

# MOULSECOOMB FOREST GARDEN WILDLIFE ACTION PLAN 2020



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**[www.moulsecoombforestgarden.org](http://www.moulsecoombforestgarden.org)**

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## INTRODUCTION

### BACKGROUND

The Moulsecoomb Forest Garden and Wildlife Project (MFGWP) (TQ 3247 0697) started in 1994 as an inclusive community garden project, set on ten allotments in an area of multiple deprivation in Brighton. It is a Registered Charity which offers opportunities for children struggling at school, people with learning difficulties and of all abilities to work together to gain valuable skills in horticulture, cooking and bushcraft. As well as growing vegetables, fruit, flowers and herbs organically, the team at MFGWP provides an outdoor education programme for local pupils who benefit from an alternative to a typical classroom setting, as well as providing outdoor activities for young people and adults with learning disabilities. Through use of the garden space and the adjacent woodland, people are being brought regularly into contact with wildlife and the natural world.

This wildlife management plan has been created in to recognise the high value of this site for biodiversity, and to maximise the charity's capability to conserve it. It is designed to guide the enhancement of habitats in the garden allotment and the adjacent woodland site for wildlife, making best use of the resources currently available. The action plan table outlines prescriptions for habitat works to enhance the ecology of the site, outlining a schedule of timings to carry out these tasks. The ecological data search references a summary of the species which are known to occur near or on-site through the Sussex Biodiversity Record Centre (SxBRC) report and previous wildlife surveys. The ecology survey schedule provides guidance for increasing the understanding of the site ecology and informing the habitat works. Finally, this report suggests ways of engaging people from diverse backgrounds and of differing abilities with wildlife and its conservation.

### SITE DESCRIPTION

The geology of the site is comprised of chalk and flint escarpment which is largely covered by Queensdown Wood (classified as secondary woodland). The south-side, downslope end of the woodland abuts the top of Moulsecoomb Place Allotments, which is the home to the project. As a permeable boundary for wildlife, many species use the wood and the allotments to meet different parts of their life needs (Queensdown Wood Management Plan, 2009).

The site is also located very close to the South Downs National Park boundary and Wild Park, Brighton and Hove's largest Local Nature Reserve (LNR). The presence of these habitats, their management and overall protection has resulted in a diverse suite of wildlife utilising the space, with high potential for rare and interesting species to occur within project area.

The garden site itself consists of ten organic vegetable plots, on sloping, well-draining ground which in places is gently terraced. The plots and the surrounding spaces are managed by a small team of staff and an extensive group of volunteers, many of whom have been involved with the project for several years. A composting area sits at the lowest point (south-east) of the site, close to Moulsecoomb Railway Station. Two ponds with built-up edges are situated about midway up the slope of the

garden: one is fairly large and popular with breeding Smooth Newts; the other is a small ceramic basin frequented by breeding Common Frogs. A few mature fruit trees and open-grown, coppiced Hazel shrubs provide areas of shade along the western edge of the allotment. A diversity of flowering annual and perennial species currently exists around the borders of, and areas between the cultivated plots. Some beds in an area named the 'bee-garden' have been set aside, allowing for longer grasses and nectar-rich plants such as Marjoram, Comfrey and Borage to flourish, benefiting a variety of pollinating insects. Towards the top of the site, some old materials have been left undisturbed such as reed thatch and log piles, and an area of tall ruderal vegetation has been retained which benefits a variety of invertebrates as well as reptiles, amphibians and small mammals.

## ECOLOGICAL DATA SEARCH

A biological record is a documented observation of a species (commonly a plant, animal or fungus), in a particular area, on a particular date. A data search was requested by Rachel Bicker in June 2018 and carried out by the SXBRC, including the allotment garden area, Queensdown Wood and the surrounding Wild Park site (see Appendix II for detailed species lists). Below are summary tables displaying the results of this search. A species database has been compiled for the site, reviewing the most recent and historical biological records for all species ever recorded on site. This helps to identify gaps in monitoring, highlighting where more effort might be needed to ascertain which species occur on site and how best they can be conserved.

European protected species confirmed as found on site include Slow Worms, Common Lizards and Badgers, of which there is an active sett reported nearby. Common Pipistrelle Bats have been observed around the woodland and there is some potential for Dormice to occur in the bordering woodland (the closest recent record being in Stanmer, around 2km as the crow flies). There is some potential for two other reptile species, Grass Snake and Adder, to be present as the gardens and woodland edges are an excellent habitat for these species, with potential for breeding in composting areas.

Several Amber bird species are known from the main garden allotment site including Bullfinch, Song Thrush and Dunnock, which are also likely to be breeding nearby. Moulsecoomb is only about 2.5km from the coast, and so it is unsurprising that occasional 'fly-over' records include notable migratory species of bird, such as Brent Goose, Honey Buzzard, Osprey and Cuckoo.

Due to the highly floristic nature of the site and the fact that it has been managed organically for several years, there is likely an excellent diversity of pollinating insects present, such as solitary bees, hoverflies and moths. Several notable species may be occurring within the allotment garden itself, such as White-letter Hairstreak butterflies, which would be benefitting from the medium to large-sized Elm trees bordering the site. Due to the proximity to the Wild Park LNR, which is extensive species-rich chalk grassland, it would not be impossible for rarer plant species to be recorded nearby, such as Round-headed Rampion and the Autumn Lady's-tresses Orchid. Rare butterfly species such as Silver-spotted Skipper, Grizzled Skipper and Chalkhill Blue have all been recorded within Wild Park, and a record of Small Blue was noted within the garden itself in 2001.

Many wildlife groups are currently under-surveyed due to a lack of time and resources. Many species which are deemed rare and declining receive no official protection yet can act as important indicators of the health of ecosystems. It is therefore still important to collect information on these less-understood species groups, in order to know how they are utilising the site and best safeguard them for the future.

**Table 1. Summary of sites and habitats, protected and designated species (more detailed species lists can be found in Appendix II.)**

Summary of sites and habitats	
Statutory sites	1 National Park: South Downs 1 Local Nature Reserve: Wild Park
Non-statutory sites	None present
Section 41 habitats	1: Deciduous woodland
Ancient and/or ghyll woodlands	None present
Summary of protected and designated species	
International designations	20 species (238 records)
National designations	85 species (2,205 records)
Other designations	143 species (3,166 records)
<b>Total</b>	<b>157 species (3,492 records)</b>
Invasive non-native species	14 species (79 records)

**Table 2. Species groups and the total recorded species within the Moulsecomb Forest Garden site and wider surrounding area (as of 2017)**

Group	No. recorded species
Flowering plants	370
Birds	158
Moth	41
Butterflies	36
Hoverflies	25
Mosses	18
Beetles	12
True bugs	12

Mammals	9
Hymenoptera	8
Spiders	6
Dragonflies & damselflies	4
Fern	3
Reptiles	3
Amphibians	3
Conifer	1
Other True Flies	1
Grasshoppers & Crickets	1
<b>Total number of species</b>	<b>711</b>

Based on the above data summaries from the SxBRC extract, under-surveyed wildlife groups on site include lower plants and fungi, along with many invertebrate groups such as the Hymenoptera (bees, wasps and ants), moths, flies, molluscs (slugs and snails) and arachnids.

## ECOLOGY SURVEY SCHEDULE

Structured ecological monitoring through standardised surveys will provide valuable information on species assemblages and wildlife populations, helping to further understand how a site is used by wildlife, which habitats are most important and how they might need to be managed. Casual records by visitors or local naturalists can also be important in informing presence of notable species and so should be captured where possible. Ecological surveys and wildlife monitoring can also be made inclusive to the wider public, involving volunteers where appropriate. This helps to raise awareness and engage people with the natural world.

**Table 3. Suggested ecological surveys to be carried out within the period of a year (several of these surveys may also work well for public engagement and open day events).**

Survey	Frequency	Month	Time/ conditions	Method
Big Garden Birdwatch	1 visit	January	Morning	Towards the end of January, the RSPB hold their public survey, the Big Garden Birdwatch. This survey has successfully been conducted from the balcony of the Eco Hut, using binoculars and a notepad to keep peak counts of birds seen and heard within site boundary.
Amphibian torching survey	2 visits - late winter and spring	Feb-May	Early evening	Starting 45 minutes after sunset, shining a high-powered torch into water bodies, to identify and count amphibian species. Use a net to help capture and identify the more subtly different newt species
Reptile surveys (Slow-worm and lizard counts)	Monthly	March-Oct (1st - 15th)	Morning (10°C+ and sunny)	Reptile refugia checks; peak counts of the different reptile species in 'hot spots' on site. Gauging relative ages based on body size

Bat activity survey/tracking	1 per year	April - October	Sunset	Invite an expert from a local bat group to carry out a bat survey with bat detector. Potential to also carry out trapping on site for harder to identify species, however a special license is needed to carry out this work
Botanical: Woodland groundflora	1 visit	April/May	Daytime	Listing of groundflora species and relative abundances, using the DAFOR abundance scale
Breeding bird survey	4 visits	March - August	Early morning (1hr after sunrise)	Beginning one hour after sunrise. Identifying breeding bird species in or around the site by song or breeding signs (nest building, fledglings etc). No bird nests or young can be disturbed
Bumblebee survey	Roving records	March - October	Daytime (10°C+ and sunny)	Identifying species through netting and/or photographing in clear pots, using balled up tissue to gently hold the bee still
Butterfly surveys	Roving records	March - October	Daytime (10°C+ and sunny)	Identifying species through netting and/or photographing in clear pots
Dragonfly surveys	Roving records	May - October	Daytime (10°C+ and sunny)	Identifying species through netting and/or photographing in clear pots
Botanical: main garden and pond areas	1 visit	May - July	Daytime	Invite the local botanical recording society to create an inventory of the native, non-native and naturalised species occurring on site



Hazel Dormouse survey	Monthly	May - September	Daytime	Initially around 30 Dormouse boxes or tubes to be installed in suitable woodland habitat. These may be checked monthly by volunteers, until the time that a live Dormouse is detected, then surveys will need to be carried out by a license holder
Moth surveys	2 nights	May and September/ October	After sunset, continue until midnight or leave overnight	Using a bucket moth trap and actinic light to collect and count numbers of different moth species. Help can be sought from the local moth group, who will also identify micromoths to species level where possible
Small mammal surveys	3 consecutive nights	May-September	3 consecutive nights and mornings	Longworth trapping with help from the local Mammal Group
Fungi foray	1 visit	Oct-December	Daytime	Invite the local fungi group to visit and record fungus species
Tawny Owl survey	1 visit	November-March	1 hr after sunset	A survey using playback of Tawny Owl calls to help map territories, using maps, a smartphone and portable speaker
Infrared trail camera nocturnal mammal tracking	A minimum of 3 consecutive nights	All year	Leave camera on site for 3 nights and check daily	Useful for detecting hedgehogs, badgers, foxes and mustelids as well as other nocturnal species. Boosting the mammal species list using infrared trail cameras. Using of bait such as peanuts, and cat food, targeting areas of obvious mammal trails and edge habitat

Table 4. Additional species groups which are not listed above but could also be covered with specialist help

Lower plants: Algae, Lichens, Mosses, Liverworts, Ferns	Centipedes, millipedes and woodlice
True bugs	Grasshoppers
Spiders	Springtails
Molluscs	Beetles

## ENGAGING PEOPLE WITH WILDLIFE

A fundamental element within the MFGW Project is providing volunteers and visitors with the opportunity to interact with nature. It has been proven that direct contact with nature and greenspaces has measurable benefits to human wellbeing and mental health (Twohig-Bennett & Jones, 2018). Guided activities can help to reduce perceived barriers to nature, and events which are open to everyone provide informal settings for experiences and learning about wildlife. With this site being so rich in its variety of wildlife groups, there are plenty of opportunities to do so.

## DIRECT CONTACT AND HANDLING OF WILDLIFE

Hands-on experiences with wildlife can be of great benefit to learning and generate positive feelings, however as the welfare of both people and wildlife should be a priority, disturbance of animals in particular should ideally be limited as this can be costly to individuals.

For protected species, it is a criminal offence to intentionally cause harm and, in some cases, such as Dormice and all bats species, special licenses are required for disturbing or handling these animals. It is recommended that professionals and specialists are engaged for help in regard to any protected species.

Handling of live animals by visitors to the garden should ideally be supervised by an experienced and competent person. Animals may be handled in differing ways, such as a spider in a pot, a small mammal by its neck scruff or a damselfly gently by pinching its wings. It may be beneficial for specialists of certain wildlife groups to provide demonstrations prior to any handling by visitors or volunteers. By setting a high standard of wildlife welfare early on, this can help to engender a sense of responsibility and respect for all living organisms.

Vertebrates (animals with a backbone), are recognised as being able to perceive pain and stress, therefore any handling or disturbance must be careful and considerate. Although pain and stress perception in invertebrates (animals without a backbone) is a debated topic, it is generally considered that needless harm and potential suffering of these organisms (such as insects, spiders and molluscs) should be avoided where possible.

Some wildlife may present a minor hazard to people if handled improperly, such as small mammals which can bite and draw blood, and certain insects such as bees and wasps which may sting when held. Plants such as the Common Nettle carry an unpleasant and itching sting, and fungi such as the Fly Agaric can be toxic if consumed, therefore these species should not be handled with bare hands. Even dragonflies and large crickets may occasionally bite when held, therefore due care should be taken to prevent any negative experiences.

Active surveying methods, such as pond dipping, vegetation sweeping and turning over deadwood, are sometimes intrusive activities which can border on destructive, posing a particular risk to more delicate species and habitats. For areas which are particularly sensitive, large numbers of people working in one spot may be undesirable, and sampling activities should be carried out in a calm and controlled manner. It may be preferable to have one or two leaders demonstrating to others within large groups.

### Wildlife recording days, aka 'Bioblitz'

Themed, or targeted and organised events can help to focus the engagement of people with wildlife. For example, a popular event for children titled 'Mammal Detectives', recently hosted by the Sussex Wildlife Trust, involves several games in the identification of mammals, finding their tracks and joining in a quiz of UK mammal facts. Events themed around specific wildlife groups such as mammals, butterflies (i.e. the Big Butterfly Count) and quizzes on the leaves of trees can boost specific local wildlife knowledge.

On a broader scale, a general wildlife recording day (aka 'BioBlitz'), can be very successful in providing wildlife records while entertaining and engaging people. This is an often fast-paced event where as many species records are generated as possible within a given time period, e.g. 24 hours. Often most successful when run with help from partner organisations, these events can be conducted with a large number of people. For MFGWP, an event like this would perhaps benefit from the involvement of local institutions such as the University of Brighton and University of Sussex, as well as the Sussex Wildlife Trust, the Sussex Biodiversity Records Centre, local rangers and local natural history groups. Almost all BioBlitz events in the UK take place in Spring and Summer to coincide with peak ecological activities of the majority of our species, generating the maximum number of records and human interest.

It is important to note that BioBlitz events cannot act as a replacement for structured monitoring and survey effort; a single BioBlitz event will not take account of ecological seasonal change. However, by galvanising and focusing recorder effort, such events play an important role in maintaining and expanding the existing datasets, as well as recruiting future biological recorders and scientists.

The table below is adapted from that by the Bristol Natural History Consortium. This draws on the study by Christmas et al. (2013) who identified that people could be grouped within distinct tiers of engagement regarding biodiversity activities.

**Table 5. Tiers for wildlife engagement levels**

Prior engagement level	Example Groups
Tier 1: No or limited prior interest in wildlife, biodiversity or conservation issues	<ul style="list-style-type: none"> <li>➤ Parents with inexperienced children</li> <li>➤ Targeted 'hard to reach' groups</li> <li>➤ Passing footfall</li> <li>➤ School children</li> <li>➤ Teachers</li> </ul>
Tier 2: Some interest in wildlife, biodiversity or conservation issues but no prior knowledge/experience of biological recording. Carried out occasional positive action relating to conservation	<ul style="list-style-type: none"> <li>➤ Students</li> <li>➤ Adults with existing interest</li> <li>➤ Parents with children</li> <li>➤ Teachers</li> <li>➤ Retirees</li> </ul>

Tier 3: Occasionally takes part in casual biological recording or record wildlife sightings but does not submit records to a recognised data repository. Medium levels of positive behaviours and actions relating to conservation	<ul style="list-style-type: none"> <li>➤ Students</li> <li>➤ Adults with existing interest</li> <li>➤ Wildlife enthusiasts (e.g. birdwatchers, photographers)</li> <li>➤ Wildlife sector professionals</li> </ul>
Tier 4: Regularly contribute biological records to a recognised data repository. High levels or daily positive actions relating to conservation	<ul style="list-style-type: none"> <li>➤ Wildlife sector professionals</li> <li>➤ Amateur naturalists</li> </ul>

A targeted element to wildlife engagement may be in encouraging people to move up through respective groups or tiers. The suggested activities below help to reinforce positive efforts and raise awareness in wildlife conservation. Whether individually or as part of a group, progress could be tracked through measuring activity levels, involvement and skill. There is also the opportunity to progress beyond the stages outlined in the table below, which may relate to more experienced or professional biological recorders.

**Table 6. Summary of engagement levels and suggested types of activity**

<b>Engagement Level</b>	<b>Activity suggestions</b>
1: Non-structured playing	Outdoor, self-led playing in child-friendly areas of the wildlife garden and woodlands
2. Low-skilled structured activities	Lead activities such as show-and-tell wildlife talks, and presentations directed at a suitable academic level of audience. Introductory forest school sessions. Low to basic identification skills
3. Medium-skilled structured activities	Forest school sessions for regular participants. Lead activities such as adult bushcraft, supervised pond dipping, bird box building, mammal tracking and general wildlife watching. Some identification skills in common wildlife groups such as certain butterfly, bird, amphibian and reptile species
4. Advanced level structured activities	Assisting with slightly more technical ecological surveys such as moth trapping, Slow-worm counts, butterfly surveying, mammal trapping. Habitat creation and small construction projects. Now able to identify a number of species across several wildlife groups such as butterflies, dragonflies and birds. Entering data into spreadsheets or via iRecord
5. Leading own activity/ conducting own project/study	Conducting own wildlife surveys, completing species lists to then be entered into iRecord. Able to identify species using resources such as books, keys and online photographic guides. Encouraged to take skills outside of the garden and into other spaces

## Talks and presentations

Wildlife talks and presentations are a great way to engage people in a comfortable setting, during inclement weather or during dark winter months. Many experienced wildlife surveyors and conservationists are volunteers in their spare time, willing to provide further education and training to interested parties in order to further the cause of wildlife conservation. Using guest speakers and inviting passionate and experienced people to provide demonstrations will help to keep costs low and provide free events where possible, promoting greater accessibility to local people and meeting mutual goals of public education and engagement for both the recording group and the MFGWP.

However, publicly chargeable events to generate some income may also work, such as more structured courses in natural history and species identification. Even if only a nominal fee, this may help to ensure people who subscribe value the event and are more likely to stick to their booking commitment. Pre-booking can help to ensure that money is still raised despite last-minute cancellations.

## USE OF RESOURCES AND INTERPRETATION

### Eco cabin

One of the main structures within the forest garden is the 'eco cabin', a sustainable building constructed from straw bales, locally sourced wood and recycled materials. It was created to provide an indoor seating and working space for educational and community groups and events. The cabin has high potential to hire out as a space for local businesses, community organisations and charities to generate further income. It was been used for an evening bat workshop in 2019 to great success.

Suggestions for wall decorations and informative materials within the eco cabin:

- Photographic displays; photos of wildlife taken within the garden site, presented as a collage with annotations
- FSC species wall charts – illustrated images of wildlife with species captions
- A blackboard or whiteboard for anyone to write and share their wildlife observations
- Interactive wildlife identification quiz (images and name matching games)

Care will be taken to preserve the integrity of the straw bale walls, so pins and nails should be avoided, and boards can be designed to avoid damaging the interior plaster finish.

### Site Interpretation boards & signage

Sign boards and posters on site can provide instant and concise information, highlighting key wildlife on site and habitat features. They can be as large and provide as much detailed information as desired, such as a site map outlining the main allotment beds, the produce being grown and the

wildlife features in between. They can provide information on the notable species present on site, with brief notes on their life histories. Signboards provide an interactive tool if built with a corkboard or whiteboard and cover so that individuals can share information about sightings. See Appendix III for examples of interpretation boards.

### **Equipment and resources**

There is a wide variety of ecological equipment and resources, via suppliers such as NHBS, Wildcare and Watkins and Doncaster, to assist with monitoring during ecological surveys, as well as allowing people to engage with wildlife.

Examples of wildlife engagement equipment:

- Pond dipping equipment (nets, trays, underwater viewer, water sample specimen tubes)
- Portable tanks for temporarily containing wildlife
- Pocket microscopes
- Magnifier bug pots
- Children's gardening gloves
- Camouflage scarves for wildlife watching
- Binoculars
- Butterfly sweep nets
- Trail cameras
- Longworth live traps (for small mammal surveys)
- Field Studies Council (FSC) fold out charts and guides
- Wildlife natural history and identification books

There is also the opportunity to ask local charitable organisations and natural history groups to borrow portable equipment such as Longworth traps, further saving on costs.

### **Online resources**

Anyone can try their hand at identifying and recording wildlife and nature, using free websites such as iSpot and iNaturalist. Both websites and phone apps allow people to upload their wildlife sightings and photographs, which can then be reviewed by the online community for further identification.

The iRecord website and phone app act as a user-friendly tool for slightly more experienced individuals or groups to create biological records. Users must enter a precise date, species name and select a location. It also allows multiple species uploads and entire species lists for multiple areas. The data submitted online is saved into a central database, where users can download their own information at any time. The records are also examined by voluntary verifiers, and records which are accepted will go to a national database to be added to datasets for specific wildlife groups.

These websites and smartphone apps are all free and simply require the user, or a group of users, to sign up for an account.

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

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

[www.brc.ac.uk/irecord](http://www.brc.ac.uk/irecord)

## REFERENCES

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Christmas, S., Wright, L., Morris, L., Watson, C., and Miskelly, C. (2013) *Engaging People in Biodiversity Issues: Final report of the Biodiversity Segmentation Scoping study (B2020-004)*, Defra, London



WILDLIFE ACTION PLAN TABLE

<b>Objective 1. Woodland</b>	To maintain and enhance existing woodland, ensuring good structural and botanical diversity	
<b>Protected / notable species:</b>	Woodland groundflora and ancient woodland indicator plant species, badgers, nesting birds, roosting bats, butterflies, mining bees, amphibians and deadwood invertebrates. Potential for presence of Hazel Dormice	
<b>Target</b>	<b>Timing</b>	<b>Benefits</b>
<b>1.1</b> Annual litter collection with teams of volunteers	Any time of year	Removing rubbish and plastic from the woodlands will help to safeguard vulnerable wildlife, increasing space for groundflora and improving the site aesthetically.
<b>1.2</b> Woodland understory management; selective coppicing (every third shrub) of Hazel, Blackthorn and Hawthorn. Halo-thinning around mature native trees. Reducing areas of brambles where dominating the groundflora. Logs and woody cuttings to be kept in neatly stacked brash piles	Autumn – late winter	Selective coppicing will help to ensure retention of mature trees, lengthen their life-span and encourage fresh growth. Structural diversity within the woodland positively impacts biodiversity, maximising the number of available habitat niches. Brushing-up of coppice stools helps protect the regenerative growth from browsing by deer, providing cover and hibernation spaces for wildlife such as bats and Hazel Dormice. Neatly stacking or ‘brushing-up’ cut materials minimises negative impacts on woodland groundflora.
<b>1.3</b> Woodland canopy management; felling an entire tree to leave in-situ (suggested selective removal of a Sycamore tree or diseased Ash). Creation of standing deadwood via ring-barking of a mature tree	Autumn – late winter	Selective felling creates a break in the canopy, allowing light to reach the woodland floor, benefitting groundflora, butterflies and bees as well as the next generation of saplings. It is important that any tree is closely inspected for cavities or potential bat roots prior to felling, and woodlands should be checked for Tree Preservation Orders as special permission may be needed from the local authority prior to any management being carried out. Any shrubs or trees with deadwood features such as rot holes or thick ivy covering should be left alone, as these may contain roosting bats or act as an important resource for deadwood invertebrates. An entire felled tree is a naturalistic habitat feature,

		<p>providing continual resources as the length of wood decays at different rates. Damp cavities in decaying logs are often used by hibernating amphibian species such as newts and toads. After several years, logs and deadwood piles may lose their to wildlife value as they completely decay, so it is worth replenishing them periodically. Standing deadwood has become a rare habitat resource, valuable to many invertebrate species as well as birds and bats, therefore should be left in situ where safe to do so. Sycamore is a dominant species, relatively recently introduced to the UK. It is not considered to be of high biodiversity value, as few organisms tend to feed or associate with this species. Ash trees which are currently afflicted by the Ash-dieback Disease may need control felling if situated particularly close to a footpath or presenting a hazard.</p>
<p><b>1.4</b> Woodland understory planting; in recently opened up areas, planting a selection of shrub species. e.g. Hazel, Hawthorn, Wayfaring Tree, Field Maple, Crab Apple, Spindle, Alder Buckthorn, Yew, Holly</p>	<p>Autumn – late winter</p>	<p>Introducing a greater variety of species to the woodland understory will help to increase resource and niche availability for wildlife. It will also help to improve the woodland structural integrity. Planting can help to ensure future recruitment to the woodland, improving its longevity and resilience to environmental change.</p>
<p><b>1.5</b> Woodland canopy planting; where tree species diversity or recruitment is low, planting a selection of canopy species. e.g. English Oak, Wych Elm, Alder, Lime, Wild Service, Beech, Hornbeam, Willow, Rowan</p>	<p>Autumn – late winter</p>	<p>Introducing a greater variety of species to the woodland canopy will help to increase resource and niche availability for wildlife. Planting can help to ensure future recruitment to the woodland, improving its longevity and resilience to environmental change.</p>

<b>Objective 2. Main garden and allotment</b>	<b>To maintain and enhance the wildflower areas within the garden, ensuring structural and botanical diversity</b>	
<b>Protected / notable species:</b>	Slow Worms, Common Lizards, amphibians, butterflies, mining bees, native wildflowers	
<b>Target</b>	<b>Timing</b>	<b>Benefits</b>
2.1 Creation of deadwood features; adding small logs to the edge of cultivated beds	Any time of year	Logs placed in full sun and partial shade will provide shelter and corridors for wildlife to move along. Materials around the edges of cultivated areas create a buffer and help to reduce disturbance of wildlife
2.2 Using plant cuttings to mulch the edges of beds	Spring - autumn	This creates additional areas of cover, corridors and warmth for invertebrates and reptiles, as well as suppressing unwanted weeds.
2.3 Creation of an undisturbed composting area through the piling of soft vegetation cuttings	Any time of year	Providing an undisturbed pile of soft vegetation/grass cuttings is beneficial to hibernating Slow Worms and potentially breeding Grass Snakes, which are egg laying reptiles. The pile could be left toward the top of the slope, away from the main composting areas and replenished annually, being left to break down naturally instead of being continually turned and disturbed.
2.4 Establishing a wildflower propagation area in allocated spaces within polytunnels	Any time of year	Native and local wildflowers are an important resource for local invertebrate fauna, which have co-evolved and so are dependent on them. It may be worth investigating the potential for growing native local wildflower plugs and selling/giving away to other projects for re-use nearby.
2.5 Creation of a native chalk grassland wildflower bank, planting a calcareous mix of plug plants or seed	Autumn – late winter	This can be constructed like a beetle bank, with a line of materials such as stones and deadwood forming the base, then capped off with low-nutrient topsoil. This provides cavities for overwintering insects, amphibians and reptiles. The ideal aspect of the slope should be east or south-facing.

<b>Objective 3. Wetland areas</b>	To maintain and enhance the ponds and adjacent wetland areas, ensuring a structurally diverse and healthy aquatic ecosystem	
<b>Protected / notable species:</b>	Amphibians: Smooth Newts, Common Frogs, Common Toads Aquatic invertebrates: diving beetles, water boatmen, dragonfly larvae, caddisflies, pond skaters	
<b>Target</b>	<b>Timing</b>	<b>Benefits</b>
<b>3.1</b> Creation of an additional wildlife pond in a sunny area; planting with native wetland plants, leaving a shallow, marginal edge and an adjacent marshy area	Pond construction (autumn – late winter)  Planting (mid-spring-summer)	A newly dug wildlife pond with marshy edges provides an instant variety of resource for wildlife, can colonise up quickly and be of high biodiversity value. The best siting would be in a sunny area with partial shade, ideally a minimum area of 1.5 x 1.5m. Planting with native species will help to encourage and support local aquatic wildlife. Care should be taken to not introduce any non-native plants or wildlife to the new pond, as these can upset the balance of native ecosystems.
<b>3.2</b> Management of existing pond; control of dominant aquatic plants by manual removal, topping up water level as needed with rainwater from water butts	Late summer - autumn	Keeping at least 33% or more of the surface layer open will allow more light to penetrate down to through the water column, reaching submerged aquatic vegetation. Submerged plants are important for oxygenation, but also should not occupy the entire water column.
<b>3.3</b> Creation of deadwood features; leaving a sloping log in the pond to act as an escape ramp for trapped wildlife. New logs to be neatly stacked within 3m of the pond edge.	Winter - spring	Deadwood in the water as well as on dry land provides shelter and resources for many wildlife groups. Partially submerged deadwood is of particular benefit to the Southern Hawker Dragonfly. Placing log piles in partially sunny areas with some shade allows them to warm up without the wood drying out completely. Logs with the bark still attached are of the best value, providing more layers and cavities while slowing the decomposition process. The partial burying of logs also helps retain moisture, allowing differing rates of decomposition.

<b>Objective 4. Habitat features</b>		<b>To enhance the site for specific groups of wildlife, using tried and proven habitat features and designs (See Appendix III for further details and examples)</b>
<b>Target</b>	<b>Timing</b>	<b>Benefits</b>
<b>4.1</b> Placing out and maintaining a network of reptile mats to act as refugia	Spring - Autumn	Rectangles cut from shed roofing felt and pieces of tin can provide refuge and warmth for basking reptiles, as well as other wildlife such as small mammals and invertebrates. Surveys help to raise awareness of their presence to garden visitors and highlight how the site is being utilised by reptiles and other species.
<b>4.2</b> Installing bird boxes; bespoke designs for woodland birds may include spotted flycatcher, little owl, nuthatch and common redstart	Any time of year	The creation of nesting options for birds in relatively immature woodland can benefit local populations and the visiting summer breeders. Using volunteers for building or installing these boxes on site helps to engender ownership and a sense of gratification. Once installed, no boxes may be disturbed if they are occupied by nesting birds.
<b>4.3</b> Installing bat boxes; flat panel boxes to the edge of the woodland site	Any time of year	With the assistance of a local bat group, install new bat boxes at a serviceable height on mature trees. Utilising volunteers for building or installing these boxes on site helps to engender ownership and a sense of gratification. The boxes can be cleaned out each winter to increase their longevity, but should be checked carefully with a torch prior to doing so. No boxes containing a bat can be disturbed without the supervision of a bat handling licence holder.
<b>4.4</b> Creation of a hibernaculum for reptiles and amphibians	Any time	A hibernaculum can be a cavity in the ground, lined with dead wood, or even clean rubble where reptiles and amphibians may spend the winter. These spaces can be created virtually at any size, but 1.5m x 3 m would be ideal. Other wildlife may benefit from the below-ground niches too, such as beetles and small mammals.
<b>4.5</b> Building a bug hotel	Any time	A bug hotel provides nesting areas for invertebrates such as mason bees, leaf-cutter bees, solitary wasps and spiders.

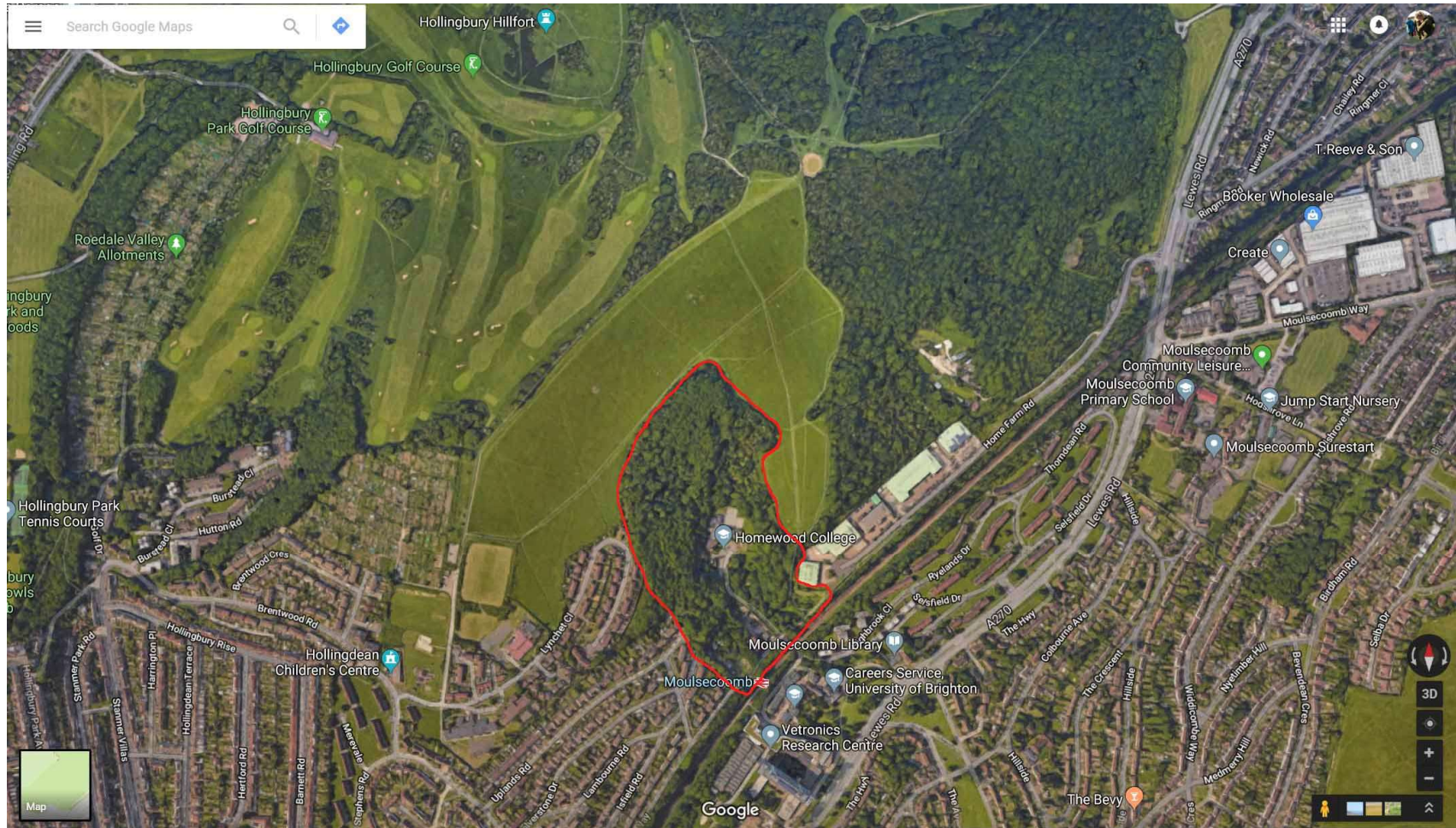
<b>Objective 5. Wildlife record database</b>		<b>To maintain and manage an ecological database, providing up-to-date information on the wildlife occurring on site</b>
<b>Target</b>	<b>Timing</b>	<b>Benefits</b>
<b>5.1</b> Creating an ecological database for all species records	Any time	This provides a quick reference of all common, notable and protected species, informing site management. By keeping track of the last recorded year, then this may highlight where recording effort needs to be increased, or perhaps where a species is no longer present on site.
<b>5.2</b> Setting up an iRecord group, encouraging volunteers to use the smartphone app	Any time	This may help to engage the regular staff and volunteers, allowing them to create species lists acting as a diary of what was seen, where and when. It also assists with keeping the species database up to date, while feeding the information back to national wildlife datasets.

<b>Objective 6. Community engagement</b>		<b>Outreach to the local community through events and activities on the site engaging people with wildlife</b>
<b>Target</b>	<b>Timing</b>	<b>Benefits</b>
<b>6.1</b> Creating a calendar of specialist wildlife talks and events, open to volunteers and the general public	Any time	Creating a programme of wildlife talks, show-and-tell events or inclusive wildlife surveys, with the assistance of local specialists and passionate wildlife recorders. These events can be advertised to the regular garden users as well as shared with the wider community online and via social media, potentially bringing in new and interested people to the project. Some posters around Moulsecoomb station and other local areas may help to engage the immediate community.
<b>6.2</b> Providing a wildlife engagement element to the annual MFGWP Open Day	Summer	This open day event brings in a variety of people from differing social backgrounds, some who may not have had opportunities to observe or directly interact with local wildlife. A focused activity such as counting moth species

		found in a trap, or a more general approach such as a wildlife species list for the day can help provide a wildlife focus to the open days.
<b>6.3</b> Hosting a local nature photography competition (using smartphones or any photographic device)	Any time	This acts as a way for people to look more closely at nature, observing the wildlife in their immediate vicinity.
<b>6.4</b> Hosting a wildlife quiz night	Any time	Either hosted on site at the garden or at a local pub, a quiz would test the newfound knowledge of visitors and volunteers. Potentially this would work well as a wrap-up activity at the end of a survey season.



APPENDIX I. SITE MAPS

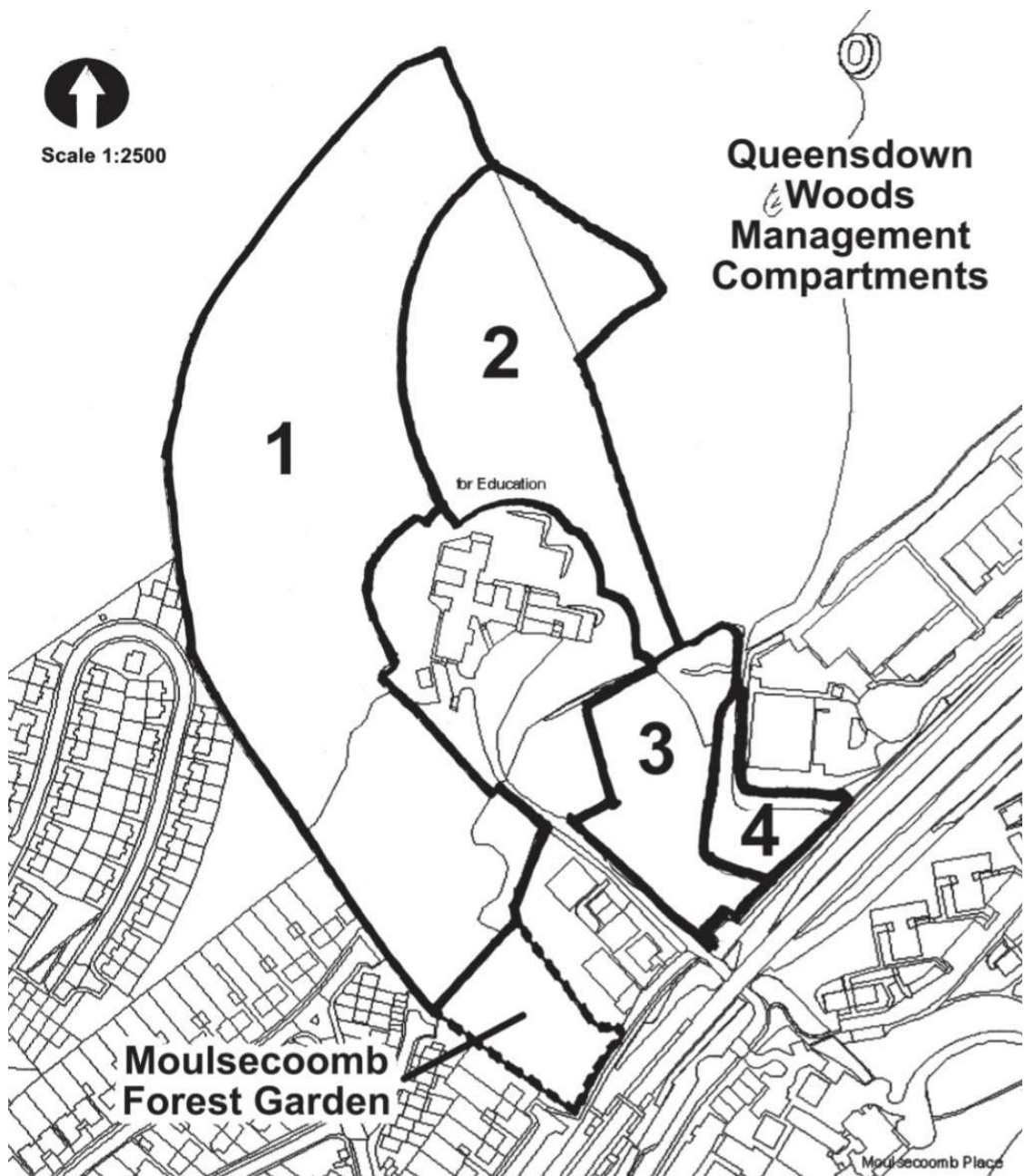


Map 1. Map of MFGWP site and Queensdown Woods, situated on the Sussex downs. TQ 3247 0697





**Map 2. Aerial photo of Moulsecomb Forest Garden allotment site with boundary outlined in red**



Map 3. Queensdown Wood management compartments (taken from the Queensdown Wood Management Plan 2009)

## APPENDIX II. NOTABLE SPECIES LISTS

These lists are of notable species recorded as occurring within 1km of the garden

### NOTABLE BIRD SPECIES

Barn Owl	Honey-buzzard	Redwing
Bearded Tit	Hoopoe	Reed Bunting
Bewick's Swan	House Martin	Ring Ouzel
Black Redstart	House Sparrow	Ringed Plover
Black-headed Gull	Kestrel	Sand Martin
Brambling	Lapland Bunting	Sandwich Tern
Brent Goose	Lapwing	Serin
Bullfinch	Lesser Black-backed Gull	Short-eared Owl
Common Crossbill	Lesser Redpoll	Skylark
Common Gull	Lesser Spotted Woodpecker	Snipe
Common Sandpiper	Linnet	Song Thrush
Common Shelduck	Little Egret	Spotted Flycatcher
Common Tern	Little Gull	Starling
Corn Bunting	Little Tern	Stock Dove
Cuckoo	Long-eared Owl	Swallow
Curlew	Mallard	Swift
Dartford Warbler	Marsh Harrier	Tawny Owl
Duncock	Marsh Tit	Tawny Pipit
Fieldfare	Meadow Pipit	Tree Pipit
Firecrest	Mediterranean Gull	Tree Sparrow
Fulmar	Merlin	Turtle Dove
Golden Oriole	Mistle Thrush	Wheatear
Golden Plover	Montagu's Harrier	Whimbrel
Grasshopper Warbler	Mute Swan	Whinchat
Great Black-backed Gull	Nightingale	White-fronted Goose
Green Sandpiper	Nightjar	Whitethroat
Green Woodpecker	Osprey	Wigeon
Greenshank	Oystercatcher	Willow Tit
Grey Partridge	Peregrine	Willow Warbler
Grey Plover	Pied Flycatcher	Wood Warbler
Grey Wagtail	Pink-footed Goose	Woodcock
Greylag Goose	Pintail	Woodlark
Hawfinch	Red Kite	Wryneck
Hen Harrier	Red-backed Shrike	Yellow Wagtail
Herring Gull	Redshank	Yellowhammer
Hobby	Redstart	Yellow-legged Gull

## MAMMALS

Brown Rat	<i>Rattus norvegicus</i>
Red Fox	<i>Vulpes vulpes</i>
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>
Yellow-necked Mouse	<i>Apodemus flavicollis</i>
Field Vole	<i>Microtus agrestis</i>
Weasel	<i>Mustela nivalis</i>
Stoat	<i>Mustela erminea</i>
Badger	<i>Meles meles</i>
Bank Vole	<i>Myodes glareolus</i>
European Rabbit	<i>Oryctolagus cuniculus</i>

## AMPHIBIANS

Common Frog	<i>Rana temporaria</i>
Common Toad	<i>Bufo bufo</i>
Smooth Newt	<i>Lissotriton vulgaris</i>

## REPTILES

Common Lizard	<i>Zootoca vivipara</i>
Grass Snake	<i>Natrix helvetica</i>
Slow-worm	<i>Anguis fragilis</i>



BUTTERFLIES

36 species recorded in 2011 Queensdown Woods TQ324074 – 323073

Adonis Blue	<i>Polyommatus bellargus</i>	WCA Sch5 s9.5a, RedList GB post2001 NT, Sussex Rare
Brimstone	<i>Gonepteryx rhamni</i>	
Brown Argus	<i>Aricia agestis</i>	
Chalk Hill Blue	<i>Polyommatus coridon</i>	WCA Sch5 s9.5a, RedList GB post2001 NT
Clouded Yellow	<i>Colias croceus</i>	
Comma	<i>Polygonia c-album</i>	
Common Blue	<i>Polyommatus icarus</i>	
Dark Green Fritillary	<i>Speyeria aglaja</i>	
Dingy Skipper	<i>Erynnis tages</i>	NERC S41, RedList GB post2001 VU
Essex Skipper	<i>Thymelicus lineola</i>	
Gatekeeper	<i>Pyronia tithonus</i>	
Green Hairstreak	<i>Callophrys rubi</i>	
Green-veined White	<i>Pieris napi</i>	
Grizzled Skipper	<i>Pyrgus malvae</i>	NERC S41, RedList GB post2001 VU
Holly Blue	<i>Celastrina argiolus</i>	
Large Skipper	<i>Ochlodes sylvanu</i>	
Large White	<i>Pieris brassicae</i>	
Marbled White	<i>Melanargia galathea</i>	
Meadow Brown	<i>Maniola jurtina</i>	
Orange-tip	<i>Anthocharis cardamines</i>	
Painted Lady	<i>Vanessa cardui</i>	
Peacock	<i>Aglais io</i>	
Purple Emperor	<i>Apatura iris</i>	WCA Sch5 s9.5a, RedList GB post2001 NT, Sussex Rare
Purple Hairstreak	<i>Favonius quercus</i>	
Red Admiral	<i>Vanessa atalanta</i>	
Ringlet	<i>Aphantopus hyperantus</i>	
Silver-spotted Skipper	<i>Epargyreus clarus</i>	WCA Sch5 s9.5a, RedList GB post2001 NT, Sussex Rare
Small Blue	<i>Cupido minimus</i>	WCA Sch5 s9.5a, NERC S41, RedList GB post2001 NT
Small Copper	<i>Lycaena phlaeas</i>	
Small Heath	<i>Coenonympha pamphilus</i>	NERC S41, RedList GB post2001 NT
Small Skipper	<i>Thymelicus sylvestris</i>	

Small Tortoiseshell	<i>Aglais urticae</i>	
Small White	<i>Pieris rapae</i>	
Speckled Wood	<i>Pararge aegeria</i>	
Wall	<i>Lasiommata megera</i>	NERC S41, RedList GB post2001 NT
White-letter Hairstreak	<i>Satyrrium w-album</i>	WCA Sch5 s9.5a, NERC S41, RedList GB post2001 EN

#### MOTHS (NOTABLE SPECIES)

Buff Ermine	<i>Spilosoma lutea</i>	NERC S41
Cinnabar	<i>Tyria jacobaeae</i>	NERC S41
Garden Tiger	<i>Arctia caja</i>	NERC S41
Knot Grass	<i>Acronicta rumicis</i>	NERC S41
Oak Hook-tip	<i>Watsonalla binaria</i>	NERC S41
Rosy Minor	<i>Litoligia literosa</i>	NERC S41
Scarlet Tiger	<i>Callimorpha dominula</i>	Sussex Rare
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	NERC S41
Straw Crest	<i>Mesophleps silacella</i>	RedList GB Pre94 EX, Sussex Rare

#### OTHER NOTABLE INVERTEBRATES

Wasp Spider	<i>Argiope bruennichi</i>	Sussex Rare
A True Fly	<i>Epistrophe melanostoma</i>	Nationally Scarce
A True Bug	<i>Lygus pratensis</i>	RedList GB Pre94 R, Sussex Rare
A True Fly	<i>Myopa extricata</i>	RedList GB Pre94 R
A True Fly	<i>Norellia spinipes</i>	Notable
A Spider	<i>Philodromus albidus</i>	Sussex Rare
A Beetle	<i>Scybalicus oblongiusculus</i>	RedList GB post2001 VU, Nat Rare, Sussex Rare

PLANTS (NOTABLE SPECIES)

Autumn Gentian	<i>Gentianella amarella</i>	RedList ENG post2001 NT
Autumn Lady's-tresses	<i>Spiranthes spiralis</i>	RedList GB post2001 NT, RedList ENG post2001 NT
Bastard-toadflax	<i>Thesium humifusum</i>	Nat Scarce, Sussex Rare
Carline Thistle	<i>Carlina vulgaris</i>	RedList ENG post2001 NT
Chives	<i>Allium schoenoprasum</i>	Nationally Scarce
Common Rock-rose	<i>Helianthemum nummularium</i>	RedList ENG post2001 NT
Corncockle	<i>Agrostemma githago</i>	Sussex Rare
Cornflower	<i>Centaurea cyanus</i>	NERC S41, Sussex Rare
Dense-flowered Fumitory	<i>Fumaria densiflora</i>	Sussex Rare
Devil's-bit Scabious	<i>Succisa pratensis</i>	RedList ENG post2001 NT
Eyebright	<i>Euphrasia nemorosa</i>	RedList ENG post2001 NT
Field Mouse-ear	<i>Cerastium arvense</i>	RedList ENG post2001 NT
Field Scabious	<i>Knautia arvensis</i>	RedList ENG post2001 NT
Goat's-Beard	<i>Tragopogon pratensis x porrifolius = T. x mirabilis</i>	Sussex Rare
Harebell	<i>Campanula rotundifolia</i>	RedList ENG post2001 NT
Hoary Plantain	<i>Plantago media</i>	RedList ENG post2001 NT
Hound's-tongue	<i>Cynoglossum officinale</i>	RedList GB post2001 NT, RedList ENG post2001 NT
Quaking-grass	<i>Briza media</i>	RedList ENG post2001 NT
Round-headed Rampion	<i>Phyteuma orbiculare</i>	Nat Scarce, Sussex Rare
Sanicle	<i>Sanicula europaea</i>	RedList ENG post2001 NT
Stinking Hellebore	<i>Helleborus foetidus</i>	Nationally Scarce, Sussex Rare
Strawberry Clover	<i>Trifolium fragiferum</i>	RedList ENG post2001 VU
Tormentil	<i>Potentilla erecta</i>	RedList ENG post2001 NT
Wild Strawberry	<i>Fragaria vesca</i>	RedList ENG post2001 NT

## APPENDIX III. SUGGESTED HABITAT FEATURES

This section lists ideas and potential habitat creation for the site. Although some specific products have been suggested, it might be worth considering whether habitats can be built on site using volunteers, such as bird, bat and dormouse box construction.

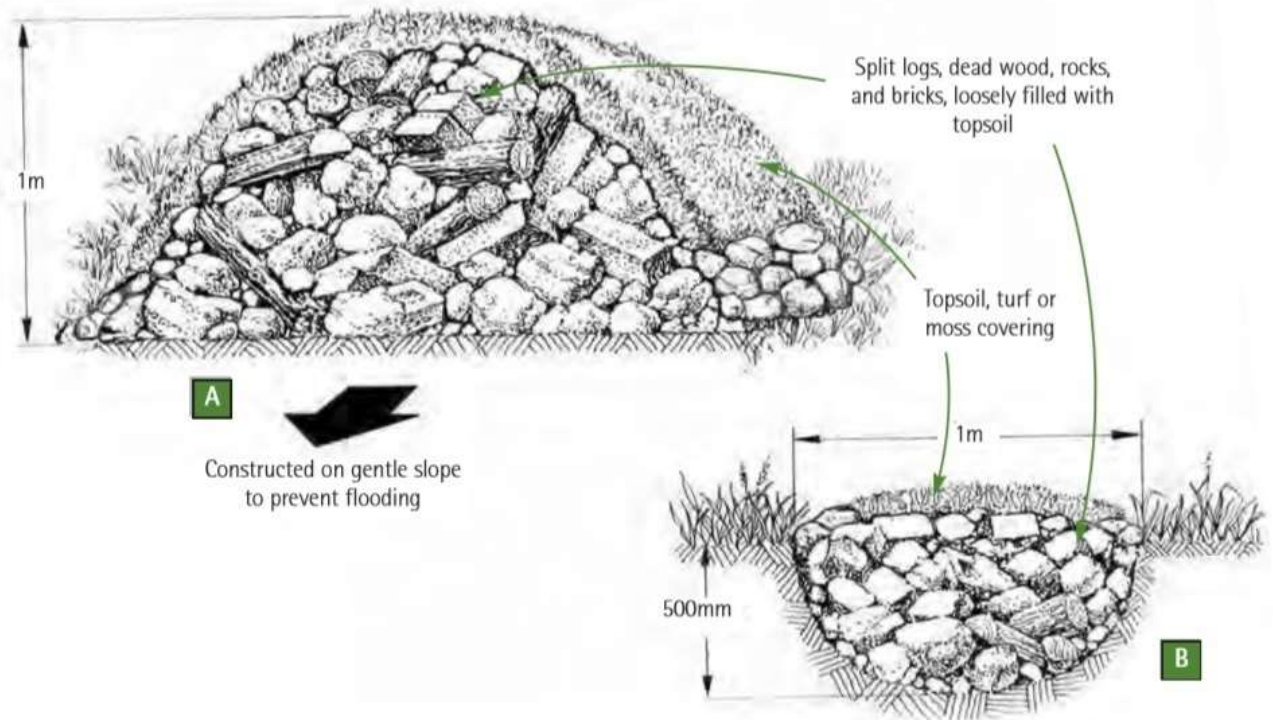


Fig 1. Amphibian and reptile hibernaculum design (image taken from the Great Crested Newt Conservation Handbook) [https://www.froglife.org/wp-content/uploads/2013/06/GCN-Conservation-Handbook\\_compressed.pdf](https://www.froglife.org/wp-content/uploads/2013/06/GCN-Conservation-Handbook_compressed.pdf)

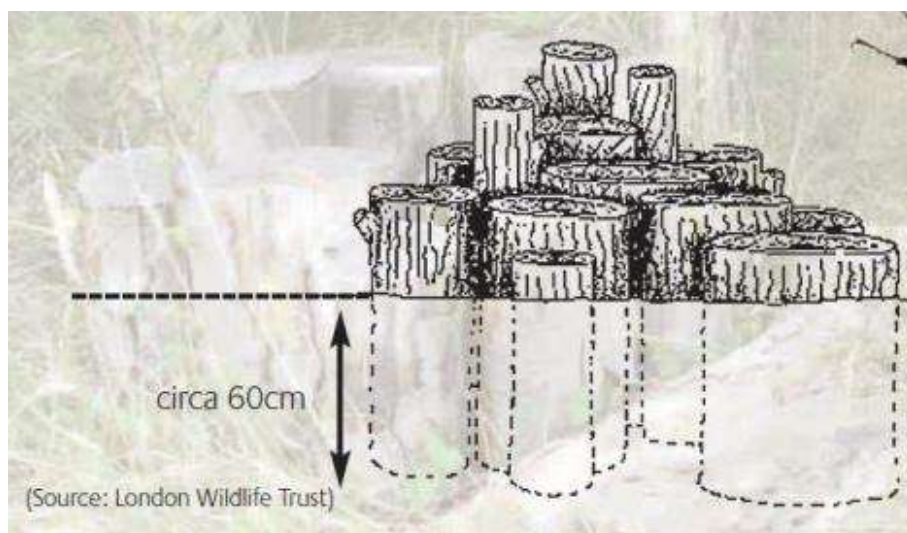


Fig 2. Beetle loggers (image from London Wildlife Trust). This can benefit other species as well as Stag Beetles. <https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf>





Fig 3. Bee and bug hotel under construction; two pallets were screwed together and materials stuffed into the gaps including deadwood, bamboo canes, hay and clay.

<https://www.buglife.org.uk/sites/default/files/Bee%20hotel%20v.2.pdf>



Fig 4. Leafcutter Bees (*Megachile* sp.) occupying bamboo canes in the pictured hotel

# Make a wildlife pond

wildlife  
watch



**You will need**

- A big patch of garden
- Spade 
- A plank of wood 
- Spirit level 
- Butyl pond liner 
- Sand 
- Water (use rainwater for best results) 
- A variety of pond plants 
- Large rocks 

**1** Choose your spot.\* Draw your pond outline and dig out, including some shallow areas.

Use a plank and spirit level to ensure that the edges are level.

**2** Put a layer of sand at the bottom (don't use it all, you'll need some later).

**3** Make a trench all around the edge of your pond, and lay the edge of the liner into this. Weigh it down with large rocks.

**4** Fill the bottom with the remaining sand.

**5** Fill the pond up with water.

If you fill it from a tap or hose your water might turn green - don't worry, this is just the minerals.

**6** Leave your pond to settle for about a week before adding your plants.

**7** Watch and see what wildlife visits.

Make sure you add a plank of wood, or something similar, as a ramp to help any wildlife that may have fallen in.

**Remember:** don't add fish or a pump. The fish will eat smaller life forms (including frog and newt larvae) while the pump may suck them up!

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

\* Look for a spot with plenty of sun, ideally with some shade in the afternoon. Try to avoid trees nearby, as fallen leaves can pollute the pond.

Illustration: Corinne Welch © Copyright Royal Society of Wildlife Trusts 2015

Fig 5. Wildlife pond instructions by [www.wildlifewatch.org.uk](http://www.wildlifewatch.org.uk) (many other information sheets of habitat features for gardens are available to download from this website)





**Fig 6. Schwegler bat box made of 'woodcrete', a special mixture of wood, concrete and clay which will not leak, rot or warp, and has excellent thermal insulating properties.**



**Fig 7. Schwegler Little Owl box made from wooden batons mounted on woodcrete rings, covered with specially sanded roofing felt.**



**Fig 8. Wildcare wooden Dormouse box with sliding roof, manufactured from 18 mm FSC certified hardwood ply**



**Fig 9. A wildlife interpretation board along the River Mole footpath at Gatwick Airport**