

# **Management Plan**

## ***Woodhouse Park***

*Peterlee*

***July 2022***

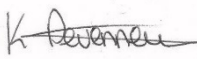

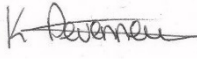
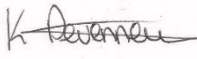


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# Quality Control

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## 1.0 AIMS AND LEGISLATION

### 1.1 Aim of Management Plan

The aim of this management plan is to give an overview of Woodhouse Park, and its important habitats and species. This information was then used to make recommendations in order to manage the site to the benefit of nature conservation.

The plan is also important for ensuring compliance with all current UK and European wildlife legislation, national and local government policies, and best practice to protect and improve biodiversity.

### 1.2 Legal Obligations

Local authorities have a key role to play in conserving biodiversity, through their role in: developing and influencing local policies and strategies; planning and development control; owning and managing their estates; procurement; education, awareness raising and advisory functions. This plan focuses on those species afforded protection under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife and Countryside Act 1981 (as amended) and the Protection of Badgers Act 1992. A very brief summary of the protection that the current legislation provides is as follows:

**The Conservation of Habitats and Species Regulations 2017** makes it illegal to:

- Deliberately capture, injure or kill a European Protected Species (EPS).
- Deliberately disturb an EPS. [\*]
- Damage or destroy a resting place used by an EPS.

[\*] Disturbance of includes in particular any disturbance which is likely to:

- Impair their ability to survive, breed, reproduce, rear or nurture their young, hibernate or migrate.
- Affect significantly the local distribution or abundance of the species to which they belong.

**The Wildlife and Countryside Act 1981** makes it illegal to:

- Damage, destroy or obstruct any structure or place used for shelter by animals listed on Schedule 5[\*] of the act.
- Disturb animals listed on Schedule 5[\*] when occupying a place used for shelter.

- Intentionally kill, injure or take any wild bird.
- Intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built.
- Intentionally take or destroy the egg of any wild bird.
- Disturb any bird, listed on Schedule 1 of the act, while it is building a nest or is in, on or near a nest containing eggs or young, or to disturb dependent young of such a bird.

[\*] Animals listed on Schedule 5 include otter, water vole, great crested newt and all bat species, amongst others.

**The Protection of Badgers Act 1992** makes it illegal to:

- Kill, injure or take a badger.
- Cruelly ill treat a badger.
- Interfere with a badger sett.

In addition, local authorities have a Duty to have regard to the conservation of biodiversity in exercising their functions. This Duty was introduced by the Natural Environment and Rural Communities Act and came into force on 1 October 2006. The Duty affects all public authorities and aims to raise the profile and visibility of biodiversity, to clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making (Defra, 2007). Under the Natural Environment and Rural Communities (NERC) Act (2006), all local authorities have a statutory obligation to conserve and enhance biodiversity when exercising their functions. As such, this management plan also considers those priority species listed within Section 41 of this Act, and those habitats considered to be of national importance through their designation as a local Biodiversity Action Plan (BAP) species/habitat.

### **1.3 Local and National Policies**

The National Planning Policy Framework (NPPF) states that local planning authorities should set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure. To minimise impacts on biodiversity, planning policies should promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations.

## 2.0 SITE DESCRIPTION

### 2.1 Overview

**OS National Grid Reference:** NZ418407

**Status:** No Designation

**Area:** 4.7 ha

**Date of site visit:** 10<sup>th</sup> December 2021 & 27<sup>th</sup> June 2022

**Ownership:** Peterlee Town Council

### 2.2 Site Location

Woodhouse Park is a formal park within a residential area of Peterlee, near the coast of County Durham. The site is surrounded by housing and schools, with additional areas of amenity open space and playing fields. The numerous formal footpaths and playparks mean that the site is well used by locals and dog walkers. The site location is shown in Figure 1 below.

### 2.3 Site Description

The majority of the site comprises of amenity grassland surrounding numerous play parks, skate parks, cycle tracks and surfaced sports facilities. A carpark, toilets and community gardens lie to the south of the site. Paths to the north are treelined, with Norway maple *Acer platanoides*, cherry *Prunus avium*, English oak *Quercus robur*, larch *Larix decidua*, spruce *Picea*, horse chestnut *Aesculus hippocastanum* and yew *Taxus baccata*, as well as two rows of hawthorn *Crataegus monogyna*. To the southwest corner is a small area of mature broadleaf plantation woodland dominated with hybrid poplar *Populus sp.*

Scattered trees are present across various parts of the site, largely non-native and ornamental. Through the centre of the site are several areas of new tree planting of native broadleaf species. This planting will create pockets of woodland once matured and the grassland beneath, although maintained to allow the trees to establish, is not being cut as amenity grassland. Trees planted include silver birch *Betula pendula*, hawthorn, hornbeam *Carpinus betulus*, beech *Fagus sylvatica*, copper beech *Fagus sylvatica purpurea*, field maple, bird cherry *Acer campestre*, guelder rose *Viburnum opulus*, lime *Tilia sp.*, and English oak.

The amenity grassland is species poor, with perennial rye-grass *Lolium perenne* dominated, and daisy *Bellis perennis*, creeping buttercup *Ranunculus repens*, dandelion *Taraxacum officinale*, Yorkshire fog *Holcus lanatus*, ribwort plantain *Plantago lanceolata* and greater plantain *Plantago major* also present in the sward.

Along the northeast edge of the site the ornamental shrubs have been recently cut down to ground level. Species included cherry laurel *Prunus laurocerasus*, hydrangea, late cotoneaster *Cotoneaster lacteus*, and a non-native species of holly *Ilex* sp.

Ornamental shrubs are still present along the north-western edge of the site, with barberry *Berberis vulgaris*, non-native species of holly, pheasant berry *Leycesteria formosa*, dogwood *Cornus sanguinea*, weigela, and an ornamental hedgerow comprising of cotoneaster. Pockets of ornamental shrubs are also towards the south of the site, with snowberry *Symphoricarpos albus*, non-native honeysuckle, and variegated holly *Ilex Aquifolium 'Argenteomarginata'*. A new beech *Fagus sylvatica* hedgerow has been planted along part of the western boundary.

A variety of birds were recorded during the walkover, including magpie *Pica pica*, starling *Sturnus vulgaris*, jackdaw *Coloeus monedula*, bluetit *Cyanistes caeruleus*, robin *Erithacus rubecula*, chaffinch *Fringilla coelebs*, blackbird *Turdus merula* and goldfinch *Carduelis carduelis*.

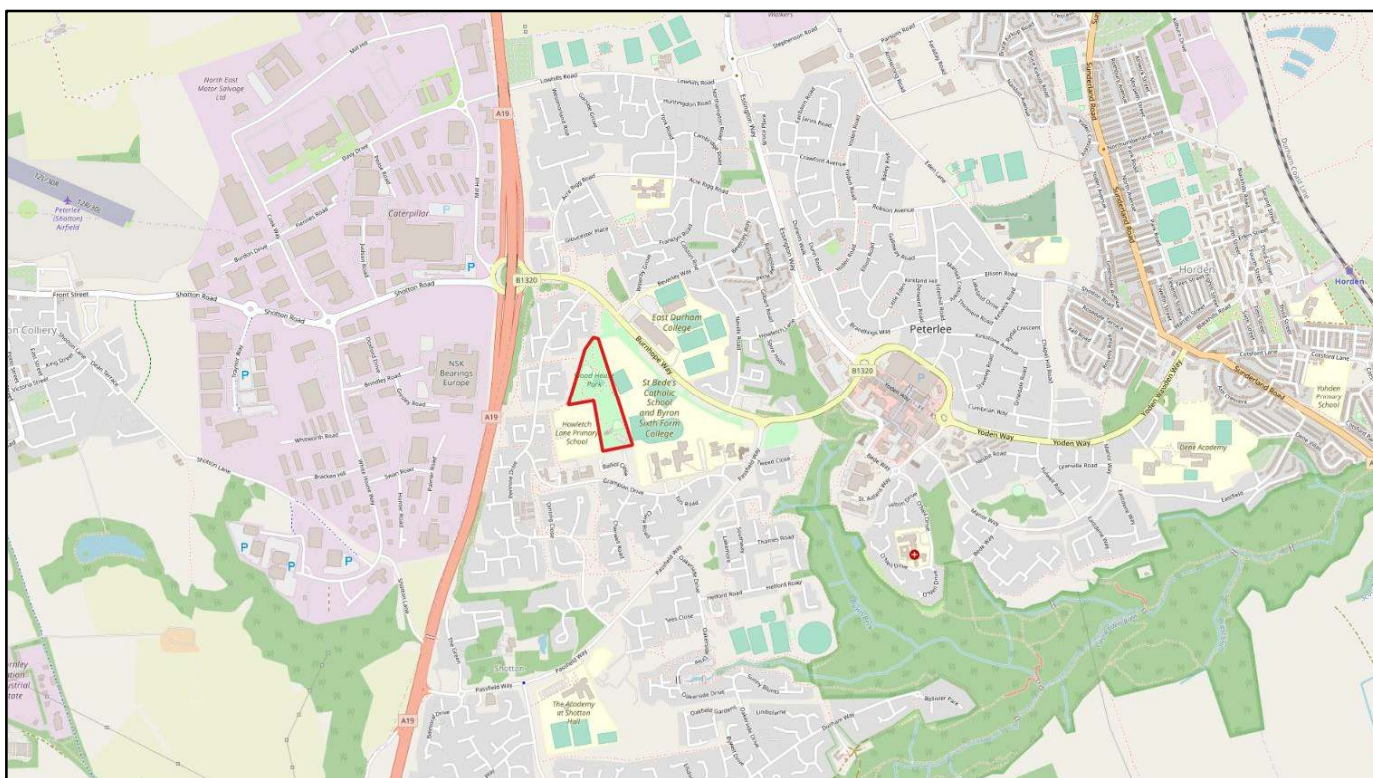


Figure 1: Location Plan (not to scale).

## 2.4 History/Past Management

The site is well managed, with new areas of ornamental planting, recently planted native woodland, recently planted beech hedgerow, new play areas and large expanses of grassland managed as amenity. There is also evidence of some tree felling to the northwest and removal of stands of non-native shrubs to the northeast.

## 2.5 Connectivity and Buffers

A wildlife corridor is an area of habitat connecting wildlife populations separated by human activities or structures. They are usually a connecting feature such as a river, stream, disused railway line, or woodland. They allow an exchange of individuals between populations, which may help prevent the negative effects that often occur within isolated populations, such as localised extinction. They are essential for minimising the effects of habitat fragmentation as urban areas increase.

The site is not situated on any features that naturally act as a wildlife corridor. The trees to the north of the site do connect through to additional trees and woodland heading east. In turn, this joins with woodland that forms part of Castle Eden Dene



National Nature Reserve, Site of Special Scientific Interest and Special Area of Conservation, which lies 700 metres away. The nature of the habitats currently on site, coupled with the site being well used by the public, means that the site is unlikely to provide a habitat to rarer species, despite its close proximity to Castle Eden Dene. However, once the newly planted woodland matures, coupled with recommendations in this report, this will greatly enhance the site for a range of wildlife, especially birds, invertebrates and small mammals.

### **3.0 SITE FEATURES**

#### **3.1 Summary of Features**

The following habitats of interest are known to occur within the site:

- Other Broadleaved Woodland
- Hedgerow (Non-BAP)
- Scattered Trees (Non-BAP)
- Grassland (Non-BAP)

#### **3.2 Description of Features of Interest**

##### **3.2.1 Other Broadleaved Woodland**

This priority habitat encompasses all woodland which is not ancient (established since 1600), and which contains predominantly broadleaved species. This includes plantation, and secondary woodland. Secondary woodland is woodland growing on a previously unwooded site. Even mature broadleaved woodland dominated by non-native broadleaved species such as sycamore and beech are important in the context of the LBAP area.

Management of woodlands is crucial, particularly where some species rely on more open woodlands and where non-native species are becoming dominant. Removal of non-native species of tree can help restore sites with remnant ground flora and old native trees.

A narrow band of plantation broadleaf woodland lines the southwest corner of the site, part of the Community Garden. The woodland qualifies as the LBAP habitat "Other Broadleaf Woodland" However, the woodland is in poor condition, dominated by just one species, poplar, and is very uniform in age and lacks in deadwood habitat. The community garden has created seating areas beneath the canopy.

Several areas across the central band of the site have been planted up with native broadleaf woodland species including English Oak, guelder rose, hawthorn, lime, and silver birch.

#### Current Condition:

The woodland on site is in poor condition, managed within the community garden it is used for more formal purposes with paths, sitting areas and willow tunnels. There are some deadwood logs within, but it lacks in woodland flora, and is uniform in age, with mostly non-native poplar present.

The new areas of woodland planting are too young to condition assess but are a nice mix of native species. They are closely planted and planted in rows, so will need thinning in the future.

### 3.2.2 Hedgerow

A hedgerow is defined as a line of trees or shrubs over 20m long and less than 5m wide, provided that at one time the trees or shrubs were more or less continuous. A native hedgerow is defined as one in which over 80% of the woody plants are native species.

A number of ornamental hedgerows are present on site, particularly to the west. A newly planted beech hedgerow is also present on this site. Although native to the UK, beech is not thought to be native to the northeast of England.

Hedgerows are a LBAP habitat, however because these hedgerows comprise of non-native species they do not qualify as a BAP habitat. They are still of value though, providing nesting opportunities for birds and shelter to a range of other species.

### 3.2.3 Scattered Trees

There are a large number of scattered trees across the site, mostly over amenity grassland. They are planted in lines, either side of the footpaths, to the north of the site. They are also arranged in a formal landscaped way around areas of ornamental planting. Elsewhere they are more scattered. A large number of these trees are non-native, with ornamental versions of hawthorn, birch, and beech, and a variety of different conifers, as well as a number of mature Norway maple and horse chestnut present at the northern end of the site. Mature native specimens are also present here and include wild cherry, and English oak.

#### 3.2.4 Grassland

The grassland across the vast majority of the site is managed as amenity grassland and is very species poor, with typical species associated with improved grassland i.e. perennial rye grass, white clover, daisy, dandelion and creeping buttercup.

There are pockets of longer vegetation, around areas of new planting and to the northeast, around areas of felled ornamental shrubs. Dominant species include those found in the amenity grassland

#### 3.2.5 Birds

The site is likely to attract a mixture of woodland and garden birds given its location. Some woodland bird species have been declining across the UK since the 1960s. This is mainly due to habitat loss and fragmentation, and insensitive woodland management. A number have been added to the red and amber lists of Conservation Concern.

The site is disturbed, with a number of paths crossing the site. However, the site has a range of habitats present, including woodland, and hedgerows. These habitats in such an urban location will be important for birds locally, although rarer birds are unlikely. Magpie, starling, jackdaw, bluetit, robin, chaffinch, blackbird and goldfinch were all recorded during the site walkover.

#### 3.2.6 Invertebrates

The habitats on site are of limited value for invertebrates, lacking in deadwood habitat, species rich grassland or wetland habitat. Invertebrates are largely under recorded, particularly due to the specialist skills required to identify them, especially rarer species. Invertebrates are also often specialists, requiring certain conditions/habitat/flora. Invertebrate species that rely on deadwood habitat are some of the threatened in Britain. Native species of tree are found to support a greater diversity of invertebrate to non-native.

### 3.2.7 Bats

All bat species and their roosts in Britain are protected under the Wildlife and Countryside Act 1981 (as amended) and under The Conservation of Habitats and Species Regulations 2017 (as amended). Combined, these make it an offence to kill, injure, capture or disturb bats or obstruct access to, damage or destroy roosts. Noctule, soprano pipistrelle and brown long-eared bats are listed as UK priority species (UKBAP, 2007). There are eleven species of bat known to occur in County Durham, of which eight are known to breed. All species of bat found within the LBAP area are included within the LBAP.

Bats usage of the site is unknown. No trees on site appeared to provide suitable roosting opportunities for bats. However, the site is likely to provide foraging habitat, particularly with the woodland, hedgerows and trees on site.

### 3.2.8 Other

Ornamental planting on site is of low value to wildlife but denser areas will provide cover for small mammals and birds and they will be of value to some invertebrates. Areas of ornamental planting to the northeast have been cut down and these areas are ideal areas to target enhancements for wildlife such as native scrub planting.

## **4.0 ECOLOGICAL MITIGATION AND ENHANCEMENT**

### **4.1 Introduction**

This management plan provides a framework for wildlife enhancements across the site. Figure 3, Appendix A shows locations for the proposed works. Appendix B provides additional specifications for the recommendations outlined below.

#### *General*

- Native scrub and hedgerow planting, to provide additional habitats of ecological value on the site.
- Use of trees of local/UK provenance.
- Wildflower meadow creation. Wildflower meadows are attractive and benefit a wide range of wildlife including insects, birds and small mammals.
- Training should be provided to grounds maintenance so that the wildflower meadows receive appropriate management in the long term.
- Peat bogs are very special places for wildlife but, partly due to gardeners' demand for peat, nearly all have been destroyed in the UK. If any compost is needed on site this should always be peat-free.
- The habitat management plan in section 5 is to ensure appropriate long-term management of the habitats of ecological value created on the site.
- Development of an ecological monitoring programme to assess the success of the mitigation and enhancement scheme in relation to key habitats and species.

### **4.2 Enhancements for Protected and Target Species**

#### **4.2.1 Bats**

Three (or more) woodcrete/stonecrete boxes could be installed on the trees on site.

The boxes should be installed as high as possible on a south-easterly to south-westerly aspect of the tree, sheltered from the wind but unshaded for most of the day. Bat boxes should also be located close to unlit linear features. Up to three can be installed on a single tree if space allows.

Consideration should be given to tree growth and boxes may need rehangng over time, regularly check boxes to assess this. Boxes must be checked by a licenced bat

ecologist before they can be moved. Use headless or domed nails not fully hammered home to allow the tree growth, again regular checks will ensure that this allowance can be made while still being securely fitted. Iron nails can be used on trees with no commercial value. Copper nails can be used on conifers, but aluminium alloy nails are less likely to damage saws and chipping machinery.

Bat boxes can be bought from a number of retailers, including:

<https://www.wildcareshop.com/wildlife-nest-boxes/bat-boxes.html>

<https://www.nhbs.com/equipment/bat-boxes>

<http://www.wildlifeservices.co.uk/batboxes.html>

#### 4.2.2 *Birds*

Three (or more) woodcrete/stonecrete boxes could be installed on the trees on site, with Appendix B providing additional detail.

Boxes for tits, sparrows or starlings should be fixed two to four metres up a tree. Face the boxes between north and east, thus avoiding strong sunlight and the wettest winds. Make sure that the birds have a clear flight path to the nest without any clutter directly in front of the entrance. Tilt the box forward slightly so that any driving rain will hit the roof and bounce clear.

Use headless or domed nails not fully hammered home to allow the tree growth, again regular checks will ensure that this allowance can be made while still being securely fitted. Iron nails can be used on trees with no commercial value.

Nestboxes are best put up during the autumn. Read more at <https://www.rspb.org.uk/birds-and-wildlife/advice/how-you-can-help-birds/nestboxes/nestboxes-for-small-birds/making-and-placing-a-bird-box>

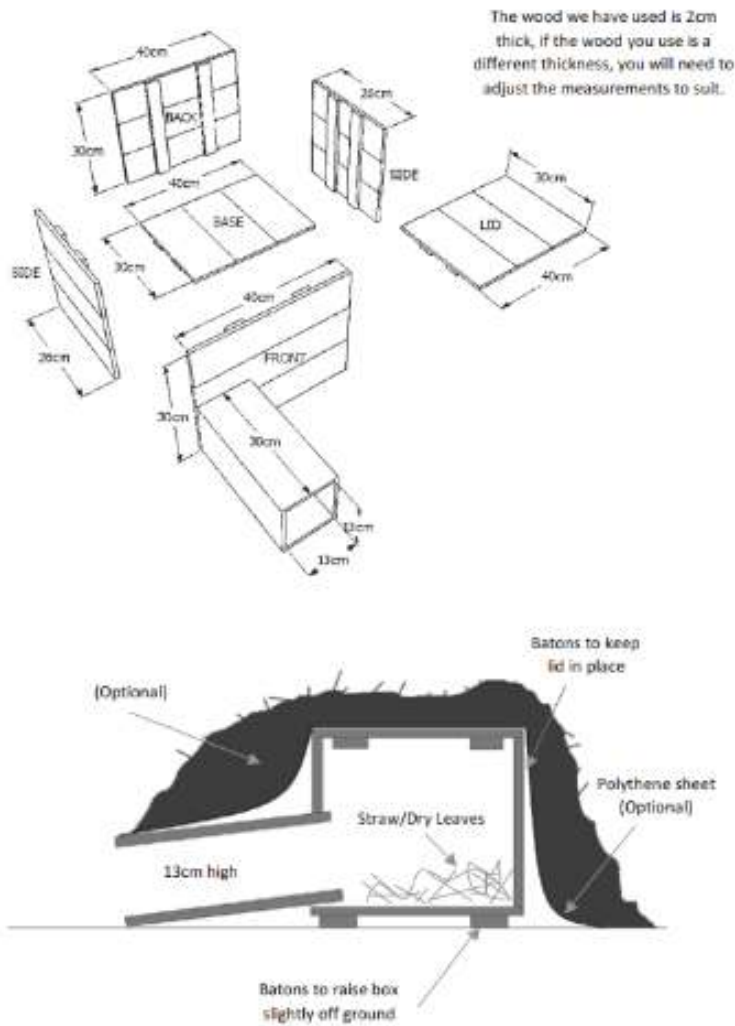
Bird boxes can be bought from a number of retailers, including:

<https://www.wildcareshop.com/wildlife-nest-boxes/bird-boxes.html>

<https://www.nhbs.com/equipment/bird-boxes>

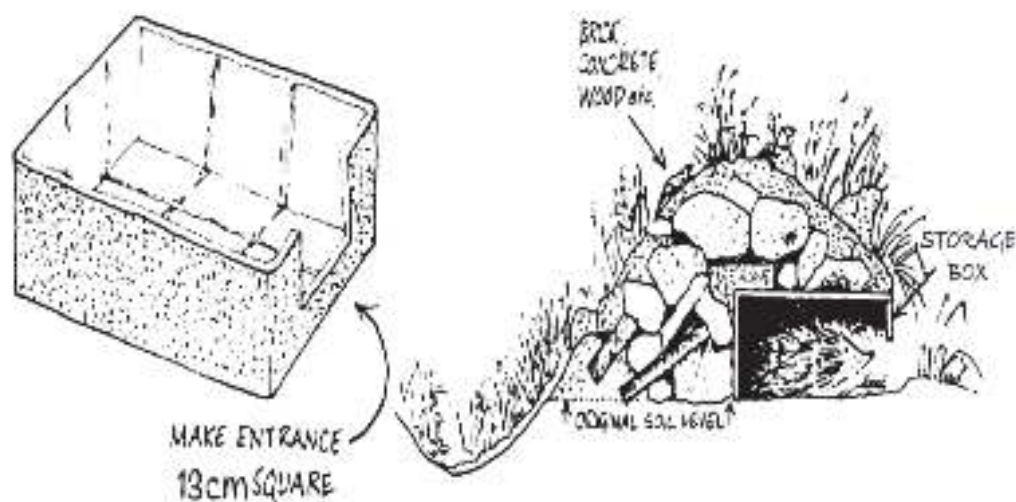
### 4.2.3 Hedgehog

Adding an artificial spoil heap, such as that detailed below, will provide additional shelter for this species on site, which is highly likely to utilise. Hedgehog homes can be bought from a number of retailers. This should be situated within the dense ornamental planting/hedging to the west/northwest.



**N.B. Do not creosote or treat wood with non-water based preservatives or paint (even water based preservatives should only be used on outside of box)**





Both taken from the British Hedgehog Preservation Society's Hedgehog Homes (2019).

#### 4.2.4 *Invertebrates*

##### Log piles

Piles of dead wood, logs, leaf litter and dead vegetation are very popular with hibernating and breeding insects, beetles, wood lice and ladybirds in particular. A pile of logs in a shady corner will also shelter animals such as frogs and toads. Log piles should be created within the areas of woodland.

##### Mini beast homes

The RSPB have produce an excellent guide to creating your own mini-beast hotel: [RSPB Mini Beast Hotel](#). Some creatures like damp dark conditions and others sunlight so having some in a variety of locations will benefit a wider range of critters. They can even be built to be suitable for hedgehogs, frogs and toads. The RSPB also provide a step by step guide to creating [bee hotels](#). As an alternative to building your own, you can also buy insect and bee homes from a wide range of retailers. The latter should be sited in sunny locations.

##### Planting for spring summer & autumn nectar sources

Planting recommendations in section 4.3 below will benefit invertebrates by providing nectar sources.

### 4.3 Enhancements for Habitats on Site

#### 4.3.1 Scrub Planting

The northeast area, adjacent to the boundary, where ornamental shrubs have been removed, is ideal for planting up with native scrub.

The recommended season for tree planting is mid- November – late March when tree roots are dormant and can cope better with being moved. The trees should be grown from seed within the Forestry Commission Provenance Zone 204. Both [www.treesplease.co.uk/](http://www.treesplease.co.uk/) and [www.cheviot-trees.co.uk/](http://www.cheviot-trees.co.uk/) are northeast companies that sell native plants and provide additional advice on planting, they both stock trees of zone 204 provenance. All whips or cell grown planting stock should have Tubex tree guards, tied and staked. Care should be taken to not plant in rows to give the scrub a more natural feel. Spacing between trees should be varied, with at least two metres between plants.

The trees below are suitable for planting and they are all native to the Northeast of England:

Blackthorn *Prunus spinosa*

Dogwood *Cornus sanguinea*

Dog rose *Rosa canina*

Goat Willow *Salix caprea*

Gorse *Ulex europaeus*

Grey Willow *Salix cinerea*

Guelder Rose *Viburnum opulus*

Hawthorn *Crataegus monogyna*

Hazel *Corylus avellana*

When planting aim to create or enhance the following features:

- sunny, sheltered edges, which offer a hot microclimate that is important for insects
- scalloped edges that increase the length of edge and provide shelter

- bramble, which is valuable for nesting and feeding birds and for nectar-feeding insects

#### **4.3.2 Wildflower Grassland**

A wildflower meadow could be created in the gap between the boundary (and any suggested hedgerow/scrub planting) and the footpath along the eastern edge of the site.

The area should be prepared by scarifying, creating a short sward with frequent patches of bare ground over 50% of the area. The wildflower seeds should be introduced via over-sowing following TIN064 (provided in Appendix B), which provides details on ground preparation and seeding rates. There are a number of suppliers of native neutral grassland mixes including, but not exclusive to:

- [Emorsgate \(EM3 Special General Purposed Meadow Mix\)](#)
- [Landlife Wildflowers \(Traditional Meadow\)](#)
- [British Wildflower Meadow Seeds sell a mix native to the Northeast of England](#)

Other suppliers are available, as long as the seeds are a native neutral grassland mix, of UK provenance. This should be sown in late summer-early autumn (August-Mid-September). Alternatively, wildflower plugs can be bought (from suppliers such as Landlife).

Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact.

#### **4.3.3 Hedgerow Planting**

A hedgerow could be planted along the eastern boundaries. This should be species rich, with 4 or more species over a 30 metres length, and planted using native species. Both [www.treesplease.co.uk/](http://www.treesplease.co.uk/) and [www.cheviot-trees.co.uk/](http://www.cheviot-trees.co.uk/) are northeast companies that sell hedgerow plants and provide additional advice on planting. Species should include 70% hawthorn, blackthorn *Prunus spinosa*, and hazel *Corylus avellana*, and the other 30% can be a mixture of dog rose *Rosa canina*, elder *Sambucus nigra*, or guelder rose *Viburnum opulus*.

Planting should take place between November and March. Prepare the ground so the soil becomes friable (has a crumbly texture) and is free of other growth prior to planting. Planting should be in a staggered double row 40cm apart with a minimum of 6 plants per metre. The plants should be kept clear of weeds until they are established. A herbicide can be used, but avoid doing this in the summer when the hedgerow is in leaf. Consult with a suitable qualified agronomist to determine suitable winter herbicides. Alternatively, this should be done by hand.

All plants should be protected with a suitable hedge guard (e.g. Tubex Hedging Guard) and secured with a cane. These should be removed once the plants are established. Failures should be replaced in the following planting season.

#### **4.4.4 Wildflower Bulb Planting**

To enhance the areas of woodland/ scattered trees, native bulbs should be planted. <https://www.meadowmania.co.uk/> and <http://wildnativebulbs.co.uk/> provide a range of native species. Particularly suitable are:

- Wood Anemone - *Anemone Nemerosa*
- Bluebell - *Hyacinthoides non – scripta*
- Wild Garlic/Ramson - *Allium ursinum*
- Lesser Celandine - *Ranunculus ficaria*

##### *Planting*

This varies from species to species but for the examples above:

- Bluebell  
Plant straight away. Planting distance 10cm apart, in sun or partial shade. Do not mow/cut the grass until the seeds have ripened in mid-July. The richer the soil the better. The bulbs should be planted at a depth of about three times their length (Approx. 5cm-7.5cm, though shallower on heavy soils).
- Ramsons/Wild Garlic  
The bulbs should be soaked for 24 hours on arrival and planted immediately. Plant in groups in an upright position, allow about 30cm-46cm between clumps, approx. 5-10cm deep. Or plant individually distance, 10cm apart.
- Lesser Celandine

Soak for 24 hours on arrival before planting immediately. Plant on their side, 2.5cm deep and 3-5cm apart.

- Wood Anemone  
Enjoys the same conditions as Bluebells. Plant the rhizomes horizontally, about 2.5cm deep.

## **5.0 Management Plan**

### **5.1 Habitat Management Plan**

#### ***All Newly Planted Trees/Hedgerow/Scrub***

Tree guards should be checked biannually, particularly after strong winds, and any missing guards replaced. Aftercare will include ensuring that tree guards are upright and pushed firmly into the soil. Any grass growing inside the guard will be removed. Once the tree is established and wind firm, the guard should be removed (normally after 5-7 years for woodland planting, 3-5 years for scrub/hedgerow).

Within the first 5 years any failures/losses should be replaced on a like for like basis.

Annual mulch in autumn will enrich the soil and provide frost cover particularly in the early years. Using mulch will also suppress weeds

#### ***Existing woodland planting***

Removal of epicormic growth (at the base and lower half of the stem) will divert growth effort into the crown of the tree.

#### ***New Woodland Planting***

##### Woodland Thinning

Year 5 – Inspect areas of woodland planting and coppice some nurse species such as birch, and willow to allow light to larger tree specimens such as oak.

Year 10 – Inspect areas of woodland planting and selectively remove nurse species to provide space for growth and to allow light to larger tree specimens.

#### ***Hedgerow***

Trim the newly planted hedgerow in at least the first 2 years to encourage bushy growth, allowing the hedge to become taller and wider at each cut. After that it should be cut no more than one year in three, unless there are access issues, and should be allowed to reach 2 metres tall and 1.5 metres wide.

### ***Wildflower Grassland***

#### *Maintenance*

The meadow should be mown at different times from late July to the end of August. Parts of the meadow may be left occasionally (one year in three in rotation) into September so that late flowering species can seed. Swath turning or tedding should be undertaken to assist seed shedding. All cuttings should be removed. Weeds (nettle, thistle, dock, rosebay willowherb) should be controlled by spot treatment with an appropriate herbicide or by regular cuts to prevent them flowering and setting seed.

An additional cut should also be carried out, at the end of, or beginning of, the growing season to replace the lack of aftermath grazing.

### **Woodland Bulbs**

#### *Maintenance*

If these areas require a cut, it should be done at the same time as the species rich grassland, ensuring that the bulbs have set seed.

## 5.0 WORK PROGRAMME

**Table 1: Newly Planted Woodland**

Description of Works	Month(s) During Which Works are Possible												Year Required									
	J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	5	6	7	8	9	10
Bi-annual checks of trees guards	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Remove vegetation inside trees guard /apply mulch				✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓			
Replace failures	✓	✓	✓								✓	✓	✓	✓	✓	✓	✓					
Remove tree guards once tree is established and wind firm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓			
Coppice nurse species around oaks to allow them more light	✓	✓	✓								✓	✓					✓					✓



**Table 2: Scrub Planting**

Description of Works	Month(s) During Which Works are Possible												Year Required									
	J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	5	6	7	8	9	10
Scrub planting													✓									
Management of scrub – weeding new plants														✓	✓							
Management of scrub – check and remove tree guards															✓	✓	✓					

**Table 3: Wildflower Grassland Creation**

Description of Works	Month(s) During Which Works are Possible												Year Required									
	J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	5	6	7	8	9	10
	Wildflower grassland creation.													✓								
Annual mid- late summer cut and rake of areas														✓	✓	✓	✓	✓	✓	✓	✓	✓
Second cut at the start or end of the growing season														✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring of species composition and spread of noxious weeds														✓	✓	✓	✓	✓	✓	✓	✓	✓

**Table 4: Hedgerow Planting**

Description of Works	Month(s) During Which Works are Possible												Year Required									
	J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	5	6	7	8	9	10
	Plant hedgerow.													✓								
Remove weeds from around new plants in first year.														✓								
Remove tree guards once plants are established.																✓	✓	✓				
Manage the new hedgerow in first two years.														✓	✓							
Monitor for failures and replace when necessary.														✓	✓	✓						
Once established cut not more than one year in three.																			✓			✓

**Table 5: Woodland Bulb Planting**

Description of Works	Month(s) During Which Works are Possible												Year Required																	
	J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	5	6	7	8	9	10								
	Plant Woodland Bulbs	As soon as they are received following instructions for individual species.												✓	✓															

**Table 6: Species recommendations**

Description of Works	Month(s) During Which Works are Possible												Year Required										
	J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	5	6	7	8	9	10	
	Install bat and bird boxes on site, as well as a hedgehog house.													✓									
Monitor boxes for damage and replace if necessary																	✓						✓
Clean out bird boxes													✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

## 6.0 REFERENCES

**Bat Conservation Trust** Bat Box Information Pack.

[www.buglife.org.uk](http://www.buglife.org.uk)

<http://butterfly-conservation.org/>

**Department for the Environment, Food and Rural Affairs (DEFRA) (2002)** Working with the grain of nature. A biodiversity strategy for England. HMSO: London

**HMSO. (1981)** Wildlife and Countryside Act. [www.hmso.gov.uk](http://www.hmso.gov.uk)

**HMSO. (2000)** Countryside Rights of Way Act. [www.hmso.gov.uk](http://www.hmso.gov.uk)

<http://jncc.defra.gov.uk/>

**Natural England (2017)** BE3: Management of hedgerows

**Natural England (2017)** BN11: Planting new hedges

**Natural England (2010)** Technical Information Note TIN064: Sward enhancement: diversifying grassland by oversowing and slot seeding

<http://neenp.org.uk/natural-environment/>

<https://www.rspb.org.uk/birds-and-wildlife/advice/how-you-can-help-birds/nestboxes/nestboxes-for-small-birds/>

**RSPB** Farming for Wildlife: Scrub Management

<https://wildseed.co.uk/mixtures/view/9>

<https://wildseed.co.uk/page/management-of-meadows-and-grassland>

[www.woodlandtrust.org.uk/plant-trees/advice/caring/](http://www.woodlandtrust.org.uk/plant-trees/advice/caring/)

**APPENDIX A**  
**Species Lists**

The following list was created on the 10<sup>th</sup> December by Karen Devenney MCIEEM and Jodi Bell and 27<sup>th</sup> June 2022 by Karen Devenney.

Plant species abundance was quantified using the DAFOR scale. The DAFOR scale is used for semi-quantitative sampling, to provide a quick estimate of the relative abundance of species (generally plants) in a given area. The DAFOR scale comprises the following categories:

- Dominant (D) – Percentage cover >75%
- Abundant (A) – Percentage cover 51-75%
- Frequent (F) - Percentage cover 26-51%
- Occasional (O) - Percentage cover 11-25%
- Rare (R) - Percentage cover 1-10%
- Locally (L)

#### Newly Planted Woodland

Common Name	Botanical Name
Field Maple	<i>Acer campestre</i>
Silver Birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
Hawthorn	<i>Crataegus monogyna</i>
Beech	<i>Fagus sylvatica</i>
Copper Beech	<i>Fagus sylvatica f. purpurea</i>
Wild Cherry	<i>Prunus avium</i>
Bird Cherry	<i>Prunus padus</i>
English Oak	<i>Quercus robur</i>
Lime	<i>Tilia sp.</i>
Guelder Rose	<i>Viburnum opulus</i>

**Scattered trees**

<b>Common Name</b>	<b>Botanical Name</b>	<b>Abundance (DAFOR)</b>
Korean Fir	<i>Abies koreana</i>	Rare
Norway Maple	<i>Acer platanoides</i>	Frequent
Horse Chestnut	<i>Aesculus hippocastanum</i>	Rare
Ornamental Birch	<i>Betula pendula 'Youngii'</i>	Rare
Lebanese Cedar	<i>Cedrus libani</i>	Rare
Hawthorn	<i>Crataegus monogyna</i>	Frequent/Locally Abundant
Ornamental Hawthorn	<i>Crataegus sp.</i>	
Ornamental Beech	<i>Fagus sylvatica 'Pendula'</i>	
Holly	<i>Ilex aquifolium</i>	Rare
Larch	<i>Larix decidua</i>	Rare
Scots Pine	<i>Pinus sylvestris</i>	Rare
Poplar	<i>Populus sp.</i>	
Cherry	<i>Prunus avium</i>	
English Oak	<i>Quercus robur</i>	
Yew	<i>Taxus baccata</i>	Rare

**Amenity Grassland**

<b>Common Name</b>	<b>Botanical Name</b>
Daisy	<i>Bellis perennis</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Perennial Rye-grass	<i>Lolium perenne</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Dandelion	<i>Taraxacum officinale</i>
White Clover	<i>Trifolium repens</i>



**APPENDIX B**  
**Figures**



### Legend

- Site Boundary
- Amenity Grassland
- Bike Track
- Broadleaf Plantation Woodland
- Built Structures
- Community Garden
- Felled Ornamental Shrubs
- Hard Standing
- Introduced Shrubs
- Newly Planted Beech Hedge
- Ornamental Hedge
- Planted Areas
- Scattered Trees
- Tree Planting

© Google Earth



Rainton Meadows  
 Chilton Moor  
 Houghton-le-Spring  
 Tyne and Wear  
 DH4 6PU

info@dwsecology.co.uk  
 www.dwsecology.co.uk

<b>Project</b>	Woodhouse Park
<b>Title</b>	Phase 1 Habitat Plan
<b>Client</b>	Genee
<b>Date</b>	23/02/2022
<b>Ref</b>	Figure 2





### Legend

- Site Boundary
- Hedgerow Planting
- Native Scrub Planting
- Wildflower Grassland Creation
- Woodland Bulb Planting
- Possible Additional Wildflower Grassland Creation

© Google Earth



Rainton Meadows  
 Chilton Moor  
 Houghton-le-Spring  
 Tyne and Wear  
 DH4 6PU

info@dwsecology.co.uk  
 www.dwsecology.co.uk

<b>Project</b>	Woodhouse Park, Peterlee
<b>Title</b>	Proposed Enhancements
<b>Client</b>	Genee
<b>Date</b>	07/02/2022
<b>Ref</b>	Figure 3

**APPENDIX C**  
**Specifications**





## Bat Box Information Pack

Bat boxes are artificial roosts designed to provide bats with alternative resting places. There are various designs of bat box, from wooden boxes that you can make yourself, to ready-assembled boxes and even integrated bat boxes that can be built into walls.

Providing bat boxes can increase opportunities for roosting bats, particularly when they are located where there are few existing roosting sites. However, where a number of suitable alternative roost sites exist it can take a long time for bat boxes to be used regularly and in some cases they may never be used. Even in these situations, bat boxes can have an important additional function in encouraging interest and educating members of the public about bat conservation. The correct design and placement of boxes will help increase the likelihood of their uptake by bats.



© Andrew Dumbleton

### Bat roost preferences

Bat boxes are now available from many outlets, and in a range of shapes and sizes, so some knowledge of bats' preferences will help you choose the best possible box.

Microclimate within a new roost is a very important factor in terms of increasing the chance of successful uptake by bats. In general, they prefer warm spaces in the summer for rearing young and cooler spaces in the winter for hibernation. The box should be draught proof and made from a thermally stable material such as untreated wood, woodcrete, brick or stone. If possible, it is better to provide several internal chambers so that the bats can move around as their needs change.

Although, it can take bats a long time to make use of artificial roosts, bat box location seems to be the most important factor influencing successful uptake.



© Hugh Clark

## Orientation and location

Lack of warmth is the most important known cause of bat box failure, and structures for summer roosting should be positioned where they are unshaded for most of the day. Summer maternity roosts (in the northern hemisphere) should have a southerly or westerly aspect. On average we estimate that the bat box should receive 6-10 hours of direct sunlight a day if possible. It is always best to provide a number of different options for bats so that they can choose the most appropriate temperature based on their needs. This can be achieved by grouping a number of bat boxes each with a different aspect, for example around the trunk of a tree (see 'putting up bat boxes' below).

## Size of the bat box

It is important that the type of bat box should be appropriate to the species it is aimed at. The most frequently used bat boxes are small and only suitable for crevice-dwelling bat species. Some species such as horseshoe bats and grey long-eared bats do not use bat boxes.

## Access

Crevice dwelling bats crawl into their roosts via small gaps in the range of 15-20mm high. Roughened surfaces or landing areas allow better access though landing perches should be avoided as these are not necessary, may even deter bats and encourage birds to nest within the bat box. It is important to locate access points where they are unobstructed but close to sizeable vegetation and flight lines. This allows bats to emerge earlier and forage longer.



## Other considerations

Bats are nocturnal and adapted to low light conditions. Artificial light sources should not be directed onto bat boxes or flight paths as most bat species find artificial lighting very disturbing.

## Types of bat boxes

Bat boxes come in many forms depending on their materials, function and location. Simple bat boxes are available commercially or can be home-made. They can be divided into the following categories: woodcrete external bat boxes, wooden external bat boxes and integrated bat boxes. Advanced forms of artificial roost creation include bat houses, bat barns and internal bat lofts (if you are interested in these please refer to the websites and publications listed at the end of this document).

### Woodcrete external bat box

Woodcrete (a mixture of wood and concrete) bat boxes have the advantage of being more durable so will not need to be replaced for many years. There are two basic types of woodcrete bat box:

- Cylindrical with an access hole in the front and designed to be hung on tree branches with a wire loop.
- Brick-shaped, usually with narrow roosting crevices inside and an entry slit at the bottom, designed to be fixed to trees or flat surfaces such as walls of buildings.



If possible, purchase boxes with an entrance slit along the bottom so that accumulated bat waste can drop out of the box or be pushed out as bats emerge. Bat boxes with entrance holes in the middle will need to be cleaned regularly by a licensed bat worker (see ‘monitoring bat boxes’ below).

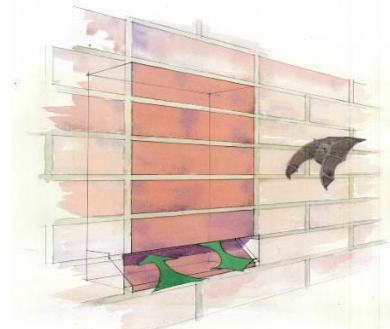
### Wooden external bat boxes

External bat boxes are usually located on trees or outside walls of buildings. The most common types of bat boxes are made from wood. Wooden bat boxes are usually cubic or wedge-shaped, with a grooved ‘bat ladder’ and a narrow entrance slit at the bottom. These will last for approximately ten years and can either be bought ready-made, in kit form, or you can make your own from scratch (there are instructions for the ‘The Kent Bat Box’ and ‘The CJM Bat Box’ in the appendices of this document). They come in a variety of shapes but key requirements are:

- The wood should be rough sawn for grip and untreated on the inside.
- To protect against moisture, air leaks and wood deterioration, apply one coat of primer to all outer surfaces, including vent openings, landings and entry areas. Follow that with two coats of flat exterior, water-based paint or stain. Do not use oil-based products. Consult Natural England’s guide for safe timber treatment products (TIN092).
- In cool climates bat boxes should be painted or stained black or a dark colour using non-toxic coatings.
- Bats do not like draughts. The entrance slit should be no more than 15-20mm wide, and there should be no gaps where the sides and top join. A box that cannot be opened from the top is best, as it will have fewer gaps for draughts, and will lessen the chances of the bats being disturbed. (Bats may unintentionally be injured if the box is opened, for example by damaging their feet and legs. A special licence is required in the UK to disturb bats and to handle them – see ‘monitoring bat boxes’ below)
- One of the most successful wooden bat boxes is the Kent bat box. These boxes are not available commercially but are very easy to make yourself (see instructions in the appendix).

### Integrated bat boxes

Integral or integrated bat boxes can be built into the walls or masonry of houses and other buildings. The boxes can be embedded such that they do not impair the air-tightness of the building. Many designs are available including some that have bespoke coverings that can match the building façade. The same rules for size, location and access apply.



Habitat, enhancing home for bat boxes.  
© Ecosurv

## Putting up bat boxes

### How many boxes?

Ideally, put up two or three boxes facing in different directions to provide a range of temperature conditions. For example, boxes facing from south-east to south-west allow the sun to fall on each box for part of the day. During very hot days a south-facing box may overheat, but the other boxes should have some shade.

Two or three boxes will always be preferable to one, although a single box has a chance of being used depending on the bat species that use the local area. Three boxes can be arranged around the trunk of larger trees.



To increase the chance of it being used, locate the box at a site where bats are known to feed, that is sheltered from strong winds and exposed to the sun for part of the day. Most maternity roosts are located within a short distance of permanent fresh water, preferably a stream, pond, river or lake. Bat boxes are more likely to succeed in areas where bats are frequently found in buildings and where there is a good mixture of habitat including trees and nearby water especially if there is good habitat for feeding bats but few roosting opportunities. (See below for more information on other things you can do to encourage bats.)

Bat boxes may be more successful if located close to a linear feature such as a line of trees or hedgerow. Some bat species use these features for navigation between their roosting sites and feeding grounds and to avoid flying in open and exposed areas. Ensure the bats approach to the box is not impeded, for example by branches – clear away underneath the box so the bats can land easily before crawling up into the box.



© Daniel Fellman

### On trees

Most species will use higher positioned boxes (around 5m high), although brown long-eared bats may use a box 1.5m above the ground. If you are locating boxes in public areas, consider the risks of vandalism and of the box being accessible to cats. Place the box as high as it is safe to. Consideration should be given to tree growth and boxes may need rehangng over time. Use headless or domed nails not fully hammered home to allow the tree to push the box off without splitting, or strap the box to the tree. Iron nails can be used on trees with no commercial value. Copper nails can be used on conifers, but aluminium alloy nails are less likely to damage saws and chipping machinery.

### On buildings

Placing the boxes high up by the eaves on a building will reduce the likelihood of the bats falling prey to cats or humans. As with trees, the aspect of the box should capture sun for part of the day.

Gazebos, garden walls and sheds have been suggested as sites for bat boxes. However, the main danger is that the boxes are not high enough above the ground and are too visible to predators.



© Sue Burchett



## On poles

American style bat houses (larger, multi-chambered boxes) have been successfully used for bat conservation in North America and elsewhere. These are increasingly being used in the UK with some success. Some designs are suitable for the sides of buildings or they can be put up on poles. More information on the design of these bat houses can be found in 'The Bat House Builder's Handbook' produced by Bat Conservation International (referenced in the Publications section at the end of this document). Some commercial designs are also available.

## Monitoring bat boxes

Making and putting up bat boxes is a great conservation action but what is even more useful is to know whether they are being used, when and by which species.

### How long before bats will use the box?

Sometimes it may take several years for the bats to find the box. Be patient!

It is highly unlikely bats will shift their roost from a well-used site to a newly positioned box and there may be plenty of other suitable roosting sites in the area. However, at other times bats will use the box within a few months, and if you are extremely lucky, maybe even within a few weeks!



© Daniel Fellman

### How will I know if the box has been successful?

To check if the box is being used, look out for droppings, urine staining, listen for 'chattering' and watch the box for an hour either side of sunset to observe any bats leaving to feed.

## Licensing

You can undertake the checks above without needing a licence. However, if the box needs to be opened to check it then there must be a suitably licensed bat worker present. Anyone wishing to undertake bat box checks should obtain training in bat handling and identification before applying for a licence. You can find out more about licensing and bats on the Bat Conservation Trust website at: [www.bats.org.uk/pages/licensing.html](http://www.bats.org.uk/pages/licensing.html)

All bats and their roosts are protected by law and it is an offence to deliberately disturb, handle or kill bats. The relevant legislation in England & Wales is the Wildlife and Countryside Act 1981 and Conservation of Habitats & Species Regulations 2010 (as amended). In Scotland it is the Conservation (Natural Habitats, etc.) Regulations 1994 and in Northern Ireland the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995.

## A bed without breakfast?

Bats often use features such as hedgerows, tree lines and waterways as commuting pathways between roosts and foraging areas. This type of habitat also provides shelter, allowing insects to gather and therefore support foraging bats. The highest densities of bats occur where insects are most plentiful.



Make sure you maintain or create good foraging habitats for bats by planting a wide range of plants such as flowers that vary not only in colour and fragrance, but also in shape. The addition of water (for example a pond) and deadwood to a garden will also increase the variety of invertebrates that your garden can sustain, providing food for bats. See BCT's 'Encouraging Bats' leaflet for more information (available from [www.bats.org.uk/publications](http://www.bats.org.uk/publications)).

## Bat Box Supplier Websites

There is a wide variety of commercially available bat boxes in a wide range of shapes, sizes and materials. These are available through NHBS ([www.nhbs.com](http://www.nhbs.com)), CJ Wildlife ([www.birdfood.co.uk/pro](http://www.birdfood.co.uk/pro)), Amazon ([www.amazon.co.uk](http://www.amazon.co.uk)), The Nestbox Company ([www.nestbox.co.uk](http://www.nestbox.co.uk)) and a range of alternative suppliers. Please be aware that BCT does not endorse any particular product or brand.

### **Habibat**

[www.habibat.co.uk](http://www.habibat.co.uk)

Habibat is a partnership between the Bat Conservation Trust, Ecosurv and customers. Their aim is to provide bat boxes that work for bats and buildings. A portion of the profits from each Habibat sold is reinvested into the Habibat scheme to improve accommodation for bats through monitoring and research. They will be improving knowledge of integrated bat boxes, monitoring uptake, refining our bat box design and giving their customers guidance on installation.

## Other Useful Websites

### **Bat Conservation Trust**

[www.bats.org.uk](http://www.bats.org.uk)

The Bat Conservation Trust (BCT) is working towards a world where bats and people thrive in harmony, to ensure they are around for future generations to enjoy. BCT is the only organisation solely devoted to bat conservation in the UK.

### **Roost**

[roost.bats.org.uk](http://roost.bats.org.uk)

Roost is a resource developed by the Bat Conservation Trust (BCT) to aid in the gathering of information on bat roost mitigation, compensation and enhancement techniques. The aim for this site is to provide accessible information to support everyone involved in bat conservation and development. The site is useful for those involved in projects which require mitigation for loss of bat roosts, and for those who wish to provide additional resources for bats in buildings.

### **Bat Conservation International**

[www.batcon.org](http://www.batcon.org)

Bat Conservation International's mission is to conserve the world's bats and their ecosystems to ensure a healthy planet. Based in Austin, Texas, BCI is devoted to conservation, education and research initiatives involving bats and the ecosystems they serve.

### **Vincent Wildlife Trust**

[www.vwt.org.uk](http://www.vwt.org.uk)

The Vincent Wildlife Trust (VWT) is an independent charitable body founded by Vincent Weir in 1975 and has been supporting wildlife conservation ever since. They conserve a range of endangered mammals through management their own reserves, undertake pioneering research and provide expert advice to others through practical demonstration.

## Publications

Gunnell, K., Murphy, B. and Williams, C. (2013) Designing for biodiversity: a technical guide for new and existing buildings

Gunnell, K., Grant, G. and Williams C. (2012) Landscape and urban design for bats and biodiversity

*Photos and illustrations in this document by the Bat Conservation Trust unless otherwise stated.*

The Bat Conservation Trust (known as BCT) is a registered charity in England and Wales (1012361) and in Scotland (SC040116).

Registered office: Quadrant House, 250 Kennington Lane, London SE11 5RD

Email: [enquiries@bats.org.uk](mailto:enquiries@bats.org.uk)

National Bat Helpline: 0845 1300 228

# Appendix A: The Kent Bat Box (D.I.Y. instructions)

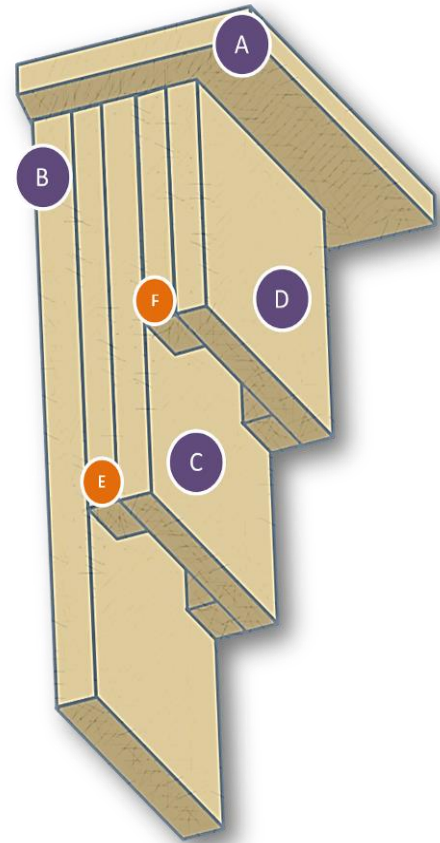
## Design and measurements

Simple to construct, self-cleaning and low maintenance, the Kent bat box (designed by the Kent Bat Group) is a great extra home for bats to hang out and rest on a hunting night out. These boxes won't be spacious enough to be used as maternity roosts but are a great way to encourage bats in your garden or your green space. The box should be rainproof and draught-free

The only critical measurement is the width of the crevices: between 15-20mm. Other measurements are approximate. Timber should be approximately 20mm thick.

Measurements for one Kent bat box kit would be as follows:

Part	Quantity	Size (mm)
Roof (A)	1	250 x 160 x 20
Back (B)	1	450 x 200 x 20
Centre (C)	1	330 x 200 x 20
Front (D)	1	210 x 200 x 20
Centre Rails (E)	2	330 x 20 x 20
Front Rails (F)	2	210 x 15 x 15
Stand-offs (optional)	2	200 x 20 x 20



## Material and Tools

This kit requires approximately 1.6m of rough wood and 25 screws (8 x 1 ½ inches) to assemble. You can rough it up by scraping with a suitable tool – possibly a saw blade or even a screwdriver but make sure you use untreated wood as some preservative chemicals can kill bats.

Pre-drill the holes to prevent the wood splitting. The hanging screws may either be at the edges of the front panel or in the side centre block (not in the rails!). Fixing may be by use of brackets, durable nylon cord or wires. Alternatively you can assemble your bat box kit with nails although they tend to be less robust than boxes made with screws.

*This design has been developed by Kent Bat Group*

*We'd like to know how successful it is. Please send any comments or records of bats seen using it to: [records@kentbatgroup.org.uk](mailto:records@kentbatgroup.org.uk)*

*With thanks to Glen Sharman for help in prototype and Lloyd Bore for providing plans.*



## Kent Bat Group

[www.kentbatgroup.org.uk](http://www.kentbatgroup.org.uk)

Reg Charity No. 1079767



© Kent Bat Group

## Appendix B: The CJM Bat Box (D.I.Y. instructions)



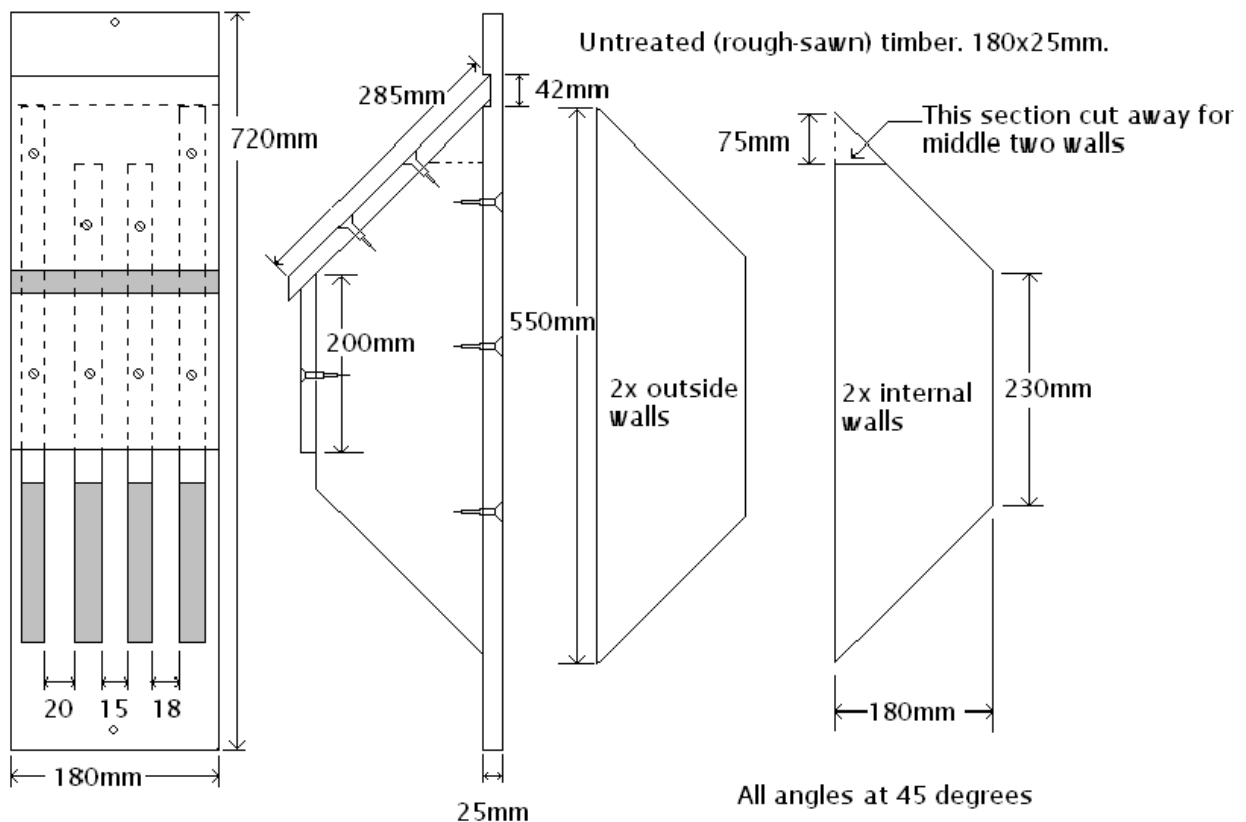
The CJM bat box was designed to imitate niches where crevice dwelling bats might roost; such as a split in a tree trunk or behind loose bark. This design was created for woodland habitats and has proven to be successful with several different species in woodland studies.

This design requires no maintenance as the open bottom allows droppings to fall from the box.

The three vertical 'slots' each of a different width, offers a choice that several species of bat, depending on their size, might use. The upper section of the two partition walls have been cut away to allow bats an area to cluster, conserve energy and breed.

These simple drawings are all you need to build one yourself. Please contact Colin Morris at The Vincent Wildlife Trust if you require any more information: [colinmorris@vwt.org.uk](mailto:colinmorris@vwt.org.uk)

*All the timber used is untreated, rough-sawn 180mm x 25mm.*



*All information on this page has been provided by and is copyright of The Vincent Wildlife Trust.*

The  
Vincent Wildlife  
Trust



# Sward enhancement: diversifying grassland by oversowing and slot seeding

**Sward enhancement refers to management techniques which aim to increase the botanical diversity (mainly the wildflower component) of species-poor grassland. Such work can be funded under Environmental Stewardship Higher Level Scheme (HLS). Oversowing and slot seeding are two methods of sward enhancement. Other techniques of spreading species-rich green hay and planting pot-grown transplants and plug plants are described in separate information notes.**

## Key points

- Suitable sites must be selected to ensure the best chance of success.
- Seed must be carefully chosen for a particular site.
- The site should be prepared prior to oversowing to achieve a short sward with 50% bare ground.
- When oversowing, seed must be broadcast on the surface and then bedded in.
- Slot seeding requires specialist machinery, which may have to be adapted, for example, to attach a band sprayer.
- Subsequent site management is important.

## Introduction

Not all grassland is suitable for enhancement. The main requirements include low soil fertility and low/no weed burden. Enhancement methods usually involve disturbance to the sward. The benefits of enhancement, must be balanced against the risk of erosion or damage to other features for example, where there is buried archaeology or bird interest. If in doubt consult your Natural England adviser.



Six-spotted burnet moth on common knapweed

For more information see Technical Information Notes TIN061 - *Sward enhancement: selection of suitable sites* and TIN062 - *Sward enhancement: choice of methods*.

## Sward enhancement: diversifying grassland by oversowing and slot seeding

On the right sites, both oversowing and slot seeding can be very effective techniques of diversifying grassland. Oversowing is the more commonly used method, as slot seeding requires specialist machinery.

### Timing

Both oversowing and slot seeding should be undertaken in late summer or early autumn (ideally early August to mid September). This favours autumn-germinating species, and seeds of species such as cowslip *Primula veris*, which require a period of cold to break their dormancy before they germinate in the spring.

Later sowings should be avoided because of the risk of frost damage to seedlings. Spring sowings are possible, but many species will not germinate in the first year, and there is greater risk of failure due to drought.

### Seed mixes

The species chosen must be suited to the site conditions and should be appropriate for the area. Where possible seed should be of local origin ie collected from grassland close to the site where it is to be sown. Wildflower seed should always be of British native origin.

For more information see Technical Information Note TIN038 *Seed sources for grassland restoration and re-creation in Environmental Stewardship*.

For sites in the early stages of restoration, it may not be worthwhile sowing species which are more difficult to establish – see section on successive sowing.

### Weed control

All pernicious weeds present in the sward should be controlled before ground preparation. Any application of herbicide should be by spot treatment or weed wiping to avoid damaging non target species.

Spear thistle *Cirsium vulgare*, ragwort *Senecio jacobaea* and other weeds with wind-blown seeds should be controlled where they occur on

adjacent areas, as they can quickly invade once the sward has been opened up.

### Oversowing

The success of oversowing depends on the presence of gaps in the sward which are large and persistent enough for seeds to germinate and establish free from competition. Seeds must land and then be pressed into the bare soil in the gaps with sufficient moisture to germinate and sustain them.

### Ground preparation

In the majority of cases, ground preparation will be required prior to oversowing. Sowing onto a closed sward is extremely unlikely to be successful. Seed may fail to come into contact with the soil and die, and any seedlings which germinate may be out-competed by the existing sward.

The starting point is a short sward, created by cutting (with cuttings removed) or grazing. The aim is then to create 50% bare ground, using livestock (the 'hoof and tooth' method) or machinery.

This may seem drastic but research and experience has shown this to be necessary to reduce competition from the existing sward. Within a few months (or even less) the sward will recover and very little bare ground will remain. However, if there are known archaeological sites in the area, consult your historic environment advisor to ensure archaeological features are not damaged.

Where livestock are used to create bare ground, cattle are most effective as their hooves more easily break up the sward. Sheep can also be effective on damp ground. As a guide there should be frequent gaps of at least 10 cm in diameter.

Where livestock are unavailable, or where the ground is too dry for them to be effective, bare ground can be created using a power harrow or set of discs.

Mechanical sward disturbance may release nitrogen from the soil and stimulate herbage

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growth which should be controlled – see section on subsequent management. It may also stimulate the weed seed bank, so it should only be undertaken on sites with very low or no weed burden.

In a few cases, notably in upland hay meadows, there may be sufficient bare ground and soil moisture following the hay cut for seed to be sown without further ground preparation. However, such cases are likely to be rare.

### Seeding

The following seed rates are recommended:

- 5-10 kg/ha of a wildflower and grass seed mix (usually including at least 10% wildflower seed).
- 1-2 kg/ha of a pure wildflower seed mix.

Seed can be sown either over the whole field or in patches. Patch sowing may be appropriate where:

- seed is in short supply;
- certain parts of the field are being targeted (for example, areas with lighter soils); or
- there is a risk of soil erosion.

The seed must be sown on or only just below the surface. The most appropriate method is to broadcast the seed using for example, a fertiliser spreader, slug pellet applicator, grass seed box or one of the modern arable seed drills with the coulters lifted up. Slug control may be needed – see later section.

For small areas, seed can be sown by manual broadcasting using a hand-held lawn fertiliser applicator, seed fiddle or seed barrow.

Seeds of different sizes and weights may settle out or become partitioned during sowing, causing a patchy sowing distribution. A more even coverage can be obtained if the seed is bulked up with an inert carrier for example, barley meal, silver sand, fine sawdust, or poultry chick crumbs, and then sown at half rate in two directions. Light coloured carriers make it easier to see which areas have been sown.

### Bedding in the seeds

After sowing, seed must be bedded in to ensure good contact with the soil, by trampling with livestock (preferably cattle) or light rolling.

### Successive sowing

Successive sowing, which introduces new species over several years, may be a good approach since many plant species vary greatly in their ease of establishment.

TIN050 – *Selecting indicators of success for grassland enhancement* categorises species according their ability to colonise new sites.

Those in Group 1 are relatively easy to establish. It is thought that some of these (for example, red clover) are ‘facilitator species’ which over time can create soil and sward conditions which speed up subsequent colonisation by species in Group 3 which are difficult to establish.

It will often be useful to sow yellow rattle (a Group 2 species) which parasitizes more competitive species, such as white clover, perennial ryegrass and Yorkshire fog but seed must be very fresh (For more information see TIN060 *The use of yellow rattle to facilitate grassland diversification*).

In the early stages of restoration the cost of sowing Group 3 species may not be justified.

Successive sowing will not be appropriate every year, as plants should be given time to establish before the sward is disturbed again. Some of the introduced species may not appear in the sward for several years, so the success of sward enhancement should not be judged too soon.

### Slot seeding

Slot seeding was originally developed as a technique for increasing the productivity of grassland by introducing species such as white clover *Trifolium repens* and ryegrass *Lolium perenne*. The method has been used with some success to introduce wildflowers.

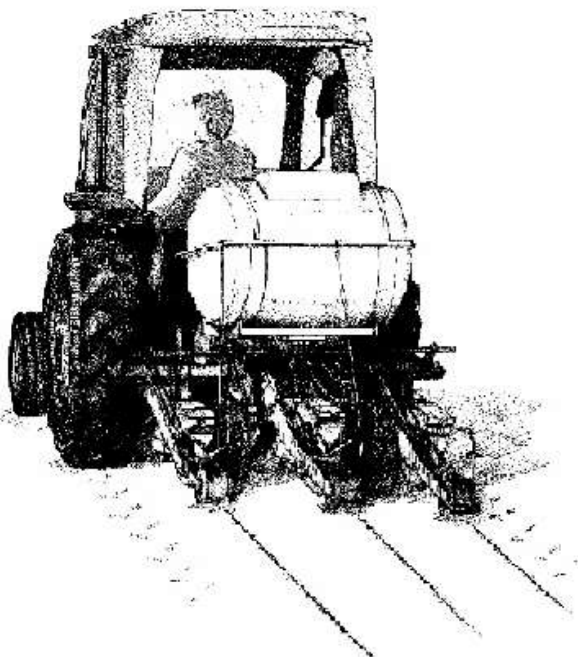
## Sward enhancement: diversifying grassland by oversowing and slot seeding

Slot seeding requires specialist machinery which drills seed into shallow slots, up to 15 mm deep, cut into the turf. Suitable machinery includes:

- a sugar beet drill (for example, Stanhay/Gibbs drill);
- a Howard Rota seeder; and
- a Gallagher/Aitchison Seedmatic.

Normal arable direct drills are usually unsuitable, either because they are unable to penetrate hard ground, or they bury seed too deeply. In addition, these drills are not designed to create gaps or to reduce sward competition.

It is essential to control competition from the existing sward in order for seedlings to establish and survive. The best means of doing this is by fitting the slot seeder with a band sprayer which applies a narrow strip of contact herbicide to the sward at the same time as the seed is sown.



Slot seeding with adapted Stanhay/Gibbs drill

Some machines have a rotovating attachment, which serves a similar purpose by removing the existing sward. However, rotovating may release nitrogen from the soil and stimulate the weed seed bank.

A major advantage of slot seeding is that good results can be achieved with very low seed

rates. However, the stripes of the drill lines may be visually unappealing and can take several years to disperse. The use of herbicide or a rotovator also risks the loss of desirable species from the sward.

The method is not recommended on poorly drained soils because slots can smear or fill with water, and there is a greater risk to seedlings of slug damage and damping off. It is also unsuitable where there are visible archaeological features.

### Ground preparation

Before slot seeding create a short sward by cutting (with the cuttings removed) or hard grazing. Allow the sward to green up slightly to provide a target for the herbicide.

### Seeding

Avoid undertaking the work when the ground is too hard or too wet.

A wildflower seed rate of 1-2 kg/ha is recommended. Seed should be bulked with a suitable inert carrier to aid spreading.

Where lines are widely spaced, ie >30 cm apart, consider cross drilling at half rate in two directions.

### Successive slot seeding

Successive slot seeding is not recommended because of the risk of destroying the plants already introduced.

### Slug control

Slugs can devastate wildflower seedlings and populations should be carefully monitored. Control is particularly likely to be necessary when slot-seeding as slugs will readily follow the sown strips and eat the seedlings.

Rolling can help control slugs. Alternatively, slug pellets can be used - ideally drilled into the slots at the time of seeding. Slug pellets must be used in accordance with statutory instructions and directions for use on the product label. For land in agri-environment scheme agreements, prior approval will be needed from your local adviser.



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### Subsequent management (both methods)

In the period immediately after sowing (usually September - November), the sward should be kept short so that light can help germination.

This is best done by short periods of intensive grazing. Alternatively the sward can be cut and the cuttings removed. Prolonged grazing should initially be avoided in order to reduce the risk of seedlings being selectively grazed.

In the first spring, it may be necessary to cut or graze the sward to prevent seedlings being shaded out by the existing vegetation.

A short period of intensive grazing, or cutting (with the cuttings removed) is recommended. However, this may not be appropriate on all sites and care should be taken to avoid damage to other interests on the site, for example, birds and invertebrates.

Any perennial weeds which have colonised should be controlled early on, for example, by spot treatment with herbicide. Any annual weeds are likely to be controlled by the regular cutting or grazing outlined above.

Subsequently, if the field is to be managed as a hay meadow it should be cut late (for example, after mid July), with swath turning or tedding undertaken to assist seed shedding. The use of livestock, particularly for aftermath grazing, is important because they create gaps in the sward and trample in the seed, which helps the introduced species to spread.

Where the field is managed as pasture, plants must be allowed to flower and set seed by reducing the grazing pressure for a period of about eight weeks in spring and summer.

Inorganic fertilisers or widespread application of herbicides should not be applied after sowing or seeding.

Commitment to an appropriate long term management is essential if a grassland

enhancement project is going to succeed and be maintained.

### Further information

Natural England Technical Information Notes are available to download from the Natural England website: [www.naturalengland.org.uk](http://www.naturalengland.org.uk). In particular see:

- TIN035: Soil sampling for habitat recreation and restoration in agri-environment schemes
- TIN036: *Soils and agri-environment schemes: interpretation of soil analysis*
- TIN038: *Seed sources for grassland restoration and re-creation in Environmental Stewardship*
- TIN060: *The use of yellow rattle to facilitate grassland diversification in agri-environment schemes*
- TIN061: *Sward enhancement: selection of suitable sites*
- TIN062: *Sward enhancement: choice of methods*
- TIN063: *Sward enhancement: diversifying grassland by spreading species-rich green hay*
- TIN065: *Sward enhancement: diversifying grassland using pot-grown wildflowers or seedling plugs*

For further information contact the Natural England Enquiry Service on 0300 060 0863 or e-mail [enquiries@naturalengland.org.uk](mailto:enquiries@naturalengland.org.uk).

This note does not supersede prescriptions in agri-environment scheme agreements. If there is any conflict between the information in this note and your agreement please contact your Natural England Adviser.

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# Siting a nestbox

23 August 2006



You could see young robins in your garden if you provided somewhere to nest

Image: **Andy Bright**

**This depends on the species the box is intended for. Boxes for tits, sparrows or starlings should be fixed two to four metres up a tree or a wall.**

Unless there are trees or buildings which shade the box during the day, face the box between north and east, thus avoiding strong sunlight and the wettest winds.

Make sure that the birds have a clear flight path to the nest without any clutter directly in front of the entrance. Tilt the box forward slightly so that any driving rain will hit the roof and bounce clear.

House sparrows and starlings will readily use nestboxes placed high up under the eaves. Since these birds nest in loose colonies, two or three can be sited spaced out on the same side of the house. Keep these away from areas where house martins normally nest.

Nestboxes are best put up during the autumn. Many birds will enter nestboxes during the autumn and winter, looking for a suitable place to roost or perhaps to feed

Open-fronted boxes for robins and wrens need to be low down, below 2m, well hidden in vegetation. Those for spotted flycatchers need to be 2-4m high, sheltered by vegetation but with a clear outlook. Woodpecker boxes need to be 3-5m high on a tree trunk with a clear flight path and away from disturbance.

Fixing your nestbox with nails may damage the tree. It is better to attach it either with a nylon bolt or with wire around the trunk or branch. Use a piece of hose or section of car tyre around the wire to prevent damage to the tree. Remember that trees grow in girth as well as height, and check the fixing every two or three years.

Two boxes close together may be occupied by the same species if they are at the edge of adjoining territories and there is plenty of natural food. While this readily happens in the countryside, it is rare in gardens, where you normally can only expect one nesting pair of any one species. The exceptions to this are house and tree sparrows and house martins, which are colonial nesters. By putting up different boxes, several species can be attracted.

Nestboxes are best put up during the autumn. Many birds will enter nestboxes during the autumn and winter, looking for a suitable place to roost or perhaps to feed. They often use the same boxes for nesting the following spring. Tits will not seriously investigate nesting sites until February or March.

## How you can help

Encourage birds to nest in your garden

[BUY A NESTBOX FROM OUR ONLINE SHOP](#)

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## Making a nestbox **Cleaning nestboxes**

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**APPENDIX D**  
**Report Conditions**

# Durham Wildlife Services

## REPORT CONDITIONS Woodhouse Park, Peterlee

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*February 2008*