ecological**report**

for

Land to Southwest of Summergrove,
Whitehaven
CA28 8YN

August 2025

bringing **e**cological **e**xcellence **t**o **l**ocal **e**nvironments

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Contents

1.0 Introduction

1.0.1 Whistling Beetle Ecological Consultants were commissioned in August 2025 to undertake an ecological assessment survey on an area of land to the South West of Summergrove, Whitehaven CA28 8YN. The extent of the land is approximately 8Ha.(20acres) with a perimeter boundary of 1500m.

1.0.2 The purpose of the assessment is to identify any potential ecological constraints to any proposed works at the earliest opportunity, to minimise future delays to potential works and provide advice as to how works on site will avoid breaching any UK or European nature conservation legislation.

1.0.3 The ecological survey of the site was undertaken to support a planning application for the redevelopment of the land.

1.0.4 This would be the second Ecological Site Assessment carried out on the site. The first ESA was undertaken in April 2022

1.0.5 The assessment was carried out on the 29th August 2025 and followed the principles of Extended Phase 1 Habitat Survey methodology (JNCC, 2010) with extended targets if points of interest/note were recorded during the walkover survey.
The ecological assessment results are presented in this report, together with the current ecological status of the site, and:

- Any potential significant ecological constraints that may affect the development proposal:
- Recommend further survey/potential mitigation if needed. This ecological report provides information from the site survey on the 29th August 2025.

1.0.6 The survey focused on an assessment of habitats for protected species.

1.0.7 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on the site based on the suitability of the habitat and results of the surveys. It should not be taken as providing a full and definitive survey of any protected species group. Additional surveys may be recommended if on the basis of the preliminary assessment or during subsequent surveys, if it is considered reasonably likely that protected species may be present.

1.0.8 The species taken into consideration and surveyed at the site following the site walkover were –
• Badgers (the site and its environs is located within badger habitat)
• Breeding Birds (the hedgerows and scattered trees provide significant opportunities for nesting birds)

1.0.9 All assessments and surveys work detailed within the report were carried out or personally supervised by Whistling Beetle's Principal Ecologist assisted by by appropriately qualified, licenced and/or experienced surveyors working under the direct supervision of the Principal Ecologist. The Principal Ecologist takes full responsibility for the quality of data collected and any subsequent interpretation. Raw survey data and names of individual surveyors may be provided for bone fide reasons, upon request, but only where this is strictly necessary and does not otherwise conflict with client, landowner or surveyor confidentiality and privacy.

1.0.10 All assessments and surveys were supervised by Whistling Beetle's Principal Ecologist Graham Workman who has over forty five years professional experience in the ecology field. He has the specialist knowledge and ecological skills to undertake and complete all the surveys contained within this report.

2.0 Site Description

2.0.1 The site is accessed directly from Dalzell Street which joins the B5295 to the north

A drawing of The Area of Survey is located in Appendix 1, SWS/SL/WB/01

2 Photo sheets of the sites features are included in Appendix 2, SWS/WB/PS01, SWS/WB/PS02.

2.0.2 The site is basically square in shape with a rectangular leg on its north west boundary. It is set within an agricultural landscape used for crop production and grazing. It is bounded on the northeast by the Summergrove Park residential estate.

2.0.3 The immediate area surrounding the site is a rural landscape. North of the site is a large tree nursery; west of the site are several operational farms producing a mixture of cereal crops and haylage, east are several large areas of woodland and south of the site are operational farms producing a mixture of cereal crops and haylage.

2.0.4 The site was assessed as having a single Habitat of Principal Importance present within its boundaries.

- Boundary: Hedgerows

2.0.5 There are no waterbodies or buildings on site.

2.0.6 The main habitats present on the site included

- Semi improved grassland
- Structures (remnant stone walls)
- Mature Trees
- Hedgerow
- Tall ruderal

2.0.7 All habitats present on site were searched for obvious signs of faunal activity, e.g. presence of badger setts, mammal tracks or herpetofauna under refugia. Any mature trees on the site boundary were visually examined from the ground to identify features with the potential to support roosting bats.

2.0.8 The area of land has been historically and is currently used for sheep grazing resulting in a very poor grassland sward community.

2.1 Habitat Descriptions

2.1.1 Semi Improved grassland

The internal grassland has and is currently used for sheep grazing resulting in a very poor sward community. There are no areas within the fields that would be suitable for farmland birds nesting, The high number of sheep present are also provided with supplementary food in the form of haylage. The only record of mammal species was the above ground evidence of European mole (Talpa europaea) activity. No farmland bird species were recorded in any of the fields although many Covid species were present around the fields
The very short height of the sward and the abundance of covid species results in suboptimal habitat and opportunities suitable for skylarks, pipits or lapwings to nest. Due to the heavy sheep grazing there were no un managed field margins where a taller sward would offer more suitable nesting opportunities.

2.1.2 **Structures**

On the northern boundary the remnants of a stone wall are present. Within the remaining structure which has a maximum height of <1m shrub species such as hawthorn and self seeded native trees have become established. This structure is one of the most interesting aspects of the site but will need some focused management to retain this ecological interest. A single rabbit hole was recorded at the bottom of an area of wall. The hedge topped wall provides good opportunities for bird nest construction and any management of tree removal should be undertaken outside the bird breeding period (April to September).

2.1.3 **Mature Trees**

A line of mature Oak (Quercus sp) is present on the northern boundary but just outside the site boundary. These trees play an important role in enhancing the ecological value of the area in general. In the hedgerows a number of mature trees are present increasing the biodiversity value of the site.

2.1.4 **Hedgerow**

There is a mixture of good quality and in places remnant hedgerows on the site. They are primarily on the boundary perimeter apart from a dividing hedge which divides the two fields. The hedge is dominated by Hawthorn (Crataegus sp.) with the occasional standard tree mixed in.

- The hedge to the south east of the site that bounders Dalzell Street is managed and regularly cut.
- The hedge on the northern boundary is made up of a managed part and where the stone wall is present this length has been unmanaged.
- The hedge that bounders Summergrove Park is managed and dominated by Crataegus species.
- The hedge up to and bordering the former tip on the eastern boundary is a mixture of consolidated hedge with gaps and missing lengths.

2.1.5 **Tall ruderal**

Some areas of tall ruderal have become established along the Dalzell Street boundary on the inside of the hedgerow. The species mix in this area is dominated by bramble. There is also some tall ruderal species bordering on the former domestic refuse tip which features on the boundary of the site and covers around 1.2 acres.

2.1.6 The loss of this small area will have no significant negative impact on the local biodiversity. In fact with the development of the site for residential purposes

there will be an increase in the ecological value of the site due to the diverse planting and mature trees that will eventually feature on the site.

3.0 Species considered as part of the Ecological Assessment of the site

3.0.1 During the assessment the site suitability for these European Protected Species and species of note were considered.

- **Bats** (all species)
  The key document guiding ecologists attempting to locate bat roosts (of any species) is the Bat Conservation Trust's 'Bat Survey Guidelines' (BCT,2007) in which Chapter 8 deals specifically with bats in trees. In addition, there are various other documents that surveyors refer to when designing bat surveys; including Natural England's Bat Habitat Assessment Prior to Arboricultural Operations: Guidance for Natural England's National Nature Reserves (Natural England, 2010) and The Arboricultural Associations' Trees and Bats Guidance Note No 1 (Cowan, 2003).No buildings or trees suitable for bat roosts were recorded on the site. The fields provided sub-optimal opportunities suitable for foraging, but these opportunities would be increased with the introduction of residential garden with associated floral interest.

- **Badgers** (Meles meles).
  No landscape features suitable for setts or outliers were identified during the assessment. Badgers could forage on the site but no evidence of badger activity such as latrines, snuffle holes, fur on barbed wire fences or scratching posts was recorded during the site walkover.

- **Water Vole** (*Arvicola amphibius*)
  No water bodies are present on site and as such this species which relies on still or running water will not be resident on site.

- **Barn Owl (**Tyto alba)
  Barn owl optimum habitat is rough grassland on low lying farmland field margins (including woodland edges) and linear grasslands, particularly alongside river and ditch banks. The continuity these micro habitats offer can lead to the establishment of new and viable communities of this bird within a region.
  Nesting / Roosting habitat - Barn owls need large, dark, open cavities in buildings or trees to nest and roost in. Once they become established at a site they remain faithful to the area, and to the nest itself, for many generations.
  No buildings or suitable nesting sites were present on the site so Barn Owls will not be resident. Foraging would be very limited due to the absence of suitable tall ruderal or uncut margins. More suitable habitat is present in the general area.

- **Reptiles** (All species)
  No field signs were recorded during the walkover survey. Although some limited suitable habitat is found on site within the stone wall and hedgerow bottoms. A detailed hand search was carried out on any moveable refugia. These were inspected but no evidence was recorded.

- **Great Crested Newt** (Triturus cristatus)
  No water bodies are present on site and as such this species which relies on still water for breeding will not be resident on site.

- **UK BAP species**
  Some of the habitats recorded on site have potential to support the foraging activities of West European hedgehog (Erinaceus europaeus), and bird species Hedge Accentor (Prunella modularis), Song Thrush (Turdus philomelos), House sparrow (Passer domesticus), Eurasian tree sparrow (Passer montanus), Common starling (Sturnus vulgaris), and herptile species such as Common Toad (Bufo bufo). It is considered likely that all these species have the potential to be occasionally present within the site and the surrounding area.

- **Nesting Birds**
  As all wild birds, their nests, eggs and young are protected under the Wildlife and Countryside Act 1981 (and subsequent amendments) during the bird breeding season any vegetation removal works must be undertaken outside this period (April to September inclusive). Please note that birds can nest outside the bird-breeding season and therefore should any nests be identified or suspected to be present on site at any time, then works should cease and an ecologist contacted to attend site and provide advice on appropriate working methods. Should site works require being carried out during the bird-breeding season (April to September inclusive) it is recommended that an ecologist conducts a check for nesting birds across the site in advance of any works commencing. Once complete, should no active nests be identified, a five-day window will allow for site works to commence. Should works cease at any point for more than five days then further checks for nesting birds should be undertaken.

3.0.2 To determine likely presence or absence of protected species can require multiple visits at suitable times of the year. As a result, the surveys focused on assessing the potential of the site to support species of note, which are considered to be of principal importance for the conservation of biodiversity with reference to the National Planning Policy Framework (NPPF, 2012), especially those species given protection under UK or European wildlife legislation.

3.0.3 **This report provides an assessment of the ecological interest recorded during the site surveys and highlights areas where further survey work may be recommended if felt necessary.**

4.0 Overall Conclusions and Recommendations

4.0.1 **The behaviour of animals can be unpredictable and may not conform to characteristics recorded in current scientific literature. This Report, therefore, cannot predict with absolute certainty that animal species will occur in apparently suitable locations or habitats or that they will not occur in locations or habitats that appear unsuitable.**

4.0.2 Results and findings from all the surveys conducted on the site indicate that no further additional survey effort is deemed necessary for an EPS species or

species of note

4.0.3 The size and limitations of the proposed development of the site will have no significant negative impact on the biodiversity of the area.

4.0.4 The development of the site for residential properties provides numerous opportunities to enhance the site's ecological value. Probably the most effective will be the provision of specialist permanent roost opportunities on suitable elevations of the new build properties. Within a site such as this and the number of properties proposed if possible a total provision of 20% of the builds to have opportunities for bats it could provide opportunities to build up bat *meta populations across the site.

* *"Bat meta-populations" refers to a network of interconnected bat populations, where individuals move between local populations, allowing for gene flow and maintaining the overall genetic health of the broader population. Studies in Europe show mixed population trends, with some increasing and others declining, but factors like habitat loss, pesticides, and human disturbance threaten these metapopulations. Genetic research on species like Natterer's bats and pallid bats indicates complex population structures, with varying levels of gene flow, often with males dispersing more than females, leading to distinct subpopulations that still benefit from connection within a meta-population system.* See Appendix 3 for Bat Box examples and locating information.

4.0.5 **Hedgehog**

Legislation

Hedgehogs are listed as a UK 'Priority Species' under S41 of the NERC Act (2006). They also have limited protection under Schedule 6 of the Wildlife and Countryside Act (1981) as amended, which means they cannot be caught or trapped without a licence. The Wild Mammals (Protection) Act (1996) prohibits cruel activities and mistreating of hedgehogs.

The timing and method of habitat clearance has an impact on hedgehogs, but will need to be balanced with other biodiversity needs.

Bramble disturbance is least hazardous in autumn to avoid the bird breeding season, the bulk of hedgehog breeding, and hibernation. Hedgehogs are generally absent from long grass in winter, making this the least hazardous time for cutting, but this isn't necessarily the best time to cut wildlife meadows. Rotational cutting is recommended so that there's always an area left unstrimmed for insects to feed on and hedgehogs to nest in.

A high-cut, low-cut method allows nest checks in-between, and increasing the blade height of mowers will minimise risks. Ensure all machine users are trained to be hedgehog aware.

Areas of well-connected native hedging, scrub, bramble, shrubs, dead hedging and piles of dead wood become important nesting and foraging sites. Keeping fallen leaves on the ground or in accessible leaf stores is especially useful for breeding and winter nest building. Mosaic grass management provides the mix of long grass, short turf, open soil and tussocks needed for foraging and day nesting. Developing nectar sources and herbaceous vegetation provides the diverse microhabitats needed for the invertebrates hedgehogs rely upon. Edge habitat is especially important as hedgehogs often navigate landscapes by following linear features

Hedgehog Highways

Link parcels of land by ensuring boundaries are permeable to hedgehogs. Hedging or hedgehog-sized holes in fencing or walls help create Hedgehog Highways. Ground-level boundary holes should measure 13x13cm and should link as many neighbouring pieces of land as possible. These are easy

to include for most fencing contractors, and both wooden and concrete hedgehog-friendly gravel boards can be purchased from some suppliers ready-made. Cinder blocks or piping can be used to deter use by pets.

In the interest of best ecological practice, between October and March, any piles of wood or suitable materials should be checked for hibernating hedgehogs before disturbance. Any hedgehogs found should ideally be left alone. If this is not possible, the hedgehog should be carefully and safely relocated to suitable habitat away from the development site.
(see Appendix 3 for enhancements that would benefit hedgehogs to be implemented during construction and site works.

4.0.6 Mammal Ramps
During construction works any excavations that need to be left overnight should be covered or fitted with mammal ramps to ensure that any animals that enter can safely escape.

4.0.7 Vegetation Removal
Any areas of tall ruderal in particular provide suitable nesting/breeding habitat for small mammals and birds. It is therefore recommended that the removal of all woody vegetation (including bramble) be conducted outside of the bird nesting season, which usually encompasses March to September. If this is not possible and removal works are required to take place during the nesting season, nesting bird survey/s will be required. Removal of woody vegetation outside of the nesting season is therefore strongly recommended.

4.0.8 To prevent any adverse impacts on biodiversity within and adjacent to the site as a result of development activities it is recommended that:

- A safe system for the correct storage of materials/chemicals should be implemented to ensure that materials are stored in a suitable manner as to avoid potential impacts on vegetation and watercourses adjacent to the site.
- Although the presence of construction waste is unavoidable, it is recommended that waste is removed at the earliest opportunity to avoid contamination of ground and possible disturbance to wildlife. Contractors should also avoid leaving construction waste within the site.

5.0 Closure

This report has been prepared by Whistling Beetle Ecological Consultants Limited with all reasonable skill, care and diligence. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

The information presented in this report provides guidance to reduce the risk of offences under UK law. However, Whistling Beetle Ecological Consultants Limited is not a legal practice and disclaims any responsibility to the client and others for actions that lead to offences being caused, whether or not the guidance contained in this report is followed. Interpretation of UK legislation is presented in good faith; however for the avoidance of doubt, we recommend that specialist legal advice is sought.

6.0 References

Batten, L.A. (2002). *Red Data Birds in Britain: Action for Rare, Threatened and Important Bird Species*, Poyser.

Bat Conservation Trust (2007). *Bat Surveys – Good Practice Guidelines*, Bat Conservation Trust, London.

BTO, (2006). Birds of Conservation Concern 2002-2007 [online]. British Trust for Ornithology.
http://www.bto.org/psob/amberlist.htm

HMSO, (1995). *Biodiversity: The UK Steering Group Report, Volume 2: Action Plans*, HMSO, London.

Mitchell-Jones, A.J. (2004). *Bat Mitigation Guidelines*, English Nature, Peterborough.

Mitchell-Jones, A.J. and McLeish, A.P. (Eds) (2004). *Bat Workers' Manual*, Joint Nature Conservation Committee, Peterborough.

Richardson P (2000). *Distribution atlas of bats in Britain and Ireland 1980 – 1999*. Bat Conservation Trust, London.

Bat Conservation Trust (2012) *Bat Surveys - Good Practice Guidelines 2nd Edition*, Bat Conservation Trust, London.

Ernest, N and Cheeseman, C. 1996. *Badgers*. T & AD Poyser

Harris, S., Cresswell, W. And Jefferies, D. 1989. *Surveying Badgers.* Mammal Society Occasional Publication No 9. Mammal Society London.

Natural England, 2007 Badgers and Development: A guide to best practice and licensing (interim guidance document, version09/07). Natural England Wildlife Licensing Unit, Bristol, England.

Web addresses for access to full UK legislation and policy text:

http://www.magic.gov.uk/MagicMap.aspx

Conservation of Habitats and Species Regulations 2010:
http://www.opsi.gov.uk/si/si2010/uksi_20100490_en_1

Wildlife and Countryside Act 1981:
www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1981/cukpga_19810069_en_1

Countryside and Rights of Way Act 2000:
www.legislation.hmso.gov.uk/acts/acts2000/20000037.htm

Natural Environment and Rural Communities Act 2006:
http://www.opsi.gov.uk/acts/acts2006/ukpga_20060016_en_1

Planning Policy Statement 9:
www.communities.gov.uk/documents/planningandbuilding/pdf/147408

Appendix 1

NB the red line boundary details the area of land surveyed as part of the Ecological Site Assessment. This includes land outside of the proposed development but adjacent to the development in which if EPS were recoded would need mitigation to prevent harm or disturbance.

Google Earth from June 2023

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Project

Ecological Site Assessment

Title

Land to South West of Summergrove, Whitehaven CA28 8YN

Approximate extent of land surveyed during Ecological Site Assessment

Photo Sheet	SWSSL/WB/01
Date	August 2025
Scale	N/A

Appendix 2

1. South east boundary with Dalsell Street

2. South east boundary with Dalsell Street inside of site

3. Existing South east hawthorn hedge boundary

4. Comparison of Juncus from April 2022

5. Same area of Juncus August 2025

6. Evidence of European mole activity

7. Scattered trees provide over reach opportunities for Corvid sp

8. General images of site

9. General images of site with poor species sward due to grazing

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Land to South West of Summergrove, Whitehaven CA28 8YN

Title

General Photographs of site

Photo Sheet SWS/WB/PS01

Date August 2025

Scale N/A

1. Adjacent former tip now colonised by tall ruderal habitat

2. Former land fill

3. Good species diversity in boundary hedgerows

4. General images of site

5. Adjacent pasture not a part of the proposed development so foraging opportunities un affected

6. General images of site

7. Continual grazing has resulted in an exterely poor sward with very few species

8. General images of site

9. Looking south from the site

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Project

Land to South West of Summergrove, Whitehaven CA28 8YN

Title

General Photographs of site

Photo Sheet SWS/WB/PS02

Date August 2025

Scale N/A

Appendix 3

Bat Box Information Pack

Bats are amazing animals that are important to ecosystems in the UK and worldwide. We have 18 species of bat in the UK, all of which are protected under European law. Bat populations in the UK have declined dramatically over the past century due to persecution and habitat loss. However, a number of UK bat species have recently shown signs of population increases so there is hope.


© Andrew Dumbleton

Bat boxes are artificial roosts designed to provide bats with alternative resting places or to encourage bats into areas where there are few existing suitable roost sites. There are various designs of bat box; wooden boxes that you can make yourself, ready-assembled external boxes for buildings and trees, and even integrated bat boxes that can be built into walls.

Providing bat boxes can increase opportunities for roosting bats but it can take a while for bat boxes to be used regularly, particularly where a number of suitable alternative roost sites exist. 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.

Bat roost preferences

Bat boxes are now available from many outlets, and in a range of shapes and sizes, so some knowledge of what bat species are in your local area and their preferences will help you choose the best possible box. For example, some species such as horseshoe bats and grey long-eared bats do not use bat boxes.

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, dry spaces in the summer for rearing young and cooler damper spaces in the winter for hibernation. The box should be draught proof and made from a thermally stable material such as untreated wood, ecostyrocrete, woodcrete, brick or stone. If possible, it's better to provide several internal chambers so that the bats can move to where the conditions suit them best.


©Hugh Clark

Orientation and location

Structures for summer roosting should be positioned where they are sheltered from the wind but unshaded for most of the day. Summer maternity roosts (in the northern hemisphere) should be on a south-easterly to south-westerly aspect. 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; two or three boxes is preferable to one, although a single box still 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 – see below for details about putting up bat boxes.


© Fern Alder

Bat boxes are more likely to succeed in areas where there is a good mixture of foraging habitat, including trees, and a source of water (most maternity roosts are located within a short distance of permanent fresh water such as a stream, pond, river or lake). Bat boxes in areas with few other roosting opportunities are also likely to be more successful.

Bat boxes should also be located close to unlit linear features, such as lines of trees or hedgerows and no lit should fall on the bat box itself or the adjacent habitat. Bat species use dark linear features for navigation between their roosting sites and feeding grounds and to avoid predation by 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.

Size of the bat box

The most frequently used bat boxes are small, with narrow apertures to enter them and are only suitable for crevice-dwelling bat species.

Access

Crevice dwelling bats crawl into their roosts via small gaps around 15-20mm high. Roughened vertical surfaces or landing areas allow better access (by landing and crawling), horizontal landing perches should be avoided as these are not necessary, may even deter bats and encourage birds to nest within the bat box.


© John Altringham

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.

If possible, make or purchase bat 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. This will also help stop birds nesting in the box and blocking the entrance, which can happen with bat boxes that have entrance holes in the middle or entrances holes that are too large.

Boxes that may accumulate bat droppings will also need to be cleaned regularly by a licensed bat worker. It is important to remember that bat boxes must not be opened by anyone except a licensed bat worker (see 'monitoring bat boxes' below for more details on licences). In addition, nesting birds must not be disturbed so leave the area immediately upon finding an active nest in a box, and there is the potential for dormice to be found in some woodland boxes, in which case the box must only be checked by a licensed ecologist.

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 even be home-made. Bat boxes can be divided into the following categories: self-made external bat boxes, ready-made external bat boxes, integrated bat boxes and free standing 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).

Self-made external bat boxes

Self-made wooden bat boxes are usually located on trees or the outside walls of buildings. These boxes are usually cubic or rectangular, 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 in kit form, or you can make your own from scratch (there are instructions for the 'The Kent bat box' pictured below in the Appendix at the end of this document – these boxes are also available commercially).

They come in a variety of shapes but key requirements are:


Kent Bat Box

- While commercial wooden bat boxes may be made from a variety of materials, to make sure self-made bat boxes are suitable for bats we recommend the wood used should be rough sawn for grip and untreated.
- 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 - the box should be well put together.
- A box that cannot be opened is best - it will lessen the chances of the bats being harmed through becoming trapped under the opened lid, or disturbed by people opening the top.
- To increase longevity of the box, use screws rather than nails.
- Any screws, hardware or staples used must be exterior grade (galvanized, coated, stainless, etc).

Ready-made external bat boxes

There are a number of ready made external bat boxes suitable for buildings and trees that can be purchased. These boxes can be made from wood, however there are an increasing number of more durable options, such as ecostyrocrete (pictured right). These types of boxes can come in a range of finishes to blend into the buildings façade or indeed to highlight their presence!

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 and / or highlight the boxes presence. The same principles for size, location and access apply.

©Green&Blue

Ready-made free standing boxes

American style bat houses (larger, multi-chambered boxes) have been successfully used for bat conservation in North America and elsewhere. These large multi-chambered boxes are increasingly being used in the UK for sites where there are few suitable features (such as trees or buildings) for boxes to be attached to, as they can be put up on poles:

http://www.batcon.org/files/RocketBoxPlans.pdf

The Roost Partnership scheme

The Roost Partnership is a unique conservation-lead built environment scheme involving BCT and bat box or access product manufacturers working together to provide bat conservation features that can be incorporated onto and into buildings and other structures that are designed with the latest best practice guidance and research in mind.

The Partnership doesn't endorse particular products but rather promotes the importance of our common goal of improving roosting opportunities for bats within our built environment. The Roost Partnership also acts as an information sharing hub used to gather feedback from industry professionals to constantly improve our understanding of bat roosting requirements. Details of companies and products within the Partnership scheme are found on the BCT website: https://www.bats.org.uk/our-work/buildings-planning-and-development/roost-replacement-and-enhancement/partnerships

Putting up bat boxes

Most bat species will use higher positioned boxes (around 4m up); assess the risk of working at height when undertaking the installation, then place the box as high as it is safe to do so. This will also help protect bats from vandalism and falling prey to cats. If working in the public realm, try to locate boxes so they are not above public walkways.

Ensure the boxes are appropriately fitted, to avoid the risk of them falling off. The boxes should be checked at least annually and after high winds to ensure they are still securely in place.


© Sue Burchett

On buildings

Place the boxes high up by the eaves on a building, which can also help shelter the box from the weather. As detailed above, the aspect of the box should capture sun for part of the day if the intention is to attract maternity colonies.

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, the structures may not be robust enough to support the box in high winds and the boxes are too visible to predators or vandals.

On trees

Consideration should be given to tree growth and boxes may need rehanging over time, regularly check boxes to assess this. 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.

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 can take several years for bats to find a new box. Be patient! Slow (or no) uptake may be due to the availability of other roosts locally. Sometimes, however, bats move in within months or even weeks!

How will I know if the box has been successful?

To check if the box is being used, look out for droppings and urine-staining on the vertical 'bat ladder' below the box and listen for 'chattering' during the day, especially during the summer months. You can also watch the box for an hour either side of sunset to observe any bats leaving to feed, or around dawn to see any bats returning to their roost. Bats may be observed by looking up into the box from below, however no light should be used as this may disturb any bats that are present.

Licensing and the law

You can undertake the non-invasive 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

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 2017. 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 watercourses as commuting pathways between roosts and foraging areas. This type of habitat also provides shelter, allowing insects to gather and therefore supports 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. See BCT's 'Encouraging Bats' leaflet for more information (www.bats.org.uk\publications).

Useful websites

Bat Conservation Trust 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.

Bat Conservation International 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.

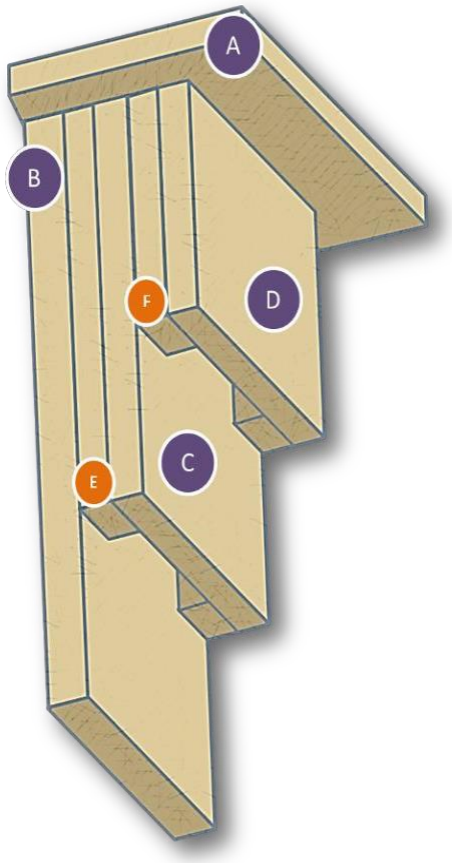
Vincent Wildlife Trust www.vwt.org.uk
The Vincent Wildlife Trust (VWT) is an independent charitable body founded by Vincent Weir in 1975 and has been supporting wildlife conservation ever since. They conserve a range of endangered mammals through management of their own reserves, undertake pioneering 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 (2nd ed.)
- Gunnell, K., Grant, G. and Williams C. (2012) Landscape and urban design for bats and biodiversity
- Mitchell-Jones, A.J (2004) Bat mitigation guidelines
- Mitchell-Jones, A.J. and McLeish, A.P. (2004) Bat workers' manual (3rd edition)
- Tuttle, M.D., Kiser M. and Kiser S (2004) The Bat House Builder's Handbook

Appendix: 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 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 15-25mm. 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	x 160 x 20
Back (B)	1	x 200 x 20
Centre (C)	1	x 200 x 20
Front (D)	1	x 200 x 20
Centre Rails (E)	2	x 20 x 20
Front Rails (F)	2	x 15 x 15
Stand-offs (optional)	2	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. Alternatively you can assemble your bat box kit with nails although they tend to be less robust than boxes made with screws.

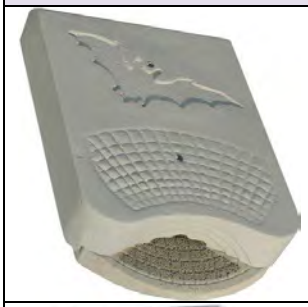
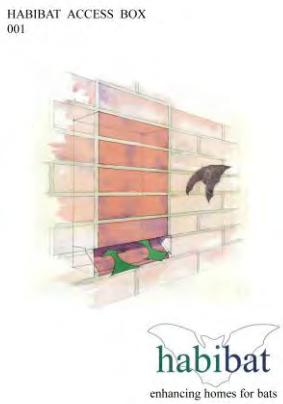
The hanging screws may either be at the edges of the front panel or in the side centre block (not in the rails!). Fixing may be by use of brackets, durable nylon cord or wires.

When installing the box, assess the risks of working at height, use the appropriate fittings and assess where the box will be located, in relation to any public access. Regular checks should be made to ensure the box remains securely fitted, especially after high winds.

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

Bat Conservation Trust

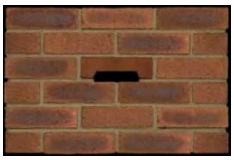
Below is a list of bat related products that may be used for bat enhancement. However, please be aware that BCT does not endorse any particular product or brand as very little evidence is available to demonstrate that they are successful.

Bat Boxes	**In situ**	**Description**	**Company**	**Estimated price**
For external surfaces of buildings:				
		**Schwegler 1 WQ Summer & Winter Roost** Dimensions: 580 H x 380 W x 120 D Weight: 22Kgs	Alana Ecology Jacobi Jayne The Code Store	£90 to £139
		**Schwegler 1 FQ Bat Roost** Dimensions: 600H x 350W x 90D mm Weight: 15.8 Kgs	Alana Ecology Jacobi Jayne NHBS The Code Store	£70 to £90
	Internal or external 	**1 Schwegler FE Bat Access Panel** with optional back plate External Dimensions: H 30 x W 30 x D 8 cm Weight: 7.8 kg	Alana Ecology Jacobi Jayne NHBS The Code Store	£38 to £49
To integrate into walls:				
	Can be built with timber, brick or stone facing to match walls. *BCT is using the Habibat as a research and monitoring tool.	**Habibat** Dimensions: 215 x 215 mm Or 215 x 290 mm	Habibat NHBS	£82.50 to £129

		**Schwegler 1FR Bat Tube** Dimensions: H 475 x W 200 x D 125 mm Entrance W 150 x D 20mm Weight: 9.5kg	Alana Ecology Jacobi Jayne NHBS	£72 to £75
		**Schwegler 2FR Bat Tube** The 2FR bat box is based on the same design as the 1FR, but with the addition of holes in the sides. This allows multiple tubes to be placed next to each other to form a much larger bat roost.	Alana Ecology Jacobi Jayne NHBS	£72 to £76
		**Ibstock enclosed bat box**	Ibstock	
For trees:				
	Trees or flat surfaces	**Schwegler 1FF Bat Box** Dimensions: 430H x 270W x 140D mm. Entrance hole: 120 x 240mm	Alana Ecology Jacobi Jayne NHBS	£56 to £60
	Trees	**Schwegler 2F Bat Box** (General Purpose) Woodcrete 33cm H x diameter 16cm Note: location of access hole means that box is not self-cleaning.	Alana Ecology NHBS	£27.95

	Trees	**Schwegler 2FN Bat Box** The 2FN Bat Box has two entrances - one at the front and one at the rear against the tree. It has a domed roof to form clusters and an increased internal height. 36cm H x diameter 16cm 4.3kg	NHBS Nature Counters	£34.95
	Trees	**Schwegler 1FD Bat Box** The 1FD is a large general purpose bat box. Effectively it is a larger version of the Schwegler 2F bat box, with the addition of two roughened wood panels inside the box which simulate crevices. Note: location of access hole means that box is not self-cleaning.	Alana Ecology NHBS	£49 to £55
Wooden bat boxes				
	Fitted to walls, other flat surfaces or trees	**Kent Bat Box** Materials to be made from untreated rough-sawn timbers. Timber should be 20mm thick. The box should be rainproof and draught-free. Crevices can be between 15 & 25mm wide	Self constructed. Instructions from BCT.	

Bat Conservation Trust

Access tiles or bricks	In situ	Description	Company	Estimated price
		**Tudor Bat access tile set**	**Tudor Clay Roof Tiles**	
		Ventilation tiles that can be adapted for bat access	Aspect Roofing	
		**Bat access brick**	Tamworth Property Services t) 01827 310475 chris@bat-survey.co.uk	
		**Ibstock bat roost entrance arch brick**	**Ibstock**	
		**Bat access slate**	JD Products **Owens Slate Service** Summit Slate	**£40-80**
		**Habibat Roof Access Tile**	Dreadnought Tiles Habibat	

Positioning considerations:

Aspect

Temperature is known to be the major factor influencing successful uptake of artificial roost by bats. In general, bats seek warm spaces to help them with rearing young. For this reason, bat boxes should be located where they will receive the maximum amount of sunlight. In the northern hemisphere this will be the southerly aspects/orientation (south, south-west and south-east). However, it is helpful to install bat boxes in more than one aspect to allow a choice of roosting conditions. Bat boxes located on a shady side will remain cooler and will be more suitable for use during the hibernation period (winter) or by male bats all year round.

Height

Position the bat boxes a minimum of 2 meters above ground. Avoid placement above windows, doors and wall climbing plants, thereby reducing the likelihood of predation by cats. A position near the eaves or gable apex of the property would be preferable.

Other considerations

To make the bat box a potential roost for a wider range of bat species, it is helpful to consider whether there is nearby linear vegetation features such as hedges. This is because some bat species use these features for navigation between their roosting site and feeding ground and to avoid flying in open and exposed areas.

Resources:

- Williams, C. 2010. *Biodiversity for low and zero carbon buildings: a technical guide for new build*. RIBA Publishing, UK
- Bat Conservation Trust, 2010. *Bats in Buildings*. Bats and the Built Environment Series: Volume 1. http://www.bats.org.uk/publications_download.php/247/Bats_and_Buildings_finalDec2010.pdf
- BCT webpages: http://www.bats.org.uk/pages/bats_and_buildings.html

Version 5: updated June 2012

British Hedgehog Preservation Society

people's trust for endangered species

Hedgehog ecology and land management

Hedgehogs are declining

Hedgehogs are one of the few wild mammals we sometimes encounter up close and are a firm favourite of the British public. Sadly, we're seeing concerning population declines across the UK. Between 2000-14 hedgehog populations declined by over half in our countryside and nearly a third in our cities and suburbs.

Easy actions can have a big impact

But there's hope! Our recent analyses suggest the decline, at least in urban areas, may be slowing, possibly even turning around. The concerted efforts of communities could be working. Sympathetic green-space management and design by local authorities, businesses and private land managers whether it be schools, cemeteries or golf clubs, has the potential to really help bolster urban hedgehog populations. And, what's good for hedgehogs is good for many other species, including us.

This guide outlines several ways to better manage land to help hedgehogs:

- Reduce habitat loss and fragmentation by connecting up green spaces
- Remove hazards from the site
- Think about roads and controlling hedgehog access to busy or dangerous areas
- Consider limiting predator access to certain areas of the site where hedgehogs are most vulnerable
- Keep an eye out for disease or illness in local hedgehog populations

Ecology and behaviour of hedgehogs

There are three main habitat requirements to consider when managing green space for hedgehogs:

- A range of nesting opportunities
- High quality feeding areas
- Ensuring varied habitats are well-connected

Nesting

Hedgehogs nest year-round and produce different types of nest for day-time resting, breeding and hibernation. Day-time nests are a retreat during the active season, and are often temporary, flimsy and found in areas of rough grassland, loose leaf piles or garden vegetation.

Breeding nests are made by females and are used to raise young. They tend to be more robust, like hibernation nests. Winter nests can be used for several months to hibernate through periods of cold weather and low food availability.

The most sturdy nests rely on medium-sized deciduous leaves and a structure to hold the leaves in place. Bramble patches, log piles and open compost heaps are common locations for breeding nests and hibernacula.

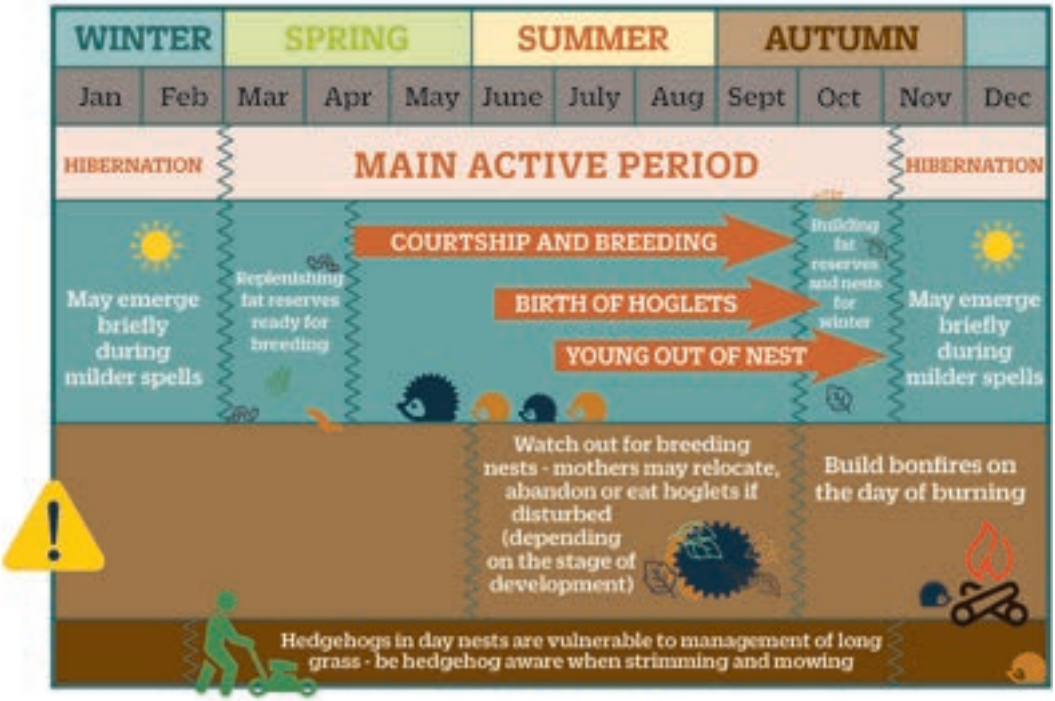
Feeding
Hedgehogs are omnivores, but the bulk of their diet consists of macro-invertebrates such as beetles, worms, slugs, earwigs, caterpillars and millipedes. In urban areas, supplementary food in the form of cat, dog or formulated hedgehog food can make up a significant part of their diet. Access to water is also very important.

Habitat
Hedgehogs are highly active and range widely. They need to be able to move freely through a well-connected range of habitats to find food, mates and areas to nest. Radio-tracking studies show that hedgehogs can travel around 2km in a night in urban areas, and up to 3km a night in rural landscapes, though distances differ between the sexes. A viable population of urban hedgehogs is thought to need around 0.9km^2 of well-connected habitat.

The hedgehog's year

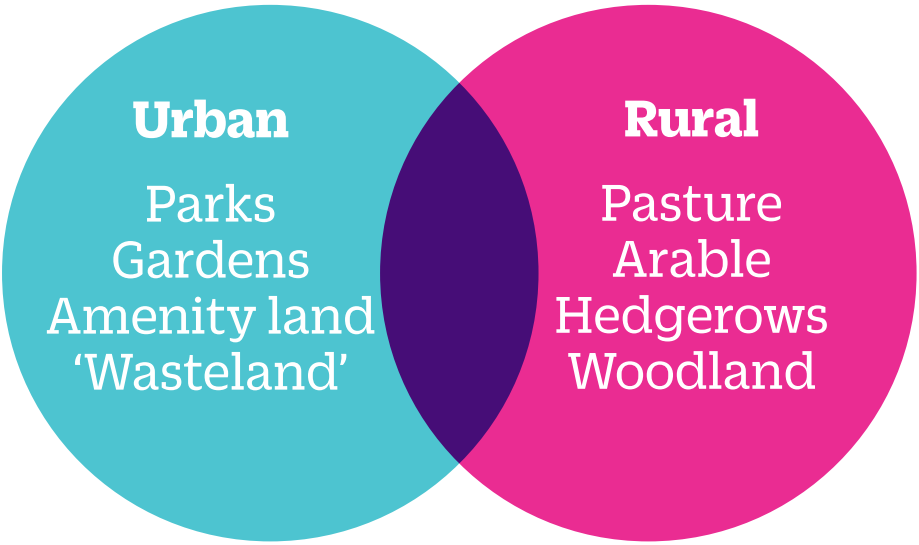
Hedgehogs are nocturnal animals, so despite their charismatic spiny appearance they are often difficult to find. They're solitary creatures, don't hold territories and rely mainly on their hearing and sense of smell. Hedgehogs are also generalists, meaning they have a varied diet and are widespread, but generally absent from moors, marshes and pine forest.

Timings of many hedgehog behaviours are dependent on temperature, gender and the body condition of the individual hedgehog. Actions at particular times of year will, however, help reduce hazards and help hedgehogs thrive.



Why are hedgehogs declining?

Hedgehogs face a multitude of natural and anthropogenic threats, many of which act together and some of which are still being understood. Whilst habitat loss and fragmentation are major issues across both urban and rural habitats, the reasons differ between the two landscapes. But many of the threats are man made and can be reduced through simple changes in land management, providing an opportunity for green-space managers to make a real difference for local hedgehogs.



Impermeable boundaries
Tidy gardening
Slug pellets
Bonfire burning
Dangerous ponds
Strimming

Habitat fragmentation
Fewer invertebrates
Road traffic
Refuse e.g. plastic
Climate change

Land use change
Pesticides (indirect)
More badgers
Flailing or tilling
Gamekeepers

Roads

Roads can act as barriers to hedgehog movement, may have genetic impacts on populations and are a large source of mortality. It has been estimated that between 167,000 – 335,000 are killed on our roads in Great Britain every year.

The solution

Road signs could alert drivers in areas of high hedgehog density, and green-space fencing could help channel hedgehog movement away from major roads. Well-connected green spaces, linked with surrounding gardens, will also reduce the need for hedgehogs to cross roads.

Road mitigation such as overbridges, underpasses and culverts are likely beneficial, as long as they are maintained and not permanently water logged or water filled.

Habitat loss & fragmentation in the countryside

Evidence shows that hedgehogs are fairing particularly poorly across agricultural landscapes. This is due to a range of factors, including; habitat fragmentation from loss of hedgerows, larger field sizes, increased pesticide use and limited areas of scrub, decaying wood or nectar rich planting. All these factors increase hedgehogs vulnerability to predation. Many farmers across the UK already do fantastic work for wildlife, but if hedgehogs are to thrive in our countryside they need a sustained effort from us all.

The solution

- Hedgerow planting and management
- Field margin management
- Reduced field sizes
- Reduced ploughing and tilling rates
- Keeping areas of scrub and decaying wood

Countryside Stewardship schemes can also help hedgehogs and other desirable wildlife.

More detailed information can be found in our farmers advice guide that can be obtained for free by contacting hedgehogs@ptes.org or by downloading it electronically from our website www.hedgehogstreet.org/farmersadvice

Habitat loss & fragmentation in our cities and suburbs

Despite covering just 6% of land, urban landscapes are increasingly important for hedgehogs. The matrix of gardens and green spaces in towns and cities can support the highest densities of hedgehogs and may act as a refuge from agricultural practices and high predator density.

Habitat loss from new developments, in-filling of gardens with housing, roads, impermeable boundaries and 'over-management' of green-spaces and gardens are all, however, threats.

The solution

Hedgehog Highways

Link parcels of land by ensuring boundaries are permeable to hedgehogs. Hedging or hedgehog-sized holes in fencing or walls help create Hedgehog Highways. Ground-level boundary holes should measure 13x13cm and should link as many neighbouring pieces of land as possible. These are easy to include for most fencing contractors, and both wooden and concrete hedgehog-friendly gravel boards can be purchased from some suppliers ready-made. Cinder blocks or piping can be used to deter use by pets. Hedgehog Highway plaques can be purchased from both People's Trust for Endangered Species (PTES) and British Hedgehog Preservation Society (BHPS) online stores to raise awareness and mark the purpose of these gaps to curious neighbours.

Wild areas for nesting and feeding

Areas of well-connected native hedging, scrub, bramble, shrubs, dead hedging and piles of dead wood become important nesting and foraging sites. Keeping fallen leaves on the ground or in accessible leaf stores is especially useful for breeding and winter nest building. Mosaic grass management provides the mix of long grass, short turf, open soil and tussocks needed for foraging and day nesting. Developing nectar sources and herbaceous vegetation provides the diverse microhabitats needed for the invertebrates hedgehogs rely upon. Edge habitat is especially important as hedgehogs often navigate landscapes by following linear features.

Hazards

Pesticides, herbicides and rodenticides

Pesticides, herbicides and rodenticides can be highly toxic, can impact non-target species, and can have both direct and indirect impacts on hedgehogs.

Herbicides can directly reduce earthworm density and reduce the varied ground cover needed for foraging. Slug pellets are potentially lethal if directly ingested and also reduce important prey sources.

The full impacts of many chemicals are still unknown but any product reducing the number of invertebrates also reduces the number of hedgehogs that can survive.

The solution

Avoid chemicals where possible and use organic alternatives where necessary. Wool pellets, nematode treatments, salt, seaweed, broken egg shells or coffee grounds are popular alternatives for slug control.

Encourage natural predators of pest invertebrate species, such as hedgehogs, frogs and toads, by installing Hedgehog Highways, wild areas and wildlife ponds.

Machinery

Hedgehogs have no flight reflex and nest year round, making them vulnerable to machine injury.

The solution

The timing and method of habitat clearance has an impact on hedgehogs, but will need to be balanced with other biodiversity needs.

Bramble disturbance is least hazardous in autumn to avoid the bird breeding season, the bulk of hedgehog breeding, and hibernation. Hedgehogs are generally absent from long grass in winter, making this the least hazardous time for cutting, but this isn't necessarily the best time to cut wildlife meadows. We recommend rotational cutting so that there's always an area left unstrimmed for insects to feed on and hedgehogs to nest in.

A high-cut, low-cut method allows nest checks in-between, and increasing the blade height of mowers will minimise risks. Ensure all machine users are trained to be hedgehog aware. BHPS offer free waterproof stickers for machines to remind operatives to check for hedgehogs.

Drowning

Ponds and lakes are excellent habitat and provide an important water source for hedgehogs in times of drought. Hedgehogs are good swimmers, but even small ponds are a hazard if they can't climb back out.

The solution

Ensure there are entry and exit points to water bodies by designing wildlife friendly ponds with shallow beaches. Reduce hazards to existing water bodies by creating ramps out of bricks, logs or sand bags. Ramps should ideally be 20cm wide and no steeper than 30 degrees.

Entanglement

Litter, wire fencing and loose or fine vegetable netting poses a risk to hedgehogs. Cricket nets and football goals are also common places for entrapment.

The solution

Information boards and adequate bins around sites will encourage responsible litter disposal. Tie up sports netting when not in use and keep fruit netting tight. Replace fine diameter thread with thicker netting or use a rigid structure instead.

Bonfires and compost heaps

Bonfires and compost heaps are attractive nesting sites for wildlife but can be particularly hazardous to hedgehogs who lack a flight mechanism.

The solution

Relocate the bonfire material from it's storage location to a new pile on the day of burning, so it's thoroughly checked before being lit. Where this isn't possible, fence the pile using steep plastic sheeting. Reptile fencing used by a local ecological consultant is suitable for this purpose.

Consider leaving an open compost heap for wildlife and maintaining an active compost heap in an enclosed container, inaccessible to hedgehogs.

Disease, injury and ailments

Thousands of hedgehogs are admitted to vets and rescue centres across the country every year. Hedgehogs are well known for their association with ticks and fleas, but can also carry and suffer from diseases such as salmonella, lungworm and ringworm. The population-level impact of these diseases on wild hedgehogs is still being researched.

Hedgehog fleas are species-specific, and the presence of ticks is normal unless they're carrying a particularly high burden, which can be indicative of ill-health. Hedgehogs seen out in the day exhibiting non-purposeful behaviour may require further assistance, but it's always best to obtain advice before removing a hedgehog from the wild.

The solution

Contact BHPS on 01584 890 801 for further information and advice about injured or ill hedgehogs.

Reports of hedgehogs that are thought to have died from disease can be submitted to Garden Wildlife Health - a collaborative project working to monitor the health and identify disease threats to British wildlife based at ZSL: www.gardenwildlifehealth.org. They can also conduct autopsies on preserved specimens, but please contact them before sending any samples.

GWH
Garden Wildlife Health

Predation

Foxes and dogs

Foxes and dogs can cause hedgehog mortality, but there's no indication that they impact hedgehog populations as a whole. Small populations may be more vulnerable.

Badgers

Badgers are the main natural predator of hedgehogs and also compete for similar prey. It's thought that the two species can coexist as they have for thousands of years, so long as there's enough feeding and nesting habitat for them both.

The solution

A good network of hedging, scrub and bramble provides nesting habitat for hedgehogs and cover from predators. Fence off prime natural nesting sites in public areas to reduce disturbance from dogs, ensuring the fencing is hedgehog permeable. Whilst not advised as a replacement for natural habitat, purpose-built hedgehog houses can provide additional protection from predators. Tunnels and small entrance holes (13x13cm) are best for these. See our hedgehog housing leaflet for tips www.hedgehogstreet.org/hedgehog-homes

Legislation

Hedgehogs are listed as a UK 'Priority Species' under S41 of the NERC Act (2006). They also have limited protection under Schedule 6 of the Wildlife and Countryside Act (1981) as amended, which means they cannot be caught or trapped without a licence. The Wild Mammals (Protection) Act (1996) prohibits cruel activities and mistreating of hedgehogs.

No legislation currently addresses the causes of decline in hedgehog populations.

How to detect hedgehogs

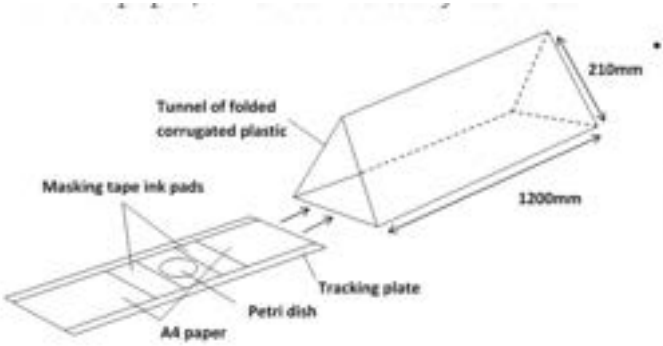
Check the Big Hedgehog Map for records local to you: www.bighedgehogmap.org, or add your own sighting. If hedgehogs have been recorded locally and suitable habitat is present, it's likely that the area will be used in some form due to their wide-ranging behaviour.

If you'd like to know whether hedgehogs are using your green-space, footprint tunnels or trail cameras are the easiest and most cost effective way of monitoring.

Footprint tunnels are cheap and easy to construct, and can be placed along linear features such as hedgerows, fences and walls. Pieces of A4 paper are attached to the inside of the tunnel, alongside two strips of non-toxic ink and a handful of meaty flavoured cat, dog or hedgehog food. The tunnels can be kept in place for up to five nights, with paper and bait being replenished daily.

If you manage to detect hedgehogs then a trail camera is a brilliant way of observing behaviour and sharing your successes with the local community. Place these around 20cm from the ground on a wooden stake, or lock them discretely to fencing or trees.

For more advice about conducting a hedgehog survey, please contact hedgehogs@ptes.org. We're giving away a free tunnel to the first 20 land managers who get in touch.



This handbook accompanies the more extensive *Hedgehog Ecology & Management Course for Practitioners*, run by PTES and BHPS. This is a one-day course aimed at land managers and consultants to inform green-space management.

For more information and to locate your nearest course leader, visit www.ptes.org/hedgehogtraining

HEDGEHOG STREET
CITY OF WILDLIFE

Hedgehog Street is a joint project run by People's Trust for Endangered Species and the British Hedgehog Preservation Society.

hedgehogs@ptes.org **www.hedgehogstreet.org**

We'd like to thank Ali North at Suffolk Wildlife Trust for her contribution to this guidance booklet.

people's trust for endangered species

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