

## Sustainable Woodland Management

There are currently 3.1 million hectares of woodland in the UK (12.6% of UK area), of which 1.4 million hectares (44%) is certified as sustainably managed<sup>1</sup>. Approximately 30% of UK woodland<sup>2</sup> is owned by the public (i.e. Forestry Commission & Councils), the rest being owned by private individuals or organisations.



### Why Manage Woodlands?

Woodland has been around in the UK for a long time; it naturally developed through the process of succession after the last ice age. As the woods have been able to look after themselves for thousands of years, you may be wondering why people want to manage them?

‘Woodland management’ – manipulating the woodland ecosystem to increase the desired outputs of the system, is not just a modern idea. Humans have been changing the environment to suit their needs since the Stone Age – there is evidence that coppicing of woodlands has occurred since Neolithic times (well, have you tried chopping down a mature Oak with a flint axe!? Our ancestors were good problem solvers, and looking to get maximum output from minimum input).

One fundamental issue we have in the UK is that we are a small island and have had a human history of various settlers (invaders some might call them) – Romans, Normans etc who all used the landscape to meet their needs. Woodlands & Trees have been used (and still are used) for;



- Materials for construction (e.g. buildings, fences, bridges,)
- Materials for Transport (e.g. wheels & wagons, boats, railway sleepers, train carriages, cars)
- Crafts (e.g. barrels, tool handles, furniture, baskets, tanning leather (bark))
- Supplying war actions (e.g. bows & arrows, rifle butts, ammo crates, trench boards, armadas, airplanes)
- Fuel for heating, cooking & manufacturing processes (e.g. firewood & charcoal)
- Food (e.g. venison & game, fungi, feeding livestock, fruit & nuts, honey)
- Medicine (e.g. various plants have medicinal properties and are still used in medical research)
- Sport (e.g. hunting & shooting, hiking, horse riding, cycling)
- Shelter (e.g. protection from wind & weather, shade from sun, trees stabilize the soil and mitigate flooding)
- Pleasure & aesthetics



As the human population increases, so too does the demands on the landscape and natural resources. The result being is that currently the UK, with 12.6%, is one of the least wooded countries in Europe (European average is 44% and average World woodland cover is 30%<sup>2</sup>). Higher demands on a smaller area mean that UK woodlands are at risk of being overused, depleted of resources and ultimately lost, along with all their associated species and ecosystem functions. Considering long term sustainability when planning to manage a woodland is fundamental to attempting to reduce this risk.

Human population growth and settlement has also affected UK woodlands in other ways that previously woodlands would not have to deal with:

- Introduction of invasive non-native species that either compete with, predate or cause damage to native species (e.g. Rhododendron, grey squirrel, muntjac deer)
- Introduction of exotic pests and diseases through importing trees (e.g. Ash die-back, dutch Elm disease)
- Extinction of native species that would naturally control others through predation (e.g. Wolves – would naturally control grazing animals)
- Human-accelerated Climate Change – tree distribution can move when environmental factors change (although they obviously take their time to move! Trees think in hundreds of years!), but if the climate changes too quickly, or if there are no available areas to colonize (because humans are using the land for other things), they might not be able to move quick enough.



These factors, amongst others, are relatively recent issues that native woodlands are now exposed to and may need help to overcome through management systems.

## **Sustainable Forest Management**

The concept of Sustainable Forest Management has been recognised internationally for at least 20 years. The definition of Sustainable Forest Management adopted by the Ministerial Conference on the Protection of Forests in Europe (MCPFE) is *"The stewardship and use of forests and forest lands in a way and at a rate that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national and global levels, and that does not cause damage to other ecosystems."*<sup>3</sup>

Simply put, sustainable management is when landowners decide to manage their woodlands today in a way that will ensure equal or greater benefits, productivity or health of that woodland in future generations.

At a European level, guidelines for the sustainable management of forests were developed through the European Process on Criteria and Indicators for European Forests. Participating countries have agreed upon 6 common criteria, 27 quantitative indicators and a number of descriptive indicators for sustainable woodland management. The 6 common criteria are:

1. Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles
2. Maintenance of forest ecosystem health and vitality
3. Maintenance and encouragement of productive functions of forest (wood and non-wood)
4. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems
5. Maintenance, conservation and appropriate enhancement of protective functions in forest management (notably soil and water)
6. Maintenance of other socio-economic functions and conditions



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In the UK, less than half of all woodlands are recognized as being managed sustainably.

## Factors Affecting Woodland Management

The specific systems/techniques of management will depend on various factors:

- **The landowner's aims & objectives**
- **The woodland type, habitats & species present (and on adjoining land)**
- **Socio-economic considerations**

### **Landowner's Aims and Objectives:**

Many different people and organisations own woodlands and for different reasons.

Landowners may be:

- National or Local Government – e.g. The Forestry Commission, County Councils, District Councils
- Charities with historic, conservation, or educational aims – e.g. The National Trust, The Wildlife Trusts, The Woodland Trust
- Educational Establishments – e.g. Universities, Colleges, Schools
- Private Businesses – e.g. Outdoor & Activity Centres, Campsites,
- Private Individuals or Families – e.g. Estates, Farms, smallholdings

Some woodland owners will need to 'work' their woodland (i.e. see some financial return from the land) whereas others may have other priorities.

The aims and objectives of woodland management fit broadly into 3 categories:

- Production of Resources (wood & non-wood) – growing and harvesting resources from the woodland that have value, this can be wood products such as timber and woodfuel but also includes other things such as venison, mushrooms and Christmas trees.
- Wildlife Conservation – maintaining (or increasing) biodiversity, particularly rarer species or habitats
- Recreation & Education – enabling and encouraging people to visit woodlands and spend time taking part in activities for; enjoyment, health or educational reasons

Woodland owners may focus on one specific area of these, or have a combination of all of them.

## Woodland Type, Habitat & Species Present:

There are 18 woodland types and 7 scrub and underscrub habitats in the UK<sup>4</sup>. Each type has different communities of species present and has developed according to the environmental conditions present – geology, soil type and acidity, ground and surface water, aspect and gradient, prevailing weather conditions. Within each woodland there are also potentially additional habitats that overlap the woodland. For example; if a stream runs through a wood there will be various wetland habitats potentially formed; there may be open glades and/or rides cut with a woodland that overlap with grassland/meadow or heathland type habitats.

Ultimately, the first step is to look at what is there - what is present within a woodland is what is there to be managed. Different species of tree have different properties, different lifecycles and growth rates and hence are used for different products. Some woodland species are very rare and protected by law, hence if one is present within the woodland it is likely that landowners would want to ensure appropriate management processes are taken. Many woodlands have been planted for a particular purpose, so understanding the physical conditions of a site may help landowners to predict what species would do best within a particular area.

Being aware of what habitats and species are present in neighbouring land is also important for management. For example if wildlife conservation is an aim – populations of species can be increased and spread by joining up pockets of habitats with 'wildlife corridors' (e.g. isolated woodlands are like islands where species cannot spread from unless there are some other habitats which join them together, such as hedgerows). It can be also important to keep an eye on neighbours in regards to pest control or invasive species.

## Socio-economic Considerations:

Landowners may rely on their land to generate income, therefore their management of the woodland would need to include methods of creating revenue streams. Others may keep their woodland purely for recreation or as an investment. Some landowners may have a desire to

allow and encourage people to visit their woodland, others might want to keep people off their land.

Management of woodland has financial implications – there is a cost associated with many of the management activities. The landowner will need to decide on whether they plan to pay other people/contractors to undertake the management activities, or engage the wider community as volunteer labour to undertake tasks.

## Managing a Woodland Sustainably – Production of Resources

Woodlands that are managed to generate products (wood and/or non-wood) are often organized in a way that maximizes efficient growth and makes it easy to harvest the product. This commonly involves grouping batches of same species and same age in a particular area.



### **Example – Timber Plantation:**

Plantations can be of any species (conifer or broadleaf), but tend to be planted in blocks of fast growing species. The trees are planted carefully in straight lines at a particular density (to encourage them to grow straight, as they compete with one another for light) and each block is separated by extraction paths planned within the woodland. The crop is usually thinned out at some point to benefit the remaining trees. Eventually the stand is clear felled, by harvester machines being driven along the lines. A harvester can fell a tree, strip its branches, cross cut it into logs and calculate the volume of wood in less than 1 minute!

Demand for timber is high, the UK was the third largest net importer (imports less exports) of forest products in 2011, behind China and Japan. This was with 10.4 million green tonnes of UK roundwood (softwood and hardwood) being delivered to primary wood processors and others<sup>1</sup>.



### **Example – Coppicing:**

Coppicing is an ancient form of management, which involves the repeated felling of a tree on the same stump near to ground level. A woodland is split into different areas or 'coupes'. The trees in one coupe are cut each year in turn, referred to as coppice rotation. After being cut, the tree naturally sends up multiple stems from the remaining 'stool', which grow for a number of years until it's their coupes turn and they are cut again. The number

of years between cuts depends on what size of wood is desired, usually between 7-25 years. In theory, any broadleaf tree can be coppiced, however in practice certain species such as Hazel, Willow, Ash, Oak & Sweet Chestnut are mostly managed in this way due to their growth habit and for the desired products. Products include – bean poles, walking sticks, broom handles, hurdles, fencing posts, wood for charcoal etc.



There are different types of coppice:

- Pure Coppice – an area with a single species being coppiced
- Mixed Coppice – an area with different species present.
- Coppice with Standards – the area has some individual trees that are allowed to grow to maturity for larger timbers and the coppice forms the understory beneath the ‘standards’. The standards are spaced out at appropriate densities within the woodland so that the coppice does not get shaded out.

Coppice management involves:  
the cutting of the coppice

annually, this might be done manually with hand tools or with chainsaw, extraction of the products (by hand, horse or machine) protection of the coppice stools from grazing animals (fencing, covering the stool, culling etc), maintaining optimum densities of stool within the coupe, establishing new stools and controlling the amount of shading from any standard trees present.



### **Example – Venison:**

Venison farming is a growing business, particularly with large estate owners who have wood pasture habitats. Management involves; selective culling of the stock to keep the population at an optimal level for the grazing available and also to promote certain characteristics, introducing new genetic strains of deer, fencing stock in certain areas, monitoring their health, supplementing their food (i.e. putting hay out in winter), and culling of competitors (undesirable deer species like muntjac).

On a much less intensive scale, landowners who are controlling grazing within their woodland through culling might generate a regular source of venison for themselves and friends.

## Considerations for Sustainability:

The main consideration when managing a woodland sustainably for products is to ensure that you are not overharvesting the woodland – taking more resources than are being replaced. Within a management plan it would be logical to calculate appropriate densities of trees, timescales for growth (or coppice rotation), and/or optimum stocking levels for the site.



Some other factors to consider may include:

- Focusing on native species rather than exotic ones – native species have higher biodiversity value and are likely to cope better with local conditions without support.
- Harvesting & Extraction systems – the processes of gathering the resources, processing them and transporting them offsite can affect the woodland. Heavy machinery causes soil compaction and disturbance to wildlife, so considering the time of year and weather conditions when this sort of work is done is important. There are traditional options such as harvesting by hand and extracting using horses, or processing the products on site (such as with charcoal production – the wood is harvested, sorted & stacked and burnt in large kilns within the woodland site) so that only the final products need extracting.
- Rotation of sites – to allow soil and/or plant life to recover. This happens naturally in some form of management such as coppicing, however it can be planned in other activities. For example in venison rearing, the deer can be fenced into different areas of the site to allow other areas to regrow without the grazing pressure.



## Potential problems to consider:

The major concern with managing a woodland for products is whether the products you are planning to generate will be commercially viable and economical to extract and process. Wood products are a long-term game; if you consider a softwood timber tree takes 60 years till it is harvested for products - a woodland manager is having to anticipate (or gamble!) what the market will be like 60 years after the point of them planting the tree!

Woodland management is considered in terms of generations – you are making decisions that you possibly won't see the effects of within your lifetime. A process perhaps unfamiliar within our modern society?!

There was a period in the 1970's where global timber prices fell. It became uneconomical for landowners to harvest their timber crop – it cost them more to cut down & extract the timber than they would get for the product. Economics are an important factor in woodland management – many landowners might like to implement certain processes, but they might

not be able to afford to do them. They have also got to find buyers for the products, and markets change quicker than the woods grow.

## Managing a Woodland Sustainably – Wildlife Conservation

Many UK woodlands are managed for wildlife conservation as a key objective. Some species and habitats are protected by UK, European or even International law and therefore the landowner has a legal responsibility to protect them. When wildlife and biodiversity is a high priority it is likely that the landowner will be very aware of which habitats and species are present within their woodland and have ongoing surveying systems. The management plan usually is based on anticipating which species would naturally occur within an area and aiming to support that to develop either naturally or by intervening to speed the process up. The aim is usually to maximize the biodiversity (Biological diversity – number of different species, habitats, genetic variation) of an area and/or promote particular species (often the legally protected ones).



### ***Example – Coppicing:***

As coppicing (described above) has been done to woodlands for thousands of years, many UK species have evolved to be used to this management technique. In recent years woodlands may be more likely to be coppiced for the wildlife benefits with the wood products being secondary (whereas traditionally the opposite would have been true), although we are now seeing a resurgence in coppice crafts.

As coppicing is done on rotation, it creates a mosaic of different habitats with the trees at different ages. Straight after cutting the area is an open and sunny glade which benefits ground plants and insects, particularly butterflies. A couple of years later the coppice has grown up to be dense bushy stems, which attract many birds like nightingales. As the trees grow, they self-thin themselves - dominant stems shade out others, resulting in fewer larger trunks. Deadwood provides great habitat for many invertebrate species which attracts predators such as woodpeckers. The larger stems act as a support for climbing plants such as honeysuckle and clematis which can cope with the shadier conditions. The coppice provides shelter and aerial runways for small mammals such as dormouse, wood mouse and squirrels, which in turn attract predators such as owls and foxes.

Each growth stage is always present within the woodland (but in different locations as the coppice rotation cycles round) which means that specialized species always have a patch that they can move to each year.



## **Example – PAWS (Plantation on Ancient Woodland Sites) Restoration:**

There are many plantation woodlands in the UK that have been planted on sites where there was previously native natural woodland. The majority of these were planted in the 20<sup>th</sup> century when there was an intention to establish a strategic timber reserve for the UK. The plantations may be of exotic (like the fast growing conifer plantations) or native species. These are referred to as PAWS.

Plantations have a negative impact on the ecology of an ancient woodland site (particularly if the species are non native and/or evergreen conifers). Plantations tend to be planted in single (or few) species blocks in a regular pattern and at the same time (meaning same age). This reduces biodiversity and stability of the system – fewer tree species means fewer associated species. Planted in rows means low light levels reaching the ground (this is particularly an issue if the species are evergreen) so reducing the ground flora able to grow. Single age within an area means the habitat is the uniform again reducing potential biodiversity. If the plantation species are also coniferous then there will also be great changes to the soil. The needles take a long time to break down creating deep layers which acidify the soil – this can inhibit plant and invertebrate species being able to live in the soil. Therefore the biodiversity of a plantation woodland is much less than that of an ancient woodland.

Despite the heavy effects a plantation can have on a site, it is usual to find some indications of the ecological or historical background of a site. Certain woodland plants only grow where there has been woodland for a long time and sometimes these can be seen within a PAWS giving a clue to the past. As do individual old trees (often seen along boundaries of sites) or large stumps of deadwood and archeological remains. It is considered that the ecology of an ancient woodland can recover if the site is restored.

The management of a PAWS to restore it to a more natural ecology will include: surveying and mapping of key ancient woodland features, selective thinning of plantation trees (it is recommended to thin out the plantation, rather than clear fell so to not expose the remaining ancient features to the wind & weather), a focus on key areas such as rides and streams to open up, and control of grazing animals to encourage natural succession.



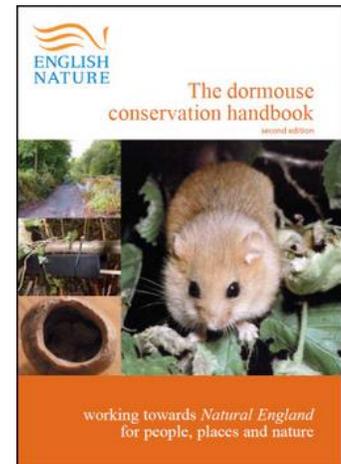


**Example – Protected Species (Red Squirrel, Dormouse, Bats):**

Individual species may be protected under UK, European and International law. Some examples include; Bats, Red Squirrel, Dormouse, Brown Hare, Barn Owl, Woodcock, Wood Warbler). The laws mean that there are legal consequences should the species and/or habitats be disturbed, damaged or destroyed (accidentally or purposefully). These laws can be used to delay and/or change planning applications & developments and prevent landowners from doing certain things in areas where these species are found.

As a landowner focusing on wildlife conservation the first point of management is to identify whether you have any of these species present within your woodland, which will involve surveying the site. There are many specialists who may undertake surveying for landowners, in some cases (particularly for the highly protected species) it may be required to have a license to be able to survey the species (particularly if this means handling or humanely trapping them).

Every species has a set of conditions that it flourishes in – for example Dormice require a mixed deciduous woodland – a coppice rotation is ideal, they eat nuts/seeds and insects and are mainly arboreal so require areas to be joined up by branches for them to be able to cross areas. They hibernate in winter on or near to the ground in nests made from barks (honeysuckle bark is a favorite). So in order to encourage a species (in this case Dormouse) a site will need to provide the features that the species need to survive (in this case, a hazel coppice rotation with honeysuckle). These features may be worked into site management plans with the intent of encouraging protected species. On some sites whole areas might be managed purely to benefit one very rare species (a good example of this is the Bittern – whole areas of wetland are managed extensively by controlling water levels etc to attract this particularly rare bird). These key species are often referred to as ‘flagship species’ – they are often charismatic species that people like (mammals and birds) and the idea being that by managing a habitat for this species it will also benefit many others that share the habitat.



There is also the question of whether species can be attracted into an area to increase its population. So a land manager may be interested in species present in nearby sites (particularly if there are habitat corridors that connect them). If a species is not present locally it does not matter how ideal you make the habitat – they just won't reach you (e.g. there is no recorded Dormice in Norfolk – even if you had a lovely dormouse-friendly hazel coppice in Norfolk it is unlikely that a Dormouse would reach it!)

## Considerations for Sustainability:

Out of the three themes, managing a woodland for wildlife conservation is the one that is easiest to focus on sustainability – ultimately conservation is usually about trying to restore a natural landscape which is rich in biodiversity and is ecologically stable.

Within conservation you have to consider the bigger picture as all ecosystems interact with one another. There are some issues which land managers need to consider that are broader than their individual site:

- Global climate change – as environmental conditions change it will affect the natural distribution of species, this means in future what currently grows in the UK's woodlands might not be able to cope with the conditions. This is a natural process and when species can move and colonize new areas it does not cause a problem. However, when sites are isolated and neighbouring land is being used for other things (such as agriculture, housing, industry, transport etc) there is nowhere for species to move to, and hence they may go extinct from areas. Some land managers are trying to anticipate which species might colonize the UK in the future as potential species to introduce to areas.
- Development – as the human population continues to increase, the demand on the landscape will continue to intensify. As new houses, industries and transport links are built, the landscape is under threat of being lost or altered. A woodland could be affected by any neighbouring developments - issues such as agricultural chemicals (run off from fields, pesticide sprays), changes in surface water amounts and drainage, fragmentation caused by transport routes cutting through the site etc. The majority of the conservation charities have a remit to lobby government and comment on planning processes to try and raise awareness of issues.

## Potential problems to consider:

The main problem that landowners may encounter are financial ones – there are costs associated with managing a site for wildlife, which may not necessarily generate any income to pay for itself (although some things like coppicing could generate income). Often, conservation work is grant aided and grants come with their own issues. Some grants might not be available to private landowners (only available to charities etc), grants can also involve bureaucracy to apply for them – taking up managers time and resources.

Another issue that is an ongoing threat to conservation is habitat fragmentation – many woodlands are small and isolated. This can be an issue for natural population migration of species and also affect a woodland's ability to change and move should the environmental conditions change (such as global climate change). Conservation organisations are now looking at landscapes rather than individual sites from a management perspective and trying to join up where they can. This can be difficult in the UK as different people own different bits of the land, and each landowner may have a different priority. This is why the majority of the conservation organisations and charities have an educational remit – to try and increase a wider understanding of conservation.

## Managing a Woodland Sustainably – Recreation & Education

About 49% of UK woodlands are open to the public to visit (assessed in 2012)<sup>1</sup> and about two thirds of the UK population have visited a wood within the last few years<sup>1</sup>. Woodlands that are managed for recreation and/or education will usually have a number of different activities happening within them, increased access to areas of the site and facilities that encourage people to visit them (such as car parks, cafes, toilets, seating and shelters etc). Often areas of the site are made



into 'honeypots' to keep the majority of visitors in certain areas so that other parts of the site are left undisturbed. A wide variety of activities could take place within a woodland but they will either be for educational purposes – activities/experiences to help people understand the woodland/conservation/forestry/management or recreational purposes – for fun and enjoyment. Some examples are: Walking, Mountain biking, high ropes courses, quad biking, shooting, orienteering, paintball, cross country running, horse riding, camping, bushcraft, Forest School, family events, chainsaw instruction, green woodworking courses, music concerts, self guided trails, art/sculpture walks etc.

### **Example – Forestry Commission Centres**

The Forestry Commission has some key sites across the UK where they have focused on encouraging people into the woodland. These centres can be quite large and offer many facilities (e.g. High Lodge in Thetford Forest, Norfolk, Haldon Forest near Exeter in Devon). They tend to have a visitor centre and café, toilets and car park. There are a variety of waymarked and maintained walking trails as well as bridleways for horse riders and cyclists,



some centres have mountain bike trails too. They also may have play equipment and picnicking areas. The Forestry Commission works with other businesses to offer additional activities on their sites – 'Go Ape' is an example of this – they provide high ropes courses in the tree tops and profit share with the hosting landowner. Some sites also have mountain bike and Segway hire and/or spaces that other organisations can hire out for events – such as schools, training providers, concert organisers etc.

In some areas the Forestry Commission are looking to do the same sort of business arrangement with educational activities, as well as their recreational ones. This will mean that private business may lease or profit share with the FC in return for being based out of their woodland sites.

Some of the management of woodland sites may include:

- Regular tree safety inspections, based on an areas frequency of use – the trees within high usage areas (such as car parks, roads, foot/bike paths, picnic areas, high ropes courses etc) being assessed the most frequently.
- Regular site risk assessments & maintenance checks of other features, based on an areas frequency of use.
- Litter picking & waste management
- Footpath/trail/structures/fencing maintenance
- Signage, Interpretation & Information systems & maintenance
- Visitor Services – Information, Help & Monitoring of activities
- Working with other organisations/authorities – i.e. local police, activity clubs, private businesses, schools etc



### **Example – Game Shooting**

Many estates and farms generate income from game shooting, particularly pheasants and partridge. Where landowners are managing their sites for this recreational activity, they will;

- Maintain woodland areas as shelter for the birds.
- Selectively thin trees within a woodland area, to create pathways – so the birds will fly out a in a certain direction when scared up.
- Install feeders and supplement food – to

increase game population numbers

- Pen in populations into certain locations.
- Control predators
- Maintain access routes for shooting parties to reach certain vantage points (often the party is transported in tractor & trailer, so vehicle access may be needed)
- Restricted access to areas at certain times (so not to scare the birds out of areas, and when the shoots are taking place).

Larger operations may employ a game keeper to oversee this aspect of their business.

### **Example – Environmental Education on Nature Reserves**

As mentioned above, many of the wildlife conservation charities and organisations (such as the Wildlife Trusts, Woodland Trust etc) have educational remits. Often Nature Reserves have designations and have protected habitats and/or species present (see above), so the activities that are encouraged within these areas are managed sympathetically. Activities may be limited to those that are



low-impact (e.g. on many Reserves bikes and dogs are not permitted). Often organisations that own Nature Reserves may employ educational staff that provide formal events and informal education. Formal events may include things like – school visits looking at habitats/food chains/ ecology, adult workshops about particular species, guided wildlife walks, family and/or childrens' events in school holidays, childrens' clubs, practical conservation volunteer groups etc. Informal Education may include things such as – Visitor Centre displays, interpretation boards & signage on reserves, fliers/ information booklets, self guided trails (permanent or seasonal), websites & app's etc. All of the activities will have the aim of increasing peoples understanding of the wildlife, ecology and/or site features.

Nature Reserves that encourage visitors may still have a variety of facilities and/or services – Car Parking, Toilets, Visitor Centre (possibly with café), waymarked walking trails, bird hides, seating & picnicking areas etc. Facilities often vary depending on the number of visitors the landowner wants to encourage to a site (which may depend on its size, sensitivity and type).



Management of Woodland Nature Reserves may be very similar to the example above of the Forestry Commission sites – however the visitor audience and activities may be very different:

- Regular tree safety inspections, based on an areas frequency of use – the trees within high usage areas (such as car parks, roads, foot paths, picnic areas etc) being assessed the most frequently.
- Regular site risk assessments & maintenance checks of other features, based on an areas frequency of use.
- Litter picking & waste management
- Footpath/trail/structures/fencing maintenance
- Signage, Interpretation & Information - systems & maintenance
- Visitor Services – Information, Help & Monitoring of activities. Often the Information desired by visitors is about species present on the reserve – so there may be systems for people to record their sightings like lists/maps etc.
- Working with other organisations/authorities – i.e. local police, clubs, volunteer groups, schools etc



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### Considerations for Sustainability:

The main issue for landowners to consider is how to balance the needs of people with the needs of the site. The more visitors and activities taking place within a woodland the greater the demand on the area. Different sites will have different levels of resilience to human impact and therefore be able to take different numbers of visitors. As mentioned above, most landowners take a 'honey-pot' approach to visitor

management – sacrificing areas to create visitor facilities (visitor centres, trails, toilets, cafes, picnic areas etc). The hope is that visitors will stick to those more maintained areas leaving the rest of the site to be undisturbed. As a landowner, deciding how much ‘honey’ you sacrifice on your site will depend on the size of an area, what other aims you have for a site and how many people you want visiting (generally speaking – the more facilities = more people).

The main issues for the woodland environment that are associated with people are:

- Compaction of soil & Trampling of Ground Flora – The more people/activities the more footfall/bike wheels/horses hooves/traffic in an area. Woodland plants can be very sensitive to trampling and will not grow in areas under heavy pressure. This can also lead to soil particles compacting together, reducing air flow to roots and invertebrates reducing what can live in it. Compacted ground is also likely to reduce ground water drainage (as the soil particles are too tightly packed) and therefore water pools on the surface, becomes muddy and floods areas. In wet conditions the ground can also become churned up and/or rutted by vehicles.
- Disturbance – Wildlife is fairly aware of human presence in an environment, just by moving through a woodland can cause disturbance to birds and mammals going about their daily affairs. Human activities may also involve moving things (e.g. moving dead sticks to build a shelter, looking under logs to find minibeasts) that disturbs or destroys something’s habitat or living conditions. In some habitats dogs off leads can be particularly disturbing for the wildlife present (e.g. Ground-nesting birds).
- Pollution – Unfortunately some visitors may not be aware of the consequences of their actions. Litter can be frequently left on sites and irresponsible bar-be-que disposable can start wildfires. Even the noise of humans could be considered as pollution – disturbing wildlife away from areas.



Most sites tend to manage these things by creating waymarked trails for visitors. These routes are often hard-packed surfaces that are maintained to take heavy compaction. Sites may also designate certain areas for particular activities (e.g. Shelter Building areas or Exploration areas), where they encourage ‘off-path’ activities. Providing information to visitors about responsible behavior within the woodland, providing facilities such as bins & bar-be-que areas can all help manage these issues. Ultimately education is a way of managing this, changing peoples attitudes towards the woodlands and increasing their awareness of how their actions affect it.

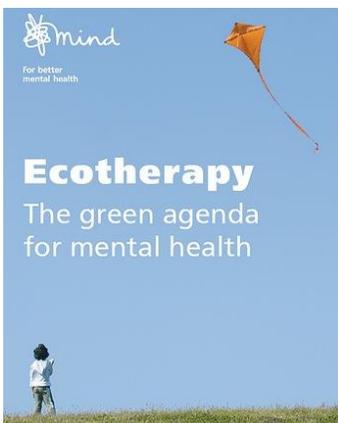


## Potential problems to consider:

For any site that is encouraging people to visit it, Health and Safety regulations will become a factor to consider. Sites and activities will need to be risk assessed to an appropriate level, depending on frequency of use and number of people involved. Health and Safety systems will need to be developed and implemented, which may have financial implications. Landowners will also need public liability insurance for sites.

The visitor facilities being created and maintained also have costs associated with them that a landowner will have to consider. Often landowners will aim to cover these costs by charging the visitors (e.g. Car parking fees, entrance fees, café, shop, publications/guides, activities). Generally speaking – recreational activities tend to cover their costs more easily than educational ones. Recreational activities are usually paid for by the participants themselves because they want to take part in the activity. Educational activities are often subsidized by organisations, local authorities or grants. This is because usually the content of the educational activities is what the charity/organization/landowner want to pass on to other people/visitors.

Another issue is how to manage the needs of the different types of visitor to the site. People visit woodlands for many different reasons and some activities may conflict with one another (e.g. Dog Walkers vs School groups, Quad Bikers vs Bird Watchers, Game shooters vs Horse riders). Land managers would need to consider how they facilitate visitor services for all groups they wish to engage fairly. Another issue that can increase with more facilities and ease of access is an increase in anti-social and/or undesirable behavior from visitors – alcohol and other drug taking, vandalism, sexual acts, raves, littering etc



It is finally worth mentioning that as well as recreation and education we are beginning to see an increase in use of woodland for health reasons (both physical and mental health). Various research has shown that being physically active in a natural space has positive effects on peoples well being and mental health. Therefore new activities such as 'green gym' and 'ecotherapy' are being seen more frequently in woodland sites.

Although we have considered the 3 broad aims of woodland management separately, in reality most woodland owners will be managing their site as a mixture of more than one of these areas.

## Sustainable Woodland Management & Forest School

Forest School is an example of an educational (and health) use of a woodland site. As Forest School leaders it is unlikely that we will be the landowner of the site (although we might be lucky enough to be!) but rather we are working with a site owner or manager. Through having a good understanding of woodland management issues and practices we are more able to work within the management plan of the area and also have an awareness of our impact of being in the woodland.



As we have explored above, the woodlands we may find ourselves in may be owned by various people, who have various aims for it. Some landowners may be very aware of what is present within their woodland and have a detailed management plan for it. Others, may have other priorities and not be aware of species present and no management plan at all. Forest School can help landowners change their perspective of their woodland, as well as how people and nature interact together.

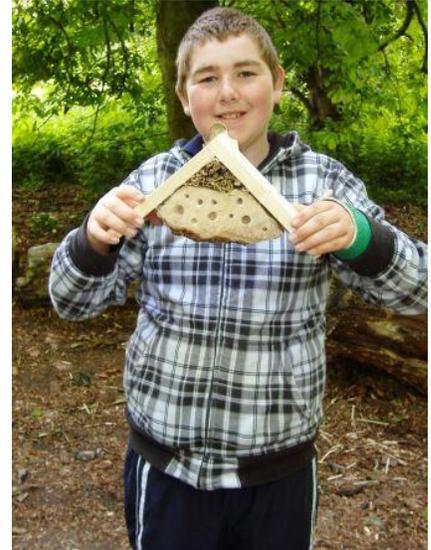


By spending time in a woodland at Forest School learners will naturally become acclimatized to the environment and cycles that take place. They will also have first hand experience of management actions and changes within the site. Just being present within the woodland creates varied learning opportunities that individuals may want to explore further – and ultimately could result in a future land-based career. As Forest School leaders we have a responsibility to use the woodland sustainably and share understanding of this with the groups we work with. This can only happen (and be shared with others) if we as practitioners have an awareness and understanding of the environments we are working in to base our decisions upon. The groups we are working with will become the next generation who care for and about the woods if we facilitate this appropriately.

Forest School programmes may also be able to contribute to the management work planned for a woodland in practical terms. Many sites rely on volunteer hours to complete management tasks so such actions are not just token gestures they really will

support the area. Some learners may be interested in this aspect of being within a woodland and want to undertake activities such as:

- Habitat management – e.g. Coppicing, thinning, removal of non-native species
- Habitat creation – e.g. Tree planting, digging ponds/wetlands
- Species specific activities – e.g. making bird/bat boxes for the site, insect habitats
- Species Surveys – e.g. vegetation surveys, butterfly transects, bird counts, mammal tracking and trapping,
- Maintenance of visitor facilities – maintaining footpaths, fencing etc
- Litter Picking
- Visitor Information – creation of signage/information guides.



Forest School should fundamentally benefit people and the environment equally, as one cannot exist without the other. Our role as Forest School practitioners is to keep opportunities alive for future generations to be nurtured by.

*"One generation plants the trees; another gets the shade.  
Keep a green tree in your heart, and perhaps a singing bird will come."*

~ Chinese Proverb

## **References:**

1. Forestry Statistics 2013, Forestry Commission
2. Sustainable Management of Woods, Forests & Trees in the UK, Woodland Trust.
3. Sustainable Forest Management Indicators, 2010, Forestry Commission
4. National Vegetation Classification