Woodland

Habitat Resource Pack

environmental partnership in action

The Greensand Trust

Greensand Country Landscape Partnership

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HERITAGE FUND

Welcome

This is one of a series of Habitat Resource Packs produced by the Greensand Trust on behalf of the Greensand Country Landscape Partnership. Each pack focusses on different habitat types, and provides information on the importance of these habitats, the species associated with them, where they can be found in Greensand Country, their management, survey and monitoring.

It is intended to be an accessible guide for a range of land-owners and managers, and is relevant to all sizes of site.

Contents

Importance of woodlands

The UK's native woods and trees are incredibly biodiverse. They support many different species of fungi, lichens, mosses and plants, as well as birds, invertebrates and other animals. Many of these species are threatened and becoming rarer. Ancient woodland is a rich diverse habitat that now covers just 2.5% of the UK. Much of what we have left is being damaged and once it's gone, it can't be replaced. Ancient woods have been around for centuries – long enough to develop into complex ecosystems. They are some of our most precious habitats, with incredible communities of plants, fungi, insects and other fauna.

They are home to lots of scarce species, including:

- the striking purple emperor butterfly which lives in the canopy
- scarce and elusive woodland molluscs like the lemon slug which spend most of their lifecycle in ancient woodland soils
- many plant species largely restricted to ancient woodland habitats, such as bluebell and wood anemone.

These habitats are also historical treasure troves, full of archaeological and cultural features, they give us an insight into the past.

Bluebells and Greater stitchwort, Maulden Wood

Hazel dormouse, Maulden Wood

There have been lots of scientific studies that provide strong evidence for the value of native tree species for biodiversity. For example, studies show that our two native oak species support a massive 2,300 species of mammals, birds, invertebrates, fungi and mosses. Of these, 326 species have become highly specialised to rely solely on oak, including moths such as the dark-crimson underwing (*Catocala sponsa*) and scarce merveille du jour (*Moma alpium*). Non-native conifers, in comparison, support very few oak-associated species.

One group of specialist woodland species, known as saproxylic invertebrates, depend on dead and decaying wood. Of 1,005 beetles known to use trees, over two thirds use decaying wood – particularly that found in large, old, native broadleaved trees in parks and wood pastures. Unfortunately, the UK's woodlands (both native and non-native) are seriously lacking in deadwood, and much of the wildlife that depends on it is rare and declining.

Not only this, but saproxylic species need the right kind of deadwood, such as standing dead trees, fallen logs or branches, and the species of tree really matters. For example, the extremely rare violet click beetle (*Limoniscus violaceus*) is only found in the hollow centres of ancient beech and ash trees. Importantly, a 2019 study led by Richard Ennos also concluded that the UK's native trees have the potential to adapt to future conditions, including those expected due to climate change. There is therefore no case for introducing non-native tree species from outside the UK when biodiversity conservation is a key objective.

Types of woodland

Native woods are made up of tree species such as pedunculate oak, ash, hazel, field maple, alder and small-leaved lime. These are trees that colonised the UK naturally when the glaciers melted after the last Ice Age, before the UK was disconnected from mainland Europe.

Many woods also contain non-native trees. These are species that have been transported to the UK by people. This may have been for ornamental gardens, timber production or for produce such as fruit and nuts.

Plantations of non-native conifers which were originally established to supply timber are now widespread on the Greensand Ridge. Sometimes these plantations have been established on existing native woodland sites but many were planted on former heathland.

The timing and method of arrival of tree species have important implications for their value to native UK wildlife. Native trees arrived in the UK over 10,000 years ago when the ice sheets retreated. Other plants and animals also colonised over that time and evolved close relationships with these species, becoming reliant on them for food, breeding sites and shelter.

In contrast, non-native conifers have been introduced by people over the last 400 years from all corners of the world. In their native range they support a diversity of species, but in the UK they have much lower biodiversity value as they don't provide the same resources our native wildlife require. This is because they do not have the same long history with other species in the UK.

Non-native conifer plantations can, however, be improved for wildlife if managed as habitats that provide more than just timber, for example by:

- increasing the amount of deadwood
- protecting old growth features (such as standing dead trees, a diversity of tree ages and gaps in the canopy)
- creating open space.

Woodlands in Greensand Country

Greensand Country contains examples of all the above woodland types, depending on the underlying geology, with acid oak and birch woodland on the exposed Lower Greensand soils and ash woodland on the overlying Boulder Clay. The rare small-leaved lime is mainly found at the junction of the Greensand and Boulder Clay soils. Wet woodlands dominated by alder and willows are most frequent in the Flit and other river valleys, though smaller areas will also be present in spring-fed wet flushes, such as at the junction of Greensand and Boulder Clay. Overall, Greensand Country contains around half of Bedfordshire's ancient woodlands, including some large and magnificent examples. However, these tend to be isolated islands of woodland within the landscape, vulnerable to the impacts of surrounding land use, recreation and invasive non-native species.

The following sites are all good examples of where it is possible to see woodland habitats in Greensand Country. All of the sites have some level of public access, and further details on this are available via the Greensand Country Interactive Map: (www.greensandcountry.com)

1. Kings Wood, Heath and Reach – Bedfordshire's largest ancient woodland site, part of the Kings Wood and Rushmere National Nature Reserve. Limited access via a public right of way and permissive routes.
2. Bakers Wood, Heath and Reach – An area of ancient woodland adjacent to Kings Wood, a significant part of Bakers Wood is within Rushmere Country Park, with access routes and nearby visitor facilities. Owned by Central Bedfordshire Council and managed by the Greensand Trust
3. Maulden Wood – a large and varied ancient woodland site with rights of way and permissive access, plus areas of heathland and acid grassland. Owned and managed by Forestry England.
4. Flitwick Moor – a Wildlife Trust Nature Reserve in the Flit Valley with areas of wet woodland.
5. Sandy Smith Nature Reserve – A Greensand Trust Nature Reserve, with public footpaths providing some access to wooded areas, and views of the wet woodland.
6. Kings Wood, Houghton Conquest – an ancient woodland on the Greensand Ridge escarpment, with access via public rights of way. Owned and managed by Central Bedfordshire Council
7. Chicksands Wood – an ancient woodland owned and managed by Forestry England, with access via permissive routes.
8. Home Wood, Northill – A Forestry England-owned ancient woodland, with access via public rights of way and permissive routes.
9. Potton Wood – A Forestry England-owned ancient woodland in the north-east of Greensand Country, with access via public rights of way and permissive routes.
10. Gamlingay Wood – A Wildlife Trust Nature Reserve and ancient woodland , with access via public rights of way and permissive routes.

Management of woodlands

There are many management techniques for managing woodland according to your objectives. Sylva's Woodland Wildlife Toolkit (woodlandwildlifetoolkit.sylva.org) is an excellent source of information and advice on managing woodlands for wildlife. Below are some techniques and woodland features to consider.

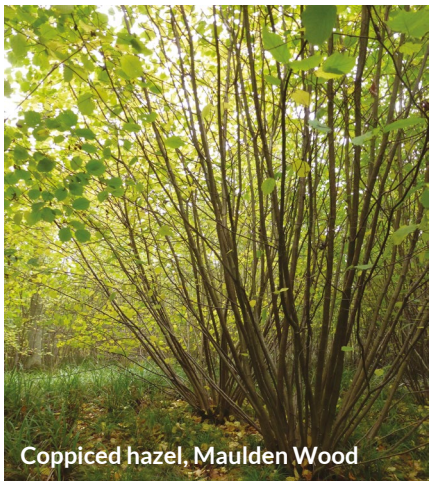
Minimum intervention


Minimum Intervention Woodland

In larger woodlands in particular, there is scope to leave some areas to develop 'naturally' to high forest as a contrast to interventionist management techniques such as coppicing. These areas are particularly valuable for species such as bats and bryophytes that cannot tolerate a lot of disturbance. Management should be confined to small scale operations for the benefit of particular species and to maintaining rides and other paths, though occasional felling of small coupes to create glades and a more diverse age structure is also beneficial.

Coppicing

Coppicing is a traditional woodland management technique where trees are cut down to ground level and allowed to regrow for a period of 10-20 years to produce a crop of small diameter poles. In the past these had many uses – from fuel to building materials, tools to fencing. Although there are now fewer uses for the wood, areas that are coppiced still have many benefits for wildlife. When first cut, light reaches the woodland floor and plants such as bluebells can flourish. These sheltered sunny areas are good for butterflies and a range of insects.
As the wood regrows, the dense thicket provides good nesting habitat for birds. Pollarding similarly involves cutting a regular crop of poles however the tree is cut above the height of browsing animals to allow it to regrow without being eaten.


Coppiced hazel, Maulden Wood

Rides and open areas


Woodland ride, Maulden Wood

Woodland rides and glades provide an important additional habitat in woodlands. As open areas they receive more sunlight and are attractive to an additional range of plants and insects.

Dead wood

Dead wood is an important feature of woodland that is often overlooked. It supports a wide range of species vital to the natural functioning of the woodland ecosystem and can be present as either standing dead trees or fallen trunks or branches.

Deer

The high numbers of deer now present in the UK countryside pose a very real threat to our woodlands, both current and future. In Greensand Country the biggest problem is caused by the small, introduced muntjac, although other species are also present. Muntjac feed on tree seedlings and young saplings, the young regrowth from coppice stools and the flowers and leaves of many species of woodland plant, for example primroses, orchids and ferns. If browsing pressure is high it can prevent the natural regeneration of woodland trees and plants and kill coppice stools. This can result in the structure of the woodland becoming much more open and the species composition of the ground flora changing to favour those species the deer do not eat.

A method of monitoring the activity and impact of deer has been developed by the Deer Initiative to help assess whether there is a problem in your woodland (**https://www.thedeerinitiative.co.uk/monitoring/activity-and-impact.php**). Dealing with the problem can be more complex with potential solutions including culling, fencing coppice plots or the entire woodland or using brash to protect individual stools or plants. Young woodland planting should always be protected, either by fencing the area or protecting individual plants.

Deer fencing illustrating impact outside fenced area

Brash piled on stool to protect from deer

Felling licences

If you plan to fell more than 5m^3 in a three month period then you must remember you need a felling licence from the Forestry Commission, who provide a useful guide to the process:
https://www.gov.uk/government/publications/tree-felling-getting-permission

Survey and monitoring of woodland

There are many methods of surveying woodland depending on what you wish to survey and monitor. The list below contains only a few different methods for surveying woodland. Some are more general helping to identify different types of woodland or map woodland habitats for example, whilst others are specific to a certain type of grassland.

National Vegetation Classification (NVC)

National Vegetation Classification (NVC) is a descriptive system of categorising habitats in Britain. The original surveys were commissioned in 1975, and the resulting botanical data was analysed and separated into different vegetation communities. The resulting NVC categories are used to identify priority habitats, for example most woodland in Greensand Country is identified as W10-oak-bracken-bramble, W16-oak-birch-wavy hair grass on the more acid soils, W8-ash-field maple-dogs mercury woodland on the Boulder clay, and W5-alder-greater tussock sedge and W6-alder-nettle woodland in river valleys.

Phase 1 habitat classification

Phase 1 habitat classification is a landscape surveillance method, identifying types of semi-natural habitat on a broad scale. It is designed to cover large areas of the countryside relatively quickly and provide some basic information about the type of habitat present and possible importance for nature conservation.

It is a useful method for mapping habitats across large areas at a coarse scale, and is also used as a baseline for preparing Environmental Impact Assessments. Phase 1 Habitat Survey relies on being able to identify some indicator species to provide a broad assessment of the habitat, particularly grasslands. However, it does not require a full species list like more intensive survey techniques.

Phase 1 Habitat Survey is suitable for use when surveying large areas of habitat, and woodlands can be separated into their different types, or can be lumped together under semi-natural woodland or plantations. The method does not enable detailed botanical information to be collected, and as a consequence, can limit priority habitat identification and cannot be used to monitor changes in species composition.

Common standards monitoring

Common standards monitoring is a specific monitoring method for Sites of Special Scientific Interest. It uses indicators of success to determine whether the habitat and species for which the site is designated for are in favourable, unfavourable improving, unfavourable – maintaining or unfavourable declining condition.

UK Habitats Assessment

The UK Habitats Assessment is a relatively new system for habitat classification, covering a range of sites and survey methodologies. It is the industry standard survey method used when determining baseline conditions for Biodiversity Net Gain Assessments.

Fixed point photography

Fixed point photography can be a useful way of monitoring the effect of management and how grassland habitats change over time. For example, taking photos over several seasons and years can show changes in the cover of scrub and bracken.

Planting new woodlands

The Climate Crisis and the Biodiversity Crisis

Trees and woodland are known to absorb carbon dioxide from the atmosphere and store carbon in the vegetation and soil. Planting trees and woodland is therefore a popular way of tackling the climate crisis and helping us towards Government targets – indeed Government targets include specific tree planting targets. Woodlands can also provide recreation opportunities, health and wellbeing benefits for local people, pollution control and can help with flood mitigation.

However, other habitats also absorb and store carbon, sometimes to greater levels than woodlands. The UK and the world are also in the midst of a 'biodiversity crisis', with species and habitats being lost at alarming rates.

It is therefore important that when considering planting of trees and woodland to ensure that the 'right trees' are being planted in the 'right place'. The following steps provide a guide to the key parts of the process. It is recommended that you involve your local Forestry Commission Woodland Creation Officer (see the links in the Further Information section below) from an early stage, to help with both the process and potential funding opportunities:

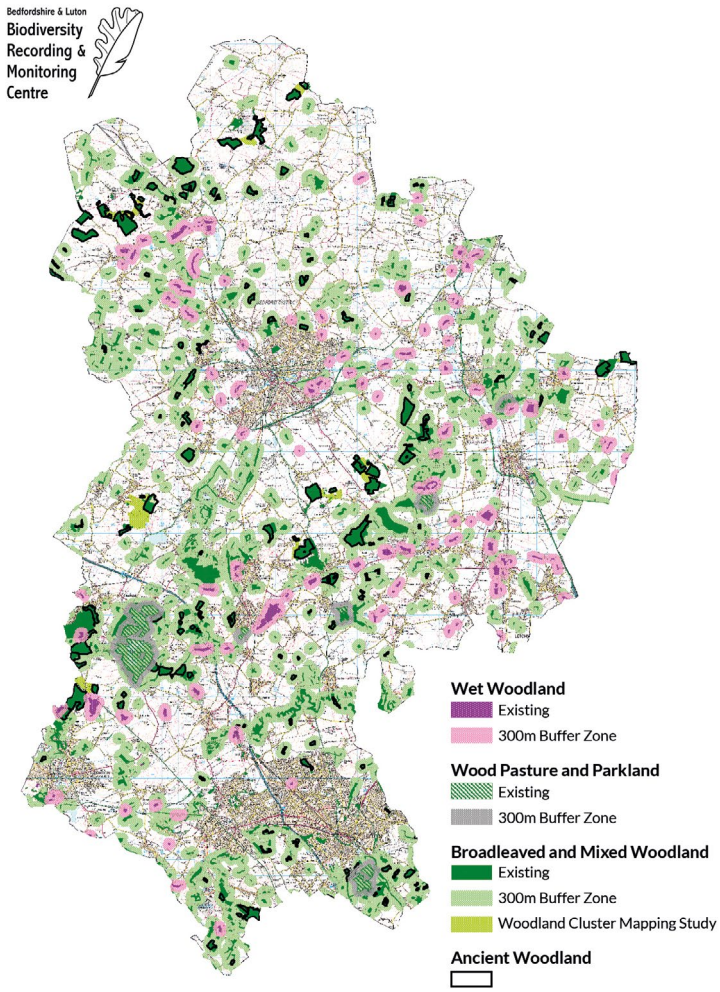
1. Land ownership

Having the consent of the landowner is an absolute necessity. If you don't know who the landowner is, the best place to start is the Land Registry: **https://onlinelandregistry.org.uk/**

2. Gathering existing information

This can be from a variety of sources. Old maps will potentially show where woodlands existed in the past, including those that may have been lost since around 1800, and therefore where it may be beneficial to recreate woodland. Habitat Opportunity Mapping will identify where woodland creation would be most beneficial for wildlife. Natural Capital and Ecosystem Service mapping helps identify where woodland would contribute to carbon absorption and storage, air pollution mitigation and flood management.

When using 'Opportunity' mapping it should always be remembered that such maps are often based on information that changes over time, or have been produced at a 'strategic' level and don't necessarily take detail on the ground into account. They should be used as an initial guide to help target opportunities, not to make hard and fast decisions.



3. Good design

The types of tree that will thrive in any location will depend on a range of factors including soil type and climate. A soil survey will provide vital information, as will survey information from nearby sites.

An ecological survey will be required to identify species and habitats currently present, to ensure woodland planting does not harm existing biodiversity interest. Local Biological Records Centres will also hold species records from across the county, and these should be researched.

Archaeological surveys may also be required, to ensure planting does not harm any archaeological interest beneath the ground. A good place to start is the Heritage Gateway (see Further Information section below).

A plan should be produced that also takes into account the local landscape and connectivity to other nearby woodlands and hedgerows. Other habitats, including ponds and open areas, should be included for habitat variety.

While it is always attractive to have tree planting events where members of the public can be practically involved in woodland creation, **natural regeneration** is often the most effective method of creating woodland in locations close to existing areas of woodland. Allowing trees to grow naturally from seed grown locally and dispersed by wind or wildlife, will result in trees perfectly matched to the local environment.

With deer browsing an issue across much of Greensand Country, it will usually be necessary to protect young trees, either through fencing, tree guards or both. Biodegradable tree guards are now widely available, and provide a suitable alternative to plastic ones.

Design will also need to take management into account – ensuring the site can be accessed by the types of machinery required, both now and in the future. Management objectives will influence design – for example, is the site to include recreational access? It will also be important to ensure that any proposed management can be sustained in the long-term.

4. Permission

As well as having the permission of the landowner, other consents will be required. It is highly likely that a Woodland Environmental Impact Assessment will be required, although for many woodlands this is a simple one-stage process (see Further Information section below). This process can be linked into Woodland Creation Grants from Forestry England, and will also ensure any new woodland meets the UK Forestry Standard.

Planning permission may be required if there is a change of use, particularly if forest tracks/roads are being created.

Depending on location, the Environment Agency or Internal Drainage Board may need to provide consent to ensure waterbodies can be managed and flood risk is not increased.

5. Funding

There are funding opportunities for planning and planting woodlands through the Forestry Commission and others, including local authorities. It is important to research this early on so that possible opportunities, especially for funding planning and surveys, are not missed. Funding cannot be applied for in retrospect, so funding bids will need to be planned well in advance.

6. Planting

This may take the form of community tree planting days, contractor planting or just leaving a site to naturally regenerate. Each has its own benefits and costs. Planting generally takes place over the late autumn/winter period.

7. Management

Sustainable ongoing management will need to be guided by a Woodland Management Plan (see Further Information section below, including grant funding opportunities). It is important that the Management Plan is agreed by and shared with all involved, so that management is consistent over time, particularly as woodlands take decades to develop.

Acknowledgements

The Greensand Trust would like to thank the Forest of Marston Vale Trust and the Bedfordshire and Luton Biodiversity Recording and Monitoring Centre for their support in developing this Resource Pack.

Further information: Woodland management

Sylva Woodland Wildlife Toolkit: **https://woodlandwildlifetoolkit.sylva.org.uk**
The Small Woods Association: **https://www.smallwoods.org.uk**
The National Coppice Federation: **https://ncfed.org.uk**
The Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire: **https://www.wildlifebcn.org**
The Greensand Trust: **www.greensandtrust.org**
The Deer Initiative: **https://www.thedeerinitiative.co.uk/monitoring/activity-and-impact.php**
The Forest of Marston Vale: **www.marstonvale.org**
Woodland Management Plans: **https://www.gov.uk/guidance/create-a-woodland-management-plan**
Tree Felling Licensing: **https://www.gov.uk/government/publications/tree-felling-getting-permission**
UK Habitat Classification: **https://ukhab.org**

Further information: Woodland creation and tree planting

Tree Planting and Woodland Creation Overview (.Gov)
www.gov.uk/guidance/tree-planting-and-woodland-creation-overview

The Guide to Planning New Woodland in England:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033301/A_Guide_to_Planning_New_Woodland_in_England_V1.0_Nov2021.pdf

The Forest of Marston Vale: **www.marstonvale.org**

Old maps: The National Library of Scotland: **https://maps.nls.uk**

Bedfordshire Local Nature Partnership (Natural Capital Mapping):
https://bedfordshirenaturally.com/downloads/

Greensand Country Tree Planting Opportunity Mapping: **www.greensandcountry.com**

Rebuilding Bedfordshire's Biodiversity (Biodiversity Opportunity Report and Mapping):
www.bedscape.org.uk/BRMC/newsite/index.php?c=bedslife_rebuild

Forthcoming **Local Nature Recovery Strategies** – Will be produced at a county level for Bedfordshire, Cambridgeshire and Buckinghamshire & Milton Keynes.

Heritage Gateway: **www.heritagegateway.org.uk/gateway/**

Bedfordshire & Luton Biodiversity Recording and Monitoring Centre: **www.bedscape.org.uk**

Buckinghamshire & Milton Keynes Environmental Records Centre: **www.bucksmkerc.org.uk**

Cambridgeshire & Peterborough Environmental Records Centre: **www.cperc.org.uk**

"Is the introduction of novel exotic forest tree species a rational response to rapid environmental change? A British perspective." (Richard Ennos, Joan Cottrell, Jeanette Hall, David O'Brien, 2019)

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