI, an Atlantic oakwood SAC, and supports red squirrel. The lichen and bryophyte flora of the site is particularly rich.
- All plots were moderately grazed by hare, rabbit, sheep and deer. The site is formally grazed by sheep.
- Only two plots within small conifer plantations contained old stumps, indicating little felling of mature trees in the recent past within the woodland as a whole.
- Mature yews near Plot 10 are protected by a small deer-fenced enclosure.

Tree and shrub composition

- Ten plots occurred under a woodland canopy, generally dominated by ash and a sparse understorey of hazel, hawthorn, holly and rowan, with larch, beech, Norway spruce and Scots pine dominating the canopy within small exotic plantations. The survey plots were atypical of the site as a whole however, and the site is generally dominated by a fairly even-aged canopy of sessile oak, with frequent ash, sycamore, birch, alder, willow, rowan, and holly, and occasional yew, hawthorn, wych elm, bird cherry, aspen, and small-leaved lime. The sparse understorey is composed of young trees and abundant coppiced hazel.
- Only four plots contained dead wood, mainly in the form of fallen branches, although dead wood was frequent throughout much of the site.
- Bryophyte and lichen growth of a diverse range of species was profuse on tree bases, stems and branches.

Ground flora composition

- The diversity of ground flora in most plots was moderate to rich. Again, this was slightly atypical of the whole site, since most plots occurred under light to moderate canopies or in the open, rather than more species-poor shaded situations.
- Grass species diversity was universally low, although coverage was generally high, with nine plots exceeding 50%.
- Bracken occurred in all but one plot, an acid flush, and was the dominant species in eight plots.
- Only one plot had a significant litter layer, while most plots showed a high abundance of moss.

Fauna

The site supported a good range of bird species including green and great spotted woodpecker, sparrowhawk and raven, and nesting and roosting holes were present in many old trees. Wood ant nests were abundant.

Conclusion

Despite its conservation status, Seatoller Wood is still subject to formal sheep grazing, which is seriously compromising the restoration and regeneration of tree, shrub and ground flora species. Grass species and bracken coverage is consistently high. Litter layer coverage is generally low and deadwood is variable. The lichen and bryophyte flora is diverse and profuse.

The site has been subject to long-term use as livestock grazing and shelter. The woodland has probably also been used as a source of fuel wood, small timber and coppice products. The national significance of the site for nature conservation has long been recognised, and it has now gained international importance as a component of the Borrowdale suite of Atlantic oakwood remnants.

SITE 44: NEW LAUND & HIGH WOOD

Position in the landscape

The site is split between woodland on very steep south-east facing slopes, 30° to 45°, above the River Hodder, and adjacent grassland on undulating knolls and hollows on higher ground with an aspect running from north-west through to south-east. Numerous small streams drain the site to the north-east and south-east.

To the west, north and north-east, the site merges across well-maintained sheep fencing into improved and semi-improved grassland. To the east the site is bounded by the River Hodder, and to the south the site merges directly into semi-natural broadleaved woodland.

Broad habitat description

Improved and semi-improved grassland with occasional scattered small broadleaved trees, adjacent to mixed woodland with blocks of existing and cleared conifer plantation, and areas of upland oak-birch woodland, upland mixed ashwood, and alderwood. Within the woodland area, the canopy is dense, and both understorey and ground flora are variable, with frequent base-rich flushes on the lower slopes being particularly species-rich. Substrate acidity is also variable, with the grassland area showing strong base-richness, and the woodland area markedly decreasing in acidity from north to south and with decreasing elevation.

Management influences

- One private owner
- The nine grassland plots were generally heavily grazed by sheep and cattle. Woodland plots showed occasional light grazing by deer.
- Two woodland plots contained old hardwood stumps and five woodland plots had old coppice stools, suggesting the woodland has been managed as coppice with standards in the past.
- Parts of the woodland at the northern end of the site have been converted to conifer blocks, mainly mid- to late-rotation Scots pine.
- The southern part of the wood is used for game management, with the release of pheasants and much evidence of trapping and snaring of predators.
- Tree and shrub composition
- Of the seven woodland plots, those at the northern end of the site support more acidic oak and birch dominated woodland, and conifer plantations. Moving from north to south, ash and wych elm become dominant, finally merging into slope alder-dominated woodland on lower ground at the southern end of the site. Sycamore and beech of all sizes occur throughout the woodland. Understorey shrubs vary from absent to occasional holly and hazel, and occasional dense stands of regenerating birch, sycamore, ash and suckering wych elm.
- All seven woodland plots contained deadwood, mainly in the form of fallen branches.
- Bryophyte and lichen growth was frequent on tree base, trunks and branches.

Ground flora composition

Of the grassland plots, the more improved swards showed the least species-diversity. Woodland ground flora increased in diversity from north to south, being particularly species rich on base-rich flushes on the middle and lower slopes.

Within woodland plots, with the exception of one damp and rocky flushed area, grasses cover was low. Bracken was infrequent, occurring in only two woodland plots as a minor component.

Only two plots had a moderate litter layer, with mosses also generally low in abundance.

Fauna

Bird life was generally sparse, apart from numerous pheasant in the southern woodland area, and heron and dipper on the River Hodder.

The grassland areas were grazed by sheep and cattle, and within the woodland were signs of roe deer, rabbit, fox, and badger.

Conclusion

New Laund and High Wood is a valuable site degraded in the past by conversion to grassland and conifer plantation, but with great potential for restoration. The surviving semi-natural woodland is largely even-aged, with a dense canopy and sparse understorey. However, areas opened up by conifer removal are allowing some regeneration to occur, although much of this is sycamore. The woodland ground flora is especially diverse in areas of base-rich flush. Deadwood is frequent, but litter and moss cover are generally low.

The grassland is intensively managed as sheep and cattle grazing. The woodland has in the past been managed as coppice with standards, and more recently parts of the site have been converted to conifer plantation, some of which has been removed in recent years. The remainder of the woodland is used for game management.

SITE 45 FOGOESBURN WOOD

Position in Landscape

- Much of this woodland is on very steep slopes on the sides of the Fogoes Burn.
- The surrounding land is pasture and arable land.
- Old railway embankment on western perimeter.

Management Description and Habitats

- Parts managed for nature conservation and other sections for timber production.
- The ancient semi-natural areas show little evidence of recent woodland management.
- The larch plantation is being managed for timber production.
- Ground flora diversity has been almost completely lost from larch plantation. *The conifers are mature and widely spaced with no shrub layer and a field layer largely dominated by bracken.
- The remaining semi-natural section shows a good woodland structure, but much of the canopy is sycamore, which has probably replaced elm.
- The field layer in the semi-natural area is diverse and includes ancient woodland indicator species including goldilocks buttercup (*Ranunculus auricomus*). The bryophyte flora is reasonable but there are very few epiphytic lichens.
- The wood provides good bird and mammal habitat, with evidence of deer and badger over much of the site.
- Though there is some evidence of the public visiting the wood, there is little disturbance except where the public right of way on the old rail line borders the wood. This is part of the Derwent walk and used by walkers and cyclists, and part of the rail embankment fell into one of the quadrats.
- Access to the quadrats close to the Burn was difficult because of the steep slopes and very wet conditions underfoot plus large bramble thickets.

SITE 46 - WHITE CLIFF WOOD

Position in the Landscape

- On the edge of the town of Loftus with the A174 trunk road running along the northern perimeter of the wood and the railway along the southern side.
- The woodland lies on steep slopes on either side of a small tributary of the Kilton Burn, and at the far western end of the wood the burn runs through a steep sided inaccessible gorge.
- One section of the woodland just below the road has been completely cleared because of a landslide which caused part of the road to collapse. This area has been re-landscaped and replanted with trees.
- Small areas have also been cleared to allow the burn to be culverted and there is still a good deal of disturbance along parts of the burn.

Management Description and Habitats

- This is an amenity woodland managed by the local authority.
- Much of the woodland away from the road and burn shows no signs of recent management.
- There are old coppice stools suggesting the wood was managed as coppice with standards in the past.
- There are a number of public footpaths and steps have been taken to improve these by the use of short section of board-walk and wooden steps.
- The only recent planting is on the re-landscaped area mentioned above. The planting is of native trees.
- The woodland structure is good in most areas away from the paths, and trees recorded included small-leaved lime, though this was restricted to one area of the wood. The woodland includes a large number of sycamore.

SITE 47 CORRIE SHALLOCH GORGE

Position in Landscape

Corrie Shalloch gorge is an incredibly dramatic feature with a well known public view point which is predominantly owned by the NTS. The gorge has vertical sides and is very narrow and very deep. The site straddles the River Broom and is adjacent to the A835 which bounds the eastern margin. The western margin is bounded by a new deer fence and the woodland lies adjacent to species rich moorland with bracken.

Broad Habitat description

There is mature semi-natural woodland associated with the gorge and some well established hard wood planting along the roadside and further down the valley. Mature birch is dominant on the bouldery slopes above the gorge and below the road with flatter areas having a peaty/marshy substrate. The valley in the lower northern part of the site broadens out towards Braemore junction where it is dominated by mostly semi-natural woodland with some very mature birch and the remains of fields containing relatively species rich grassland. On the west side where the land is flatter above the gorge there is an area of mature commercial coniferous plantation.

Management Influences

The NTS manage the gorge as a public amenity, where the only access is via a path to the bridge spanning the gorge and a view point. The rest of the gorge is too steep and fenced off from public access. There has been some tree felling of exotic species and planting of natives between the road and the gorge edge. The west side coniferous plantation is managed for timber production. The northern end was grazed until recently and currently appears to be unmanaged.

Tree and shrub composition

Betula pendula is the dominant tree with regeneration in 50% of plots. Rowan is frequent with regeneration present in 3 plots. Hazel is the only shrub species, recorded in 3 plots. The highest diversity is in Q7, due to the planting of mixed hardwoods. Mature aspen was a significant feature at the north end of the site, growing on the alluvial plain with extensive suckering, appearing as a result of grazing pressure being removed. Mature mixed planted hard woods are a feature of the eastern margin of the site along the road.

Ground flora composition

Grass forms a predominant component of the field layer (greater than 15% in all quadrats). *Molinia caerulea* is significant in 5 of these with at least 5% cover. Bryophytes are also a major component of the ground flora in all quadrats ranging from 10-70% cover. In 12 of the quadrats bracken accounts for at least 10% of the cover, up to 70% in Q5. Other fern species are also important in 5 quadrats with cover ranging from 10-20%.

Fauna

Deer signs were noted in 8 quadrats.

Conclusion

This is a spectacular site now being positively managed to encourage native hard woods. The northern section, which is under private ownership, is very diverse and could be regarded as wood pasture, having mature trees in herb rich meadows with rich wet areas. The western coniferous plantation is commercial coniferous forestry with little ground layer except bryophytes.

SITE 48: HENSOL WOOD

Position in Landscape.

Sometime estate woodland, now in three parts, bounded to the north and towards the hotel by the river, and divided by the railway and the M4. The rivers edge allows *Impatiens glandulifera* into the wood as a weed. The central section is partly surrounded by wet meadows with a lot of Ragged Robin, *Caltha*, and *Juncus* spp.. Aconite is in the wood and round the hedges. To the North and east the wood adjoins remnants of parkland belonging to the estate, now a hotel, of Miskin Manor, which lies in the valley of the river Ely. The water meadows are now part amenity (the local cricket pitch) and part sheep grazed. To the east of this northern section the wood extends beyond the survey boundaries to the village of Miskin. In the centre section between the railway to the north and the motorway to the south, the wood is accessed via the Scout camp through woodland and arable fields. The eastern section of these fields is quite wet with Aconite in the hedges and a fine meadow of *Lychnis flos-cuculi*. The southern section of the wood is bounded by ditches and banks, joined by partial hedges, and surrounded by arable and grassland.

Broad habitat description:

The Northern section is dominated by fine Beech and *Acer platanoides*, with a couple of open areas dominated by bracken towards the railway. The area south of the motorway is a remnant of alder coppice, planted perhaps some 25 years ago with *Populus canescens* (?). The current owner says that little has been done with it and it is very wet and the western section is overrun with bramble.

Management influences:

The northern section seems to be lightly managed as parkland remnant. Fine cherries, *Acer platanoides* etc remain to dominate the woodland

Tree and shrub composition:

The northern section is dominated by *Acer platanoides*, cherries and beech with holly thickets and a fine yew. The southern section is an old alder coppice now supplanted by *Populus* plantation. The centre section is mainly beech on the drier areas and birch and alder on the wetter areas to the west

Ground flora composition:

Impatiens is invading from the riverside in the northern section, which also has bracken dominated glades, bare areas under holly and yew, and grass dominated areas under *Acer*. The centre section is dominated by leaf litter, with areas of *hedera*, bluebell, etc. To the west the flora is a wet herb community though with much litter. In the southern section the wet herb community is overrun by *Rubus*.

Fauna:

Birds : Chiff chaff, Blackbird, Wren, Blackcap, Nuthatch, G. Woodpecker, Song Thrush, Chaffinch.

Conclusion:

Three quite separate areas with distinct characteristics separated by the railway and the motorway. All appear to have received only light management and the southern section could do with clearing and active management, though, as the owners say, it is a low priority.

Comments on plots

1. Moles. High beech, little shrub layer. Ivy ground layer with allium patches and a variety of scattered herbs scattered as individuals and many tree seedlings
2. High canopy with sparse understorey
3. Dense holly thicket, heavy canopy.

- 4.
5. Mainly birch and oak over ivy. Less bramble than elsewhere
- 6.
7. Old alder woodland with planted poplars. High poplar canopy over alder coppice with dense bramble. Some regeneration
- 8.
9. A wet poplar plantation with Alder and some Hornbeam, and completely overrun with bramble
10. Neglected coppice, Hazel, Alder
- 11.
12. Coppiced sycamore - regrowth from stumps, squirrel damage - stripped bark from branches in canopy.
13. Fallen birch and regenerating hornbeam under beech. Fine *Dryopteris affinis* and much litter. Flowering *Rhododendron* by plot towards the motorway
14. Knee deep in Bracken litter, dead bramble stems. Lots of tree stumps, fallen trees nearby, and some *Betula* regeneration. Badger set and runs.
15. Wet (ex)alder woodland with ash and a splendid cherry
16. Bluebell, Ivy and litter under Beech with *Sorbus*, *Betula* *Ilex* and Sycamore regeneration. Open.

SITE 49: PEN YR ALLT

Position in the landscape

Pen Yr Allt is predominantly north-east facing. The slope varies in steepness, with areas within the central part of the woodland exceeding a 45° angle. Topography within the southern half of the site is much more gently undulating.

The majority of the woodland is surrounded by permanent pasture. To the east, fragments of the woodland extend into areas of unmanaged grassland and scattered scrub. An intact wire fence clearly defines the entirety of both the western and eastern boundaries. There is no defined boundary at the site's very northern tip. Here, the woodland merges into a dense stand of bracken and scattered scrub. The woodland is divided at its central point by a road that is approximately 4m wide.

Broad habitat description

A sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*) dominated broadleaved woodland, with trees ranging from semi-mature to mature. The woodland's structural diversity is variable, with the southern half comprised of a greater dominance of under scrub species. Similarly, the southern half also has a higher abundance and a more species-rich ground flora composition.

Management influences

- The National Trust own the northern half of the woodland, while the southern half is privately owned.
- Evidence of grazing cattle was recorded within four of the plots, with the ground having been heavily poached. Observations of the site as a whole noted that poaching was present within a large part of the woodland's north-western corner.
- There was no evidence of silvicultural management in the wood.
- A permitted footpath runs through part of the site's northern section and appears to be utilised on a regular basis.

Tree and shrub composition

Sycamore was the dominant tree species occurring in 13 of the plots. Ash was the second dominant species occurring in nine of the plots. Pedunculate oak (*Quercus robur*) was present in four plots and there were also hybrids present within the woodland. This occasional occurrence was reflective of the woodland as a whole. Within the southern section of the woodland, there was a more diverse range of canopy species including some very mature sweet chestnut (*Castanea sativa*), birch (*Betula pendula*), wych elm (*Ulmus glabra*) and alder (*Alnus glutinosa*).

Plots within the northern half of the woodland had a relatively poor understory, with scattered occurrences of sycamore. Within Plots 4-7, however, young multi-stemmed hazel (*Corylus avellana*) was recorded as a dominant under scrub species. Sampled plots within the southern half (Plots 10 - 16) of the woodland had a very thickety understory with a more diverse range of scrub species present. Such species include holly (*Ilex aquifolium*), wych elm (*Ulmus glabra*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*) and hawthorn (*Crataegus monogyna*).

Regeneration was present within 13 plots, with the dominant species being sycamore and ash.

Dead wood recorded within the woodland was mainly in the form of fallen twigs and small branches. A higher proportion of dead wood was present within the southern half of the woodland with several larger fallen/rotten logs and the occasional fallen tree.

Bryophytes were more abundant at the base of trees and were generally profuse on the decaying logs and fallen trees. Due to the shady nature of the southern half of the woodland, which was more thickety and damp, bryophyte cover was more abundant. Ivy (*Hedera helix*) was profuse within 13 plots, growing along the floor and up the trunks and branches of shrubs and trees.

Ground flora composition

Average number of species ranged from 4-10 across all the plots. Broad buckler fern (*Dryopteris dilatata*) together with bramble (*Rubus fruticosus*) were the dominant species.

The woodland had a limited bryophyte cover and a deep litter layer was only present within six plots.

Fauna

Within plot 2, badger activity was noted to be very high. The field signs included two holes, tracks, a fresh hair, feeding activity and one latrine. Based on the number of holes outside of the sampled plot area it was evident that the hole formed part of a main sett, which was evidently well used.

Fox and rabbit activity was also generally high throughout the woodland. There were a number of fox scats and many rabbit burrows scattered throughout.

There was a varied assemblage of bird species throughout the woodland. These include robin, blue tit, great tit, woodpigeon, wren, blackbird, chaffinch, tree creeper, nuthatch, song thrush and great spotted woodpecker.

Conclusion

Pen Yr Allt is a woodland that varies in both its structure and species composition. While sycamore and ash were the dominant canopy species, the southern half of the woodland contained a range of different species such as mature sweet chestnut, birch and alder. The shrub layer was also better developed within the southern half of the woodland with certain areas of the wood being very thickety. Regeneration on the whole was quite poor, consisting mainly of ash and sycamore. The ground flora composition consisted mainly of fern species and bramble.

SITE 50: GARROCH WOODS

Position in Landscape

Part of the more extensive Wood of Ken SSSI. Woodland on slope with a north easterly aspect on the side of Garroch Hill. An unclassified road bounds the north eastern boundary of the site, a track up to Old Garroch (owners) runs through the site. The south west edge of the wood has been expanded by recent planting into moorland with areas of bracken.

Broad Habitat description

Mixed estate woodland with mature planted broad leaves, significant areas with semi natural characteristics in addition to dense relatively young broad leaved and coniferous plantation and areas dominated by rhododendron. Several small burns with associated wetlands run through the site.

Management Influences

Historically planted woodland with obvious current management including rhododendron clearance in recent years. Areas with cut rhododendron stumps and brush piles extensive with considerable quantities of both regeneration and re-sprouting from cut stumps. Some exotic species planted historically in small 'plantations', including alders, poplars and conifers. In other areas, particularly the southern corner, there is very little evidence of recent management. The track/paths created in the 1930's and marked on the map are almost totally overgrown. There is an area of recent planting in tree tubes of native species within and beyond the limits of the south western boundary, expanding the wood up the hill.

Tree and shrub composition

Canopy dominated by significant numbers of mature Oak. Other mature species predominantly ash and beech and more occasional sycamore. Ash regeneration is the most predominant, hazel forms the bulk of the shrub layer except in rhododendron dominated areas. Elm noted in Q4.

Ground flora composition

Bryophyte and litter form a significant component of the ground layer. Mixed ferns are important in 6 plots with bracken only noted in one plot at 15% cover (Q5). In 5 quadrats woodland herbs account for 15-80% of the ground cover. Rhododendron features in four plots with cover between 10-20%. Conifer seedlings occur throughout the site.

Fauna

There are signs of browsing/deer in nine quadrats. Red squirrels are reported. There was a notable diversity of bird species seen on site.

Conclusion

This is an oak/ash woodland, partially planted, with a remnant hazel understorey and woodland flora. Attempts have been made to control Rhododendron but re-growth is evident. Wetter areas by burns add to the diversity of the site. Three quadrats were located in a silage field. The very large mature hard wood trees were notable. Located in a somewhat unspoilt area of Scotland lacking in intensive agricultural management and particularly notable for the overall extent of the broad leaved tree cover in the vicinity.

SITE 51 CIL-HEN-RHOS

Position in the Landscape

- On steep slope facing north-east.
- Small stream at the bottom of slope with narrow alluvial strip.
- Intensive grassland above, at one end and below. Scrub and woodland at the other end.

Management Description and Habitats

- One private owner.
- No evidence of recent management - confirmed by owners.
- Very overgrown track, suggesting an old extraction route.

Tree Composition and Change

- Major increase in holly, both trees and saplings.
- Hawthorn has increased in size from saplings to trees although saplings maintained.
- Hazel shows major increase in all sizes.
- Beech - low frequency, stable.
- Wychelm - low frequency but disappeared.
- Sycamore - abundant in all size classes but large size classes, in particular, showed major increases. Saplings up 5 times as many as in 1971.
- Oak - relatively stable but some evidence of increasing size.
- Ash - dominant tree, all medium/large size classes increase but some evidence that large trees have died and disappeared. Large trees were seen blown over. Saplings have increased by 3 times.
- All stems - strong recruitment of saplings and shrubs.
- Dead - increase in large dead stems.

Ground Vegetation and Change

- Mainly species from neutral / mildly acid soils
- Veronica montana (10-6); Circaea lutetiana (11-4); Silene dioica (10-5); have declined but Rubus fruticosus (16-16), Dryopteris filix-mas (16-16) and D.dilatata (16-16) are stable whereas Hedera helix (11-16) and Hyacanthoides non-scripta (7-16) increased.
- Overall species richness has declined by 33%.
- Rubus has increased from 49.7 to 84.1% in cover. Dryopteris dilatata has also increased from 4.8 to 10.8%.

Conclusion

- This wood provides a good example of a tree population maturing without interference towards a more natural state.
- The ground vegetation has become less diverse due probably, to an increase in shade both from the canopy and the Rubus.

SITE 52: ALLT PENARTH WOOD

The wood is situated on the northern slopes on a steep sided hill, most of which is given over to sheep pasture. Springs, a small stream and a wet area (M23) lie to the north western end of the wood, and this goes on to a mire between the wood edge, a track, and the road. To the north east the wood is bounded by a narrow valley with water meadows, and a road. The wood boundaries are generally marked by wire fences with steep banks by the western road, and some derelict hedges. Hedges link the wood to the landscape towards the top of the hill to the west and south.

Broad habitat description:

The wood is primarily a coppiced oak wood with some birch and holly the upper slopes to the south.

Management influences:

The wood appears to be lightly managed and could benefit from the removal of the regenerating conifers.

Tree and shrub composition:

The wood is primarily a coppiced oak wood with some birch and holly the upper slopes to the south. The scant shrub layer is hazel, but this is largely missing. In the northern and lower slopes have considerable plantings of Abies with some larch. These conifers are regenerating and are suppressing the regeneration of Oak and Birch in some quadrats.

Ground flora composition:

The ground flora is dominated by bluebell and *Holcus mollis*, with *Vaccinium* and good *Dryopteris dilatata* etc. There is some Bracken and Blackberry development in the southern areas, and wet areas with *Chrysosplenium* in the northern areas.

Fauna:

Badgers, moles, squirrels, willow warbler, blackbird, wren, Robin, song thrush, Wood warbler, Ravens etc

Conclusion:

A pleasant lightly managed woodland with a light shrub layer and a considerable conifer plantation. It could benefit from the removal of the regenerating conifers.

Comments on plots

1. Much leaf litter over bare ground, branches on the ground, Densely shaded Birch canopy and dense regenerating Abies.
2. Steep sided bank shaded by large Beech external to plot with stream and wet vegetation over ½ the plot. Coppiced oak and some Abies. *Holcus* and *vaccinium* under
3. Coppiced oak with Oak regrowth smothered by conifers. *Vaccinium* under
4. Beech and conifer plantation smothering both regrowth and ground flora
5. In a v. wet, small, humus-rich valley. With coppiced oak and regenerating Abies
6. Open, coppiced oak, with little regeneration. Bluebells and *Holcus* under. Wood Warblers.
7. Oak and Abies with Holly thicket and little ground flora. Stream with some nice wetland flora
8. Coppiced oak with ash saplings and a hazel. Little management - wet, with stream

9. Oak, with sparse shrub layer and developing Rubus
10. Little Understorey - Tall Oak coppice. Willow warbler, blackbird, wren, robin, song thrush, wood warbler, ravens. Badger set, rabbits, old fencing wire, 106 nearby, old footpath near plot, larches nearby.
11. Wet with spring. Coppiced oak little understorey
12. No understorey under coppiced oak with *Holcus* dominated ground flora
13. In a small valley with stream - mosses and liverworts - to one side of the plot. Adjacent larches
14. Light shrub layer with Bluebell/Blackberry/*Holcus mollis*/ *Dryopteris dilatata* and bracken and *Lonicera* under. *Abies* regeneration nearby
15. Wood warblers. More open than 5. Little shrub layer of small hazel and holly with ground cover of bluebell *Holc. Moll* and *Rubus* with good *Dryopteris dilatata*
16. *Rubus* and *Holcus mollis* ground flora with coppiced oak and some birch over

SITE 53. BUBNEY MOOR WOOD.

Position in the landscape.

- Bubney Moor wood is one of a number of narrow, linear woodlands between Wrexham and Whitchurch which occupy the steep and heavily flushed slopes of small brooks which feed into the River Dee north of Bangor on Dee.
- The steep slopes and heavily flushed valleys of these brooks have afforded them protection from agricultural improvement in an otherwise unwooded landscape.
- The wood is owned by the Iscoed Estate, which lies adjacent to the western side of the wood and is an area of parkland and cattle grazed fields. Small-scale commercial units on the estate appear to be very low key. To the north and east the land is improved grassland with intensive dairy production

Broad habitat descriptions

- Bubney wood is a wood of two very distinct habitats.
- The western third is a steep, unstable, sandy slope with extensive badger and rabbit burrows. Bracken is dense where the canopy is open, but for much of its length there is very sparse ground flora development. Galium aparine combines with bramble to form an impenetrable tangle.
- The soil of the flat land adjacent to the brook is very humic, heavily flushed, and in places largely unconsolidated. Alder and willow, with planted black poplar, predominate over a ground flora which is dominated by extremely vigorous nettles with extensive Chrysosplenium oppositifolium and Ranunculus repens. On the drier fringes Poa trivialis and Holcus spp become more common. Mercurialis becomes more prevalent towards the southern end of the wood.
- Two areas of the wood are rich in Carex paniculata and may be referred to the W5 c unit; Chrysosplenium subcommunity of Alnus-Carex paniculata woodland.
- The two areas of W5 are separated by a larger stand, rich in elder, which may be referred to the Sambucus subcommunity of the Alnus-Urtica woodland (W6d).
- The southernmost section is less favoured by species of extreme dampness and supports the Urtica subcommunity of Ash-Alder woodland (W7a).

Management influences.

- Most of the wood is currently unmanaged
- Pheasant rearing and shooting was active between plots 8 and 9, with a large pheasant pen on the drier ground here. There was also active pheasant rearing on the adjacent land along the south-western boundary.
- Black poplar had been extensively planted, as evidenced by the derelict tulley tubes associated with many of the now mature trees
- Although owned by the Iscoed estate, there are new wooden gates along the western boundary which provide access from both the estate and the adjacent Wolvesacre Farm into the wood. The footpaths are generally well maintained and used for occasional horse riding.
- An area to the northwest of the wood appears to have been fenced to allow for woodland expansion in the vicinity of plots 1 and 2.

Tree and shrub composition

- Alder is the dominant tree species with ash scattered throughout though occurring only very sparsely in the central section.
- The populus species appear to have been introduced most successfully within the W5 stand. Their introduction is evidenced by the presence of old, derelict tulley tubes.
- The section opposite Gate Farm, away from the main influence of the brook, also features scattered sycamore, oak and sweet chestnut in a poorly expressed form of W8a.

- The understory is dominated by elder, much of it in decayed condition. A little hazel is present but appears to be restricted to the extreme northern section.
- Tree regeneration is very sparse.

Ground flora composition

- With the exception of the drier western arm, the ground flora is dominated by exceptionally robust nettles.
- Plants tolerant of damper conditions provide a suite of sub-dominants which include *Chrysosplenium*, *Ranunculus repens*, *Poa trivialis*. Apart from the prominent *Carex paniculata*, the wettest areas also support *Phalaris* and a depauperate *Carex riparia*, the former extending up steep slopes at the south of the site.

Fauna.

- Stock currently have no access but a small area in the vicinity of plots 13 -14 appeared to have been used as a cattle play-ground. Within the wood there was evidence of temporary electric fence posts suggesting a formerly more organized grazing pattern in the wood.
- There were extensive badger sets on the dry slopes, these were most extensive near the footpath at plots 6 and 7.

Conclusions

- Bubney Moor wood provides an interesting series of woodland communities with a rich and varied ground flora. The partial canopy cover over parts of the central, wettest, area of the wood suggests that much of the valley may formerly have supported a wet fen vegetation
- The robust growth of the nettles, and density of elder, suggests a level of eutrophication.
- In access terms the site would be in the nightmare category!

SITE 54: NEW CLOSE WOOD

Position in the landscape

The site covers the upper slopes of a low hill 0.5km east of Lake Windermere, and has an aspect ranging from north-east through to north-west. Slope gradient generally ranges from 5° to 25°. Occasional low rock outcrops occur through the site. A small shallow stream runs along the north-eastern boundary. The northern and north-eastern boundaries merge via stock fencing into permanent grassland. To the south-west the site merges into contiguous mixed woodland. The north-western and south-eastern boundaries are defined by country lanes.

Broad habitat description

An even-aged high forest, largely dominated by mature oak, beech, sycamore, and occasional mixed conifers, with a variable understorey and a species poor ground flora. *Rhododendron ponticum* is locally dominant in the understorey. Survey results suggest an acidic substrate.

Management influences

- One private owner, a management training company, which runs outdoor activity courses on the site.
- All plots were lightly to moderately grazed by deer, hare and rabbit.
- Five plots contained old coppice stools, four plots contained old hardwood stumps, occasional mature broadleaves have been recently felled and sawn on-site, and all mature trees are generally well-spaced, indicating past woodland management with a selective thinning regime.
- A few woodland glades, created by wind throw or the felling of mature broadleaves, have been replanted with tubed native broadleaves.

Tree and shrub composition

- The even-aged mature canopy is dominated by oak, beech and sycamore, with occasional ash, birch, gean, and mixed conifers, including Douglas fir. The variable understorey mainly comprises hazel, rowan, birch, freely-regenerating holly and thickets of *Rhododendron ponticum*.
- Nine plots contained dead wood, mainly in the form of wind thrown trees and fallen branches.
- Bryophytes and lichens were well-established on trees in twelve plots.

Ground flora composition

- Most plots were generally species poor, and moderately to densely shaded.
- Grasses coverage and diversity was variable, ranging from absent to 100%.
- Bracken occurred in ten plots and was dominant in two, and dense stands occurred throughout the woodland area.
- Litter layer coverage was variable, ranging from absent to 80%. Mosses occurred in all plots, never exceeding 20% coverage.

Fauna

The numbers and diversity of birds and animals encountered were low, and limited to a typical range of species including jay, woodpigeon, wren, great spotted woodpecker, and signs of roe deer, badger and rabbit.

Conclusion

New Close Wood is an even-aged mixed high forest, with a variable understorey. Grasses, bracken and litter coverage were variable, largely according to immediate canopy density. Ground flora, including mosses, was generally sparse and species poor. Deadwood was often abundant

The site has been actively managed in the past as high forest, and more recently used for outdoor activities. Low-key woodland management appears to be ongoing in the form of occasional selective felling and small-scale planting of native broadleaves. Natural regeneration of native species, particularly

holly, is occurring in woodland gaps. *Rhododendron ponticum* is steadily spreading from nuclei within the site.

SITE 55: CARMEL

Position in the landscape

- Carmel has a complex topography. The whole area is very gently undulating with the steepest sloping areas exceeding no more than 30°. The ground is generally very boulder-strewn and there are a number of very small rock outcrops. Plots throughout the woodland were recorded as being on both north and south facing aspects.
- The woodland is predominantly surrounded by permanent pasture, a small network of quiet roads, two farmhouses and smaller fragments of woodland.
- There is no fenced boundary to separate the woodland from pasture to the west of the site. To the east, however, there is a fence positioned 4m into the woodland, which prevents access to domestic grazing animals.
- The central section of the woodland is also fenced, although the fence is rather defunct in certain areas.

Broad habitat description

- A very shady ash (*Fraxinus excelsior*) dominated woodland that is structurally diverse. The ground flora is species-rich and supports several ancient woodland indicators.
- Contributing to the overall diversity of the woodland are two large disused quarries. The quarries are undergoing natural colonisation as grasses, herbaceous plants and scattered scrub have started to establish.

Management influences

- The majority of the site is owned by Tarmac, whilst the remainder of the site is privately owned.
- A large part of the site is accessible to cattle, which appears to have resulted in high levels of poaching. In particular, the ground flora throughout certain areas of the woodland has been heavily trampled.
- There was no evidence of past or present woodland management.

Tree and shrub composition

- The woodland is dominated by both semi-mature and mature ash trees. Other canopy species included oak species (*Quercus* sp), beech (*Fagus sylvatica*) and sycamore (*Acer pseudoplatanus*).
- There was a very abundant shrub layer throughout the woodland. Hazel (*Corylus avellana*) was a dominant occurring species, which was mature and multi-stemmed.
- Ash was the dominant regenerating species, although on a small scale.
- The dead wood component was comprised of one uprooted tree and a high proportion of fallen twigs and branches.
- Ivy (*Hedera helix*) was very profuse throughout the woodland extending up the trunks and branches of both shrubs and trees.
- Moss was also abundant, although the diversity of species was very limited. *Eurhynchium* sp was the most prevalent moss species, recorded within all 16 plots.

Ground flora composition

The woodland as a whole was very species-rich with approximately 12-27 herbaceous species recorded within each of the plots. The dominant species occurring consistently throughout the woodland were dog's mercury (*Mercurialis perennis*), bluebell (*Hyacinthoides non-scripta*) and bramble (*Rubus fruticosus*).

Fauna

In addition to grazing cattle, other fauna recorded during the survey included fox and rabbit. Evidence of fox included several scats and one visual observation. Evidence of rabbit included burrows and

droppings. Due to heavy rainfall at the time of the survey, few bird species were recorded. Species observed included wren, robin , blackbird and magpie.

Conclusion

Carmel is a species-rich and structurally diverse woodland. With the exception of grazing by domestic animals, the woodland does not appear to have received any management. The current grazing regime has resulted in large-scale poaching within certain areas of the woodland.

SITE 56: DEN OF ALYTH

Position in the landscape

This site is a lowland woodland river valley surrounded by agricultural land with woodland extending along the river valleys beyond the site. The woodland is typical river valley woodland, which extends from the break of slope down to the valley bottom and bounded by a minor road to the north.

Broad Habitats

This is a steep-sided valley with public access, paths, swing park area etc. There are many mature oak, particularly along the site boundaries, which were historically drystone walls and have now been fenced on the boundary with agricultural land. The canopy is dominated by birch with sycamore, oak, beech, and poplar dominant in different areas and alder in one particularly wet area. The shade is often dense. Rowan with occasional holly, honeysuckle and red elder are frequent in the understorey. There is patchy regeneration although ash and sycamore seedlings are particularly abundant in places. *Luzula sylvatica* is the dominant feature of ground flora with little variety in many areas. Some glades had been created where birch, in particular, had fallen and uprooted.

Management Influences

This is a Local Authority owned site managed for public access. Paths in the site are well used but do not extend into all areas. The valley woodland associated with the tributary, to the west of the site, is free of formal public access. Two apparently recreational fire sites and associated rubbish were noted. There is a large agricultural dump into the tributary river valley between Q12 and Q15. Broad-leaved trees including oak and beech, and exotic conifers have been planted in the past.

Tree and Shrub composition

The woodland is of mixed broad leaved tree species and some mature conifers many of which may have originated from planting. Dominant tree species are birch, sycamore and ash with occasional oak, alder, beech, poplar and hawthorn. Regeneration is predominantly of sycamore, hazel and beech and notably elm. A shrub layer is present in just under half the plots with hazel and red elder.

Ground flora composition

Luzula sylvatica is the dominant feature of the ground flora throughout the site with ferns and tall herb forming significant elements in places. Bryophytes are a significant element in one third of the plots with a maximum of 15% ground cover.

Fauna

Fox paths are frequent and one den was found. Signs of roe deer and/or browsing were found in 4 quadrats. Red squirrels are reported, but the wood has very few scattered conifers and no signs were seen during this survey. Jays were seen during the survey.

Conclusion

This is a well used public amenity woodland with species poor ground flora due to the predominance of *L.sylvatica*. There is a mix of semi-natural and plantation characteristics in this woodland with management apparently concentrating on access. Macro fungi are abundant in places.

SITE 57 - PINKNEY BANK WOOD

Position in the Landscape

- Pinkney Bank Wood is located on the slopes of the Kilton Burn and on small tributaries feeding into it.
- Forms part of a larger area of woodland.
- It is surrounded by grazing pasture, and some of the quadrats fell within the pasture.

Management Description and Habitats

- The woodland is partly managed by the Woodland Trust and partly by a private estate and is managed using conservation objectives.
- There appears to be no formal management, except for the footpaths within the wood.
- Part of the fencing has been allowed to fall into disrepair and cattle are grazing within the woodland and have caused a good deal of damage to the field layer. Quadrat plots did fall within this area and reflect this damage.
- The remainder of the woodland shows a good structural and species diversity.

SITE 58: COED GELLI-DRAWS

Position in the Landscape

- Coed Gelli-draws is situated in a steep sided valley. A stream runs in a north-easterly direction into a large pond, which is situated in the northern part of the wood. An open concrete drain runs through the most northerly part of the woodland.
- Surrounding land use includes permanent pasture, vegetated mine spoil heaps and some unimproved grassland which is floristically diverse. A fence encloses most of the woodland, although public access is possible via tracks at the northern end of the wood.

Broad Habitat Description

- Coed Gelli-draws is a mature, semi-natural broadleaved woodland. It is very boggy in parts and dry in others, resulting in quite a varied ground flora.
- The sward structure varies throughout the woodland. Some areas (for example, plots 10 and 11) contain mature trees, have no understorey and have a grass dominated ground flora. Other areas (such as plot 15) contain both mature and semi-mature trees, have a well developed shrub layer, and a ground flora which is rather more varied in species and structure.

Management Influences

- Only one stump was recorded within the 16 plots, indicating that the woodland has been subjected to only a small amount of management in the past. Very mature hazel is present, none of which has been coppiced. There were no signs of recent or large scale felling.
- People regularly use some parts of the woodland and there are prominent paths and motorbike tracks. Some dumping of small amounts of domestic rubbish occurs, particularly in the stream.
- Plot 16 landed outside the woodland on a nearby vegetated mine spoil heap, suggesting that some areas of Coed Gelli-draws have been cleared within the last 30 years.

Tree and Shrub Composition

- The most frequently recorded tree species was oak (*Quercus robur*), which occurs in 10 of the 16 plots. Alder (*Alnus glutinosa*) is also frequent, occurring in 8 plots. Other tree species include birch (*Betula pendula*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*) and rowan (*Sorbus aucuparia*). Hazel (*Corylus avellana*) was recorded occasionally, which has grown to a large size. Several standing dead alder trees are present.
- Regeneration consists of ash, oak, holly (*Ilex aquifolium*) and beech (*Fagus sylvatica*). Ash regeneration was very abundant in some areas.

Ground Flora Composition

The ground flora varies with the different habitats within the wood. Grass banks are present, and species such as purple moor-grass (*Molinia caerulea*), sheep's fescue (*Festuca ovina*) and common bent (*Agrostis capillaris*) are frequent here. Boggy areas contain species such as greater tussock-sedge (*Carex paniculata*) and tufted hair-grass (*Deschampsia cespitosa*), with occasional gipsywort (*Lycopus europaeus*) and marsh-marigold (*Caltha palustris*). Species such as remote sedge (*Carex remota*) and bracken (*Pteridium aquilinum*) are abundant in other parts of the woodland, and bluebell (*Hyacinthoides non-scripta*) is frequent in localised patches. Other species present include bramble (*Rubus fruticosus*), lady fern (*Athyrium filix-femina*), lemon-scented fern (*Oreopteris limbosperma*), wood-sorrel (*Oxalis acetosella*) and yellow archangel (*Lamium galeobdolon*).

Various species of macrofungi were present throughout the woodland.

Fauna

- Birds identified included greater spotted woodpecker, buzzard, raven and wren.
- There was evidence of badgers, foxes and squirrels in the wood.

Conclusion

Coed Gelli-draws is a mature, semi-natural broadleaved woodland. Oak is the most abundant species of tree, with alder and birch also frequent. Ground flora is diverse and varies between the different habitats present.

The woodland is not currently actively managed, and has been subjected only to small amounts of management in the past.

The northern parts of the woodland are used by the public for recreation. Southern parts of the woodland remain relatively undisturbed.

SITE 59: GARTFAIRN WOODS

Position in Landscape

This woodland lies on low-lying ground at the south west corner of Loch Lomond with the Endrick Water and marshes bordering it to the south and agricultural land to the east and north.

Broad Habitat description

The site is oak dominated woodland with some areas of dense willow scrub in places where it is very difficult to move around. The area is bisected by ditches many of which are very old and no longer maintained, some now blocked and silted up and very difficult to cross. The woodland is very dark in places but has good regeneration where trees have fallen, a common occurrence, particularly in Q's 11,12 and 14. The main part of the woodland is almost totally undisturbed and very wet. Also included in the site are some open marshy meadows with a little willow regeneration.

Management Influences

Cattle have access to some limited parts of the wood with the rest having only occasional or incidental grazing. It appears that access used to be more complete but many cattle were lost and drowned in the woodland so it was fenced off. The once extensive drainage system is no longer maintained.

Tree and shrub composition

Oak is the most important canopy species including some ancient and many mature with alder, birch, willow and ash with a shrub layer of willows, scattered holly, guelder rose, blackthorn and hawthorn. There are also occasional beech. There is regeneration of birch, willow, beech, alder and hawthorn.

Ground flora composition

Several rarities were found during the survey including water dock *Rumex hydrophalum*, which is a Red Data Book species. The ground flora is frequently made up of a mixture of lush tall herb, sedge rich and grassy vegetation occurring in 11 of the 14 surveyed quadrats ranging from 15 - 75% of the cover. Other grasses made up 10 - 45% of the cover in 12 quadrats - many were *Deschampsia cespitosa* dominated apart from Q's 1&2 which were improved pasture. High levels of bryophytes only occurred in 1 quadrat Q4 where *Sphagnum* made up 75% of ground cover. Bryophytes covered between 10 and 30% in 6 quadrats. *Juncus* species were important elements in 4 quadrats accounting for 10-40% of cover. 4 quadrats had high levels of dead wood ranging from 10-20%.

Fauna

Signs of mink were seen. Purple hairstreak butterflies were seen on site this year.

Cattle were found at Q8, with signs also noted at Q's 1,2,3,9 and 16. Sheep signs were seen at fewer quadrats Q's 1,2 11 &14. Signs of roe deer were seen in Q's 7, 11, 13 & 14.

Conclusion

Two quadrats were not surveyed; Q1 was under a newly cleared and constructed area and Q8 was inaccessible due to the presence of a bull and cows on two separate visits. This is an exceptionally undisturbed area of wet woodland with many rare and uncommon species and virtually no management input at present.

SITE 60 EAVES WOOD

Position in the Landscape

- A gently sloping site with the trees mainly growing out of limestone pavement.
- The north of the site is bounded by a large quarry.
- Otherwise other broadleaved woodland, permanent grassland and housing.

Management Description and Habitats

- Owner with conservation management objectives.
- Site is a SSSI
- Four plots were in old coppice.
- 12 plots had been felled, thinned or cleared to varying degrees.
- Some wide tracks have been cleared through the wood.
- A series of footpaths are present, much used by the public.

Tree Composition and Change

- Birch trees increases in a range of classes from 0 to 16.
- Birch saplings virtually disappeared 80-2.
- Holly saplings and trees increased from low base.
- Hawthorn increased in size classes but saplings declined.
- Sycamore trees largely removed but saplings have also almost disappeared.
- Pine removed except for isolated species.
- Oak - larger size classes increased, saplings declined.
- Ash trees quite stable but only 10% of saplings now present.
- Hazel very abundant - small stems down by 50%, larger stems increased.
- Overall only 10% of saplings still regenerating.
- Evidence of removal of lower size classes but some larger classes have increased.
- Virtually all dead stem classes have declined.

Ground Vegetation and Change

- Species rich limestone woodland
- Most species of calcareous/neutral soil types
- Many ancient woodland indicators
- Increased frequency: *Brachypodium sylvaticum* (11-12).
- Decreased: *Tercrium scorodonia* (11-1); *Rosa* (16-3); *Mercurialis perennis* (16-0); *Lonicera* (11-7); *Fragaria vesca* (14-12); *Dryopteris filix-mas* (10-6).
- Nationally scarce *Carex digitata* seen in a number of plots
- The most frequent species have declined.
- Overall species richness has declined by 36%.
- The loss of *Mercurialis* and *Dryopteris* suggests deer grazing - supported by local anecdotal information.

- Many other species have also declined although with the degree of disturbance they may have been expected to increase.
- *Brachypodium sylvaticum* (1.6 - 5.8); *Agrostis capillaris* (5.4 - 11.6) and *Agrostis stolonifera* (3.5 - 11.3) all increased in cover, no species declined - consistent with grazing pressure.

Conclusion

- A highly disturbed site with evidence of selective removal of certain tree species.
- The regeneration capacity appears to have declined - probably due to deer grazing.
- Although some species may have declined because of grazing pressure, other changes are more difficult to describe although local shading from yew could be a factor.

SITE 61 - LONGCLOSE WOOD

- The woodland lies reasonably close to an urban area.
- Much of the woodland has been felled and replanted with conifers.
- Most of the woodland on the level or on gentle slopes.
- A mixture of mature trees and young plantation.
- Old railway embankment cuts through woodland and this now serves as a public bridleway.

Management Description and Habitats

- Mainly managed for timber production.
- Some areas of semi-natural woodland remain, with large coppice stools.
- Large area must have been replanted since 1971 given the size of the trees.
- Only one track maintained, others are very overgrown.
- Grey squirrel control in woodland as part of red squirrel conservation.
- Regeneration of birch and other vegetation has been allowed under mature conifers.

SITE 62: WINSTER HOUSE

Position in the landscape

The site is long and narrow, and lies on steep east-facing slopes, often exceeding 40°. The southern section of the wood is bisected by a rock cliff, with associated blocky boulders. A number of small streams drain the site to the east.

The northern and southern ends of the site are defined by small country lanes, which also bisect the site at one point. The remainder of the boundary merges into adjacent semi-natural broadleaved woodland or abruptly into grassland, sometimes bounded by stone dykes and/or sheep and deer fences.

Broad habitat description

The site encompasses both woodland and grassland. The woodland area comprises dense-canopy high forest dominated by oak, sycamore, ash, birch, and occasional yew, with a poorly developed understorey, a generally sparse ground flora and a variable leaf litter cover, and woodland glades recently planted with native broadleaves. Grassland areas include rough grassland with scattered scrub, sometimes recently planted with native broadleaves, and improved grassland. Soils vary in pH, from acidic slopes and knolls to base-rich hollows and rock exposures.

Management influences

- One private owner, with a number of tenants.
- Management within the site is variable. Seven plots fell within established woodland. Three plots were deer-fenced and recently tree-planted, two in woodland glades and one in rough grassland. Three plots were improved grassland on the edge of the site, two of these with a sparse canopy. One plot was bracken-dominated on the woodland edge. Two plots were rough grassland with scattered scrub.
- All unfenced woodland plots were moderately grazed by deer and informally by sheep. Of the three formally-grazed grassland plots, two were grazed by sheep and cattle, and one by horses.
- Much of the woodland has been managed as coppice with standards in the past, with hardwood stumps in one plot and coppice stools in nine plots.
- Three plots fell within deer-fenced exclosures recently planted up with native broadleaves.

Tree and shrub composition

- Much of the wooded part of the site supports an even-aged high forest, dominated by a canopy of oak, sycamore, birch and ash, with a sparse understorey of hazel. In the vicinity of the low cliffs running through the southern part of the site, a low canopy of yew dominates, sometimes mixed with emergent oak and sycamore. In rough grassland and on the woodland edge, the sparse shrub layer includes low hawthorn, gorse and broom.
- Dead wood habitats of old stumps, fallen trees or branches occurred in eight plots.
- Lichen and bryophyte growth was diverse and abundant, occurring on most tree bases, trunks and branches.

Ground flora composition

- Ground flora species diversity was generally poor, with only two plots in open canopy situations exhibiting a wide range of species.
- Grasses cover was generally high, exceeding 50% in six plots.
- Bracken occurred in ten plots, and was dominant in one plot.

- Leaf litter was variable in occurrence in wooded plots, and most abundant in areas of dense canopy. Bryophyte cover was generally low.

Fauna

- A typical range of bird species was noted. The site is used for game management, especially as pheasant cover.
- Signs of roe deer and red deer, a badger sett, and occasional anthills were encountered.

Conclusion

Winster House is a mosaic of habitat types, with predominantly even-aged high forest, yew-dominated rocky woodland, woodland glades, and former wooded areas now converted to rough grassland with scrub, and improved grassland. Grass species are dominant across much of the site, and bracken is locally dominant. Ground flora diversity, litter cover and bryophyte cover is generally poor. Current management is seeking to redress the woodland loss that has occurred in recent years through deer-fenced exclosures and small-scale planting of native broadleaves in woodland glades and on rough grassland adjacent to the existing woodland.

SITE 63 - RIDING MILL WOOD

Position in Landscape

- Directly adjoining houses on the southern side of the wood and the Riding Mill Burn to the north.
- Woodland on slopes of the Riding Mill Burn, slopes steep in parts.
- West end of wood adjacent to rough pasture, with a narrow strip of woodland within the pasture. Here only trees remain of the woodland flora.

Management Description and Habitats

- Managed as amenity woodland.
- Loss of woodland adjoining the houses as areas have been adopted into gardens (thus 1 quadrat was lost).
- Large trees have been removed from the garden areas and from the woodland just beyond the gardens, this has caused these areas to lose their typical woodland field layer and are now dominated by bramble and stinging nettle. *Garden rubbish has been dumped along the edge of the wood.
- The southern side is the area most frequently used by the public and there are a number of well walked footpaths.
- Lots of areas of bramble and nettle, field layer poor in many places.
- Canopy includes mature beech and sycamore as well as oak and ash. There are many old coppice stools, and the wood has been managed as coppice with standards at some time in the past.
- Much of the character of the wood has been changed by the removal of large trees from the southern perimeter, the spread of sycamore and beech and the large network of paths used by the public. The degree of disturbance has also affected the fauna, there was limited evidence of deer, but little else in the way of mammals.
- Surveys of this site was reasonably straight forward (except for the brambles)

SITE 64: ROTTEN BUTTS

Position in the landscape

The site lies on steep north-east facing slopes of 30° to 40°, decreasing to 5° at the base of the slope. Numerous springs feeding minor streams occur throughout the woodland, and the larger Brackens Gill drains the site along the north-western boundary.

The north-western boundary merges into similar coniferous and broadleaved woodland. On the lower ground to the north the site is bounded by a small public road and by fields of improved grassland. To the east and south the site merges into a mosaic of dry heath, wet heath, acid grassland, scattered broadleaved trees and scrub, and extensive stands of bracken. The site boundary is marked by a dry stone dyke and sheep fence in poor repair.

Broad habitat description

A degraded site comprising small pockets of remnant semi-natural broadleaved woodland dominated by oak, ash, and invading beech and sycamore, large areas of spruce, larch, beech and sycamore plantation, and fields of improved grassland on the lower ground. Both understorey and ground flora are impoverished. Soil pH varies from acid on the steeper drier slopes to base-rich flushes at the base of the slope.

Management influences

- One private owner
- Two plots within improved grassland are formally grazed by cattle and sheep. The remainder of the site is subject to variable grazing pressure from deer, and sheep encroaching from surrounding land.
- Eight plots, within existing plantation areas, contained old hardwood stumps. One plot contained a coppice stool.
- Much of the site is managed as mixed plantations of spruce, larch, beech and sycamore, with evidence of past thinning.

Tree and shrub composition

Five of the plots are coniferous or mixed plantations, of which two have no understorey and two have a dense *Rhododendron ponticum* understorey. Seven of the plots occur in broadleaved woodland, dominated by a mix of oak, sycamore, beech and ash, with occasional wych elm, rowan, alder, hawthorn and holly, and a sparse understorey.

Ten plots contained dead wood, in the form of fallen branches, fallen trees, brash or old stumps. Lichen and bryophyte growth was abundant, occurring on many tree bases, trunks and branches.

Ground flora composition

All plots but one were species poor, the exception occurring in open canopy ash woodland.

Grasses cover was variable, below 10% in seven plots, and exceeding 50% in three plots.

Bracken occurred in only four plots, and was dominant in one.

Litter layer cover was variable, being highest in plantation plots. Bryophyte cover was also highly variable.

Fauna

Bird life was very limited, with occasional jackdaw, buzzard, and woodcock, and a young tawny owl flushed from bracken cover on the upper margin of the wood.

Signs of sheep and roe deer were frequently encountered.

Conclusion

Rotten Butts has been severely degraded in the past by conversion to coniferous and mixed plantation, and to improved grassland, and by ongoing grazing by sheep and deer. Few pockets of semi-natural

broadleaved woodland survive. A woodland understorey is largely absent, and *Rhododendron ponticum* is invading some areas. Grass, bracken, bryophyte and litter cover is variable, and the ground flora is generally uniform and sparse.

Much of the former semi-natural broadleaved woodland on the site has been clearfelled and replaced with plantations of exotic species, which have undergone some thinning in the past.

SITE 65 GREAT PLANTATION

Location and Landscape Context

Great Plantation is an isolated, roughly circular, area of mature mixed species plantation woodland of some 10 ha in extent in the grounds of Fairfield House, Stogursey, Somerset. The wood occupies essentially level ground on the coastal plain at an elevation of 50m asl. The woodland is surrounded by arable and pasture land, and on one side by an orchard policy adjacent to Fairfield House. The boundary of the wood is marked by a wire stock fence and by a stone wall in places, both of which are in good condition.

Ecological Site Factors

The site is located on the Jurassic Lower Lias clay geological strata giving rise to fertile heavy clay and clay loam soils. These are exceptionally stiff clays throughout much of the wood, with poorly drained patches. The climate is of the warm dry lowland type.

Management Factors

The woodland has been in long-term hereditary ownership by a single family holding the Fairfield Estate. The current owner Lady Gass holds historical records for the wood which suggest that it was planted on agricultural land from the mid 1600's onwards, with later extensions. No part of it appears to be ancient semi-natural from the evidence available. The majority of the wood comprises old oak and ash, some of which is of exceptionally good timber form. In recent years small group fellings of this material have been carried out by estate staff to provide large saw timber for the repair of the roof of Fairfield House. The coupes have been replanted with mixed broadleaves in tree shelters. One small part of the wood was restocked with Norway spruce and Western red cedar in the 1970's/80's. There is a good network of rides and paths which allow the wood to be used in the main for informal quiet recreation by the owner. There is no public access.

Stand Types

The major part of the wood comprises a stand of well spaced mature planted oak and ash trees exceeding 25m in height, some of which are of very good timber form (veneer quality). There are also mature sweet chestnut, horse chestnut and occasional Scots pine. The sub-canopy in this stand is dominated by more shade-tolerant tree species - notably sycamore which is becoming very abundant and may have been planted to some extent, but also elm and beech. There is a fairly light sapling understorey of elm, hazel, holly, hawthorn, spindle and field maple. Where the oak and ash have recently been felled for timber, mixed hardwoods have been planted in tubes.

One part of the wood was restocked in the 1970's/80's with Norway spruce and Western red cedar which now form a regular thinned stand reaching 20m in height. The owner indicated that these trees would be felled in due course and replaced with broadleaves.

The deadwood component was restricted to a few standing dead stems, with the wood probably being subjected to "tidying" management activity.

Ground Vegetation

The characteristic constant species throughout the woodland are *Hedera helix*, *Rubus fruticosus*, *Iris pseudacorus* and *Mercurialis perennis*, indicating moist, fertile soil conditions. In places where canopy shade is heavy *Hedera helix* becomes the clear dominant, whereas in more open patches *Rubus fruticosus* thickets takes over. *Urtica dioica*, *Circaea lutetiana*, *Geranium robertianum* and *Arum maculatum* also occur regularly. Grasses are almost entirely absent from the wood and bryophytes are very sparse, with only occasional *Eurynchium* and *Thuidium* recorded.

Fauna

The owner indicated that red deer descend from the Quantock Hills to use the wood for shelter in winter, and some resulting fraying damage on the conifers was observed. A number of roe deer were seen within the wood during the survey. An extensive badger set was found which looked as if it had been active in

the recent past. Mole hills were fairly common within the wood. As to birds, a young buzzard or sparrow hawk was constantly calling in the wood and thrush, wren, crow, pigeon and blackbird were seen. An occasional pheasant was heard and a few spent shotgun cartridges found, but there was no sign of deliberate pheasant rearing or an active shoot associated with the wood.

Habitat features

Specific habitat features of note were actually rather few as the wood is on rather uniform level ground. The abundance of ivy, and in places honeysuckle, on the mature trees was notable, as were clumps of brambles and nettles in small clearings. Bryophytes and lichens did occur on tree stems but not abundantly. By far the most lasting impression of this wood was the fine standing timber of oak and ash.

SITE 66: GLAN MORLIES

Position in the Landscape

- A complex site along the bank of a river with contrasts in slope, drainage and aspect.
- Some spurs of woodland extend away from the river out into the farmland.
- There are combinations of sharp fenced boundaries, merging direct and open woodland.
- Most of the wood is bounded by well managed permanent grassland.
- A proportion of the wood is bounded by rushy pasture which is probably becoming progressively less grazed.

Management Description and Habitats

- Four private owners.
- There are strong contrasts in management in the wood.
- Four plots are in undisturbed woodland.
- Two plots are in open grazed beech and alder woodland.
- Three plots are in old fields, now scrubbing up.
- One plot is in overgrown willow.
- One plot was in overgrown Douglas fir c. 15 years.
- One plot was in a field.
- Three plots were in young but unthinned plantations.

Tree Composition and Change

- The hazel population was stable.
- Holly and sycamore had increased a little from almost zero.
- Beech was low and stable.
- Oak was almost unchanged but with relatively few trees, some large but no regeneration.
- There was an increase in ash saplings but apart from a small decline in two smaller classes, the situation was stable.
- The overall site pattern shows some decline but reflects the mosaic of patches in the site overall due probably to felling in some parts of the wood. Dead stems have greatly declined - again probably reflecting felling and lack of competition.

Vegetation Composition and Change

- Increased: *Chrysophlenium oppositifolium* (5-11); *Dryopteris dilatata* (7-12); *Geranium robertianum* (10-13); *Veronica montana* (7-10); *Hedera helix* (10-12); *Ranunculus repens* (10-12); *Oxalis acetosella* (9-10); *Rubus fruticosus* (14-15).
- Stable: *Viola riviniana* (10-10).
- Decreased: *Lonicera* (10-9); *Lysimachia* (11-10); *Circaea lutetiana* (12-10); *Prunella* (13-5).
- The ground vegetation in this wood shows an equal balance between gains and losses both in the most frequent species and in the balance of total individual species.
- As with Wellhanger Copse and Priestfield, this probably represents the different stages of succession that the patches in the wood are currently at.
- There is no obvious pattern between the species that are declining and increasing - again reflecting the complexity of management-related patterns from plot to plot.
- Overall species richness has only declined by 9%.
- The wood is diverse with species representative of many soil conditions from wet shaded to open fields, and mature woodland, again reflecting the wide range of ground conditions present.

- Rubus (2.4 - 31.2); Lolium perenne (3.8 - 5.1); Agrostis canina (5.4 - 11.6) and Agrostis stolonifera have all increased whereas only Holcus mollis (5.0 - 0.3) has declined.

Conclusion

- This wood shows a mosaic of patches at different successive stages, with the tree population therefore in flux and no overall pattern.
- The highly variable ground conditions favour many species.
- The site has therefore maintained a diverse structure and species composition, showing disturbance to be beneficial in the short-term.

SITE 67: EDEN GORGE

The site has a highly variable aspect, lying on both banks of the River Eden flowing from south-east to north-west, and on both banks of Croglin Water, a minor tributary flowing into the Eden from the north. Slope gradients can range from 5° to 45°, but are often much steeper, merging into frequent New Red Sandstone outcrops. These rock outcrops often form vertical cliffs and associated boulder scree, especially where the northern tributary cuts down to the main river.

The upper margins of the site generally merge via stock fencing into permanent grassland and arable crops. The lower margins of the site are bounded by the River Eden. Part of the south-western perimeter is bounded by a railway, and a small section of the north-eastern boundary borders a country lane.

Broad habitat description

A diverse woodland largely dominated by high forest of mature oak, beech, ash and sycamore, with areas of conifer plantation, wet woodland and riparian woodland dominated by willows and alder, a variable understorey and a species poor ground flora. The substrate is generally acidic, with occasional neutral and base-rich flushes.

Management influences

- One private owner
- All plots were moderately grazed by deer, hare and rabbit.

- Eleven plots contained old hardwood or conifer stumps, and six plots had old coppice stools, indicating past woodland management.
- Small conifer and mixed plantations occur in the east of the site (Staffield Walks).
- Recently planted native broadleaves in tubes are scattered across the area to the south of the river.
- The site is actively managed for game, including several pheasant release pens.

Tree and shrub composition

Canopies in nine of the ten plots north of the River Eden were dominated by a range of mature broadleaves including oak, ash, beech, sycamore, birch, small-leaved lime, wych elm, rowan, sweet chestnut and hawthorn, with a variable understorey of young broadleaved trees, derelict hazel coppice, and sometimes dense rhododendron thicket. One plot lay within a mid-rotation larch and Scots pine plantation. The plots to the south of the river were very different in character, with open canopies of scattered oak, birch, rowan and hawthorn over extensive bracken stands.

All plots contained dead wood, mainly in the form of fallen branches.

Bryophytes and lichens were well-established on tree bases, trunks and branches in all but two plots.

Ground flora composition

Plots were generally species poor, often sited under moderate to dense canopies of mature trees, bracken or rhododendron.

Thirteen plots contained some grasses coverage, with three plots of 50% cover or more.

Nine plots contained bracken, three to the north of the river, and the remainder to the south where bracken was the dominant ground flora species.

Litter layer coverage ranged from absent in nine plots, to 50% or more in five plots. Mosses exceeded 25% cover in only two plots.

Fauna

The site supported a good mix of typical bird species including dipper, grey wagtail and heron along the River Eden, and barn owl on the woodland edge south of the river.

Numerous field signs were encountered of grey squirrel, rabbit, badger, fox, hare and roe deer.

Conclusion

Eden Gorge shows great structural diversity, in terms of topography, habitat and vegetation. Grasses and mosses cover was variable but generally low. Bracken was dominant south of the river, and litter coverage was often high north of the river. The understorey is also variable, and occasionally rich. Ground flora was generally species poor, partly due to heavy shading.

The site has great potential for restoration through the removal of plantation conifers, the control of rhododendron and bracken, and the creation of woodland gaps and selective thinning to encourage natural regeneration of native species.

SITE 68: BLANE SMIDDY

Position in Landscape

A small lowland woodland lying adjacent to the A 81 west of Killearn. The site is bounded to the east and north east by the road, to the west by the Blane Water a tributary of the Endrick Water and to the south by the derelict Killearn Hospital site.

Broad Habitat description

The woodland consists of planted oak wood on mostly flat ground, with a gentle slope towards the river on the south and west of the site. The wood had a very open feel, with hardly any shrub layer and a uniform ground layer particularly on the flat part of the site. There is much fallen wood on site covered in bryophytes. There is a small area on the west margin of the site with *Typha* dying back indicating slightly wet conditions. The substrate had a high clay content which may have contributed to the recent water logging apparently occurring throughout the site.

Management Influences

The oak which dominates the flat area is even-aged plantation, recent blaze marks on many of the trees suggested that some felling is planned. There is a significant rubbish dump beside the road where fly-tipping obviously occurs frequently. Small numbers of sheep range through the site.

Tree and shrub composition

The canopy is dominated by the planted oak with abundant ash, hawthorn, birch and alder and some sparse sycamore. Ash regeneration is frequent with very occasional hawthorn, birch, alder, sycamore and oak. There is little shrub layer.

Ground flora composition

Grass species are significant in the groundcover ranging from 10-75% in 11 out of the 16 quadrats. *Deschampsia cespitosa* is an abundant species throughout the site with at least 10% cover in 7 plots. Tall herbs include *Filipendula ulmaria*, *Geum urbanum* and are also significant in some plots ranging from 10-20% cover and bryophytes with at least 10% cover in 13 of the quadrats. Litter is a frequent element in the ground layer accounting for 10% and up to 85% in 12 quadrats and bare ground occurs to at least 10% cover in 8 quadrats.

Fauna

Roe deer are present in the wood with small numbers of sheep ranging through. Moles are ubiquitous. Greater spotted woodpecker was noted.

Conclusions

Rather a small area of mature plantation woodland. Despite the area of the wood having been increased due to a road realignment this wood has a rather degraded feel to it. The site appeared to have been quite waterlogged, relatively recently, inhibiting plant growth of many species. In large areas there was clay debris on leaves indicative of water lying on site. The apparent imminent felling of mature trees would be a great loss to this site.

SITE 69 - GREAT AND SCARRY WOODS

Position in the Landscape

- These woodlands form a part of Sneaton Forest and are managed by Forest Enterprise.
- Situated on a steep slope, which is bordered on one side by a burn and the other by grazing pasture.
- The woodland also contain a building of historic interest, a hermitage cut into a solid block of stone.

Management Description and Habitats

- There is evidence that there has been tree planting in the past as there are a good number of mature beech in some sections, and some areas are planted with conifers.
- Much of the woodland is ancient semi-natural and has a good woodland structure and species diversity.
- The trees include some fine veteran oaks, which include a few old pollards.

The semi-natural ancient woodland areas are being managed by non-intervention

- Though there was a good deal of evidence of deer, probably roe deer, regeneration was good in some sections, particularly ash regeneration.
- The woodland has well marked footpaths which are well used, though walkers are asked to keep to paths. Erosion of the footpaths is leading to widening and a loss of woodland in a few areas, but the damage is limited.
- Some quadrats were very difficult to access because of the steepness of the slopes and there was a difficulty in obtaining accurate tree heights.

SITE 70 - OVERDALE WOOD

Position in the Landscape

- The woodland is situated on steep slopes on either side of the Overdale Burn and follows the line of the burn.
- Surrounded on either side by pasture and arable land.
- Lower slopes poorly drained
- Two public footpaths cross the woodland, and here steps have been set into the banksides.

Management Description and Habitats

- This woodland was probably the most unpleasant to survey.
- Few sections with a diverse field layer, but these are very limited.
- The main feature was the stinging nettle and bramble thickets.
- Some areas have been replanted with conifers, and one end of the woodland is new plantation.
- The woodland is mainly being managed for timber production, and much has been replanted.
- There are open areas where elm trees have fallen, or are still standing but dead.

SITE 71. MORSES GROVE.

Position in the landscape.

Morses Grove occupies the crest and southeast slope of a ridge which forms part of the very undulating wooded landscape east of Cinderford.

The Grove is entirely surrounded by pasture land and is bounded by stockproof fences which in places are also rabbit proof (probably to prevent foraging of the pasture by the substantial rabbit population which inhabits the woodland!).

Most of the site has been recently acquired by the Woodland Trust following a period of extensive felling and removal of mature trees from the wood.

The southern quarter is privately owned by a local builder (Mr Bell) who has modified part of the wood through the construction of a horse exercise circuit.

The boundary between the two ownerships is marked by a stream in a deep gully; there are no internal boundaries.

The wood is a major retreat for badgers and is crossed by numerous tracks between setts: human usage appears minimal.

Broad habitat description.

Morses Grove is an ash woodland which ranges from the drier form of W8 near the crest of the ridge where birch is more prevalent, through a more species-rich damper form of the community, to an ash-alder wood along the south-eastern margin.

It is a site rich in bluebell with a marked increase in species diversity on the lower slopes i.e. the south eastern and southern sections.

Management influences

- The present distribution of oak standards and the stage of development of pole birch and ash suggests that the major extraction of canopy took place 15 -20 years ago and that the eastern third of the wood appears to have escaped this phase of management.
- The current management of the main area appears to be of the 'fence it off and forget it' persuasion.
- Though tree regeneration is extensive, the density of the over-mature hazel understory is such that sapling development is inhibited.

Tree and shrub composition.

- Although large oak trees are retained in the eastern section, elsewhere ash predominates.
- The understory supports a wide variety of species which have become established following canopy opening.
- The Hazel coppice is, however, all utterly abandoned and often of extraordinary size.
- A few isolated chestnut stools were recorded.
- Much young sycamore was present especially in the western portion.
- A small area of aspen grove was noted near the eastern boundary.

Ground flora composition

- The wood is characterized by the enormous population of bluebells which form dense carpets over extensive areas.
- The ground flora is moderately rich and varied since significant bramble shading is restricted to the margins of the wood and the north-central portion.
- The stream sides are too steep and shady to support the rich flora that might be expected.
- The most frequent elements of the ground flora are *Endymion non-scripta*, *Rubus fruticosus* and *Circea lutetiana* with *Eurhynchium praelongum*.

Fauna.

The wood is a major retreat for badgers with many setts and an extensive network of tracks.

Rabbits are also numerous as are squirrels

Bird activity was moderate to good with much song bird activity; sparrow hawk and green woodpecker were also present.

Conclusion.

A potentially very fine ash wood site but one that requires the initiation of a coppicing programme and possibly some thinning of the younger canopy.

The quantity of sycamore regeneration may become an issue in the north-western section of the wood.

SITE 72 HALL BROW

Position in the Landscape

- Complex series of slopes down to streams both in and outside wood. Some quite steep slopes and small rocky outcrops.
- Upper and southern boundary of wood grades into open ground with scattered trees.
- Northern boundary is deciduous woodland.
- Otherwise the wood is bounded by permanent pasture although a track between the trees and grassland in one section.

Management Description and Habitats

- Owner with conservation management objectives.
- Most of the wood is stored, singled coppice.
- Overgrown tracks, charcoal burner huts and walls are present in the wood showing long history of exploitation.
- One clearing has been made with a fenced area planted with beech.
- Large glades are present in the upper section, usually with dense bracken.

Tree Composition and Change

- Birch trees and saplings have virtually disappeared.
- As with Great Knott, the extent of loss suggests management rather than a natural progression.
- Minor decline in hawthorn but beech and ash similar.
- Sycamore shows small decline from low base.
- Overall increase in the larger size class and major loss of smaller - extent of this suggests management.
- Saplings show a major decline overall and shrubs have almost disappeared.
- The overall pattern is dominated by the decline in smaller oak stems.
- Dead stems have almost disappeared suggesting maturation of the site population of trees.

Ground Vegetation and Change

- Increased: *Pteridium aquilinum* (11-16); *Agrostis capillaris* (13-14).
- Decreased: *Anthoxanthum odoratum* (15-14); *Deschampsia flexuosa* (16-15); *Digitalis purpurea* (12-11); *Oxalis acetosella* (16-14); *Teucrium scorodonia* (13-10); *Dryopteris dilatata* (16-12); *Galium saxatile* (14-10); *Lonicera periclymenum* (16-12); *Luzula pilosa* (12-8); *Dryopteris filix-mas* (10-5); *Rubus fruticosus* (13-7).
- Mainly species of mildly acid soils.
- Most frequent species are declining.
- Overall species richness has declined by 19%.
- As with Great Knott, the bryophytes have also declined overall.
- These changes could be consistent with an increase in cover of bracken, dense shade and possibly deer grazing.
- *Pteridium* has thus increased (18.0 - 40.1) as have *Agrostis capillaris* (2.2 - 15.3) and *Deschampsia flexuosa* (3.5 - 8.5) whereas *Anthoxanthum* has declined (11.1 - 5.4).

Conclusion

The change in size class pattern is probably mainly due to maturation of the stand but this could have been amplified by removal.

Strong evidence of increase in bracken cover could be causing loss of ground flora species, in conjunction with shading - most of the wood is now quite dense.

The small cleared area would have had a minor influence in the overall total.

SITE 73 GREAT KNOTT

Position in the Landscape

- Lower slopes gentle but upper slopes have some steeper sections with silurian slate outcropping.
- Lower boundary is road adjacent to permanent pasture.
- Two thirds of remaining boundary is woodland, some felled.
- Other boundary is permanent pasture.

Management Description and Habitats

- Owner with conservation management objectives.
- Most of the wood is stored coppice.
- Some clearings have been made, with fenced areas within which regeneration, mainly of Birch and willow is taking place.
- There are way marked paths for public access.
- Some large pine trees felled.
- Small areas of plantation c. 30 years at the upper edge of the wood.
- Small plantation of Nothofagus.

Tree Composition and Change

- Birch trees and saplings have virtually disappeared - the extent of loss suggests management rather than natural process.
- Hazel declined by 75%.
- Introduction of Nothofagus spp. by planting.
- Increase in pine due to planting.
- Oak predominates with loss of smaller size classes, probably by management and increase in the larger categories.
- The latter process is identical over the whole site because of the dominance of oak.
- Few dead stems were recorded at either site.

Ground Vegetation and Change

- Stable: *Deschampsia flexuosa* (15-15); *Galium saxatile* (14-14); *Pteridium aquilinum* (15-15)
- Decreased: *Anthoxanthum odoratum* (10-8); *Dryopteris dilatata* (15-13); *Dryopteris filix-mas* (10-5); *Holcus lanatus* (10-2); *Lonicera periclymenum* (10-6); *Luzula pilosa* (10-4); *Oxalis acetosella* (16-13); *Rubus fruticosus* (13-11); *Teucrium scorodonia* (12-4).
- Mainly species of mildly acid or very acid soils.
- Most frequent species are declining although three are stable.
- Overall species richness has declined by 13%.
- Otherwise a balance of gains and losses although the bryophytes seem to have shown a marked decline.
- Some changes could be due to deer grazing together with increased shade in undisturbed areas.
- *Vaccinium myrtillus* (2.2 - 15.4); *Agrostis capillaris* (2.2 - 10.3); and *Pteridium* (14.3 - 25.5) have all increased in cover whereas *Deschampsia flexuosa* (49.4 - 18.9) and *Holcus lanatus* (5.3 - 0.6) have declined.

Conclusion

- Removal of certain size classes together with clearance has modified the structure of the wood.
- Quite strong evidence of deer grazing causing decline of some species.
- Mosaic of patches may mean that different parts of the wood are following different trends and therefore difficult to identify overall pattern.

SITE 74: GLEN BEASDALE

Position in landscape

Part of an extensive area of western acidic oak woodland bisected by road, rail and power lines. Structurally highly diverse landscape ranging from rocky seashore, with some low steep cliffs, to flat topped wooded or heathy hills and outcrops. The site also includes Glen Beasdale, a steep sided flat bottomed valley with the Beasdale burn running west-south-west through the site. The site is unbounded by fences or walls - with the exception of the railway which has an old post and wire fence - and is contiguous with extensive areas of coastal woodland to the east and west and rough grazing to the north.

Broad habitat Descriptions

The canopy is generally dominated by sessile oak, with little shrub layer and is quite uniform in structure. On the higher ground birch dominates. The field layer is often bryophyte or *Calluna vulgaris* or *Molinia caerulea* dominated with or without *Pteridium aquilinum* and other species. There are abundant birch, oak and rowan seedlings with occasional holly, but little regeneration. The area to the west has become dominated by rhododendron, some of which extends into the site. Ash, alder and willows are also present on site but did not occur in any quadrats. Small burns, flushed and boggy areas add to the diversity of habitats within the site.

Management Influences

The site forms part of a candidate SAC, although the cSAC covers a larger area. The site is designated for otter, fresh water pearl mussel and old sessile oak woods with *Ilex* and *Blechnum* for which this is considered to be one of the best areas in the UK. Extensive rhododendron was noted by the Arisaig estate site manager to the west and reported to be expanding. However, it did not feature significantly in the areas covered during this survey. Sheep are present, mainly to the north of the road and deer stalking is carried out on the estate. There are no signs of current active management. The site manager reported that although the rhododendron is recognised as an issue, insufficient resources/funds are available to tackle the problem so no action has been taken.

Tree and shrub composition

Two quadrats had no trees or shrubs, these are Q 11 a sheep grazed moorland and Q15 an area of blanket bog. Oak is the predominant tree species. Regeneration was present in three plots (Q1, 13 &14) all are close to the road/railway which may restrict access by deer and sheep. The only shrubs recorded were rhododendron in Q1 & 3.

Ground Flora Composition

Bryophytes are predominant throughout the site. Dry open areas are dominated by heath species including *Calluna*, *Erica* sp. and *Vaccinium myrtillus*. Sheep grazed areas had a high percentage grass cover and wetter areas are dominated by *M.caerulea*. Bracken accounts for over 50% ground cover in 5 plots.

Fauna

Red deer and/or signs of browsing were noted in over 50% of the plots. Wood ant nests occurred in Q4. Sheep were noted to the north of the road in areas of rough grazing but not noted in the woodland south of the road. Sparrowhawk were seen.

Conclusion

A superb western oak wood in terms of its species composition and extent. Although there is no current management it is assumed with the designation of the SAC that conservation will become the primary land use. Issues of rhododendron and extensive bracken will then be addressed as mechanisms should become available. The plots sampled by this survey represent only a very small part of such a diverse and extensive area. There were only 15 quadrats.

SITE 75: CEUNANT DULYN

Position in the Landscape

Ceunant Dulyn forms part of a steep sided V-shaped valley. Due to a number of rock outcrops, the valley has several vertical drops.

Large boulders characterise the valley bottom, over which flows a fast stream.

The woodland's surrounding landscape features include permanent pasture, broad-leaved woodland, an informal road and a few scattered houses.

Intact wire fencing bounds the woodland to the north and south. There are, however, parts of the woodland that adjoin other woodland blocks and/or areas of scrub. In this case there is no clearly defined boundary.

Broad Habitat description

Ceunant Dulyn is a deciduous broadleaved woodland that has a well developed understorey and a species-rich ground flora. Some of the species are indicative of ancient woodland.

The floristic species present reflect a site with a variable substrate. Species favouring acidic conditions prevail on the steep-sided slopes, whilst species favouring a more nutrient base rich soil prevail along the bottom of the valley.

Management influences

The woodland is privately owned and there is no evidence of past or present management.

There are two worn tracks running through the woodland, indicating that the site is utilised as a recreational resource.

Tree and shrub composition

All plots are comprised of mixed aged trees, representing a range of different heights and DBH. Ash (*Fraxinus excelsior*) and oak species (*Quercus* sp) were the characteristic canopy species.

The shrub layer was well developed and mainly consisted of wych elm (*Ulmus glabra*) and hazel (*Corylus avellana*).

Regeneration throughout the woodland was very good, with saplings present in 15 of the plots.

The woodland as a whole has a high proportion of standing and fallen dead wood and an abundant bryophyte cover.

Ground flora composition

The majority of plots had a good mix of herbaceous plants, ferns and bryophytes. Many plots also had a deep litter layer and the woodland was very boulder-strewn.

Fauna

There was little evidence of faunal activity within the woodland. Rabbit was the most abundant species.

Bird activity, however, was high, with a range of different species present including robin, great spotted woodpecker, raven, wren, nuthatch, chiffchaff, chaffinch, buzzard, blue tit, great tit, coal tit and magpie.

Conclusion

Ceunant Dulyn is a structurally diverse and species rich woodland. The damp conditions within the woodland offer a good habitat for bryophytes and ferns. There was also a high proportion of both standing and lying dead wood within the woodland.

SITE 76: COILLE COIRE CHUILC

Position in Landscape

Isolated Scots pine woodland on north east facing slopes above the River Cononish. In an area of sheep grazed hill land with some commercial coniferous plantation close by. It lies to the west of the main rail line and two kilometres from the closest road access of the A82 running through Strath Fillan. It is highly visible from the A 82 at Tyndrum where it forms part of the Tyndrum community woodland initiative to the north of the river.

Broad Habitat description

There is a low diversity of tree species at this site which is dominated by Scots pine with birch and rowan. The site is characterised by a mixture of substrates. There are free draining soils where Scots pine occur, usually associated with dominant heather, other heathland species and typical bryophytes. There are other areas of peaty substrates, the wetter ones dominated by Sphagnum with some dominated by birches and *Molinia caerulea*. There is also some acidic grassland. Notably there are many very mature and some Granny pines.

Management Influences

Management to regenerate the woodland occurred in the 1960's by fencing out deer. Most but not all of this fencing is still intact and functional, although deer and sheep clearly occur on the inside of the fences. An informal path is in the process of being created as part of the Tyndrum community woodland initiative and other well used walkers paths run through the woodland mostly parallel to the river. A forestry and stalkers access track runs through the site.

Tree and shrub composition

The woodland is a mature open Scots pine and birch woodland with no shrub layer. There is sparse and scattered Scots pine regeneration with scattered patches of abundant birch and rowan regeneration. Freely drained areas are dominated by Scots pine and birch with wetter areas dominated by birch with some open Sphagnum rich mire habitats.

Ground flora composition

Molinia caerulea is ubiquitous throughout the site with at least 10% and up to 70% cover in all but one plot. Sphagnum is also a relatively dominant feature with cover at least 10% in 11 plots, other mire species including *Tricophorum cespitosum*, *Myrica gale* and *Narthecium ossifragum* have high cover in some quadrats. Bracken ranges from 10-70% in 6 plots. The eastern and southern plots Q11, 14, 15 and 16 have a relatively high proportion of grasses ranging from 10-35%.

Fauna

Both red and roe deer occurred on site, sheep were also recorded on site and wood ant nests are present.

Conclusion

This is a notable native Scots pine site, relatively isolated in the landscape with a rich mix of upland habitats on acid substrates.

SITE 77: DOUNDUFF

Position in Landscape

The site lies on the south east side of Shaw Hill with a south and south easterly aspect. This is a relatively large site, which is contiguous with an extensive area of mixed coniferous plantation and river valley woodland. The south-east margin grades into permanent pasture and a 'B' road borders the southern corner.

Broad Habitat description

The site is a mixture of semi-natural and coniferous plantation woodland with native broadleaves and areas of variously aged sitka spruce. There are some very mature Scots pine on site. The areas of non-sitka spruce plantation are highly biodiverse. There are a variety of soils on site ranging from free draining sandy soils to peat and peaty podsolls. This results in a range of wetland, heathland and woodland habitats. There are significant amounts of dead wood on site. Extensive areas are dominated by bryophytes. Notable plant species present including *Moneses uniflora*, *Trientalis europaea* and *Goodyera repens*. Q 1 was not surveyed due to the dense and impenetrable nature of immature sitka spruce plantation with no ground flora.

Management Influences

The site is actively managed for commercial wood production and does not appear to have any conservation designation. There are numerous large woodland tracks through the woodland with signs of recent felling, brash heaps, cord wood etc. and we were told that significant management was about to take place.

Tree and shrub composition

The canopy is dominated by *Pinus sylvestris* with *Betula pendula* which would be expected on this type of substrate under semi-natural conditions. *P.sylvestris* has been extensively planted and in some parts other exotic conifers have also been introduced. Much of the site is very open with little shrub layer, sparse regeneration and dry under foot. Only one quadrat recorded a shrub layer of *Salix cinerea* at the north east corner of the site in a wet peaty area. There are some areas of dense immature sitka spruce plantation

Ground flora composition

The majority of quadrats are dominated by grass species and bryophytes. *Calluna vulgaris* and *Vaccinium myrtillus* are important components in a few plots. The peatland Q 14 & 15 are dominated by bryophytes notably *Sphagnum* with *C.vulgaris*. Q 16 is exceptional being essentially heathland, with 95 % heather and high bryophyte cover. A wide variety of macro fungi were noted on site.

Fauna

Signs of red squirrel were noted in Q10. Wood ants are highly significant in this wood with numerous large nests and well established pathways. Signs of deer were seen in 10 plots possibly both roe and red deer. Butterflies on site included frequent sightings of Scotch argus and speckled wood. One female capercaillie seen and others heard during survey.

Conclusion

Although managed for timber this woodland has significant semi natural characteristics and the range of substrates has allowed development of classic Scots pine woodland and scrubby birch woodland. The open nature of the woodland is notable particularly in the very mature stands such as at the southern edge, where mature Scots pine occurs with typical assemblages of bryophytes and specialist pine wood species. Despite the obvious active timber management much of the site has a relatively undisturbed feel to it. Capercaillie is an Annex 1 bird species and Red Squirrel is a UKBAP species. This site was notable for its infected ticks !

SITE 78: ALLT-YR-HEBOG

Position in the Landscape

The woodland is situated on a hill, steep in parts, with varying aspect. A fast flowing stream runs through a valley within the wood.

Surrounding land use includes recently ploughed fields and housing. A wire fence encloses the woodland.

Broad Habitat Description

Allt-yr-Hebog consists of areas of mature, broadleaved, semi-natural sessile oak (*Quercus petraea*) woodland, beech (*Fagus sylvatica*) and larch (*Larix decidua*) plantations.

Within the plantation areas, a dense canopy provides deep shade, and ground flora is sparse in these areas. Within the oak woodland, the canopy is more open and ground flora is abundant. Species such as bilberry (*Vaccinium myrtillus*), heather (*Calluna vulgaris*) and the moss *Rhytidiadelphus loreus* indicate an acidic substrate throughout the woodland.

Management Influences

Old stumps and felled trees indicate that the woodland has been managed at some time in the past, although there were no signs of recent management at the time of survey.

There are a few small tracks through the woodland, but it is not thought that these are well used.

Tree and Shrub Composition

The dominant tree species within the woodland vary between single species stands of beech or larch in the plantation areas, and sessile oak in the ancient woodland areas. Rowan (*Sorbus aucuparia*) and downy birch (*Betula pubescens*) are also present, but rare. The understorey was not generally well developed, and shrub species were recorded as regeneration only.

There are many standing dead and dying trees in the oak woodland. Fallen dead wood provides a cover of up to 60% in some plots, though is generally present in smaller quantities.

Regeneration consists of oak, beech, holly (*Ilex aquifolium*) and rowan. This occurs mainly in the oak woodland areas, and is rare within the plantations.

Ground Flora Composition

Ground flora within the woodland is, in general, not diverse. Within the larch and beech plantations there is almost no ground flora except for small amounts of mosses such as *Dicranum majus* and *Leucobryum glaucum*. In these areas, there are large amounts of leaf litter, providing a ground cover of up to 95%.

Ground flora in the oak woodland is more plentiful and varied, and consists of abundant bilberry and *Rhytidiadelphus loreus*, with frequent wavy hair-grass (*Deschampsia flexuosa*) and bracken (*Pteridium aquilinum*). Bramble (*Rubus fruticosus*) was occasionally present in large amounts.

Fauna

Birds identified in the wood included jackdaw and woodpecker. Signs of badger and rabbit were also noted.

Conclusion

Allt-yr-Hebog is a combination of mature oak woodland with relatively large areas of beech and larch plantation. Ground flora occurred predominantly in the oak wood and consisted of species such as bilberry, heather, bracken and the moss *Rhytidiadelphus loreus*. In the plantations ground flora was sparse.

There were no signs of current management in the woodland at the time of survey, although trees have been felled in the past.

SITE 79. WARREN WOOD

Position in the landscape.

Warren Wood is a large unit on undulating terrain but with a predominantly north-western slope. Much of the wood has been landscaped in the past and the opportunity afforded by several streams has been taken to create lakes and ponds within the wood.

The wood is divided into two sections by the minor road of Carters Lodge Lane. The larger portion north of the lane forms part of the extensive Hyde Estate which combines wooded areas with open farmland in which both arable and pasture feature.

Broad habitat description.

Warren Wood is a largely dry site and overlies freely draining podzolic soils. Heather and broom are not infrequent at the highest elevations where the predominantly oak-birch canopy may be referred to W16. On the lower slopes a similar canopy supports a more grassy ground flora and this is probably closer to W11.

At the lowest elevations near the streams alder is also present but the entire wood is lacking in ash. The openness of the canopy in many areas resulting from the 1987 storm has allowed for the development of extensive areas of dense bracken.

Management influences

Both the larger northern section and southern Warren Wood, which is owned by Mr Charles of Ashfold, are essentially woods managed for private amenity with timber production playing a very subordinate role.

Compartments of larch, Corsican pine and smaller areas of Scots pine all interrupt the primary oak-birch canopy.

There were formerly more extensive areas of chestnut but these were subject to considerable damage in the 1987 storm and have not been replaced. Some planting of broadleaved species in gaps was evident. The original ride system has been partially retained and new bridleways have been added in the northern section.

Tree and shrub composition.

The wood is characterized by a lack of diversity in the canopy species: the vast majority of which are of pedunculate oak.

Some mature beech groves are present and many birch thickets have developed.

Species such as ash, lime, hornbeam and sycamore are conspicuous by their absence.

The wood lacks any areas of hazel understory; thickets of rhododendron are numerous but nowhere cover extensive areas.

Bramble, though frequent, is rarely dense.

Ground flora composition.

The entire wood is dominated by bracken, which is unusually vigorous in places.

Bluebell is frequent without forming the massive drifts of many woods. The only other common associates in the ground flora are *Lonicera*, *Holcus mollis* and *Teucrium scorodonia*.

Fauna.

Stock have no access to any part of the wood

Rabbits and deer are excluded from the central plantation. The former are extremely numerous outwith the fence, but the latter much less evident.

There was a modest amount of badger activity and little evidence of squirrel damage.

Bird activity was similarly modest in nature; the wood lacked sufficient understory and edge habitat.

Conclusions.

The wood is actively managed though at rather low intensity; there has clearly been a major clear-up operation following recent storms and the Warren is a tidy wood. It seems likely that the wood supported a far superior canopy and ground flora prior to the storms when the density of bracken was generally lower.

SITE 80: HOADS WOOD

Position in the landscape:

- Part of a sizable estate, Hoads Wood is connected to the larger Great Wood by a narrow wooded corridor. The northern section is more or less flat but most of the wood has a southerly slope dropping from an elevation of 125m to 70m over approximately 500m. The small Cristian's River rises close to the extreme south-central boundary of the wood.
- The wood is bounded to the north by a minor road and otherwise by the semi-improved pastures of the encircling estate farms. A second minor road passes through the extreme western edge of the wood.
- The boundaries of the wood are not stockproof except for an embankment and stockproof fence along the northern boundary adjacent to the road. Grazing animals appear to be excluded from the wood through the use of temporary electric fencing.

Broad habitat description.

A large and varied wood many sections of which are dominated by birch whilst in the southern, somewhat wetter section, ash and hornbeam become more prevalent.

Management influences.

- The wood and estate are owned by a private owner at Stonehouse, Rushlake Green.
- Current management is primarily for shooting. There are many pheasant pens and feeding areas though little if any rearing appears to have taken place in the last two years. There is little disturbance or eutrophication evident despite the intensity of pheasant rearing.
- In the mid-1970's, the owner obtained permission to clear an area in the central portion of the wood for use as sheep grazing. This area, which influences plots 9 -12, shows signs of reversion to good quality heath. Within the cleared area canopy has been retained on the site of a large old badger set.
- A displeasing aspect of the site is the large and pungent rubbish heap in this cleared area, burning of which has been only partially effective.
- There is no evidence of recent timber extraction and the wood can be described as lightly managed.
- Towards the south-eastern extremity of the wood an area of birch thicket has developed on damp soils; this appears to have arisen as a result of clearing chestnut coppice perhaps 10 years ago.

Tree and shrub composition.

- The wood displays a level of zonation of the canopy dominants with sweet chestnut coppice largely confined to the north-western area adjacent to the principal road.
- There are areas of hazel coppice under both ash and birch but these are only prevalent in the south-western quarter of the wood.
- Hornbeam makes a significant contribution to the canopy towards the southern edge.
- Ivy is of only sparse occurrence and though bramble is quite frequent it is rarely dense or robust in nature.
- Canopy height is only moderate and along Priory Lane in the western section the wood is very open but with sparse ground flora.
- A feature of Hoads Wood is the apparent total absence of sycamore.

Ground flora composition.

Hoads Wood is essentially a bluebell wood. Species diversity is generally only modest as is total ground cover though drifts of *Anemone nemorosa* are conspicuous in the more hazel-dominated areas of the south-western zone.

Bracken, though frequent, is rarely dense.

A small area of beech canopy immediately to the west of Priory Road is particularly impoverished. The mean species number per plot, for the 13 plots with a tree canopy (forbs and bryophytes combined), is only 16; with a range from 8 -35.

Fauna

The central cleared area is used for sheep grazing but none were present at the time of survey. The stocking levels appeared low.

Grey squirrel were numerous and rabbits common especially around the fringes of the cleared area.

Deer prints and droppings were seen at several locations.

Although several large badger sets were encountered there was little evidence of recent activity.

Bird activity was most marked in the area of birch thicket with many willow warbler. Elsewhere both chiffchaff and chaffinch were prevalent, but generally bird activity was only modest.

Conclusion.

The lack of recent coppice and canopy management has resulted in a very shaded ground flora which in some areas is very impoverished.

The rich flora associated with the area of birch thicket suggests the potential of much of the wood to support a much more varied ground flora than is currently present.

SITE 81: WERN-FAWR WOOD

Position in the landscape

Wern-fawr wood lies on relatively flat ground, though in some parts slopes gently towards the south. Tracks and paths are present throughout the woodland, as are small streams and gullies.

The woodland is enclosed with a fence, and a private road runs along the eastern boundary. Surrounding land consists of permanent pasture (grazed by horses), farm buildings, an area of cleared ground where work was taking place, and an area of unmanaged, marshy grassland.

Broad Habitat Description

This is a mature, broadleaved semi-natural woodland, with small areas of planted conifers. Ground flora is relatively diverse but is dominated by bramble (*Rubus fruticosus*), which occurs in every plot, forming a cover of up to 90%. The woodland is wet and boggy in many parts.

Management Influences

- There is one private owner who lives on adjacent land.
- Until 1999 this woodland was managed as a commercial pheasant shoot, although there is no longer any shooting on the site. Unused pheasant pens still remain in the wood.
- There is currently no active management of this woodland, although numerous stumps indicate that the wood has at some time been thinned. Several felled trees and old extraction routes are also present.
- The landowner indicated that the areas of conifers had been planted so that the pheasants would fly high over the trees and be easier to shoot.
- A pond has been constructed within the woodland, which was once used for shooting ducks.
- The present owners want to keep the area specifically as a site for nature conservation, and are trying to encourage animals such as deer. The woodland now remains relatively undisturbed.

Tree and Shrub Composition

The predominant tree species in the wood are oak (*Quercus robur*), ash (*Fraxinus excelsior*) and beech (*Fagus sylvatica*), with shrub species such as hazel (*Corylus avellana*) also being frequent. Conifers such as larch (*Larix decidua*) and Scot's pine (*Pinus sylvestris*) were occasional.

Many trees (oaks in particular) are very large and old (over 100 years).

Regeneration consists mainly of ash, but also includes hazel, oak and sycamore (*Acer pseudoplatanus*). Standing dead trees were present in several plots, and living oak trees often had dead branches.

Ground Flora Composition

The ground flora throughout the woodland is dominated by bramble, which forms a dense understorey in parts. Remote sedge (*Carex remota*) and enchanter's nightshade (*Circaea lutetiana*) are frequently present in smaller quantities. Bluebell (*Hyacinthoides non-scripta*) is occasional. In wetter areas, species such as meadowsweet (*Filipendula ulmaria*), opposite-leaved golden-saxifrage (*Chrysosplenium oppositifolium*) and sharp-flowered rush (*Juncus acutiflorus*) occur.

Bryophytes (mainly *Eurhynchium* species, and occasional blankets of *Polytrichum commune*) were frequently recorded on the ground. Mosses, such as *Isothecium myosuroides*, also form a thick cover on many trees, as does ivy (*Hedera helix*) and honeysuckle (*Lonicera periclymenum*.) Common polypody (*Polypodium vulgare*) is also present on several trees (particularly on old oak trees).

Leaf litter was very abundant in several plots, forming a cover of up to 90%.

Dead wood provided a ground cover of up to 10% in most quadrats.

Fauna

Birds identified within the woodland included raven, greater-spotted woodpecker, buzzard and nuthatch. Roe deer were seen during the survey (an adult and fawn). Rabbits were also present.

Conclusion

Wern-fawr wood consists of some very mature stands of oak, ash and beech, with occasional areas of planted conifers. Bramble is the dominant ground flora species, with enchanter's nightshade being frequent, and bluebell occasional. Wetter species such as meadowsweet also occur. The woodland was previously a commercial pheasant shoot, but is not currently managed. The present owners want to keep the area as a site for nature conservation.

SITE 82. BLAKENEY WOOD.

Position in the landscape.

- Blakeney wood lies at the eastern edge of the extensively wooded area of the Forest of Dean. It is owned and managed by Forest Enterprise.
- The area marked for survey appears to be only part of the larger Blakeney Hill wood and is thus more or less surrounded by woodland.
- To the southeast the wood abuts a minor road with scattered houses whilst the south-western boundary is the small stream adjacent to the B4432. There are no internal fences.
- The site rises quite steeply from the road to the north-eastern corner.

Broad habitat description.

It seems probable that much of the site was former oak woodland which has been underplanted with beech, fir and spruce. The soils are generally thin and of a light brown mineral texture with occasional humic accumulations towards the upper slopes.

The woodland falls broadly within the W10 community, with three subcommunities recognizable. Towards the higher elevations a transition to W11 is evident.

Broadleaved species, mainly oak and beech, predominate on the lower slopes. Stands of Douglas Fir, with occasional Norway spruce, occupy the higher ground; here the relic flora is indicative of a lowland oak wood more akin to W11.

Wide rides, tracks and the wayleave provide good open habitat for flora and butterflies.

Management influences

Much of the conifer planting has been recently thinned for the second time providing a low density crop, but currently with sparse ground flora. Brash cover is often extensive. Conversation with a local mycologist suggested that this thinning may be deleterious to the fungal flora. However it is likely to benefit the herbaceous element of the flora.

Retained broadleaved species in the conifer stands are relatively sparse, but regeneration is good.

The site of plot 7 was being actively excavated at the time of our visit - it was omitted from the survey. The cessation of sheep grazing since foot and mouth is reputed to have resulted in a marked increase in spring flowering, e.g. Anemone, though the impact of this at the time of survey was hard to judge.

Tree and shrub composition.

Four canopy zones may be distinguished though Blakeney Hill wood is principally characterized by the lack of variety of canopy species.

Stands of coniferous planting are widespread especially in the higher northern sections. These are admixed with a zone where the conifers are present as an underplanting of oak.

On the lower slopes, especially on the eastern side, the canopy is principally of oak high forest. This merges, towards the lowest western portion, into stands of beech and oak-beech mixtures.

The understory is remarkably sparse and is largely confined to occasional scattered hawthorn bushes/trees. Tree regeneration was widespread, principally of oak, holly and locally beech.

Ground flora composition.

The ground flora is characterized by its lack of uniformity both in terms of species composition and richness.

Hedera is ever present but nowhere achieves significant cover.

Similarly, *Endymion non-scripta* is frequent but only occurs en masse in the east-central portion.

Areas under the densest beech support little but a fragmented moss carpet whereas where light penetration is greater a mixture of bracken, bramble and *Dryopteris dilatata* is frequently accompanied by *Oxalis acetosella* and *Luzula pilosa* with scattered *Circea* and *Carex remota*.

Fauna.

- Apart from much grey squirrel activity, confined principally to the lower oak-beech stands, animals are sparse.
- Rabbits were occasional.
- Some rides, especially the wayleave, support a good variety of butterflies and dragonflies.
- Sheep grazed the wood prior to foot and mouth but have not been reintroduced since.

Conclusions.

- A classic 'PAW' site!
- Actively managed by the FC, with extensive thinning, likely to enhance its diversity.
- area by a pair of minor roads which form the northern and western boundaries.
- To the south and east it lies adjacent to the improved farmland of Hartshurst Farm.
- The wood slopes evenly to the south, the change in elevation being from some 225m in the northeast corner to c.135m at the southern extremity.
- A well marked footpath descends the slope near the eastern boundary whilst a, largely well maintained, series of tracks form a circular network within the wood.
- The surrounding area is undulating and heavily wooded, lacking settlements of any size and with several relatively low intensity farms.

SITE 83: TYNRON WOOD

Position in Landscape

Slope faces south east down to the road and the Shinnel Water, with rough grazing above the woodland. The Juniper woodland SSSI (no longer designated as NNR) continues along the hill slope to the north of this site. The boundaries of the site do not conform with boundary features on the ground where there are fences and walls in good condition.

Broad Habitat description

The site is mixed semi-natural broad leaved woodland with a distinct wet area dominated by alder. The north east of the site grades into juniper dominated woodland of the old NNR. Quadrats 8,9,10, 11 & 14 comprise an area of acid grassland, which is distinct from the wooded areas and is clearly defined by well maintained walls.

Management Influences

The private owner reported that part of the area was fenced by SNH in 1970's? to specifically exclude cattle. The owner recalls the site 'flourishing' pre fencing when cattle were still allowed to graze the woodland, by which she meant the woodland was notable for its high species diversity. She also reported that her father had cleared part of the juniper woodland in an attempt to eliminate the yew which were poisoning the cattle. The owners now employ a woodland management advisor and are very keen to encourage positive management possibly with timber production taking precedence over management for biodiversity . Within the area of juniper, bracken had been sprayed. A number of mature trees were blaze marked for felling.

Tree and shrub composition

Trees outwith the juniper area were predominantly ash with alder in wetter areas, in the south west of the site. Several mature oak were also noted outwith quadrats. Essentially this was mixed woodland with some semi-natural characteristics which has had significant management input in the past and selective management continues.

Ground flora composition

A high percentage of the non-pasture sites have a grassy field layer. Of these woodland quadrats 4 have a significant bracken component one of these is very high at 60%. Bracken has been cleared from Q1. Bryophytes are only a significant component in 3 of the quadrats.

Fauna

Sheep were present in 4 of the woodland (as opposed to pasture) quadrats. Red ant nests were present in Q4&5.

Conclusion

A significant part of this site - 5 quadrats, is sheep grazed permanent pasture and Q16 has been built on. There has clearly been significant interference with this site over a long period of time. The fragmented nature of the site, as a consequence of what appears to have been piecemeal management in the past has resulted in a rather degraded woodland site.

SITE 84: WELLINGTON WOOD

Position in the landscape

The site lies on flat to gently sloping ground, with a south to south-westerly aspect, in a landscape of undulating fields and scattered woodland.

The western and eastern boundaries are defined by country lanes, with fields of improved grassland to the north and south. Well maintained sheep fencing separates the site from the grassland areas. A derelict stone dyke runs alongside the road on the western boundary, and a row of low wartime brick bunkers run alongside the road on the eastern boundary.

Broad habitat description

A mature oak-dominated woodland with generally dense canopy, scattered blocks of conifers, a moderate understorey and a species poor ground flora. The ground flora suggests a mildly acidic substrate.

Management influences

- Two private owners.
- All plots were lightly grazed by deer, hare and rabbit.
- Thirteen plots contained old hardwood stumps, evidence of selective felling in the past.
- Areas of the woodland have been converted to conifer plantation, mainly larch now in mid- to late rotation, most of which have undergone past thinning. Some conifer blocks have been felled in recent years, retaining scattered broadleaves, with occasional planting of native broadleaves in tubes. Some oak and birch stands have recently been thinned.
- Areas of *Rhododendron ponticum* understorey have recently been cleared.
- The site is used for game management, and contains pheasant release pens.
- In two locations, woodland rides are used for storage of big bale silage.
- The line of an underground gas pipe crosses the woodland at one point, which entailed the clear felling of a narrow woodland strip. This has now been replanted with native broadleaves in small deer-fenced exclosures.

Tree and shrub composition

Fifteen plots contained oak as a major canopy component, with sycamore often co-dominant, and frequent birch, ash, beech, sweet chestnut, rowan and alder. Fourteen plots contained understorey shrubs, including young rowan, holly, birch, sycamore, oak, ash, alder and *R. ponticum*.

Eleven plots contained dead wood, mainly in the form of fallen branches.

Bryophyte and lichen cover on tree bases, trunks and branches was occasional to frequent in all but two plots.

Ground flora composition

Most plots were species poor. Coverage of bramble, ferns and bare ground was generally high. Grass coverage exceeded 25% in only two plots.

Bracken was absent from all plots.

Litter coverage was generally moderate to high, except in more open or recently cleared plots.

Fauna

Little bird activity was encountered, although pheasant were frequent.

Animal field signs included badger, hare, roe deer, grey squirrel, and rabbit.

Conclusion

Wellington Wood is a formerly neglected woodland which in the past has been subject to felling of the better timber trees and partial conversion to conifer plantation. This trend has now been reversed with the gradual clearance of conifers and *R. ponticum*, and enrichment through tubed planting of native

broadleaves, mainly oak. The range and abundance of ground flora species and understorey shrubs have been impoverished in the past, but present management should aid recovery.

SITE 85: ALLT DU DOLY GARNEDD

Position in the Landscape

- Allt Du Doly lies on the north-facing slope of the steep-sided Llynant Valley. The slope has many large and small boulders and is gently undulating.
- Near the foot of the valley, where the topography is less steep, a narrow road cuts through the woodland. Leading from the road runs an informal track up to a farmhouse which is surrounded by small fields utilised for permanent pasture.
- Immediate surrounding landscape features include a coniferous plantation, broadleaved woodland and permanent pasture.
- Intact wire fencing defines the boundary to the woodland.

Broad Habitat description

A mature, even-aged woodland comprised of pedunculate and sessile oak (*Quercus robur* and *petraea*) and a poorly developed shrub-layer. The woodland supports a rich bryophyte flora and there is an abundant lichen cover.

Management influences

A very old moss-covered stump was present within plot 5, and within the vicinity of plots 14 and 15 there appeared to have been some removal of woodland edge trees to expand an area of open grassland. Despite several endeavours to relocate plot 15, the compass bearing combined with pacing consistently relocated this plot within the central part of the grassland.

The grassland was bounded by an intact wire fence and was characterised by an intimate mix of grasses and tall herbs. Compared with the adjacent areas of permanent pasture, this grassland had not received any form of recent management.

Tree and shrub composition

- The trees within the plots were very scattered. Oak (*Quercus* sp.) is the dominant canopy species with silver birch (*Betula pendula*) occurring as frequent throughout.
- Grey willow (*Salix cinerea*) and alder (*Alnus glutinosa*) were recorded within plot 13, reflecting the marshy nature of the woodland's lower slopes.
- The understorey throughout the woodland was very poor and regeneration was limited to only a few silver birch seedlings.
- There was a good proportion of dead wood throughout the woodland. This was in the form of standing dead wood and fallen trees.
- Bryophytes and lichens extended abundantly up the trunks and along the branches of trees. The notable species present included *Usnea subfloridana*, *Peltrigera lactacifolia*, *Parmelia caperata*, *Evernia prunastri* and *Sphaerophorus globosus*. Common polypody (*Polypodium vulgare*) was also abundant, occurring on the trees within several of the plots.

Ground flora composition

The ground flora composition was mostly an intimate mix of grasses, bracken (*Pteridium aquilinum*) and bryophytes. The bryophyte cover was particularly profuse with a mosaic of different species carpeting the woodland floor.

Fauna

Birds observed during the survey included flycatcher, robin, raven, buzzard, lesser spotted woodpecker, coal tit, nuthatch, blue tit and great tit.

The only other fauna noted was a frog in plot 2.

Conclusion

Allt Du Doly is a mature even-aged oak woodland which has a poor shrub-layer. The bryophyte cover within the woodland, however, is very rich and there is an abundant lichen cover.

With the exception of one cut stump, there is no other evidence of past or present management.

SITE 86: DINAS

Position in the Landscape

Dinas is situated on a very steep slope, the aspect of which varies throughout the woodland. Surrounding land use consists of permanent pasture, heathland, a large river and a road. A fence encloses part of the woodland. Several well used paths and tracks are present throughout the woodland.

Broad Habitat Description

This is a mature, broadleaved, semi-natural woodland on an acid substrate. On the lower slopes, grassy habitats occur. Towards the top of the woodland the vegetation consists of heath species such as bilberry (*Vaccinium myrtillus*) and heather (*Calluna vulgaris*). In this area there are large rock outcrops. At the top of the hill the woodland merges with an area of open heath where there are very few trees.

Management Influences

The lower parts of the woodland are currently used by the public for walking, although the higher parts remain relatively undisturbed. Presence of old stumps indicates that trees have been felled in the past. Only one new stump was recorded. Numbered bird boxes are present within the woodland, indicating that some nature conservation measures have been taken. It is thought that these are checked by a local ornithological group.

Tree and Shrub Composition

Sessile oak (*Quercus petraea*) is the most frequently recorded tree species, occurring in 15 out of 16 plots. Silver birch (*Betula pendula*) is also frequent, occurring in 11 of the plots surveyed. Other tree species present include downy birch (*Betula pubescens*), rowan (*Sorbus aucuparia*) and beech (*Fagus sylvatica*). Shrubs such as hazel (*Corylus avellana*) were only occasionally present. The canopy is reasonably open throughout. Many dead standing trees were present throughout the woodland, and living oak trees often had dead branches. Regeneration consists of oak (*Quercus petraea*), birch (*Betula pendula*), holly (*Ilex aquifolium*), rowan (*Sorbus aucuparia*) and hazel (*Corylus avellana*).

Ground Flora Composition

Many of the species present indicate an acid soil. Some plots are dominated by grass species such as wavy hair-grass (*Deschampsia flexuosa*), whilst other plots are dominated by bracken (*Pteridium aquilinum*). Bilberry and heather are abundant in several plots, particularly in the higher parts of the woodland. Other species present include tormentil (*Potentilla erecta*), bluebell (*Hyacinthoides non-scripta*) and common cow-wheat (*Melampyrum pratense*). Species of fern include lady fern (*Athyrium filix-femina*) and lemon-scented fern (*Oreopteris limbosperma*). Bryophytes are in places very abundant, forming a cover of up to 85% in some plots. The moss *Rhytidiadelphus loreus* was the most frequently recorded of these, although several other species including *Pleurozium schreberi* occur, along with some localised patches of sphagnum species. *Pseudoscleropodium purum* was recorded occasionally; the presence of which indicates an open canopy, as this species of moss will not tolerate deep shade.

Fauna

Birds recorded within the wood included buzzard, raven and tawny owl. Wood-warbler, pied fly-catcher and redstart are also known to breed in the wood, although were not recorded during the survey. Numbered bird boxes are present throughout the woodland. Possible deer tracks were noted.

Conclusion

Dinas is a mature, broadleaved semi-natural woodland with an acid substrate. Oak and birch are the dominant tree species, while the ground flora consists of species such as bracken, bilberry and wavy hair-grass. Moss is very abundant and several different species were recorded. At the top of the hill the woodland merges with an area of open heath.

There is currently no (or very little) management of the woodland, although it is regularly used by the public for walking.

SITE 87 COED COCHION

Position in the Landscape

The site lies on a north-facing slope, which varies in steepness. The lower slopes are gently undulating while the upper slopes exceed 45°. A vertical rock outcrop, situated towards the top of the slope, is approximately 3m in height and runs across the entire length on the site. A moderately fast flowing shallow stream runs down through the centre of the site, in a south to north direction.

The northern boundary is defined by a country lane and an area of permanent pasture. All other boundaries also grade into permanent pasture and small blocks of deciduous woodland. Intact wire fencing surrounds a high proportion of the site while scrub and trees informally bound other areas.

Broad Habitat description

A mature oak woodland with no understory and a species poor ground flora. Plots located in areas inaccessible to grazing animals supported a more diverse mix of ground flora species, with a sward structure also more variable. Results show that the type of floristic species recorded throughout the entire site reflects an acidic substrate.

Management influences

- One private owner
- Fourteen plots were intensively grazed, possibly explaining the lack of understory and species-poor ground flora. Many plots had sheep tracks running through them.
- Five plots contained old hardwood stumps, indicating that some woodland management has been undertaken in the past. All stems and brash from the cut trees had been removed.
- Seven plots contained bird boxes suitable for small species. Wildlife conservation measures therefore have been employed within the woodland.

Tree and shrub composition

All sixteen plots are comprised of oak species (sessile, pedunculate and hybrids) with only five quadrats containing shrub species. The absence of understory shrub species is reflective of the site as a whole, resulting in a woodland that lacks structural diversity. The oak trees throughout the site were of a similar height, giving an even aged woodland.

Fourteen plots contained dead wood, which was mainly in the form of fallen branches.

Bryophytes had mainly established on the bases on trees rather on their trunks. Lichens however, occurred up the trunks.

Ground flora composition

Most plots were generally species poor. The two plots with the most diverse and abundant range of floristic species were seven and nine. These were the only two non-grazed plots.

All plots contained between 5-7 grass species.

Five plots contained bracken as the dominant species.

Eight plots had a high litter layer, while only three plots showed a higher abundance of moss.

Fauna

The site supported a good mix of bird species including red start, nuthatch and tree creeper. Raven was observed by sight and sound to be flying over the woodland canopy. Woodpecker activity was particularly high as many of the dead branches revealed feeding signs and nesting holes were present on oak trees.

In addition to the presence of sheep there were field signs of grey squirrel and rabbit.

Conclusion

Coed Cochion is subject to intensive grazing pressure and this may partially account for the lack of structural and floristic diversity. A range of grass species and bracken occur consistently in the ground flora. The ground also generally has a thick litter layer and moss species were generally more abundant in areas where there was dead wood and adequate shading from canopy trees.

This mature oak woodland appears to have had some past management in the form of selective felling, although the cut wood and brash from the felled trees has been removed from the site. Some wildlife conservation measures have been undertaken as there are numerous bird boxes that have been erected to suit the nesting requirements of smaller species.

SITE 88. LEITH HILL PLACE WOOD

Position in the landscape.

- The wood forms a southern extension of an extensive area of National Trust-owned woodland on Leith Hill. It is separated from the larger area by a pair of minor roads which form the northern and western boundaries.
- To the south and east it lies adjacent to the improved farmland of Hartshurst Farm.
- The wood slopes evenly to the south, the change in elevation being from some 225m in the northeast corner to c.135m at the southern extremity.
- A well marked footpath descends the slope near the eastern boundary whilst a, largely well maintained, series of tracks form a circular network within the wood.
- The surrounding area is undulating and heavily wooded, lacking settlements of any size and with several relatively low intensity farms.

Broad habitat description.

- In terms of canopy the wood may be divided into three portions. The northernmost, Slittens Copse, at the highest elevations, is largely a beech wood with a bracken-bluebell ground flora where shade was less dense.
- On the southern lower slopes oak and birch predominate with a well developed hazel understory. Towards the eastern section here there are small areas where ash becomes prominent whilst one part of the south-eastern zone contains an extensive larch planting.
- The central area is more varied with oak remaining the most prominent canopy tree but with small alder groves along the small spring and stream lines which descend the slope and also with occasional dense thickets of holly and birch.

Management influences.

- The wood is actively managed by the National Trust though removal of wood on a commercial basis is of limited extent.
- Some fairly recent planting of oak has occurred following the great storm and attempts are being made to control the birch thickets which have arisen in the gaps formed by the storm damage.
- The presence of a maintained track network within the wood has resulted in a rich herbaceous flora along the verges.

Tree and shrub composition

- Pedunculate Oak is the principal canopy tree with well developed beech assuming prominence towards the upper northern edge.
- Apart from one area of larch, conifers are largely absent and ash and sweet chestnut make only a very limited contribution though there are scattered veteran specimens of the latter.
- Downy birch is plentiful, but forms dense stands only in areas affected by the 1987 storm.
- The understory is composed almost exclusively of hazel and this is largely confined to the southern third of the wood.
- In places honeysuckle is well established; the wood is notable for the virtual absence of ivy and generally low vigour of the brambles which were absent from much of the wood.

Ground flora composition

- The ground flora of the wood is largely dominated by bracken and bluebell and the richness of the underlying flora varies greatly.
- It is poorest in the north-central and west-central zones of the wood under the beech and numerous associated holly thickets.

- A very rich ground flora is found along the southern section of the wood in association with the hazel understory area; a second species-rich zone occurs along the eastern flank where the prevalence of ash cover is greater.
- Elsewhere species diversity is moderate.
- *Lamium*, *Glechoma* and *Lysimachia nemorum* are all widespread whilst an interesting addition is that of *Impatiens parviflora* which is scattered throughout the damper areas of the wood.

Fauna.

- The extent of rabbit activity is remarkable for such a uniformly wooded area.
- Evidence of deer is plentiful and much damage was noted especially to the birch.
- The prevalence of bird egg shells, including those of blackbird, song thrush and pheasant, and the amount of bird song even in the middle of the day indicated the wood to be a significant breeding area.
- Foxes were active but there was no evidence for the presence of badgers.

Conclusions.

The wood appears to have escaped the worst of the effects of the 1987 storm and damage that has occurred has been sympathetically managed through the removal of most of the fallen trees and through a measure of control of the ensuing birch thickets.

The wood is structurally diverse and well managed and, even though the ground flora is not exceptionally rich, the general appearance and ambience is of an extremely pleasant piece of woodland.

It is a fine example of a southern lowland bluebell wood.

SITE 89: ALLT BLAIRN EIGIAN

Broad habitat description:

Single coppiced oak woodland in steep sided valley with Douglas fir plantation on the south side. Sparse shrub layer and ground cover dominated by *Vaccinium* and mosses. Small reservoir (drained at time of survey), with willow surrounding. Good tracks throughout, and much brash at the side of tracks

Management influences:

Actively maintained, brash, tracks etc.

Tree and shrub composition: Single coppiced oak in the main with Douglas fir plantation south of the reservoir (Large trees). Occasional ash. Sparse shrub layer of coppiced Hazel

Ground flora composition:

Vaccinium and thick moss layer including *Sphagnum*

Fauna:

Little evidence of deer, badgers or squirrels

Conclusion:

This wood has obviously been actively managed with good new tracks throughout, brash margins and the lake in the bottom is being cleaned out. The survey stands out in my mind as the most difficult two days in the field I have ever had. And this includes the Himalayas in the monsoon. I never want to see the place again. The adjacent quarry faces were inspiring in the mist and I suggested that rock climbing should be included in our training days in the future.

Plot comments

1. V. steep, waist high *Vaccinium*
2. V. steep, waist high *Vaccinium* with oak single coppicing
3. Quadrat partly on track. Tracks are extended from the 1970's maps and some old tracks are not in use. Very little shrub layer, - occasional Rowan. Tall *Vaccinium* and *Lonicera* in trees.
4. V. steep, waist high *Vaccinium* with oak single coppicing. Open canopy. Above 15 m. high vertical cliff
5. Dense *Vaccinium* with single coppice oak and regenerating holly on a steep slope
6. Steep slope, waist high *Vaccinium* with oak single coppicing
7. Conifer plantation (Douglas fir) with forest track through the middle of the plot on steep slope
Oak and *Rubus* to the north
8. Steep slope and lots of brash. *Betula* seedlings in 4
9. Steep slope with coppiced oak. Good *Dryopteris dilatata* and *felix-mas* with much *Rubus*
10. Blackbird, wren, woodpecker, chiff-chaff heard, remarkably, over the rain. Beech saplings nearby.
Sparse understorey dominated by *Dryopteris*
11. *Dryopteris dilatata* dominated slope with bramble, close to a stream and a glade. Large beech just outside plot

12. In a valley bottom, steep stream embankments on both sides, very wet flat valley bottom. Covered culvert.
13. Crataegus with many sycamore saplings.
14. Robin, Raven, Mistle Thrush, Blackbird, Wren, Willow Warbler. Wet, and remarkably flat
15. Less managed plot than most - natural looking. Must have been the mist. Shallow soil on a shale base
16. Blackcaps. Bramble covered slope with uncoppiced oak over.

SITE 90. HOUNDTOR WOOD

Location and Landscape Context

Houndtor Wood forms a part of the extensive complex of mixed woodlands in the valley of the River Bovey descending from Dartmoor to the west towards Bovey Tracey to the east. The survey area comprises a belt of semi-natural woodland of some 60-70 ha in extent on the steep north-east facing slopes of the Bovey Valley between Lustleigh and Manaton, at elevations ranging from 50m in the valley bottom to 250m asl at the upper edge. The survey area is bounded along one edge by the River Bovey and on the other edges adjoins other woodland areas and permanent pasture fields. There is an effective wire stock fence around the wider complex of woodlands in the Bovey Valley.

Ecological Site Factors

The site is located on the intrusive Dartmoor granite geology which gives rise to infertile freely drained soils in the main. However within the survey area there are a wide variety of soil conditions determined by microtopography, which also include poorly drained boggy areas with peaty soils. Some areas also display a woodland vegetation assemblage which is indicative of more fertile local soil conditions. The climate is of a warm moist/ warm wet type, transitional between lowland conditions and the wet upland of Dartmoor.

Management Factors

The entire survey area has been owned and managed by NC/ English Nature as a National Nature Reserve since the 1960's/70's. During that period it has been subject to essentially a non-intervention management regime, with the exception of enhanced stock fencing and some attempts to control sycamore by patch fellings of mature seed trees. Prior to that time the woodland was extensively grazed by livestock for a long period and may originally have been more of an open wood-pasture common habitat. Some of the surrounding areas of similar woodland have been partially restocked with conifers since the last war, and their current owner, the Woodland Trust, aims to remove these in time. Management access to parts of the survey area are made difficult by steep slopes and wet, boggy ground together with thicket vegetation. However there are a number of public footpaths traversing the site (both along the valley and across it) which are widely used by ramblers. The whole area is effectively open to general public access. Roe deer are said to be prevalent throughout the woodland complex although they were not seen.

Stand Types

The semi-natural stand types within the survey area display a naturally determined variation from acid oak-hazel-birch-rowan woodland on the freely-draining slopes to ash and alder dominated woodland on the wetter, more fertile ground near the River Bovey and locally elsewhere. The canopy height is usually 20-25m irrespective of species. Sycamore is becoming an increasingly important element of both types of stand, despite efforts to control its spread by felling seed trees - it is now the dominant sub-canopy tree species in many parts of the survey area and can only be expected to replace the current oak canopy in due course. There are a few mature planted conifers within the study area.

The understorey in the oak-dominated woodland areas is of hazel, rowan, birch and holly, with willow species also occurring in the wetter areas of the site. Regeneration is primarily of ash, sycamore, holly and rowan with little evidence of oak regeneration at present. There is a significant and diverse dead wood component which is increasing.

Ground Vegetation

A complex mosaic of woodland vegetation types occur within the survey area, influenced by soil moisture and fertility levels. The upper, steeper parts of the oak woodland are characterised by dominant *Vaccinium myrtillus*. Other areas have extensive *Pteridium aquilinum*, *Dryopteris dilatata* and *Dryopteris affinis*. More locally *Rubus fruticosus* and *Hedera helix* are dominant. Wetter areas have *Chrysosplenium oppositifolium* and *Ranunculus repens*. Among the grasses *Holcus mollis* and *Deschampsia flexuosa* are

the species most commonly found. Bryophytes can also be locally important with *Thuidium tamariscinum*, *Rhytidiadelphus loreus*, *Hylocomium splendens* and *Eurynchium* spp being the main species present.

Fauna

Roe deer are known to be present throughout the Bovey Valley woodlands. Grey squirrel were seen and there was some evidence of possible rabbit burrowing. Dartmoor ponies are in the general area, but are, in principle, fenced out of the survey area of Houndtor. Wood ants were seen to be very common in parts of the site, but no anthills were found. The avifauna recorded consisted of jay, buzzard, wren, raven, tits, robin and woodpecker.

Habitat features

Because of the extent and topographical diversity of this site there are a wide variety of habitats. There are extensive rock and boulder features, gullies and small bogs and a variety of small streams and ditches in addition to the River Bovey itself. Vegetative features include dense bracken and ferns, bramble clumps, tall herb vegetation and alder groves. Open areas are fairly restricted away from the river corridor. Bryophytes and lichens occur widely on the trees. The woodlands generally give a wild and unmanaged feel, although in reality they may be of fairly recent origin.

SITE 91. CHIDDINGLY WOOD.

Position in the landscape.

- Chiddingly Wood forms the central portion of a much more extensive wooded area lying immediately to the east of the B2028.
- The wood occupies a steep-sided valley with high sandstone exposures forming major breaks of slope on both sides of the valley.
- A stream runs north-south through the wood and this has been utilized, in Victorian times, to provide ponds, lakes, sluices, water shoots etc. as part of the C19 landscaping of the wood.
- The old pump house still appears to be in working order.
- Wakehurst Place, the outstation of Kew, is situated on the western boundary over the B2028. To the north and south Chiddingly merges into Walls Wood and Boundary Wood respectively without internal boundaries. The north-eastern extension is flanked by improved pasture having a stockproof post and wire fence with filled gaps.
- Immediately to the southeast the wood borders Philpots, a former estate farm now housing various youth education centres and a riding school.
- The area is part of a rural heavily wooded landscape dissected by several steep stream valleys flowing south.

Broad habitat description.

- Much of the original nature of the wood is obscured through the planting of exotic conifers and the now enormous beech trees and through the uncontrolled expansion of Rhododendron thickets which now occupy much of the eastern section.
- The stream is flanked by a small area of Alder-Urtica wood of very reasonable quality.
- An area of ash wood survives on the small plateau above the cliffs in the extreme north-east section.

Management influences.

- The wood is grossly under-managed; little attempt appears to have been made to deal with the extensive damage caused by the 1987 storm.
- The owner has intentions of instigating a management regime and hopes to involve English Nature in the clearance of the area of the geological SSSI: members of staff at Wakehurst Place have also expressed an interest in giving advice on the restoration of this area.
- There appear to be no plans to remove the extensive stands of pine and larch in the eastern section.

Tree and shrub composition

- Stands of both alder (W6) and ash-alder (W7) are confined to the southern end of the river valley. Though having a dense cover of *Carex pendula* in places they remain of very reasonable quality.
- *Pinus sylvestris* and *Betula pubescens* are the principal species providing the sparse canopy of the northern slope.
- Open areas in the west central section support numerous isolated birch whilst the east-facing slope has stands of larch.
- A variety of conifers including *Wellingtonia*, *Pinus* spp., *Cupressus* and *Cedrus* join the massive beeches as relics of the original landscaping, these are most prominent in the eastern section.

Ground flora composition.

Only in the western section is the ground flora reasonably rich and this is mainly concentrated on the damper areas associated with the stream. Here *Carex pendula* is locally dominant, with frequent *Urtica*, *Glechoma*, *Carex remota* and *Ajuga*.

Species diversity tends to decrease in an easterly progression being moderate in the central areas where bracken dominates and exceptionally poor, and sometimes confined to a handful of shade tolerant bryophyte species, in the more rhododendron-infested eastern portions.

Fauna.

- Grey squirrels appear abundant throughout the wood and there is ample evidence of both rabbit and fox activity.
- The site does not seem to be amenable to use by deer of which there was no sign.
- Stock have no access to the wood.
- Scrubby areas supported a reasonable numbers of warblers, otherwise bird activity was generally low to moderate and confined to common species.

Conclusions.

The steep nature of the terrain, the dense rhododendron and the antiquity of the map provided, which did not accurately represent the paths on the ground, made the location of the points particularly difficult and it is likely that there will be a poor level of overlap between the current survey points and those of the 1971 survey.

One plot, number 15, situated at the base of the sandstone cliffs and in the area of densest rhododendron, proved inaccessible in the absence of cutting gear and could not be sampled -sorry.

In summary, although small areas of damp broadleaved woodland of reasonably quality were present much of the site would fall within the nightmare category!

SITE 92: GELLI-HIR

Position in the Landscape

- Gelli-Hir is situated predominantly on flat ground. To the north, the woodland slopes towards the east at an angle of approximately 30°.
- Permanent pasture, enclosed by a network of hedgerows, defines the surrounding landscape. A 4m wide track runs along the southern boundary of Gelli-Hir and a wire fence encloses the woodland.

Broad Habitat Description

- Gelli-Hir is a structurally diverse, mixed-aged, broadleaved woodland. Species composition is varied at all structural levels (canopy, shrub layer and ground flora).
- Features such as rides, open water, streams and marshy areas enhance the overall diversity of the woodland.
- A large pond has been created within Gelli-Hir, and several dragonflies and damselflies were noted here at the time of survey. A bird hide has been built at the edge of the pond.

Management Influences

- Gelli-Hir is owned by the Wildlife Trust of South and West Wales.
- There was evidence of both past and recent management within the woodland, with a number of both old and recently cut stumps present. Brash piles and stacked logs were frequent.
- The presence of many bird and dormouse boxes provides evidence of conservation methods having been undertaken within the woodland.
- A well-maintained footpath runs through the woodland.

Tree and Shrub Composition

- Within all 16 plots a range of canopy species was recorded, including oak (*Quercus* sp.), beech (*Fagus sylvatica*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), sweet chestnut (*Castanea sativa*), alder (*Alnus glutinosa*) and birch (*Betula* sp.). These species occurred as a dense intermix, although were more scattered in areas where local thinning had been undertaken.
- The shrub layer was well developed and included species such as hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*) and holly (*Ilex aquifolium*). Hazel was particularly frequent, being recorded in 13 of the 16 plots, and much of it was very mature and multi stemmed.
- Dead wood was present in all 16 plots and included decaying brash piles, rotten logs and fallen and uprooted trees. Much of the dead wood was covered by bryophytes.

Ground Flora Composition

- Ground flora was relatively diverse. The most abundant species was bramble (*Rubus fruticosus*), with bracken (*Pteridium aquilinum*), male fern (*Dryopteris filix-mas*), bluebell (*Hyacinthoides non-scripta*), and remote sedge (*Carex remota*) occurring frequently. Other species present in smaller numbers included enchanter's nightshade (*Circaea lutetiana*), lady fern (*Athyrium filix-femina*), and hard fern (*Blechnum spicant*). Some plots were not as diverse as others, and these were principally dominated by bramble and ferns.
- Moss and ivy cover were variable, being present in large amounts in some plots and not others.

Fauna

- Mammals recorded within the woodland were fox, rabbit, mole, grey squirrel and pipistrelle bat. Dormouse boxes were present.
- Birds recorded included sparrowhawk, kestrel, owl, heron (near the pond), wren, blackbird and robin.

Conclusion

Gelli-Hir is mixed aged, broadleaved woodland in which there is evidence of both past and recent management.

Tree species include oak, ash, sycamore and beech. The shrub layer is comprised predominantly of mature hazel. Ground flora includes bramble, bracken and bluebell.

Bird and dormice boxes are present throughout the woodland.

SITE 93: LLANGIBBY PARK

Position in the Landscape

Llangibby Park lies on a combination of steep and gentle slopes and flat ground. A stream runs through the woodland, as do several paths and tracks for vehicles.

The woodland is enclosed with a fence, and the surrounding land is permanent pasture grazed by cattle.

Broad Habitat Description

Llangibby Park is a mixed, predominantly mature, woodland. It contains large areas of mature planted conifers, mature semi-natural broadleaved woodland and semi-mature planted ash trees.

Ground flora varies both in species and quantity between the different habitats present (e.g.. coniferous plantation and boggy or disturbed areas).

Management Influences

Stumps and coppiced stools are frequent throughout most of the woodland, indicating past management. The forest is currently managed as a commercial pheasant shoot, with many thousands of birds being present both within the woodland and on the surrounding pasture. Pheasant pens and feeding stations are present throughout, as are snares for foxes. Gamekeepers visit the area several times a day, and the woodland is also used by the public for walking.

Tree and Shrub Composition

The woodland contains a diverse tree assemblage, with a well-defined understorey.

Within the areas of semi-natural broadleaved woodland, ash (*Fraxinus excelsior*) was the most frequently recorded tree species, with oak (*Quercus robur*), sycamore (*Acer pseudoplatanus*), birch (*Betula pendula*), alder (*Alnus glutinosa*) and beech (*Fagus sylvatica*) also occurring. Shrubs include elder (*Sambucus nigra*), hazel (*Corylus avellana*) and hawthorn (*Crataegus monogyna*). Areas of planted conifers are composed of species including larch (*Larix* sp.), spruce (*Picea* sp) and pine (*Pinus* sp).

There is a good deal of regeneration throughout the woodland, and this consists mainly of ash and sycamore.

Ground Flora Composition

Ground flora is not generally abundant or diverse, and in many plots (particularly within the coniferous plantations) the woodland floor is covered by a layer of leaf litter rather than vegetation. This layer of leaves and conifer needles forms a cover of up to 85%.

Plots which have a more open canopy have a greater amount of vegetation and are dominated by species such as dog's mercury (*Mercurialis perennis*), yellow archangel (*Lamiastrum galeobdolon*) and bracken (*Pteridium aquilinum*). Other species present include ivy (*Hedera helix*), honeysuckle (*Lonicera periclymenum*) and red campion (*Silene dioica*).

Bryophytes are not abundant, forming a cover of 5% or less in all but one plot. Bryophytes present on the ground include *Mnium hornum* and *Eurhynchium* species, while *Isoetes macrospora* was commonly found on tree bases.

Dead wood is present in all plots and forms a cover of up to 25%, although this is more commonly around 5%.

A good variety of macrofungi is present throughout the woodland.

Fauna

There are many pheasants throughout the woodland, both in pens and also free.

Other birds recorded include raven, buzzard, jay and wren.

Mammals present include fox, badger, squirrel and rabbit.

Several corpses (mainly rabbits) were present, and a fox corpse was found in a snare.

Conclusion

Llangibby Park is a mixed woodland consisting of conifer and ash plantations, and semi-natural broadleaved woodland. Ground flora is not generally abundant or diverse, and there is a thick litter layer present in most plots. Numerous stumps are present, indicating past management. The woodland is currently managed as a commercial pheasant shoot.

SITE 94: BRADENHAM WOOD, THE COPPICE

A very large Chiltern Beechwood, mostly W14 *Fagus-Rubus* with some areas of W12 *Fagus mercurialis*. Much storm damage from 1987 is evident, in the form of fallen trees (most were removed) root plates, glades and considerable replanting. Some mature conifer plantations - presumably Larch as a nurse crop for beech. Much recreational use.

Comments on plots

1. Very spp poor Beech woodland, mature beech maidens, some *Acer pp* colonising along road side, immediately to W. Large pile of brash, otherwise no management.
2. Some mature beech have been felled in last 10 years. Also storm damage from 87. Busy path runs through plot.
3. Mature Beech woodland with *Acer pp* understorey, some rowan, hornbeam. Bluebell dominates ground flora. Path runs through plot, adjacent to boundary fence, also 20m from road, so quite light and open. Dead wood (branches) and stumps - 87 storm damage? No management.
4. Plot lies immediately W of North/South road - quite dense *Fagus* pole stage high forest with occasional mature *Fagus*.
5. Mature beech high forest, some holly. Path runs through plot, *Holcus poa des cesp* common here. Some holly removal along path edge - to create scallop, also some removal of fallen beech.
6. Root plates from 87 storm apparent near plot - no fallen deadwood, all cleared away. *Fagus* high forest with *Fagus* and *Q rob* pole stage egen. Holly thicket in part of plot. V small *Fagus* seedlings. Dense *Fagus* canopy.
7. Mature Beech forest with may pole stage regen and saplings of Beech, with some holly birch and oak. Large root plate from 87.
8. Mainly pole stage *Fagus* regen, more mature *Fagus* maidens nearby outside plot. Old wood bank runs NNE/SSW thru plot. Slope to W down to roadside. No field layer, no management.
9. Post 87 storm cleared and replanted with *Pru av*, *Fagus* and *Frax*. *Rubus* dominates. Grassy path runs through plot. *Crat mon* and *bet pend* self sown.
10. Rather open Beech high forest, with pole stage *Fagus* and *Acer pp*, plus other broadleaved regen. *Hyacinthoides* and *Pteridium* field layer mosaic with *Rubus* and *Melica*. Some past thinning. Planting post 87 storm(?)
11. Half plot lies within mature beech wood, other half is mixed Larch, Beech and Cherry plantation. Some clearance following 87 storm (root plates persist), no current management evident. Much dead wood. Nettles dominate patches.
12. Plot falls on intersection of 2 rides, mostly MG type grassland with woodland and bramble scrub on edges. Rides mown: some post 87 storm clearance, possibly replanted with *Q rob* (and *Fagus* nearby).
13. Large clearing with planted *Q rob*, *Fagus*, *Frax* and *Prunus av*. Self-sown *Acerpp*, *Sorb auc*, *Taxus*. *Rub frut* dominant.

14. Very open mature Beech high forest. Closed canopy, no understorey or field layer. Occasional Fagus and Ilex saplings; near old wood bank. No management.
15. Large glade within mature Beech high forest. Path goes through plot. Large bramble clump. Management: tree planting of Q rob and Fag syl. Storm damage clearance in past.
16. Mature Beech high forest. No understorey or field layer. No management apparent.

SITE 95 PRIESTFIELD

Position in the Landscape

- Complex series of slopes down to streams both in and outside wood. Some quite steep. The bottom 20% slopes down steeply to a river and has two small streams present.
- The river and more deciduous woodland form the lower boundary.
- Two other sides are adjacent to permanent grassland.
- The other side has newly planted trees in about a fifty metre strip adjacent to permanent grassland.

Management Description and Habitats

- One private owner.
- Nine plots have been carefully felled and are now singled coppice.
- Four plots are overgrown plantation of exotic species c. 15 years when many large trees were felled.
- Four plots are relatively undisturbed on the steep ground above the river.
- There is public access by footpaths and also horse riding.
- Some very large trees still remain on the edge of the wood and the lower section.
- An old railway line runs through the middle of the wood.

Tree Composition and Change

- Birch saplings and trees have both greatly increased, presumably because of disturbance.
- Holly has greatly increased (400% saplings) but also in the middle size classes of trees.
- Hawthorn has declined a bit from a low base.
- The larger size classes of ash and beech have disappeared - presumably because of the felling.
- Larch has been planted in the wood whereas it was absent previously.
- Many small oak are present as saplings and trees and the larger size classes have also increased, presumably due to planting.
- Overall saplings, young trees and hazel have all expanded extensively with only the very large size classes disappeared.
- The number of small dead saplings and trees have greatly increased probably from competition.

Ground Vegetation and Change

- Increased: *Dryopteris dilatata* (12-16); *Lonicera periclymenum* (10-14); *Dryopteris filix-mas* (7-10); *Rubus fruticosus* (10-15); *Oxalis acetosella* (14-15); *Stellaria holostea* (9-10).
- Decreased: *Deschampsia caespitosa* (10-9); *Pteridium aquilinum* (13-6); *Holcus mollis* (11-9).
- Exceptionally, this site has more species expanding than declining, presumably because of the extensive disturbance.
- Also, more species have increased than declined.
- Species are from mildly acid to neutral soil types.
- Species richness has increased by 23%.
- The collapse of the bryophyte species frequency is difficult to explain.

- *Dryopteris dilatata* (3.2 - 5.4); *Dryopteris filix-mas* (3.2 - 4.9); *Oxalis acetosella* (3.1 - 5.7); *Rubus* (1.9 - 7.8) have all increased in cover whereas *Pteridium* (24.8 - 4.5) is the only species to decline.

Conclusion

This wood showed the greatest evidence of the effects of removal of large trees and disturbance.

Exceptionally, for the pilot series, it showed widespread increases in species frequency, presumably because of the opening up of the canopy.

This points to the increase in shade being the most important factor in species decline elsewhere.

Some large individuals present in the wood indicate the policy importance of protecting the few old trees that remain.

SITE 96: GARREG-GOCH-ISAF

Position in the Landscape

The woodland lies predominantly on flat terrain. Where the Afon Gwynon stream cuts through the northern section of the woodland, however, the topography becomes gently undulating, with certain areas forming a very shallow sloping V-shaped valley.

The adjacent landscape comprises permanent pasture, private farmland and smaller blocks of deciduous broadleaved woodland.

An intact wire fence defines the woodland's northern and eastern boundary. In some areas the fence is positioned approximately 3m into the woodland, leaving fragments of the woodland's edge open to domestic grazing. To the south, a small embankment defines the boundary. The embankment retains the character of a relict hedge boundary and also extends around the woodland's western boundary, which is further defined by a narrow road.

Broad Habitat description

Garreg-goch-isaf is a mixed aged deciduous broadleaved woodland. The canopy composition is varied, although trees such as pedunculate oak (*Quercus robur*) and beech (*Fagus sylvatica*) are locally dominant within certain sections of the woodland.

The woodland is structurally diverse with shrubs present at different densities and at varying stages of development.

Adjacent to the steadily flowing Afon Gwynon stream are some low lying marshy areas. The ground flora and canopy composition in these areas differs to the drier areas. Alder (*Alnus glutinosa*) and willow (*Salix* sp) are more abundant and the ground flora supports additional species such as remote sedge (*Carex remota*). This variation in species enhances the woodland's overall diversity.

Management influences

The entire woodland is privately owned.

Cut stumps were recorded within eight plots. Stumps recorded in plots south of Afon Gwynon were evidently very old, being rotten and carpeted with bryophytes. North of Afon Gwynon, a higher number of cut stumps were present, some of which appeared more recent as they had limited bryophyte cover and it was possible to distinguish the tree species. In most cases it was pedunculate oak that had been felled. At the time of the survey it was noted that woodland clearance was being undertaken along a large section of the woodland's south-western boundary. This seems to have been undertaken in a very crude manner, with mature pedunculate oak being ripped away from the top of the old embankment.

Whilst evidence of sheep grazing was recorded within Plot 5, there were smaller fragments of woodland to the north of the site that were accessible to domestic grazing. Within Plots 9 and 11 sheep bones were found, which may suggest that other parts of the woodland may have been grazed in the past.

Tree and shrub composition

The range of tree species recorded within the plots included ash (*Fraxinus excelsior*), pedunculate oak, sycamore (*Acer pseudoplatanus*), beech, bird cherry (*Prunus padus*) and holly (*Ilex aquifolium*). The average density of trees per plot was 12, with all species ranging from semi-mature to mature.

The woodland as a whole has a well-developed shrub layer, comprised of a range of species at different developmental stages.

There was abundant regeneration throughout the woodland. The dominant species was ash, occurring within 14 of the plots. Other regenerating species, although less abundant, were hazel (*Corylus avellana*), holly and hawthorn (*Crataegus monogyna*).

Dead wood was recorded within 14 of the plots and this varied in form, including fallen broken trees in 10 plots, fallen uprooted and hollow trees in two plots, rotten logs in four plots and rot holes within three of the plots. Standing dead wood was also recorded within 13 of the plots, although this was mainly associated with the shrub layer.

Whilst bryophytes were present on the base and trunks of trees within 14 of the plots, the general cover was very scattered. The bryophyte cover on dead wood, however, was profuse, with the dominant species being *Thuidium tamariscinum*.

Ground flora composition

All 16 plots supported an intimate mix of grasses, ferns and herbaceous plants, with no one particular species being dominant.

All plots had a good bryophyte cover, although the site as a whole supported a limited number of species. A total of 10 species were recorded, with species such as *Thuidium tamariscinum* and *Rhytidiadelphus loreus* showing dominance in some of the plots.

A deep litter layer was present within 12 of the plots, and this was reflective of the wood as a whole.

Fauna

A potential bat roost was found in a large rot hole of a mature pedunculate oak within Plot 2. Two droppings, a number of hairs and scratch marks were found at the base of the rot hole. The tree is situated towards the edge of the wood with the rot hole facing out towards grazed pasture. The rot hole measured 6cm in height by 3cm wide.

Other fauna present within the woodland included rabbit, squirrel, fox and badger. There were a number of holes and droppings to indicate the presence of rabbit, a visual sighting of squirrel, a fox scat and, within plot 8, there was a badger latrine consisting of one fresh dung pit.

The woodland supported a varied bird assemblage including great spotted woodpecker, buzzard, raven, wren, robin, nuthatch, treecreeper, wood pigeon, blue tit and great tit.

Conclusion

Garreg-goch-isaf is a mixed broadleaved woodland, comprised of both semi-mature and mature trees. The woodland as a whole is structurally diverse with a range of woody species at different developmental stages. The ground flora is species rich, consisting of an intimate mix of ferns, grasses and herbaceous plants. There is evidence of past management in the form of tree felling. Woodland edge clearance is currently being undertaken along a large section of the woodlands south-western boundary.

SITE 97: AFON-SYLGEN

Position in the Landscape

Afon-Sylgen occurs in a steep sided valley, at the bottom of which lies a rock-based river with a moderately fast flow.

Surrounding land-use consists of permanent pasture, unmanaged grassland and housing. The woodland is enclosed by a fence.

Broad Habitat Description

Afon-Sylgen is a mature, broadleaved semi-natural woodland. One small area of planted conifers was noted. Towards the top of the valley sides there are some areas with heathland ground flora, indicating an acid substrate in these parts of the woodland. Marsh species are present in boggy, wet areas alongside the stream at the bottom of the valley.

Some steep rock faces are present, which have a good cover of bryophytes.

Management Influences

- The woodland has several private owners who live on adjacent land.
- Old stumps were recorded in just two plots, indicating that the woodland has been subjected to only a small amount of management in the past. There is currently no active management of the woodland. It is overgrown and difficult to access, and is not used by people.

Tree and Shrub Composition

- Ash (*Fraxinus excelsior*) is the most frequent tree species recorded. Other tree species include sycamore (*Acer pseudoplatanus*), rowan (*Sorbus aucuparia*), oak (*Quercus robur*) and beech (*Fagus sylvatica*). Alder (*Alnus glutinosa*) is present along the edge of the river. The shrub layer is well developed, with hazel (*Corylus avellana*) occurring in 10 out of the 16 plots surveyed. Conifers such as spruce (*Picea* sp.) are rare and local.
- Regeneration consists mainly of hazel, but also includes species such as ash, beech, oak and holly (*Ilex aquifolium*).
- Standing dead wood is present in most plots, and fallen dead wood generally provides a ground cover of between 5 and 10%.
- Ivy (*Hedera helix*), honeysuckle (*Lonicera periclymenum*) and mosses such as *Isoetecium myosuroides* form a dense vegetative cover on the trunks and branches of many trees.

Ground Flora Composition

- There are a variety of habitats in this woodland and the ground flora is diverse, and often dense. Some areas at the top of the steep sided valley slopes are vegetated by heathland species such as bilberry (*Vaccinium myrtillus*) and heather (*Calluna vulgaris*), whilst, in wetter areas at the bottom of the valley, species such as hemlock water-dropwort (*Oenanthe crocata*), opposite-leaved golden-saxifrage (*Chrysosplenium oppositifolium*) and meadowsweet (*Filipendula ulmaria*) are present. The most frequent species to occur throughout the woodland include bramble (*Rubus fruticosus*) and broad buckler-fern (*Dryopteris dilatata*), both being recorded in 14 out of 16 plots. Other species present include wood-sorrel (*Oxalis acetosella*) and bluebell (*Hyacinthoides non-scripta*).
- A good variety of bryophytes is present throughout the woodland, including the mosses *Plagiomnium undulatum*, *Thuidium tamariscinum* and *Rhytidiadelphus loreus*.
- Amounts of leaf litter varies from 0-90%.

Fauna

There were many signs of badgers throughout the woodland, including latrines, setts and a badger corpse. Other animals present include squirrels and rabbits.

Birds recorded were buzzard, raven and wren.

Conclusion

- Afon-Sylgen is a mature, broadleaved semi-natural woodland, with a well-developed shrub layer and diverse ground flora.
- It is not currently managed or used by people.
- Signs of badgers were common throughout the woodland at the time of survey.

SITE 98 (GLEN ORCHILL WOOD) MULBEN

Position in Landscape

This river valley woodland has a convoluted boundary following the break of slope. The site is bounded by the railway to the north, the distillery buildings, the B9103 road and intensively used agricultural land to the south. Part of this woodland Q12 has been lost to expansion of the distillery (Achroisk distillery - Diageo) and Q11 has been built on. The only proper access to the valley bottom is for distillery workers down a newly built metal stairway and by a track for maintenance of the water tanks for the distillery. The woodland is extremely steep sided and made up of several deep valleys cut by the Mulben burn and its tributaries. The site is essentially private, owned by the distillery with no public access.

Broad Habitat description

Steep slopes with multi-stemmed scrubby woodland comprising predominantly birch, rowan and hazel. The lower wet areas with willow, birch and blackthorn scrub and lush tall herb communities. More open better drained slopes have bracken. Large areas of the woodland seem species poor totally dominated by *Luzula sylvatica* or *Pteridium aquilinum*. Where *L. sylvatica* is not dominant there occurs a good variety of fern and bryophyte species. There are significant amounts of standing and fallen dead wood. No other canopy species were seen except for some small areas of introduced conifers and a few mature oak which occurred mostly on the site boundary.

Management Influences

Currently there appears to be no active management in the woodland, many areas were very inaccessible due to lack of human use and due to steep water logged slopes. No agricultural grazing currently occurring within the site with the exception of one individual sheep. It is likely that oaks have been systematically removed from the woodland for use by the distillery. A power line noted crossing part of the site in 1970's is no longer present.

Tree and shrub composition

The canopy is predominantly *Betula pendula* and *Betula pubescens* with multi-stemmed hazel and rowan and scattered patches of blackthorn scrub.

Ground flora composition

L. sylvatica forms a major component in 11 out of the 14 quadrats surveyed, with up to 90% cover in one Q4. Bracken is also significant covering at least 10% in 50% of the quadrats with 75% cover in Q1. Mixed fern species cover over 10% of the ground in 5 quadrats and mixed grass species give at least 20% cover in 5 quadrats. *Juncus* sp. forms 25% of ground cover in 3 of the valley bottom quadrats. Bryophytes cover at least 10% in six quadrats and bare ground appears in 3 quadrats which are impacted by human activity, associated with the distillery.

Fauna

Otter spraint was found in Q5 and possible otter paths noted in Q15. Signs of deer and browsing were only noted in three quadrats. A sheep was seen and signs were recorded in three quadrats.

Conclusion

This site is a mixed scrubby woodland/wetland site with relatively low diversity of associated species in the woody areas but rich plant communities along stream sides and the valley bottoms. The site is being allowed to develop naturally with no current interference from the site owners (distillery).

SITE 99. DULWICH WOOD.

Position in the landscape.

- The wood occupies the north-western slopes of Dulwich Hill and together with the surrounding area of allotments and a golf course forms a green island within the built-up metropolitan area.
- Dulwich is a wood of two parts - the larger, northern section is an area of public amenity favoured by dog walkers and joggers whilst the southern section, isolated by two roads, is fenced-off and said by the Dulwich estate to be an area reserved for the use of Dulwich residents only. Largely difficult to traverse, this use by the locals seems to be restricted to the deposition of litter within its periphery.
- With the exception of the small north-eastern area, separated from the remainder by a disused railway track, the wood is entirely enclosed by stout estate fencing.
- It is surrounded by residential curtilage on all but the northern edge where residences give way to allotments and a golf course.

Broad habitat description.

- The wood lies on freely-drained humic podzols, the organic layer of which is greater than 15cm in some places. In this situation a dry oak wood has developed.
- The woodland is densely shaded with the exception of gaps created by the considerable damage inflicted by past storms.
- Areas of cherry laurel have expanded to dominate the understory of much of the southern section of the wood.
- In contrast to other woods surveyed, sycamore colonization is extensive.

Management influences.

- There is some management input from staff of the estate though this appears to be largely restricted at the present time to attempts to control ivy growth on the canopy trees plus a reasonable level of removal of damaged and fallen trees from the northern section.
- The density of canopy trees is extremely great and there appears to be a reluctance to undertake any thinning and thus ground flora tends to be generally impoverished.
- The wood has contracted since the 1971 survey through the extension of an existing housing development along the south-eastern fringe. Building commenced in 1971/72 and has resulted in plots 10, 13 and 14 being lost as they are now part of residential curtilage.

Tree and shrub composition.

- The wood is overwhelmingly dominated by mature pedunculate oak with more recent sycamore invasion in some areas, particularly around the fringes.
- Beech are frequent but generally subordinate to the oak.
- A few well developed ash, common lime, yew and hornbeam are accompanied by occasional exotics such as laburnum.
- The wood features an abundance of holly thickets and occasional large specimens of Ilex.
- As to the understory, hazel is very sparse throughout the wood, cherry laurel and to a much lesser extent rhododendron become increasingly prominent towards the central and southern sections.
- Tree regeneration is generally sparse.

Ground flora composition.

The ground flora is uniformly species poor, dominated by mixtures of ivy, bramble and occasionally bracken. There were a few records for *Anemone* and *Hyacinthoides non-scripta* and one record for *Polygonatum multiflorum* (Solomons seal).

Despite the extensive network of paths and tracks which bisect the wood the overall density of the canopy shade prevents the development of a rich ride-side flora. On the wide entrance track there were records for *Anthriscus* and *Lamiastrum*; *Allium ursinum* was also recorded in one plot.

Japanese knotweed was recorded near the margins of the wood (plots 4 and 15).

Fauna.

There are no stock in the vicinity and the high incidence of dog exercising may explain the almost total lack of evidence of animals apart from use by foxes.

Bird activity was however moderately high and included G.S. Woodpecker and Tawny owl.

Conclusions.

- An over-shaded site in need of more active management.
- The remnants of the ground flora are so sparse that even an opening of the canopy would probably not result in a rapid expansion of the smaller herbaceous species.
- The profusion of ivy from ground to canopy, the dense shading, lack of a decent understory and the poverty of the ground flora combine to give the wood a rather dismal aspect.

SITE 100: NETTLEBED COMMON WOOD

Nettlebed Common Wood is a mixture of mainly *Fagus/Ilex* high forest, some originating from old coppice, with some *W10 Quercus/rubus/pteridium* and areas of conifer plantation (we believe to be *Abies alba*). Ground flora is generally sparse to non-existent. There is little or no management apart from some thinning of conifers, and firewood collection. Recreational use by locals is evident, particularly dog walking.

Comments on plots

1. Plot near edge of wood, adjacent to road. High forest *Q. rob/Fag syl* with *Fag syl* understorey. *V* parse field layer, only *rubus*. No management.
2. Boundary between older *Fag syl* high forest and more recent fir plantation. Recent *Bet pend/Pru av* with some *Fag syl* regen - now pole stage. Mainly *rub* fruit below. Management: some evidence of fir thinning more than 10y bp. Also clearance of storm damage from 87.
3. *Fag syl* high forest with (Douglas?) Fir plantation mostly replacing it. *Rubus* and *Pteridium* field layer.
4. Fir plantation with occasional mature *Fag syl*, much *fag syl* regen. No understorey or field layer.
5. Fir plantation with occasional mature *Fag syl*, with *Bet pend* regen. No ground flora or shrub layer.
6. Conifer plantation with occasional mature *Fag syl*. Several felled conifers and brash - recent thinning?
7. Old ride runs through centre of plot. *Q. rob* and *Fag syl* high forest with occasional *Bet pend*, *Crat mon* and *Ilex*. *Bramble* and *Pt. Aq* dominate field layer - *W10*.
8. Mature *Q rob*, *Fag syl* and *Bet pend* with *Rub* fruit, *Pt aq* field layer, *crat mon* in shrub layer. Some fallen branches from uprooted tree on ground. Small quarry pit/pond with bryo-rich banks is in plot.
9. Species poor *W10*, *Q. rob*, *Bet pend* and *Fagus* in canopy with scattered *Crat mon* understorey. *Spp* poor ground layer. Probably 100y old coppice on ex-common grassland/heathland, probably not been coppiced for 50y.
10. Plot on edge of track, some felling of *Fag syl* to maintain track. Very open *Fag syl* high forest, nettle and bramble patches. Abundant *Mnium* otherwise *v. spp* poor.
11. Old ride with large wood bank intersects plot - bryos on bank. Old *Fag sylv* coppice along edge of ride. Otherwise *Bet pend/Fag syl* high forest, no understorey, occasional *Ilex* in shrub layer.
12. *Fag syl* high forest - some 87 storm damage. *Il aq* understorey. Old ride to N of plot with old woodbank.
13. *Fag syl* high forest - no understorey or ground flora. No management except random cutting of *Fag syl* sticks.
14. *Fagus* high forest originating from *Fagus* coppice. No shrub layer or field layer. Some firewood collection.
15. *Fag syl/Bet pend* high forest, occasional *Q rob*. Some old *Fagus* coppice stools + ? *Bet pub* coppice? Firewood collection.
16. Plot lies just W of old quarry/sand pits?. Nettle dominated. Collapsed wall along edge of plot/quarry. *Q. rob/Bet pend* high forest, some old *Q rob* coppice stools, singled. *Ilex*, *Prun av* and *Crat mon* in shrub layer, very sparse ground flora. Path runs thru plot.

SITE 101 OAKERS WOOD

Position in the Landscape

- The wood is situated on almost level land.
- It is bounded on two sides by banks / ditches, probably an ancient boundary against the heathland which would have been traditionally grazed.
- On one side the wood is bounded by crops.
- On one side by heathland, in the process of being invaded by birch.
- On one side by a mixture of heathland, trees, scrub, a small field and a house.
- On the fourth side by a road adjacent to woodland.

Management Description and Habitats

- One private owner.
- The current position is that it has been unmanaged for a considerable time, at least before the last survey.
- The bank / ditch boundaries suggest that it is an ancient wood, as do the banks / ditches running through the wood.
- Some planting, probably Victoria, of sweet chestnuts has taken place.
- The northern edge of the wood has probably been derived from colonisation of heathland - the soils are podzolic and quite different from elsewhere in the wood.

Tree Composition and Change

- Birch shows a typical pattern of a maturing population with no evidence of recruitment - presumably disturbance is necessary for birch regeneration at this site.
- There is a vigorous population of hazel with many young stems.
- Although there is no evidence from 1971 to support it, it seems likely from observation that Rhododendron is expanding - confirmed by the increase from one to four in the ground vegetation.
- Oak shows an exceptionally evenly balanced series of size classes suggesting maturation from an initial coppiced base.
- Ash has many saplings but otherwise shows a relatively narrow range of size classes at the lower end of the range.
- Overall there is a wide range of classes but with relatively few large trees - suggesting a felling perhaps in the second war followed by lack of interference.
- Apart from hazel, there are few dead stems suggesting that competition is not yet taking place.

Ground Vegetation and Change

- Stable: *Hedera helix* (14-14); *Pteridium aquilinum* (10-10); *Rubus* (14-14).
- Decreased: *Lonicera* (12-10); *Viola* (11-9); *Dryopteris* (12-6); *Potentilla sterilis* (11-4);
- *Poa trivialis* (11-1); *Prunella vulgaris* (10-0); *Veronica chamaedrys* (10-0).
- The balance is greatly towards declining species.
- Species that declined most are largely typical of more open situations.
- Overall, only a quarter of species were increasing whereas three quarters were declining.
- Overall species richness declined by 50%, the highest percentage drop of any of the pilot sites.
- The overwhelming evidence is of decline through increase in shade - if it was not for the opposite trend in Wellhanger Copse and Priestfield, this could have been put down to observer bias. Furthermore, the species such as *Primula* could *Arctium* could hardly be mistaken.
- As in the other sites, *Rubus* is expanding its cover (1.7 - 17.5) at the expense of minor species, *Agrostis canina*, *Dactylis*, *Mercurialis* and *Pteridium* which have almost disappeared.

Conclusion

- The rhododendron expansion is a real threat to the native species in this wood.
- The tree population shows evidence of development from a possible felling 50-60 years ago but because the trees are widely spaced there is little competition.
- The decline in diversity in the ground vegetation seems to be linked with a combination of increase in shade and a lack of disturbance.
- It could well be many years before natural processes reverse this trend.

SITE 102: LOWER NUT HURST

Position in the landscape:

Lower Nut Hurst is a part of Sutton Park. This is a mediaeval deer park that was once part of a series of heathlands that covered much of the West Midlands, and formerly comprised part of Sutton Chase, continuous with Cannock Chase to the north. It is now completely enclosed by suburbs of Walsall and Birmingham, but by virtue of its large size and continuity of traditional management, still retains the impression of “naturalness”, and an impressive biodiversity. It is now a National Nature Reserve, and is much used by the public for a wide range of recreational activities, largely concentrated around the car parks, although the more remote parts are used for walking and running.

Lower Nut Hurst is situated on a plateau and on gentle south and east facing slopes. It is continuous with the ancient deciduous woodlands of Upper Nut Hurst to the north and Holly Hurst to the south, and is separated from these by broad tracks. Heathland is present to the west, with scrub and valley mire to the east. There are large artificial 18th century mill ponds adjacent to Lower Nut Hurst in the south and north east. The woodland is crossed by numerous tracks, and there is a wood bank along the western edge.

Broad habitat description

The majority of the Lower Nut Hurst is dry calcifuge woodland over the very freely draining glacial sands and gravels and the underlying Triassic Pebble Beds. The major community is W16, dominated by a dense *Ilex aquifolium* understorey with standard *Quercus robur* and *Sorbus aucuparia*. Much of this *Q. robur* was planted in these woodlands in the 19th century, and there are also stands of other planted species, most notably *Fagus sylvatica* in W15 in the south-west.

Flushes emerge on the eastern slope, draining into the Plants Brook which flows from north to south along the eastern edge. The valley of this stream has a well developed stand of W4b and other mire and wet woodland types, with W7b on the flushed slope in the north-east.

Management Influences

The canopy composition was extensively altered by replanting with *Quercus robur* in the 19th century. It is thought that *Quercus petraea* was the dominant species before this. There has been planting of other species, chiefly *Larix* spp, *Castanea sativa* and *Fagus sylvatica* since then. There is little obvious current management, although free-ranging cattle have access.

Tree and Shrub composition

The most abundant species throughout much of the drier part of the woodland is *Ilex aquifolium*, which forms a dense, and locally nearly impenetrable shrub layer. This *I. aquifolium* woodland has standards of *Quercus robur* and *Sorbus aucuparia*. Occasional trees of *Castanea sativa* are present, and there are stands of *Larix* sp.

There is a large stand of planted *Fagus sylvatica* in the south-west of the wood.

The flush and valley bottom woodlands in the valley of the Plants Brook have a more varied range of woody species. *Betula pubescens* is dominant on peaty soils in the valley bottom with *Betula pendula* and *Salix cinerea*, with *Alnus glutinosa* locally in flushes. *Rhododendron ponticum* forms thickets on drier soils here where there has been some recent clearance.

Ground Flora composition

The drier woodlands have little or no ground flora under the densely shading *Ilex aquifolium* or *Fagus sylvatica* canopy. The only frequent species is *I. aquifolium* seedlings.

The valley bottom W4 and W1 have species-rich ground floras dominated by tall-fen species or with valley-mire related vegetation dominated by *Sphagnum recurvum* and other *Sphagnum* spp.

Fauna

Cattle are able to range freely throughout these woodlands. Rabbits and grey squirrels were noted.

The avifauna appeared to be rich, particularly in hole-nesting species, reflecting the lack of a ground layer and a holly-dominated shrub layer.

Conclusion

The woodland is inherently species-poor, and has suffered from felling and replanting in the 19th century and more recently. Despite this however, it has considerable conservation value in its own right and as an integral part of the extremely valuable habitat mosaic of Sutton Park. The valley side and valley bottom woodlands are of particular interest.

SITE 103: NORMANTON DOWN GORSE

Normanton Gorse appears to be an 18th century secondary woodland, possibly originating from scattered planted *Fag sylv* from then or even earlier. All the wood became 19th century hazel plantation which has since become neglected. There are several ancient earthworks including a large saucer barrow. Recent management includes hazel coppicing and there is a large glade on the northern boundary, which is mainly species rich MG1 arrh grassland, with some good calcicoles. Most of the wood has a spp poor ground flora dominated by *Geranium robertianum*.

Comments on plots

1. Recently coppiced *Cor av*. Large open area - storm damage? Recently cut *Cor av*. Big *Urtica* patch. Mature Corsican pine.
2. Neglected *Cor av* coppice, and one mature *Bet pub* coppice stool. Mature *Crat mon* and *Rham cart*, field layer largely *Poa triv* and *Urtica*.
3. Recently coppice *Cor av*. *Fagus* standards over *Cor av* coppice. Spp. poor ground flora, mainly *Urtica*.
4. Some recent coppicing of *Cor av*. *W8e* but no *Frax ex*, *Fag syl* standards over *Cor av* coppice.
5. Arrh elat dominated area of large glade; *rham cart* and *cor av* regrowth has been recently cut/coppiced?
6. Plot lies on edge of glade, *Bet pend* and *Cor av* coppice, unmanaged. Ground flora mainly *Ger rob*. Some fallen *Bet pend*.
7. NW corner of Saucer barrow. Mature *Fag syl* pollard with recently cut *cor av* coppice, occasional *Rham cart*, *Sm nig*. *Urtica* dominates gd flora, with *Torilis* and *Ger rob*.
8. Large (ca 0.5 ha) glade with species-rich MG1 grassland. Occasional emergent shrubs of *Rham cart*, *Cor av*, *Vib lant*.
9. *Fag sylv* 123cm DBH within 10m of plot. Plot falls on bank of saucer barrow. Mature *Fag sylv* with *Bet pend* and *Rhamnus*, with recent hazel coppicing. Field layer mostly Dense *Urtica*.
10. Plot on line of old ride, near saucer barrow. Recent scrub clearance and hazel coppicing. Brash still on ground. Disturbance has allowed arable plant community to establish.
11. Plot lies on edge of recently cut coppice coupe. Mature *Cor av* plantation now large overstood stools. Ground flora mainly *Ger rob*.
12. *Bet pend* with *Cor av* coppice. V spp poor field layer; *Ger rob* abundant. Plot appears to be sited on Victorian (or earlier) landfill.
13. SE corner of saucer barrow; *Fag syl* 113 within 10m of plot. Part of plot includes recently coppiced *cor av*. Spp poor ground flora.
14. Unmanaged *Cor av* plantation - now mature and overstood. V spp poor ground flora- dominated by *Ger rob*.
15. Unmanaged mature *cor av* coppice with occasional *Bet pend*. *Ger rob* dominates spp poor ground flora. Some hazel rods cut around 5 years ago.

16. Sparse Bet pend over Cor av coppice. Ger rob dominates field layer, with Hedera and Glec hed.
No management.