

**FRANCIS GARDNER APARTMENTS,  
89-91 WEST END LANE, LONDON**

**PRELIMINARY BAT ROOST  
ASSESSMENT**

A Report to: Quantem Consulting LLP

Report No: RT-MME-151827-02

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## REPORT VERIFICATION AND DECLARATION OF COMPLIANCE

This study has been undertaken in accordance with British Standard 42020:2013 "Biodiversity, Code of practice for planning and development".

Report Version	Date	Completed by:	Checked by:	Approved by:
Final	21/02/2020	Harry Stone MSc (Ecological Project Officer)	Colin Bundy MCIEEM (Associate Director, Regions)	Tom Docker MSc MCIEEM, CEcol (Executive Director)

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

## DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client's brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

## VALIDITY OF DATA

The findings of this study are valid for a period of 12 months from the date of survey. If works have not commenced by this date, it may be necessary to undertake an updated survey to allow any changes in the status of bats on site to be assessed, and to inform a review of the conclusions and recommendations made.

## NON-TECHNICAL SUMMARY

Quantem Consulting LLP commissioned Middlemarch Environmental Ltd to undertake a Preliminary Bat Roost Assessment at Francis Gardner Apartments, 89-91 West End Lane, Camden, London. This assessment is required to inform a planning application associated with the demolition of the current apartment block and construction of a new student accommodation building. All vegetation and trees are to be cleared and replaced with new planting.

To fulfil the above brief to assess the potential for the existing buildings and trees on site to support roosting bats, a Preliminary Bat Roost Assessment was undertaken on 18<sup>th</sup> February 2020.

This assessment identified the building as having high potential to support roosting bats, due to multiple crevice features associated with the roof and external walls. Mature trees on site were assessed as having negligible potential to support roosting bats due to an absence of such features.

Following the results of the Preliminary Bat Roost Assessment, the following recommendations have been made:

### **R1 Francis Gardner Apartments**

Francis Gardner Apartments, the large building dominating the site, has been identified as having high potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for structures with high bat roosting potential at least three dusk emergence and/or dawn re-entry surveys be undertaken during the bat emergence/re-entry survey season to determine the presence/absence of roosting bats within the structure. The bat emergence/re-entry survey season extends from May to September. At least two of the surveys should be undertaken during the peak season for emergence/re-entry surveys between May and August and one of the three surveys should be a dawn re-entry survey. If a roost is discovered during these surveys, a Natural England licence application may be required.

### **R2 Trees**

The three mature trees on site were considered to have negligible potential for roosting bats. The survey data obtained for the site is valid for 12 months from the survey date.

### **R3 Lighting**

Bats are likely to use trees for foraging and commuting. Therefore, in line with paragraph 180 of the National Planning Policy Framework, the development should aim to limit the impact of light pollution on bats through the careful use of lighting in critical areas only and at a low level with minimum spillage.

### **R4 Habitat Enhancement**

In line with the National Planning Policy Framework, the development should aim to enhance the site for bats.

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## 1. INTRODUCTION

### 1.1 PROJECT BACKGROUND

Quantem Consulting LLP commissioned Middlemarch Environmental Ltd to undertake a Preliminary Bat Roost Assessment at Francis Gardner Apartments, 89-91 West End Lane, Camden, London. This assessment is required to inform a planning application associated with the demolition of the current apartment block and construction of a new student accommodation building. All vegetation and trees are to be cleared and replaced with new planting.

In addition, Middlemarch Environmental Ltd has been commissioned to undertake the following assessments:

- Preliminary Ecological Appraisal (report RT-MME-151827-01);
- Preliminary Arboricultural Assessment (report RT-MME-151827-03); and,
- BREEAM Ecological Assessment (report RT-MME-151827-04).

To fulfil the above brief to assess the potential for the existing buildings and trees on site to support roosting bats, a Preliminary Bat Roost Assessment was undertaken on 18<sup>th</sup> February 2020.

All UK bat species are European protected species and they are capable of being material considerations in the planning process. A summary of the legislation protecting bats is included within Appendix 1. This section also provides some brief information on the ecology of British bat species.

### 1.2 SITE DESCRIPTION AND CONTEXT

The development site was situated on 89-91 West End Lane in the London Borough of Camden, centred on National Grid Reference TQ 253 841. The site was approximately 0.12 ha in size and dominated by a large four-storey apartment building. Two courtyards were present within the building, the ground floors of which had been converted into glass conservatories. A glass conservatory was also present within the paved rear garden, along the site's western boundary. A raised car parking driveway and patches of introduced shrub were present in the area of hardstanding to the front (east) of the building. Scattered trees were present and the surrounding landscape consisted of residential buildings, gardens and roads.

### 1.3 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by the client regarding the scope of the project. Documentation made available by the client is listed in Table 1.1.

Document Name / Drawing Number	Author
Ground Floor Landscape Plan / SY617-100-0001	Camlins
Basement Level Landscape Plan / SY617-100-0002	Camlins
Ground Flood External Paving Plan / SY617-100-0003	Camlins
Basement Level External Paving Plan / SY617-100-0004	Camlins
Ground level Boundary Treatment / SY617-100-0005	Camlins
Basement Level Boundary Treatment / SY617-100-0006	Camlins
Ground Floor Tree Strategy Plan / SY617-100-0007	Camlins
Ground Level Planting Strategy Plan / SY617-100-0008	Camlins
Basement Level Planting Strategy Plan / SY617-100-0009	Camlins
Section Location Plan / SY617-100-00100	Camlins
Section A / SY617-100-00101	Camlins
Elevation B / SY617-100-00102	Camlins
Section C / SY617-100-00103	Camlins

**Table 1.1: Documentation Provided by Client**

## **2. METHODOLOGY**

### **2.1 DESK STUDY**

As part of the Preliminary Ecological Appraisal (Report RT-MME-151827-01) an ecological desk study (which included a search for records of bats) was undertaken within a 1 km radius of the site. The consultees for the desk study were Natural England (*MAGIC* website for statutory conservation sites) and Greenspace Information for Greater London CIC (GiGL).

Middlemarch Environmental Ltd then assimilated and reviewed the desk study data provided by these organisations. Relevant bat data are discussed in Chapter 3. In compliance with the terms and conditions relating to its commercial use, the full desk study data are not provided within this report.

The desk study included a search for statutory nature conservation sites designated for bats within a 10 km radius of the site.

### **2.2 FIELD SURVEY**

In line with the specifications detailed in Bat Mitigation Guidelines (English Nature, 2004) and Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), a Preliminary Bat Roost Assessment of the building and trees was conducted during daylight hours. A visual assessment was undertaken to determine the presence of any Potential Roost Features (PRFs), together with a general appraisal of the suitability of the site for foraging and commuting. Table 2.1 provides examples of PRFs. Any accessible PRFs were inspected using binoculars, a torch and endoscope for evidence of possible bat presence. Buildings were surveyed externally and internally.

For reasons of health and safety the survey was only undertaken in areas accessible from 3.5 m ladders. Therefore, it was not possible to inspect PRFs above the first storey of the building, such as window lintel gaps and crevices below hanging tiles.

Based on the PRFs present, the survey area was assessed using the suitability classes detailed within Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), as detailed in Table 2.2. Trees with features present that are suitable to support roosting bats (high and moderate suitability) are discussed more fully in the report.

A summary of the trees within the survey area without suitable features to support roosting bats (low and negligible suitability) is provided within the report. Due to their negligible potential to support roosting bats, the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) recommend no further survey work is required for these tree classes.

Example of Potential Roost Features	
<b>Buildings</b>	
<u>Externally</u>	
<ul style="list-style-type: none"> <li>• Access through window panes, doors and walls;</li> <li>• behind peeling paintwork or lifted rendering;</li> <li>• behind hanging tiles;</li> <li>• weatherboarding;</li> <li>• eaves;</li> <li>• soffit boxes;</li> <li>• fascias;</li> <li>• lead flashing;</li> <li>• gaps under felt (even including those of flat roofs);</li> <li>• under tiles/slates;</li> <li>• existing bat and bird boxes; and,</li> <li>• any gaps in brickwork or stonework permitting access into access to cavity- or rubble-filled walls.</li> </ul>	
<u>Internally</u>	
<ul style="list-style-type: none"> <li>• behind wooden panelling;</li> <li>• in lintels above doors and windows;</li> <li>• behind window shutters and curtains;</li> <li>• behind pictures, posters, furniture, peeling paintwork;</li> <li>• peeling wallpaper, lifted plaster and boarded-up windows;</li> <li>• inside cupboards and in chimneys accessible from fireplaces.</li> <li>• within attic voids:</li> <li>• the top of gable end or dividing walls;</li> <li>• the top of chimney breasts;</li> <li>• ridge and hip beams and other roof beams;</li> <li>• mortise and tenon joints;</li> <li>• all beams (free-hanging bats);</li> <li>• the junction of roof timbers, especially where ridge and hip beams meet;</li> <li>• behind purlins;</li> <li>• between tiles and the roof lining; and,</li> <li>• under flat felt roofs.</li> </ul>	
<b>Trees</b>	
<ul style="list-style-type: none"> <li>• Bat, bird and dormouse boxes on trees;</li> <li>• Cankers (caused by localized bark death) in which cavities have developed;</li> <li>• Compression forks with included bark, forming potential cavities;</li> <li>• Cracks/splits in stems or branches (both vertical and horizontal);</li> <li>• Crossing stems or branches with suitable space between for roosting;</li> <li>• Ivy stems with diameters in excess of 50 mm with suitable roosting space behind (or where a roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk);</li> <li>• Man-made holes (e.g. cavities that have developed from flush cuts);</li> <li>• Natural holes (e.g. knot holes) arising from naturally shed branches, or cavities created by branches tearing out from parent stems;</li> <li>• Other hollows or cavities, including rot holes and butt rots;</li> <li>• Partially detached or loose, platy bark;</li> <li>• Woodpecker holes; or,</li> <li>• Other features that offer a place of shelter.</li> </ul>	

**Table 2.1: Potential Roost Features (Adapted from Collins 2016 and BSI 2015)**

Suitability	Description
<b>High</b>	<p>A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.</p> <p>A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.</p>
<b>Moderate</b>	<p>A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).</p> <p>A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).</p>
<b>Low</b>	<p>A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).</p> <p>A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.</p>
<b>Negligible</b>	Negligible habitat features on site likely to be used by roosting bats.

**Table 2.2: Classification of Buildings and Trees with Bat Potential (Adapted from Collins, 2016)**



### 3. DESK STUDY

#### 3.1 STATUTORY NATURE CONSERVATION SITES

The site is not located within 10 km of any statutory nature conservation sites designated for the presence of bats.

#### 3.2 SPECIES RECORDS

The data search was carried out on 12<sup>th</sup> February 2020 by Greenspace Information for Greater London CIC (GiGL). Records of bat species within a 1 km radius of the survey area provided by the consultee are summarised in Table 3.1. It should be noted that the absence of records should not be taken as confirmation that a species is absent from the search area.

Species	No. of Records	Most Recent Record	Proximity of Nearest Record to Study Area	Species of Principal Importance?	Legislation
Common pipistrelle <i>Pipistrellus pipistrellus</i>	2	2018	600 m south	-	ECH 4, WCA 5, WCA 6, Local
Pipistrelle <i>Pipistrellus</i> sp.	3	2017	970 m north-east	#	ECH 4, WCA 5, WCA 6, Local
<p><b>Key:</b> #: Dependent on species.</p> <p>ECH 2: Annex II of the European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora. Animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation.</p> <p>ECH 4: Annex IV of the European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora. Animal and plant species of community interest in need of strict protection.</p> <p>WCA 5: Schedule 5 of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds).</p> <p>WCA 6: Schedule 6 of Wildlife and Countryside Act 1981 (as amended). Animals which may not be killed or taken by certain methods.</p> <p>Species of Principal Importance: Species of Principal Importance for Nature Conservation in England.</p>					

**Table 3.1: Bat Species Records Within 1 km of Survey Area**

## 4. SURVEY RESULTS

### 4.1 INTRODUCTION

The Preliminary Bat Roost Assessment was conducted on 18<sup>th</sup> February 2020 by Harry Stone MSc (Ecological Project Officer).

Weather conditions were recorded and are presented in Table 4.1.

Parameter	Conditions
Temperature (°C)	11
Cloud Cover (%)	50
Precipitation	F3
Wind Speed (Beaufort)	Dry

**Table 4.1: Weather Conditions During the Preliminary Bat Roost Assessment**

### 4.2 CONSTRAINTS

For safety reasons it was not possible to access the flat felt roof, nor inspect features such as hanging tiles and lifted lead flashing associated with the roof. Gaps associated with window lintels were similarly not fully inspected due to height issues and tenant privacy issues.

### 4.3 SURVEY RESULTS – FRANCIS GARDNER HOUSE

#### *External Assessment*

The site was dominated by a large four-storey block of apartments, which are understood to have been constructed in the 1950s and were generally in a good state of repair (Plate 4.1). The building had a basement which had been converted into a home cinema, and two internal courtyards, the basement floors of which had been converted into glass conservatories (Plate 4.2). A basement-level glass conservatory extension had also been built on the west-facing aspect of the building.



**Plate 4.1: East-facing Aspect**



**Plate 4.2: Internal Courtyard**

The building had a flat felt roof. Hanging tiles were present in sections of the upper areas of the walls closest to the roof, particularly around the internal courtyard sections. Gaps were recorded beneath some of these lifted tiles (Plate 4.3). Lifted lead flashing was also recorded in sections of the roof near to the hanging tiles, such as where the hanging tiles met the roof. Above many windows on the west-facing aspect of the building, there were gaps between the window frames and the brick lintels (Plate 4.4). It was not possible to fully inspect these gaps but they appeared to lead to crevices and potentially on to cavities within the wall.



**Plate 4.3: Gaps under Hanging Tiles and Lifted Lead Flashing, Viewed from Internal Courtyard**



**Plate 4.4: Gap between Window Frame and Brick Lintel**

Dormer windows were present throughout the top storeys of the building. These windows appeared to be single glazed and set in wooden frames, with no gaps associated with lead flashing. The building had a mix of brick/concrete soffit and wooden fascia boarding, which appeared flush with no gaps or holes recorded. On the west-facing aspect of the building, brickwork gaps were recorded around pipework (Plate 4.5). The east-facing aspect had multiple ventilation bricks, approximately one for every storey of the building (Plate 4.6). The ground-level ventilation brick was inspected and no evidence of roosting bats was recorded. It was not possible to inspect the other ventilation bricks due to their height.



**Plate 4.5: Gaps in brickwork**



**Plate 4.6: Ventilation brick**

The building had no vegetation growth such as ivy,.

No evidence of bats, such as droppings, urine staining, feeding remains or scratch marks, was recorded during the internal and external inspection of the building. However most potential roosting features associated with the roof and external walls could not be closely inspected due to their height.

#### *Internal Assessment*

No loft spaces, or other internal areas suitable for bats to roost were present.

#### 4.4 SURVEY RESULTS – TREES

Towards the northeast site boundary was a mature Portuguese laurel *Prunus lusitanica*, approximately 12 m tall. This tree was inspected from ground level, and no potential roosting features such as knotholes and other crevices were recorded.



Plate 4.7: Portuguese Laurel

#### 4.5 SITE AND SURROUNDING HABITATS

Foraging habitat on site was limited to the mature trees, small patches of introduced shrub and ivy growing on the western boundary wall which were considered to be of what value for foraging bats? I can't check out where the site is to see if it has much connectivity, but doesn't look to be much on the site. The site was otherwise dominated by hardstanding and building.

Habitats within 1 km of the site suitable for bats included residential houses and gardens, cemeteries, church grounds, public parks and railway lines with forested and vegetated banks. The site was moderately connected to adjoining residential gardens, which in turn were moderately connected to foraging habitats such as cemeteries and commuting corridors such as railways lines.

Street lighting and the traffic associated with busy main roads reduce the suitability of the surrounding landscape for bats, and heavily illuminated areas such as Kilburn High Road may act as barriers to commuting bats. Nonetheless, given the recent desk study records and the relative tolerance of some bat species to urban lighting (Miles *et al*, 2018) it is considered likely that bats are roosting within the surrounding landscape and potentially on site.



## **5. DISCUSSION AND CONCLUSIONS**

### **5.1 SUMMARY OF PROPOSALS**

This assessment is required to inform a planning application associated with the demolition of the current apartment block and construction of a new student accommodation building. All vegetation on site is to be cleared and replaced with new planting. It is understood that the Portuguese laurel tree will be removed and three new trees will be planted. Three lighting columns are also to be constructed in this area.

### **5.2 ASSESSMENT OF BUILDINGS**

Francis Gardner Apartments was assessed as having high potential to support roosting bats due to a variety of features including:

- Gaps under hanging tiles in the courtyard area of the roof;
- Lifted lead flashing in the courtyard area of the roof;
- Gaps between window frames and brick lintels on the west-facing aspect;
- Gaps in brickwork on the west-facing aspect; and,
- Ventilation bricks on the east-facing aspect.

These potential roosting features may be utilised by crevice-dwelling bats such as pipistrelles, which are known to be locally present.

No evidence of bats, such as droppings or foraging remains, was recorded during the survey. However due to the height of the features listed above, it was not feasible to fully inspect them for evidence. Furthermore, it was not possible to fully inspect these features to ascertain their suitability to support roosting bats – for example lifted lead flashing may lead to concealed holes or crevice features not detectable with binoculars. Bats may therefore be using these features to roost within.

### **5.3 ASSESSMENT OF TREES**

The mature trees on site were assessed as having negligible potential to support roosting bats due to an absence of features such as knotholes and other such crevices.

### **5.4 POTENTIAL IMPACTS ON BATS**

The demolition of Francis Gardner Apartments risks directly harming bats and destroying bat roosts.

The soft landscaping plans appear to provide a net increase in plant abundance on site. However, the value of the proposed new trees, shrubs and climbing plants as foraging habitat for bats will be determined by the choice of plant species.

## 6. RECOMMENDATIONS

All recommendations provided in this section are based on Middlemarch Environmental Ltd's current understanding of the site proposals, correct at the time the report was compiled. Should the proposals alter, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate.

### R1 Francis Gardner Apartments

Francis Gardner Apartments, the large building dominating the site, has been identified as having high potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for structures with high bat roosting potential at least three dusk emergence and/or dawn re-entry surveys be undertaken during the bat emergence/re-entry survey season to determine the presence/absence of roosting bats within the structure. The bat emergence/re-entry survey season extends from May to September. At least two of the surveys should be undertaken during the peak season for emergence/re-entry surveys between May and August and one of the three surveys should be a dawn re-entry survey. If a roost is discovered during these surveys, a Natural England licence application may be required.

### R2 Trees

The three mature trees on site were considered to have negligible potential for roosting bats. The survey data obtained for the site is valid for 12 months from the survey date. If proposed site works have not commenced within this timeframe it will be essential to update the survey effort to establish if the trees have developed features that could be used by roosting bats in the interim. In the unlikely event that a bat is found during works to the trees all works must immediately cease and a suitably qualified ecologist should be contacted.

### R3 Lighting

Bats are likely to use trees for foraging and commuting. Therefore, in line with paragraph 180 of the National Planning Policy Framework, the development should aim to limit the impact of light pollution on bats through the careful use of lighting in critical areas only and at a low level with minimum spillage. Any lighting, either temporary or permanent, along the site boundaries (especially along the east and west-facing aspects) should be kept to a minimum and directed away from the boundary features to maintain dark areas and corridors. A lighting strategy should be designed and implemented on site to avoid impacting bat usage of the site and wider area. The strategy should be designed in accordance with the principles of 'Landscape and urban design for bats and biodiversity' and 'Bats and artificial lighting in the UK' as published by the Bat Conservation Trust (Gunnell *et al*, 2012 and Miles *et al*, 2018 respectively). Materials used under lights, such as floor surfaces, should be materials that have a minimum reflective quality to prevent light reflecting upwards into the sky. This will ensure that bats using the site and surrounding area to roost/forage/commute are not affected by illumination.

### R4 Habitat Enhancement

In line with the National Planning Policy Framework, the development should aim to enhance the site for bats. Trees, shrubs and herbs which attract night flying insects is encouraged as this will be of value to foraging bats. Examples include: hawthorn *Crataegus monogyna*, ash *Fraxinus excelsior*, willow *Salix spp.*, wild carrot *Daucus carota*, cowslip *Primula veris*, valerian *Valeriana spp.*, honeysuckle *Lonicera periclymenum* and fleabane *Pulicaria dysenterica*.

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## APPENDIX 1

### LEGISLATION

Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations 2017). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that bats, and the places they use for shelter or protection, are capable of being a material consideration in the planning process.

Regulation 41 of the Habitats Regulations 2017, states that a person commits an offence if they:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats; or
- damage or destroy a bat roost (breeding site or resting place).

Disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong.

It is an offence under the Habitats Regulations 2017 for any person to have in his possession or control, to transport, to sell or exchange or to offer for sale, any live or dead bats, part of a bat or anything derived from bats, which has been unlawfully taken from the wild.

Whilst broadly similar to the above legislation, the WCA 1981 (as amended) differs in the following ways:

- Section 9(1) of the WCA makes it an offence to *intentionally* kill, injure or take any protected species.
- Section 9(4)(a) of the WCA makes it an offence to *intentionally or recklessly\** damage or destroy, or *obstruct access to*, any structure or place which a protected species uses for shelter or protection.
- Section 9(4)(b) of the WCA makes it an offence to *intentionally or recklessly\** disturb any protected species *while it is occupying a structure or place which it uses for shelter or protection*.

\*Reckless offences were added by the Countryside and Rights of Way (CROW) Act 2000.

As bats re-use the same roosts (breeding site or resting place) after periods of vacancy, legal opinion is that roosts are protected whether or not bats are present.

For England:

The following bat species are Species of Principal Importance for Nature Conservation in England: barbastelle bat *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros*.

The reader should refer to the original legislation for the definitive interpretation.



## ECOLOGY

At present, 18 species of bats are known to live within the United Kingdom, of which 17 species are confirmed as breeding. All UK bat species are classed as insectivorous, feeding on a variety of invertebrates including midges, mosquitoes, lacewings, moths, beetles and small spiders.

Bats will roost within a variety of different roosting locations, included houses, farm buildings, churches, bridges, walls, trees, culverts, caves and tunnels. At different times of the year the bats roosting requirements alter and they can have different roosting locations for maternity roosts, mating roosts and hibernation roosts. Certain bat species will also change roosts throughout the bat activity season with the bat colony using the site to roost for a few days, abandoning the roost and then returning a few days or weeks later. This change can be for a variety of reasons including climatic conditions and prey availability. Bats are known live for several years and if the climatic conditions are unfavourable at a particular roost, they may abandon it for a number of years, before returning when conditions change. Due to the matriarchal nature of bat colonies, the locations of these roosts can be passed down through the generations.

Bats usually start to come out of hibernation in March and early April (weather dependent), when they start to forage and replenish the body weight lost during the hibernation period. The female bats then start to congregate together in maternity roosts prior to giving birth and a single baby is born in June or July. The female then works hard to feed her young so that they can become independent and of a sufficient weight to survive the winter before the weather gets too cold and invertebrate activity reduces. Males generally live solitary lives, or in small groups with other males, although in some species the males can be found living with the females all year. The mating season begins in the autumn. During the winter bats hibernate in safe locations which provide relatively constant conditions, although they may venture outside to forage on warmer winter nights.