

ECOLOGY AND PROTECTED SPECIES SURVEY

LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

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The findings of these surveys will remain valid for a period of 12 months.

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ECOLOGY AND PROTECTED SPECIES SURVEY

LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

1 INTRODUCTION

Scarborough Nixon Associates Ltd has been commissioned by Kit Longstaff to undertake an ecology and protected species survey of an area of land associated with Park Farm, Bourne, Lincolnshire.

The site was surveyed on 17th August and 8th September 2016 by Celia Commowick, Zac Hinchcliffe, Gemma Watkinson, Helen Scarborough and Ian Nixon.

During the initial appraisal of the site the protected species considered likely to occur on site were identified. These were:

- Great crested newts
- Common reptile species
- Bats (in the mature trees and foraging/commuting)
- Badger
- Common bird species

Certain protected species were scoped out of the survey due to lack of suitable habitat; in particular it was considered that white-clawed crayfish *Austropotamobius pallipes*, common dormouse *Muscardinus avellanarius* and otter *Lutra lutra* were highly unlikely to occur on the site due to lack of suitable habitat.

Water voles were scoped out of the survey as all drains bounding the site were dry at the time of survey.

A note was made of any species which are local or national Biodiversity Action Plan (BAP) species/species of principal importance.

This report details the methods used, describes the species found on the site, discusses the results and makes recommendations for further work. English names of higher plants are used throughout the text and are those used by Stace (2010). A full plant list for the site is presented as Appendix 1.

2 METHODS

2.1 Data search

Lincolnshire Environmental Records Centre (LERC) was consulted and commissioned on the 16th August 2016 to search for sites with statutory and non-statutory designation and records of protected species within 2km of the proposed development site.

2.2 Great crested newts

All habitats on site were assessed for their potential to support amphibians as either breeding or terrestrial habitat. Where access allowed, habitats on adjacent land were also assessed. All potential refugia/habitat piles on site which were considered suitable for use as shelter for amphibians were identified.

2.3 Common reptiles species

The site was assessed for its potential to support the common reptile species. The site was considered to have some limited suitability for use by grass snake *Natrix natrix* due to the presence of rough grassland and hedgerows.

2.4 Bats

2.4.1 Daylight assessment

All trees on the site were assessed for their potential to support roosting bats. The mature trees were visually checked with the assistance of binoculars for features such as woodpecker holes, broken limbs, snag ends and rot holes, dense ivy and flaking bark. The site and adjacent areas were also assessed for potential foraging and commuting habitats for bats. With the exception of a field shelter, there are no buildings on the site.

2.4.2 Remote detector survey

Two Anabat SD1 detectors were positioned on trees within the site between the 8th September and 14th September 2016.

The Anabat SD1 detector is a frequency division (FD) detector which provides broadband frequency down-conversion, which generates audio signals with frequencies directly related to those the bat is producing. The nature of the data generated by Anabat detectors is suited to analysis using Zero-Crossings Analysis (ZCA), which provides very clear depictions of the call details. The calls are recorded onto a compact flash card and the resultant data can be analysed using Analook software. Although it can be used as an active monitoring system (i.e.

handheld /mobile device) it is mainly used as a passive detector, in which the detector is used as a logging device to monitor bat activity in the absence of human intervention. It enables data to be collected from a single spot without the requirement for a surveyor to stay in that particular area all evening.

The Anabats were positioned away from the ground and at least 1-2m from solid objects. It was programmed to activate 30 minutes before sunset and to switch off 30 minutes after sunrise. The recorded calls were then analysed using AnalookW.

Detector A03598 was positioned at TF08377 20044 close to the field shelter and detector A03961 at TF08279 20196 on a tree in the hedge line close to Bourne Wood. These positions are shown on Figure 1.

2.5 Badger

The site was searched for signs of use by badger *Meles meles* including setts, latrines, dung pits, pathways, hairs, footprints, snuffle holes and scratch marks on trees.

2.6 Common bird species

The survey site was searched for signs of use by nesting birds, typically old and active nests and concentrations of faecal deposits associated with a breeding site. All bird species recorded on site were noted.

It was considered unlikely that Schedule 1 birds would nest on the site. There are no previous records of specially protected bird species nesting on the site.

2.7 Habitats and plant species

An extended ecological assessment survey was undertaken, not only to identify the habitats present on the survey site, but also to include more detailed information on hedgerows and plant species, and undertake a further appraisal of the area as habitat for legally protected species. Plant species on site were assessed against the Vascular Plant Red Data List for Great Britain, and the site was assessed against the Local Wildlife Site (LWS) criteria for Lincolnshire.

Due to the proximity of Bourne Woods (located to the north of the survey area), the potential impacts of development on adjacent habitats were also assessed.

3 SITE ASSESSMENT

3.1 Location and grid reference

The survey site comprises 4 semi-improved, grazed grass fields, with mature hedgerows and trees, areas of tall ruderals and dry boundary drains, located to the west of the town of Bourne – National Grid reference TF082200.

The habitats on site are described in detail below and representative photographs are included in the text. An aerial view of the site location is provided as Photograph 1 and a habitat map is given in Figure 1.



Photograph 1: Aerial view of the survey area

3.2 Grazed semi-improved grassland

The survey site comprises fields, currently grazed by cattle, with a short sward semi-improved grassland, dominated by perennial rye-grass, crested dog's-tail, dandelion, rough meadow-grass, creeping buttercup, ribwort plantain and cock's-foot, with some fescue species, dock species, creeping thistle, bent species, common sorrel, meadow foxtail, soft brome, wall barley, self-heal, meadow crane's-bill, Timothy grass, common mouse-ear, meadow buttercup, creeping cinquefoil, germander speedwell and ground ivy.

At the edges of the fields and in patches within the fields (particularly the central field) there

are stands of creeping thistle, dock, common nettle, cleavers, ragwort and spear thistle. Dense patches of bramble scrub occur around the edges of the western field.

There is a marshy area towards the south side of the eastern field. Soft rush and tufted hair grass were recorded in this area.



Photograph 2: View of the fields



Photograph 3: Further view of the fields



Photograph 4: Further view of the fields



Photograph 5: Further view of the fields



Photograph 6: Marshy area



Photograph 7: Further view of the marshy area

3.3 Internal boundary features

Internally, the fields are separated by fences with hedgerows.

The central field is separated from the eastern field by a tall outgrown hedgerow associated with a fence. The species recorded in this hedgerow are hawthorn, ash, blackthorn and elder over a ground flora of common nettle, cow parsley and ground elder. Dense thickets of blackthorn scrub have established on the eastern side of this hedgerow.

Within the eastern field, there is a remnant hedgerow bisecting the field. It is dominated by hawthorn with oak saplings, dog-rose and bramble.

The central field is separated from the northern field by a fence with a gappy hedgerow and mature trees. The gappy hedgerow comprises hawthorn, blackthorn, rose species, bramble and elder. The mature trees include pedunculate oak and apple.

The central field is separated from the western field by a public footpath which is flanked on both sides by an outgrown hedgerow with trees. The species recorded along these hedgerows were hawthorn, blackthorn, elder, ash, pedunculate oak, crab apple, bramble, ivy and black bryony over willowherb species, cleavers, ground-ivy, and false oat-grass. The footpath linking the road and Bourne Woods comprises rough grassland and herbs including false oat-grass, Yorkshire-fog, dandelion, cleavers, cow parsley, willowherb species and ground-ivy.

A covered reservoir occurs adjacent to the footpath on the western side – it is covered by dense hawthorn, blackthorn and bramble scrub with a ground flora dominated by ivy.



Photograph 8: Eastern boundary of the northern field



Photograph 9: Internal boundary in the eastern field



**Photograph 10: Internal hedgerow
between the eastern and central field**



**Photograph 11: Hedgerow and dense
scrub between the eastern field and Park
Farm yard**

3.4 North-east corner

In the north-east corner of the site there is a small wet depression to the south of the northern boundary dry ditch. This depression was heavily cattle poached leaving only small puddles. The area is heavily shaded with willow, ash, dog-rose, ivy, blackthorn, bramble and hawthorn on all sides. Some soft rush, floating sweet-grass and duckweed was noted, however these were the only species associated particularly with aquatic habitats, with the rest of the area dominated by creeping-bent, dock species, creeping buttercup, redshank and rosebay willowherb.



**Photograph 12: The wettest part of the
waterbody**



Photograph 13: The waterbody



Photograph 14: The waterbody, showing the shaded nature



Photograph 15: Further view of the waterbody

3.5 Field shelter

A field shelter occurs in the eastern field. It is the only building on the site. It is constructed of a timber frame covered with corrugated metal sheeting over timber boarding on the north, east and west elevations. The southern elevation is open with the eaves supported by timber poles. The mono-pitch roof is covered by corrugated metal sheeting with no lining.

The fabric of this building is very unsuitable for long term use by roosting bats.



Photograph 16: The field shelter



Photograph 17: Internal view of the field shelter

3.6 Boundary features and surrounding habitats

The eastern boundary is formed by a variety of garden fences, hedgerows and trees. The species recorded include bramble, leylandii, butterfly bush, garden privet, sycamore and ash. The land to the east comprises residential dwellings and gardens.

The northern boundary is formed by a dry ditch and associated fence line. There are hedgerows towards the eastern and western ends of this boundary – they are dominated by hawthorn and blackthorn. Beyond this is broad-leaved woodland (Bourne Woods). The dry ditch is heavily shaded and supports species such as ivy, bramble, dog's mercury, wood false-brome, bearded couch, wood avens, herb-Robert, hedge woundwort, common nettle, dock, ground-ivy and cow parsley. The woodland adjacent to the northern boundary (Bourne Woods) supports oak species, ash, field maple, sycamore, hawthorn, elder, hazel, rowan, elm, blackthorn, elder and bramble. Many trees are ivy covered.



Photograph 18: Dry ditch



Photograph 19: Boundary hedgerow



Photograph 20: Dry ditch on northern boundary



Photograph 21: Southern boundary hedgerow

The western boundary is formed by an outgrown hedgerow over a dry depression. The species comprise hawthorn, blackthorn, elder, dog-rose, dogwood, rowan and ash over bramble, ivy, great willowherb, creeping thistle, common nettle, dock and cleavers. The adjacent habitat includes pony paddocks, allotments and rough grassland. There is a pond located in the adjacent habitat to the north-west corner of the survey area. It was not possible to see the pond from the survey site. The aerial photograph suggests that it is very shaded.

In the south-west corner the boundary features are formed by garden hedgerows and fencing.

There is abundant bramble scrub on this area. Residential dwellings occur adjacent to the survey area.

The majority of the southern boundary is formed by a managed hedgerow over a dry depression. The hedgerow is species rich and includes hawthorn, elm, ash, blackthorn, elder, privet and dog-rose over ivy, hedge bindweed, common nettle, herb-Robert and dock species. A small section of the southern boundary is formed by fences and trees around the Park Farm buildings – the tree species recorded include apple, ash and cherry trees.

4 RESULTS

4.1 Data search

The results from Lincolnshire Environmental Records Centre (LERC) show that there are 4 non-statutory sites within 2km of the site;

- Toft tunnel (Local Wildlife Site and Lincolnshire Wildlife Trust Reserve)
- Auster Wood (LWS)
- Bourne Wildlife Park SNCI (Site of Nature Conservation Importance)
- Bourne Wood SNCI

The site is within 2km of the following statutory sites;

- Math and Elsea Wood (Site of Special Scientific Interest)

With the exception of Bourne Wood (discussed in later sections of the report), the proposed development is considered unlikely to have a detrimental effect on these sites and habitats due to the distances involved and the presence of built up areas between them.

There are many records given for protected species within 2km of the proposed development site. Badgers have been recorded in the area as recently as 2014. Several species of bat have been recorded in the area with the most recent record dating from 2014, the species records include noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, Daubenton's *Myotis daubentonii*, natterer's bat *Myotis nattereri*, Leisler's bat *Nyctalus leisleri*, barbastelle *Barbastella barbastellus*, whiskered/Brandt's bat *Myotis mystacinus/brandti* and common pipistrelle *Pipistrellus pipistrellus*.

There are records of grass snake *Natrix natrix* and common lizard *Zootoca vivipara*, although

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these date from 1979 and 1977 respectively. There are no records for great crested newt *Triturus cristatus*.

Several Schedule 1 bird species have been recorded in the area. Although many of the Schedule 1 birds listed in the data search may breed in Lincolnshire, the survey site is not deemed suitable for nesting by any of these Schedule 1 species.

The full report for the data search is given in Appendix 2.

4.2 Great crested newt

There are no suitable ponds for this species on the site. The ephemeral pond in the north-east corner is virtually dry and shaded. There is a pond immediately adjacent to the site (north-west corner), however it was not possible to inspect this pond closely. The aerial photographs suggest that it is very shaded. Although there are areas of suitable terrestrial habitat on the site (hedgerows and scrub) and there are ponds in close proximity, it is considered that overall there is limited potential for great crested newts to occur on the site. There are no records of great crested newts in close proximity to the site, the majority of the survey area is disturbed cattle grazed grassland and the terrestrial habitat that would be offered by the adjacent Bourne Wood is far superior to any terrestrial habitats on the survey area. Overall it is considered that the potential for great crested newts to occur on the site is very low. As a precaution, some measures are provided in order to ensure that great crested newts (and common amphibians) are protected during any future development. These measures are provided in later sections of the report.

4.3 Common reptile species

No reptiles were observed during the walkover survey; there are records of common reptiles in close proximity to the site (common lizard and grass snake) however these records date from 1977 and 1979 respectively. The site was considered to have some limited potential for use by reptiles, however the disturbed nature of cattle grazed grassland would be a limiting factor. There are some open areas within the site for basking and some refuge areas under the hedgerows, however Bourne Wood to the north of the site would offer better habitat for common reptiles.

4.4 Bats

There are several trees within the site which have potential for use by bats. These are marked on Figure 1. The features with potential include dense ivy cover, small rot holes and

dead/broken branches.



Photograph 22: Tree with features with the potential to support roosting bats



Photograph 23: Example of a feature with potential to support roosting bats

It is very likely that bats will commute and forage over the site, as the outgrown hedgerows and cattle grazed grassland all have good potential for use by commuting/foraging bats. The data search indicates that ten species of bat have been recorded in the area – to set that in context, there are only twelve species recorded in Lincolnshire.

The results of the remote detector surveys confirm this; At least seven species were recorded although the *Myotis* group were not separated to species as this is difficult given the similarity in their call structure.

Over the seven nights of the survey there were a total of 1599 recorded bat call sequences. Those from A03598 closer to the farm buildings accounted for 998 bat call sequences with the majority of them being of *Myotis* species 68.8%, common pipistrelle amounting to 22.4%, soprano pipistrelle 2.4%, noctule 5.7%, barbastelle 0.3% and brown long-eared 0.4%.

In comparison those recorded closer to Bourne Wood from A03598 comprised 601 bat call sequences with the majority of them being of common pipistrelle 46.9%, whilst *Myotis* species amounted to 26.8%, soprano pipistrelle 5.7%, noctule 16.0%, Leisler's 3.5%, barbastelle 0.3% and brown long-eared 0.8%.

Of particular interest is the number of bat call sequences of *Myotis* species noted at the detector near the field shelter as this is far higher than would be expected, but it is likely to represent a particularly good feeding area rather than a potential roost site. Also of interest is the absence of Leisler's at the southern detector which may be the result of a more cluttered environment. The results of the Anabat survey are provided graphically in Appendix 3.

4.5 Badger

Several mammal runs were noted through hedgerows and also into Bourne Woods. Snuffle holes likely to have been made by badgers were also noted.

An active badger sett was recorded on the south-east corner of the site between adjacent farm buildings and the hedgerow that separates the central and eastern field. At least three active holes were noted – although many disused holes (now occupied by rabbits and possibly foxes) were also recorded. A single latrine was recorded close to the active holes.



Photograph 24: Area between the adjacent farm buildings and the hedgerow



Photograph 25: Further view of the area

4.6 Common bird species

A number of common birds were seen on or flying over the site during the survey. These are listed below along with their current status as BAP species or Birds of Conservation Concern 4 (Eaton et al, 2015):

Table 1: Common bird species seen on site

English name	Scientific name	BAP	BoCC
kestrel	<i>Falco tinnunculus</i>		Amber
woodpigeon	<i>Columba palumbus</i>		Green
collared dove	<i>Streptopelia decaocto</i>		Green
green woodpecker	<i>Picus viridis</i>		Green
swallow	<i>Hirundo rustica</i>		Green
house martin	<i>Delichon urbicum</i>		Amber
pied wagtail	<i>Motacilla alba</i>		Green
wren	<i>Troglodytes troglodytes</i>		Green

English name	Scientific name	BAP	BoCC
dunnock	<i>Prunella modularis</i>	Y	Amber
robin	<i>Erithacus rubecula</i>		Green
blackbird	<i>Turdus merula</i>		Green
long-tailed tit	<i>Aegithalos caudatus</i>		Green
blue tit	<i>Cyanistes caeruleus</i>		Green
great tit	<i>Parus major</i>		Green
jay	<i>Garrulus glandarius</i>		Green
magpie	<i>Pica pica</i>		Green
jackdaw	<i>Corvus monedula</i>		Green
rook	<i>Corvus frugilegus</i>		Green
carrion crow	<i>Corvus corone</i>		Green
starling	<i>Sturnus vulgaris</i>	Y	Red
house sparrow	<i>Passer domesticus</i>	Y	Red
greenfinch	<i>Carduelis chloris</i>		Green
goldfinch	<i>Carduelis carduelis</i>		Green
bullfinch	<i>Pyrrhula pyrrhula</i>		Amber

The hedgerows (internal and boundary), trees and scrub all have very high potential for use by nesting birds. A woodpigeon was noted on a nest in the eastern boundary hedgerow.



Photograph 26: Woodpigeon on nest

4.7 Habitats and plant species

The habitats and plant species recorded on the site are common and widespread in the local area and in the country. The grassland would not make the required criteria to qualify as a Local Wildlife Site.

The habitats with some local importance for nature conservation are as follows:

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- Hedgerows and mature trees

The hedgerows along the southern boundary, meet the required standard (seven woody species within 30 metres) to qualify as 'important' under The Hedgerow Regulations 1997. Future development schemes should be designed in a way which incorporates these hedgerows into the masterplan.

Bourne Wood is a site of nature conservation interest and is an ancient semi-natural woodland. Development plans in close proximity to such sites can generate concerns relating to the following:

- Compacting the soil around tree roots
- Breaking up or destroying connections between woodland and other habitats
- Reducing the amount of semi-natural habitats next to woodland
- Changing the water table or drainage (more of a concern for wet woodland)
- Increasing the amount of pollution, including dust
- Increasing disturbance to wildlife from additional traffic and visitors
- Increasing light pollution
- Increasing damaging activities like fly tipping and the impact of domestic pets
- Changing the landscape character of the area

With appropriate design measures at an early stage of the process, these potential impacts can be mitigated for and designed out when a masterplan is developed. Potential mitigation measures are discussed in later sections of the report.

5 DISCUSSION AND RECOMMENDATIONS

5.1 Great crested newts

5.1.1 Legal protection

In England, Scotland and Wales, great crested newts are fully protected under the Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way (CROW) Act 2000. They are also protected under European legislation, being included on Schedule 2 of The Conservation of Habitats and Species Regulations 2010. Taken together, this legislation makes it illegal, inter alia to:

- Intentionally or recklessly kill, injure or capture a great crested newt

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- Damage or destroy habitat which a great crested newt uses for shelter or protection
- Deliberately disturb a great crested newt when it is occupying a place it uses for shelter and protection

These provisions apply to all life-stages of protected animals, and in the case of amphibians, to both their terrestrial and aquatic habitats.

5.1.2 Recommendations

For this site, given the very low likelihood that great crested newts are present, and the fact that only terrestrial habitat will be impacted, it is considered that any future development work can proceed without the risk of a breach in the legislation which protects great crested newts and their habitats. As a precaution, some measures are recommended in order to ensure best practice and legal compliance. Measures to enhance the site for amphibians are discussed in later sections.

Great Crested Newt Method Statement – Land at Park Farm, Bourne, Lincolnshire

1. All stored building materials on site will be kept on pallets to deter amphibians taking shelter underneath them.
2. All terrestrial habitats with potential for use by amphibians (i.e. the hedgerows and the rough grassland) will be hand searched for the presence of amphibians (and reptiles) ahead of any future development. This must occur in the active season (April to October).
3. All site operatives will stay vigilant for the presence of great crested newts when development work commences.
4. In the unlikely event that great crested newts are found at any point during future work, the works will be suspended and consideration will be given as to whether or not a Natural England licence is required.

5.2 Common reptiles

5.2.1 Legal protection

All four of the common species of native reptiles, that is common lizard, grass snake, slow worm and adder *Vipera berus*, are given partial protection under the Wildlife and Countryside Act (1981 and as amended) which prohibits the intentional killing, injury or taking of these species. There is no provision in the Act for licensing works which could give rise to an offence, but it does provide a defence where the otherwise unlawful act can be shown to be

the incidental result of an otherwise lawful activity and could not reasonably have been avoided. Permitted development or a development which has received planning permission is clearly a lawful activity but the law does require that a reasonable effort is made to avoid killing or injury of these animals during the implementation of this permission.

5.2.2 Recommendations

No reptiles were seen during the survey but it is considered that the site has some potential to support these species. The law requires that a reasonable effort must be made to ensure that animals are not killed or injured during the development works, and it is therefore recommended that as a precaution the site is searched to identify any reptiles which may be using the site, and any potential refuge areas to be destructively searched by hand ahead of works commencing. Precautionary working practices with respect to reptiles are given below.

Precautionary working practices for common reptile species – Land at Park Farm, Bourne, Lincolnshire

The aim of these precautionary working practices is to ensure there would be no threat of adverse disturbance, or risk of injury or killing, to any reptiles which may be present during the initial phases of the work at the above site.

1. The working area will have a precautionary walkover for reptile species prior to works commencing; this will involve the careful destruction of any potential refugia on site, and any areas of vegetation that are to be removed. Work will commence during the active season – i.e. from March through to October.
2. All site operatives will stay vigilant for the presence of reptiles during the works. A copy of the Method Statement will be retained by the contractor.
3. Any reptiles found will be carefully gathered up by hand and placed in a suitable holding receptacle for safe transportation away from the area of site clearance operations and released. This rescue method will also be extended to any common amphibian species found.

5.3 Bats

5.3.1 Legal protection

Studies have shown that populations of bat species in both Britain and continental Europe have seriously declined in recent times as the result of the reduction in habitats providing their insect food and the disturbance to, exclusion from, or total loss of their roosting and

hibernation sites. For this reason, in England, Scotland and Wales, all bats are strictly protected under the Wildlife and Countryside Act 1981 (and as amended); in England and Wales this legislation has been amended and strengthened by the Countryside and Rights of Way (CROW) Act 2000. Bats are also protected by European legislation; the EC Habitats Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 – often referred to as 'The Habitat Regs'. Taken together, all this legislation makes it an offence to:

- Deliberately capture (or take), injure or kill a bat
- Intentionally or recklessly disturb a group of bats where the disturbance is likely to significantly affect the ability of the animals to survive, breed, or nurture their young or likely to significantly affect the local distribution or abundance of the species whether in a roost or not.
- Damage or destroy the breeding or resting place of a bat
- Possess a bat (alive or dead) or any part of a bat
- Intentionally or recklessly obstruct access to a bat roost
- Sell (or offer for sale) or exchange bats (alive or dead) or parts of bats

A roost is defined as being 'any structure or place that is used for shelter or protection', and since bats regularly move roost site throughout the year, a roost retains such designation whether or not bats are present at the time.

5.3.2 Recommendations

There are several mature trees on the site with potential to support roosting bats; the locations of these trees are shown on Figure 1. Local bats are using the site for foraging and commuting. In order to ensure no detrimental impact to local bat populations the following measures are recommended. These measures should be designed into any future development scheme in order to mitigate for any adverse impacts on local bat populations.

Precautionary measures and enhancements for bats – Land at Park Farm, Bourne, Lincolnshire

- Ensure that dark unlit corridors are maintained around the site boundaries, allowing bats to pass through the site unhindered by artificial light. This will be particularly important on the northern boundary, to ensure that bats can continue to use the woodland edge for commuting and foraging. Any lighting on the edges of the site may require shields or adaptations to minimise light spill.
- The existing trees and hedgerows should be retained within the development where

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possible, and also remain unlit. Should it be necessary to carry out any work to manage or fell the mature trees with bat potential, then further survey work is to be carried out by experienced ecologists to determine their status for roosting bats.

- In order enhance the site for foraging bats, the landscaping scheme (including any future buffer zone) should be carefully planned to include night scented flowers in order to attract moths and other night flying insects (which will provide foraging opportunities for bats). Species should include evening primrose *Oenothera biennis*, sweet rocket *Hesperis matronalis*, honeysuckle species *Lonicera sp*, lavender *Lavendula sp*, white jasmine *Jasminum officinale*, sweetbriar *Rosa rubiginosa*, night-scented catchfly *Silene noctiflora*, night-scented stock *Matthiola longipetala* and soapwort *Saponaria officinalis*.
- Ensure that buffer zones along the northern edge of the site are designed to offer additional shelter and feeding opportunities for commuting/foraging bats.
- Provision of roost units for bats within any future development (see later sections)

5.4 Badger

5.4.1 Legal protection

Badgers and their setts are fully protected under the Protection of Badgers Act 1992, which amended and incorporated previous legislation. This Act makes it an offence, inter alia, to:

- Wilfully kill, injure or take, or attempt to kill, injure or capture a badger
- Interfere with a badger sett by doing any of the following things, intending to do any of these things or be reckless as to whether one's actions would have any of these consequences:
 - Damaging a badger sett or any part of it
 - Destroying a badger sett
 - Obstructing access to, or any entrance of, a badger sett
 - Disturbing a badger when it is occupying a badger sett

A badger sett is defined in the Act as any structure or place which displays signs indicating use by a badger. Although a sett may be empty at a certain time it may be used as part of a regular cycle throughout the year, and may therefore be considered to be in use. A sett, which can be shown to have been disused for at least a full year, is considered to fall outwith the Act.

5.4.2 Recommendations

An active sett was recorded on the site and evidence of badger activity was noted on the site. Any future work or development of the site will require a mitigation strategy in relation to badgers. Badgers are a mobile animal and prior to any development plans an update survey would be required in order to establish the status of the badger sett.

Outline mitigation measures for badgers at Park Farm, Bourne

1. Update the survey data and establish the status of the badger sett
2. Incorporate corridors into the masterplan to ensure connectivity between the badger sett and Bourne Woods to the north
3. Do not leave any trenches/excavations uncovered overnight.

5.5 Common bird species

5.5.1 Legal protection

All common wild birds are protected under The Wildlife and Countryside Act 1981 (and as amended). Under this legislation it is an offence to:

- Kill, injure or take any wild bird
- Take, damage or destroy the nest of any wild bird while it is in use or being built
- Take or destroy the egg of any wild bird

Certain rare breeding birds are listed on Schedule 1 of The Wildlife and Countryside Act 1981 (and as amended). Under this legislation they are afforded the same protection as common wild birds and are also protected against disturbance whilst building a nest or on or near a nest containing eggs/unfledged young.

5.5.2 Recommendations

The trees, hedgerows and scrub on site have high potential to be used for nesting by species of common bird.

Any site preparation/clearance work should commence outside the active nesting season which typically runs from March through to late August. If work commences during the bird breeding season, a search for nests should be carried out before they begin, and active nests

should be protected until the young fledge.

5.6 Habitats and plant species

The proximity to Bourne Woods is a potential ecological constraint. In order to mitigate for adverse impacts which may occur as a result of development on the site, the following measures will be required as part of any future masterplan.

- Putting up screening barriers to protect the woodland edge from dust and pollution
- Noise reduction measures
- Connecting woodland to any newly planted hedgerows or woodland plantings
- Leaving an appropriate buffer zone of semi-natural habitat between the development and the woodland (a minimum buffer should be at least 15 metres in accordance with Natural England standing advice)
- Ensuring that this buffer zone is planted and managed in a way that enhances the biodiversity of the site
- Incorporating mature trees within open space or boundaries
- Planting native, locally appropriate species within any landscaping scheme

With appropriate buffering and protection measures with regard to the woodland, retention of existing hedgerows as far as possible and creation of new habitats along the northern side of the site (as part of the buffer zone), any adverse impacts in terms of habitats can be adequately mitigated.

5.7 Recommendations for ecological enhancement

In addition to the legislation which is in place to safeguard protected species, there is also legislation and policy which imposes duties to take account of statutorily protected species and also to undertake action to prevent loss of biodiversity and species/habitats which have been identified as priorities in the UK. In England and Wales, the Natural Environment and Rural Communities (NERC) Act 2006, imposes a duty on all public bodies (including Local Authorities and statutory bodies) to conserve biodiversity – including restoring and enhancing a population or habitat. In addition, government planning policy guidance throughout the UK, provided in the National Planning Policy Framework and OPDM Circular 06/2005, requires local planning authorities to take account of protected species issues prior to determination of planning applications.

Certain areas of the site (particularly the northern edge as part of a buffer zone) could be enhanced to increase the ecological value of the site. In order to enhance biodiversity and provide some 'ecological gain' on site and fulfil the Local Planning Authorities obligations

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under the NERC Act 2006, the following measures are recommended;

- Removal of the existing hedgerows on the site should be avoided where possible, and kept to a minimum if unavoidable. Any removal of hedgerows should be compensated for by re-planting at least the amount that is lost using native species such as blackthorn *Prunus spinosa*, common hawthorn *Crataegus monogyna*, hazel *Corylus avellana*, field maple *Acer campestre*, midland hawthorn *Crataegus laevigata*, wild cherry *Prunus avium* and bird cherry *Prunus padus*. These hedgerows should be appropriately managed with traditional techniques where possible to maximise their benefit for wildlife using hedge-laying rather than flailing or trimming. If trimming is necessary, ensure it is carried out every 2 to 3 years and in sections so that not all parts of the hedgerow are cut at the same time.
- The north-east corner could be enhanced as a positive nature conservation measure – this habitat would be linked with Bourne Woods and form part of a northern edge buffer zone. Wetland creation would be the most appropriate habitat enhancement. Information relating to appropriate pond design is provided as Appendix 4.
- In order to provide suitable habitats on site to encourage invertebrates, any proposed amenity grassland areas within the development should be seeded with an appropriate wildflower mix to include red clover. It is recommended that these areas are cut once a year, in late summer/early autumn and the arisings removed after 7 days to enable the wildflowers to flourish. Wildflower matting could also be incorporated into the landscaped areas to increase the nectar sources for invertebrate species, including declining pollinators. Further information on wildflower matting and the benefits of its inclusion within developments can be found in Appendix 5 and at <http://www.meadowmat.com/>
- As a positive conservation measure, bat roost units or bat boxes should be installed on the site as part of the development. Bat boxes can be positioned on the retained mature trees or within the new dwellings to be built on the site, with bat brick features incorporated into the design. Bat boxes should be placed on the northern and southern elevations of the buildings and trees. Examples of bat roost units and bat boxes which could be used are given in Appendix 6. Avoid placing external lighting that illuminates the newly installed bat roost units.
- Consideration should also be given to the provision of nest boxes of various designs within the development, which would be a good conservation measure, and replace the potential nesting habitats that will be lost through the development of the site. This

could include those suitable for sparrow species erected on the external fabric of the new buildings. Nesting features for swifts can also be incorporated into the design. Details of nest boxes suitable for use by a range of common bird species can be obtained from Wildcare, Eastgate House, Moreton Road, Longborough, Gloucestershire GL56 0QJ (01451 833181) or at www.wildcareshop.com.

- It is considered likely that hedgehogs occur on site and within the adjacent habitats. Hedgehog populations have declined by a third in the last 10 years and are a Biodiversity Action Plan (BAP) species. Gardens and green spaces in urban areas can support high densities of hedgehogs, however habitat fragmentation is thought to be a significant contributor to their decline. To maintain commuting routes for hedgehogs between the newly created gardens and the surrounding areas, any fences that are installed should have a small hole in the bottom, 13cmx13cm, or be raised off the ground. Ideally, hedges should be used instead of fencing. Hedgehog mitigation measures are provided in Appendix 7.
- The northern buffer zone could include native broad leaved woodland planting, wildflower banks and wetlands (see above). The final details of the design and management of such a buffer zone would need developing further should future plans include development of the area.

6 SUMMARY

There are no major ecological constraints associated with the proposed development of the site in terms of statutorily protected species.

Some further precautionary measures and ecological enhancements are required in order to ensure legal compliance and no net loss to biodiversity. These are as follows:

- Appropriate timing with regards to nesting birds
- Further survey work and mitigation/safeguarding measures relating to badgers
- Best practice in relation to bats (lighting)
- Best practice in relation to hedgehogs within the development
- Provision of bird boxes
- Provision of bat roosting units
- Use of native species and wildflowers in the landscaping scheme/buffer zone
- Appropriate enhancement measures with regard to the north-east ephemeral pond
- Appropriate buffer zone and protective measures relating to the northern boundary

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and the proximity to Bourne Woods

The proximity to Bourne Woods is a potential ecological constraint. With appropriate protective measures, an appropriate buffer zone (with habitat creation), this could be mitigated. With appropriate design of the buffer zone and the enhancement measures listed above, potential impacts on habitats could be mitigated.

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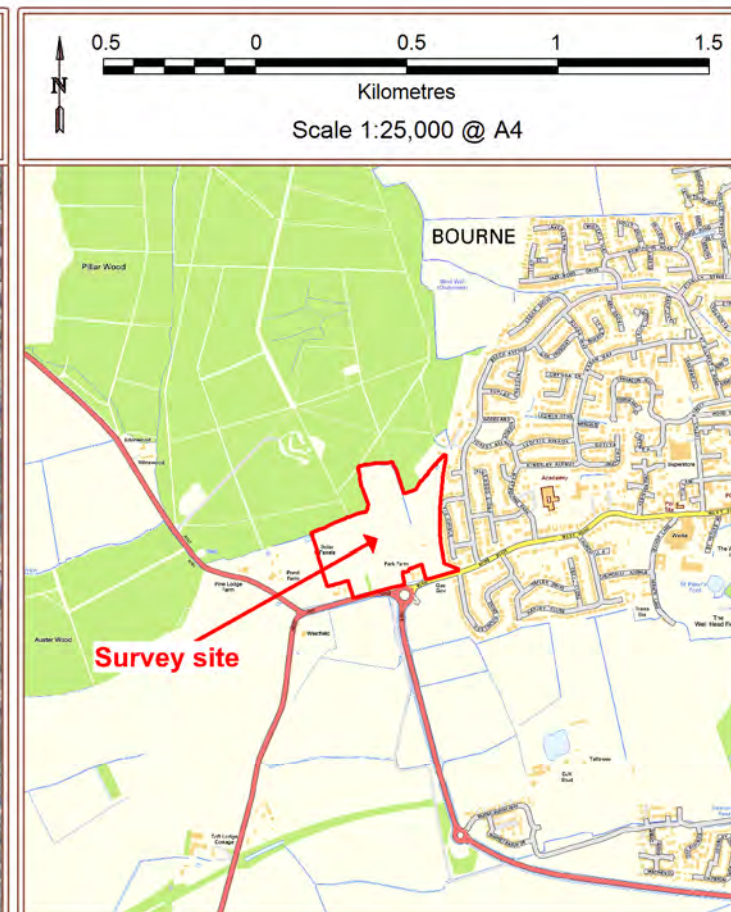
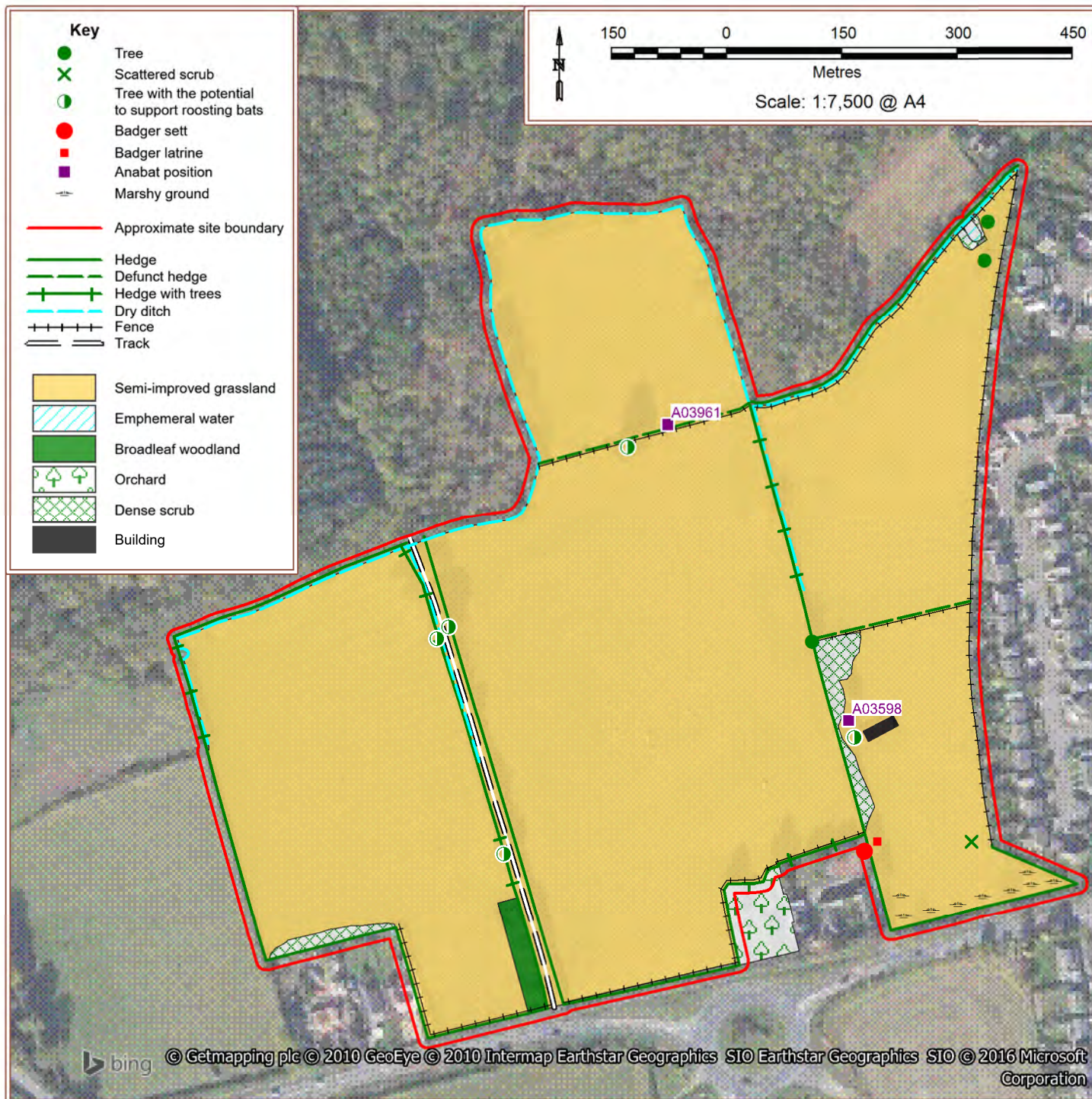
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ECOLOGY AND PROTECTED SPECIES SURVEY LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

FIGURE 1
Site Location and Habitat Map



PARK FARM, BOURNE

LINCOLNSHIRE

Site Location
and
Habitat Map

Scarborough Nixon
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Figure 1 September 2016

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Brookfield House
Chapel Lane
Tattershall Thorpe
LINCOLN
LN4 4PG
01526 344726

ECOLOGY AND PROTECTED SPECIES SURVEY LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

APPENDIX 1 Plant Species List

ECOLOGY AND PROTECTED SPECIES SURVEY

LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

ENGLISH NAME	SCIENTIFIC NAME
annual meadow-grass	<i>Poa annua</i>
apple	<i>Malus domestica</i> agg
ash	<i>Fraxinus excelsior</i>
bearded couch	<i>Agropyron caninum</i>
bent species	<i>Agrostis</i> sp.
black bryony	<i>Tamus communis</i>
blackthorn	<i>Prunus spinosa</i>
bramble	<i>Rubus fruticosus</i>
bristly oxtongue	<i>Helminthotheca echiioides</i>
broad-leaved willowherb	<i>Epilobium montanum</i>
buddleia	<i>Buddleia davidii</i>
cleavers	<i>Galium aparine</i>
cock's-foot	<i>Dactylis glomerata</i>
common chickweed	<i>Stellaria media</i>
common couch	<i>Elytrigia repens</i>
common duckweed	<i>Lemna minor</i>
common mallow	<i>Malva sylvestris</i>
common nettle	<i>Urtica dioica</i>
common ragwort	<i>Senecio jacobaea</i>
common reed	<i>Phragmites australis</i>
common sorrel	<i>Rumex acetosa</i>
cow parsley	<i>Anthriscus sylvestris</i>
crab apple	<i>Malus sylvestris</i>
creeping buttercup	<i>Ranunculus repens</i>
creeping cinquefoil	<i>Potentilla reptans</i>
creeping thistle	<i>Cirsium arvense</i>
crested dog's-tail	<i>Cynosurus cristatus</i>
dandelion	<i>Taraxacum</i> sp
dock species	<i>Rumex</i> spp.
dog's mercury	<i>Mercurialis perennis</i>
dog-rose	<i>Rosa canina</i>
dogwood	<i>Cornus sanguinea</i>
elder	<i>Sambucus nigra</i>

ENGLISH NAME**SCIENTIFIC NAME**

elm species	<i>Ulmus sp.</i>
false oat-grass	<i>Arrhenatherum elatius</i>
fescue species	<i>Festuca species</i>
field bindweed	<i>Convolvulus arvensis</i>
field maple	<i>Acer campestre</i>
floating sweet-grass	<i>Glyceria fluitans</i>
germander speedwell	<i>Veronica chaemdryas</i>
great willowherb	<i>Epilobium hirsutum</i>
greater plantain	<i>Plantago major</i>
ground-ivy	<i>Glechoma hederacea</i>
groundsel	<i>Senecio vulgaris</i>
hawthorn	<i>Crataegus monogyna</i>
hazel	<i>Corylus avellana</i>
hedge bindweed	<i>Calystegia sepium</i>
hedge woundwort	<i>Stachys sylvatica</i>
herb-Robert	<i>Geranium robertianum</i>
hogweed	<i>Heracleum sphondylium</i>
holly	<i>Ilex aquifolium</i>
ivy	<i>Hedera helix</i>
knotgrass	<i>Polygonum aviculare</i>
meadow buttercup	<i>Ranunculus acris</i>
meadow crane's-bill	<i>Geranium pratense</i>
pedunculate oak	<i>Quercus robur</i>
perennial rye-grass	<i>Lolium perenne</i>
privet	<i>Ligustrum spp</i>
red clover	<i>Trifolium pratense</i>
redshank	<i>Persicaria maculosa</i>
rosebay willowherb	<i>Chamerion angustifolium</i>
rough meadow-grass	<i>Poa trivialis</i>
scentless mayweed	<i>Tripleurospermum inodorum</i>
self-heal	<i>Prunella vulgaris</i>
soft rush	<i>Juncus effusus</i>
spear thistle	<i>Cirsium vulgare</i>
sycamore	<i>Acer pseudoplatanus</i>
timothy	<i>Phleum pratense</i>
tufted hair-grass	<i>Deschampsia cespitosa</i>
upright hedge-parsley	<i>Torilis japonica</i>

ENGLISH NAME

wall barley

white clover

wood avens

Yorkshire-fog

SCIENTIFIC NAME

Hordeum murinum

Trifolium repens

Geum urbanum

Holcus lanatus

ECOLOGY AND PROTECTED SPECIES SURVEY LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

APPENDIX 2 Data Search Results



Lincolnshire Environmental Records Centre data search report


Park Farm, West Road, Bourne
16 August 2016

Achieving more for nature



GLNP
GREATER LINCOLNSHIRE
NATURE PARTNERSHIP

Report details

Produced for	Celia Commowick, Scarborough Nixon Associates Ltd
Produced by	charliebarnes
Produced on	16/08/2016 (expires 16/08/2017)
LERC reference	ARq-0261
Aspects included in this report	Non-statutory sites <input checked="" type="checkbox"/> Statutory sites <input checked="" type="checkbox"/> Habitats <input checked="" type="checkbox"/> Species <input checked="" type="checkbox"/>
Search area (all aspects combined)	 <p>Centre of search area: E: 508250 N: 320049</p> <p><small>© Crown Copyright and Database Rights (2015) Ordnance Survey (100025370)</small></p>

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About the Lincolnshire Environmental Records Centre

The Lincolnshire Environmental Records Centre (LERC) collates wildlife and geological information for Greater Lincolnshire from various sources and makes it available for various uses. This data is crucial to aid conservation management of sites, to help organisations prioritise action, and to understand the distribution of species and trends over time. For more information on LERC or to request a data search, visit the website at <http://glnp.org.uk/partnership/lerc/>



*Lincolnshire Environmental Records Centre is an ALERC accredited LRC, meeting the standard level criteria
For more information on accreditation, see the ALERC website at <http://www.alerc.org.uk/accreditation.html>*

Non-statutory sites

Site citation sheets are available for Local Wildlife Sites, Local Geological Sites, Sites of Nature Conservation Interest and Regionally Important Geological and Geomorphological Sites. GIS boundaries are available for Local Wildlife Sites, Local Geological Sites, Sites of Nature Conservation Interest, Regionally Important Geological and Geomorphological Sites, Lincolnshire Wildlife Trust nature reserves and Roadside Nature Reserves. Distance is given as the shortest distance in kilometres from the centre of the search to the site.

Local Wildlife Sites (LWSs)

LWSs, along with biological Sites of Special Scientific Interest (SSSIs), are the most important places for wildlife at a local level. The GLNP seeks to identify every site that satisfies the selection criteria presented in the LWS guidelines, thus recognising a comprehensive suite of sites. Sites are selected by the Nature Partnership, based on recommendations made by its expert working group known as the LWS Panel and then submitted for inclusion within local authority planning policy. Identifying these sites helps local authorities meet their obligations under legislation and government guidance, including reporting on the number of sites in positive management for Single Data List Indicator 160-00.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE
804	Toft Tunnel	Selected LWS	507530	318854	1.02
4596	Auster Wood	Selected LWS	507236	319830	0.59

2 site(s) found in the search area

Local Geological Sites (LGSs)

LGSs, along with geological Sites of Special Scientific Interest (SSSIs) are the most important places for geodiversity and heritage in the county. They have substantive geoconservation value and their function is to protect and manage such interest and, where possible, provide educational opportunities. The GLNP seeks to identify every site that satisfies the selection criteria presented in the LGS guidelines. Sites are selected by the Nature Partnership, based on recommendations made by its expert working group known as the LGS Panel and then submitted for inclusion within local authority planning policy. Identifying these sites helps local authorities meet their obligations under legislation and government guidance, including reporting on the number of sites in positive management for Single Data List Indicator 160-00.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Sites of Nature Conservation Interest (SNCIs)

The LWSs status supersedes that of Sites of Nature Conservation Importance (SNCIs), which were identified on the basis of local knowledge and were selected without consideration of any formal criteria. In Greater Lincolnshire, the GLNP aims to assess all existing SNCIs using the criteria outlined in LWS guidelines. To avoid confusion, until sites have been assessed against the LWS criteria they retain their SNCI status.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE
3414	Bourne "Wildlife Park"	Notified SNCI	509401	319519	1.04
3416	Bourne Wood	Notified SNCI	507831	322290	0.11

2 site(s) found in the search area

Regionally Important Geological and Geomorphological Sites (RIGSs)

The LGS status supersedes that of RIGS, which were identified on the basis of local knowledge and were selected without consideration of any formal criteria. In Greater Lincolnshire, the GLNP aims to assess all existing RIGSs using the criteria outlined in LGS guidelines. To avoid confusion, until sites have been assessed against the LGS criteria they retain their RIGS status.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Lincolnshire Wildlife Trust Reserves (LWT)

The Lincolnshire Trust for Nature Conservation, formed in 1948, (and now known as the Lincolnshire Wildlife Trust) is a charity dedicated to safeguarding the countryside and wildlife of the historic county. It is one of a network of Wildlife Trusts that together form the largest voluntary organisation in the UK devoted to all aspects of wildlife protection.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE
R101	Toft Tunnel	-	507529	318854	1.02

1 site(s) found in the search area

Roadside Nature Reserves (RNRs)

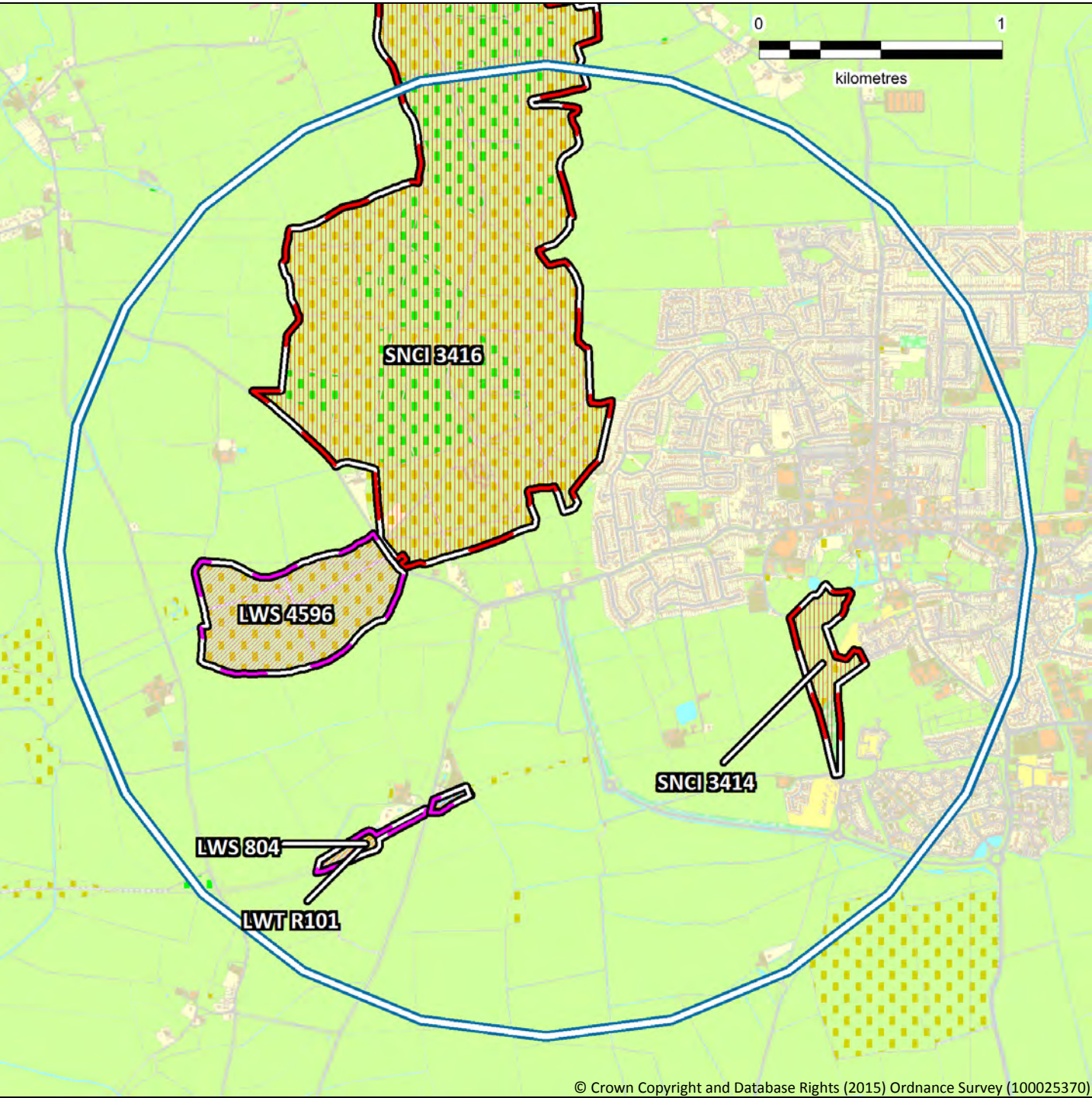
A scheme for the protection and management of roadside verges was set up in 1960 by the Lincolnshire Wildlife Trust and sites were originally termed "Protected Roadside Verges" (PRVs). Run in cooperation with Lincolnshire County Council, the Highways Division provides financial and advisory support with management is carried out by the Lincolnshire Wildlife Trust. There are 65 Roadside Nature Reserves, which total a distance of over 80 kilometres (50 miles). For each verge, the Trust appoints a voluntary 'Wayside Warden' to help look after the biological interest in liaison with the Divisional Surveyors and landowners.

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








CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Non-statutory sites within the search area



Space restrictions on the map may result in some sites not being labelled. Please refer to the GIS layers or site citations for details.

- | | |
|---|--|
|  Local Wildlife Site |  Lincolnshire Wildlife Trust Reserve |
|  Local Geological Site (mine entrance) |  Roadside Nature Reserve |
|  Local Geological Site |  Search area |
|  Site of Nature Conservation Interest |  LERC boundary |
|  Regionally Important Geological/Geomorphological Site | |

Statutory sites

Distance is given as the shortest distance in kilometres from the centre of the search to the site.

Sites of Special Scientific Interest (SSSIs)

SSSIs are part of the national suite of sites providing statutory protection for the best examples of the UK's flora, fauna, or geological or physiographical features. These sites are also used to underpin other national and international nature conservation designations, and are currently designated under the Wildlife and Countryside Act 1981 (as amended in the Countryside Rights of Way Act 2000).

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE
1002828	Math and Elsea Wood	Notified	509722	318309	1.85

1 site(s) found in the search area

National Nature Reserves (NNRs)

NNRs represent many of the finest wildlife and geological sites in the country. They are selected from the Sites of Special Scientific Interest (SSSIs) and so each NNR has at least two designations.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Local Nature Reserves (LNRs)

LNRs are areas designated by the local authority, and protected through the Local Plan as of special wildlife interest that enhance public enjoyment of wildlife. The local authority either has ownership or a legal interest in the land.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Special Protection Areas (SPAs)

SPAs are areas of the most important habitat for rare (listed on Annex I of the Birds Directive) and migratory birds within the European Union. SPAs, together with SACs, form the Natura 2000 network. SPA designation is underpinned by SSSI designation in the UK.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Special Areas of Conservation (SACs)

SACs are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II of the Habitats Directive. SACs, together with SPAs, form the Natura 2000 network. SAC designation is underpinned by SSSI designation in the UK.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Ramsar Sites (Ramsars)

Ramsar Sites are wetlands of international importance designated under the Ramsar Convention. Most Ramsar Sites are also classified as SPAs, with all terrestrial Ramsar Sites also notified as SSSIs.

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CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Areas of Outstanding Natural Beauty (AONBs)

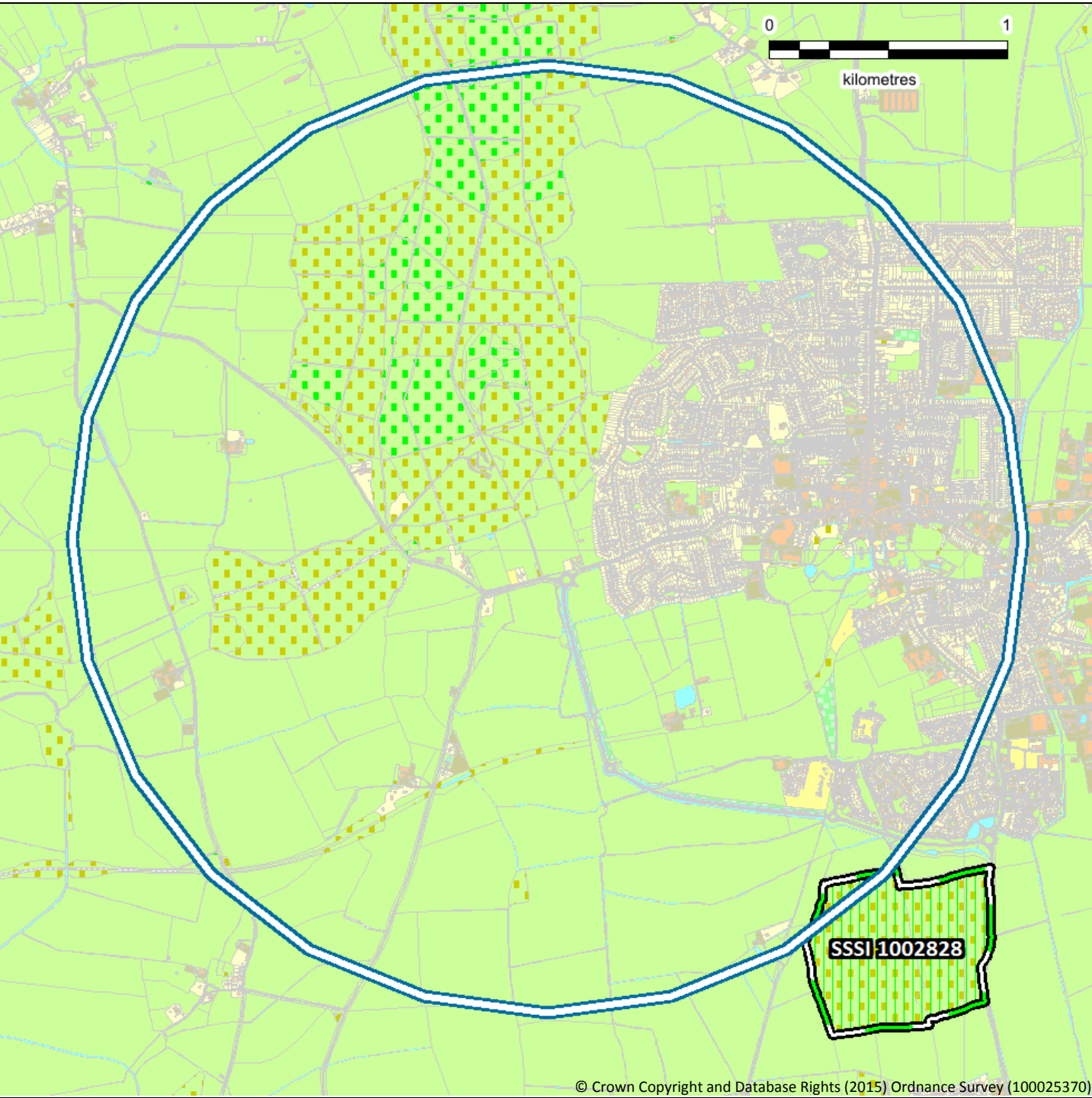
AONBs were created by legislation within the National Parks and Access to the Countryside Act of 1949. In Greater Lincolnshire there is one AONB, which is the Lincolnshire Wolds.

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

CODE	NAME	STATUS	EASTING	NORTHING	DISTANCE

no sites found in the search area

Statutory sites within the search area



Space restrictions on the map may result in some sites not being labelled. Please refer to the GIS layers or site citations for details.

- | | |
|---|--|
|  Site of Special Scientific Interest |  Ramsar |
|  National Nature Reserve |  Area of Outstanding Natural Beauty |
|  Local Nature Reserve |  Search area |
|  Special Protection Area |  LERC boundary |
|  Special Area of Conservation | |

Ancient Woodland Sites

The Ancient Woodland Inventory (AWI), maintained by Natural England, is a provisional list of woodland sites over 2ha in size that have had continuous woodland cover since at least 1600AD. This includes ancient semi-natural woodland (ASNW) and ancient replanted woodland (ARW - also known as plantation on ancient woodland sites or PAWS).

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HABITAT	Area (ha)
Ancient & Semi-Natural Woodland	54.66
Ancient Replanted Woodland	168.39

223.05 hectare(s) found in the search area

Priority Habitats

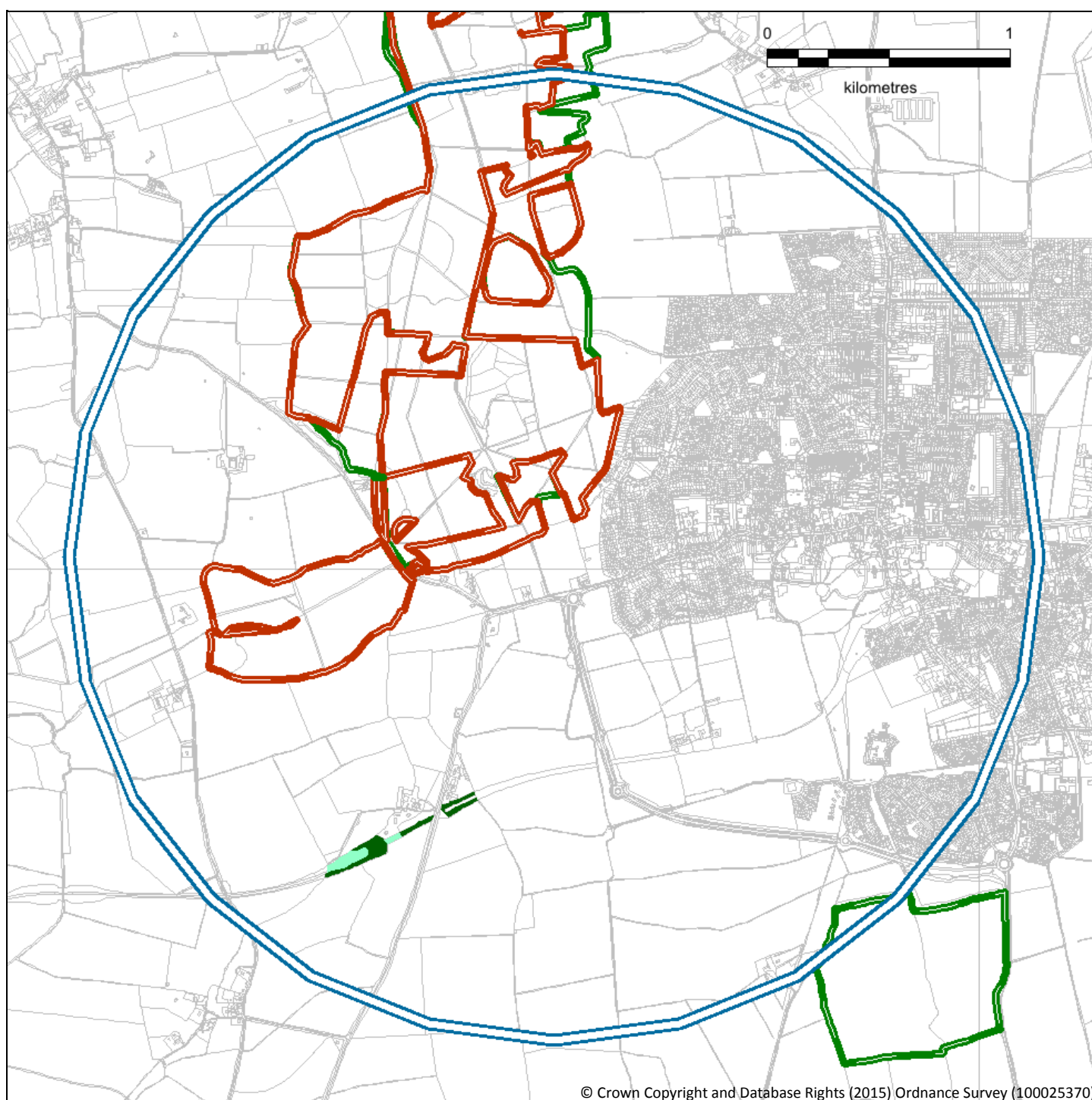
Priority habitats are those identified as being the most threatened and requiring conservation action in the UK. The data presented is the most up-to-date of the data collated by the GLNP; further historic data and non-Priority habitat data may also be available.

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HABITAT	Area (ha)
Lowland calcareous grassland	0.87
Lowland mixed deciduous woodland	1.92

2.79 hectare(s) found in the search area

Habitats within the search area



Species

Lincolnshire Environmental Records Centre holds records on the following species within or overlapping the search area. Data shown is as held by LERC; past records of presence of a species does not guarantee continued occurrence and absence of records does not imply absence of a species, merely that no records are held. Depending on the parameters of the data search, additional records may be available. Confidential data, data at poorly defined geographic resolutions and data pending validation and/or verification may also be excluded from this report.

Grid references are limited to 100m accuracy, although higher resolutions may be available. Location data for the following record types are further limited to avoid environmental harm: badger setts, bat roosts. Release of enhanced data is dealt with on a case-by-case basis and confidential records are provided separately.

The following organisations have contributed data to this report:

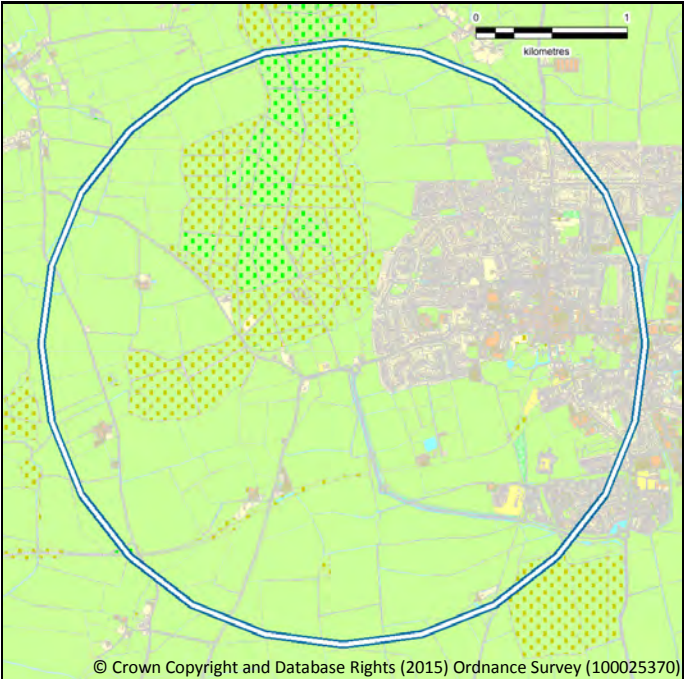
- Biological Records Centre
- British Bryological Society/Biological Records Centre
- Environment Agency
- Greater Lincolnshire Nature Partnership
- Lincolnshire Badger Group
- Lincolnshire Bat Group
- Lincolnshire Bird Club
- Lincolnshire Naturalists' Union
- Lincolnshire Wildlife Trust
- People's Trust for Endangered Species
- Royal Society for the Protection of Birds
- The Vincent Wildlife Trust
- The Wildlife Trusts

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The results of the species search have been broken down into 1 separate data output(s), which are summarised on the following pages. Zero abundance records are excluded from these summaries, but are included in the spread sheets (these can be identified by having abundance values of '0 Present (Count: Exact)').

Search #1

Search parameters

Designations:	Taxonomic groups:	Geographic area:
Badgers-1992 BAP-2007 GBNNSIP HabReg-Sch2 HabReg-Sch4 HabReg-Sch5 LBAP:3 WACA-Sch1_part1 WACA-Sch1_part2 WACA-Sch5_sect9.1(kill/injuring) WACA-Sch5_sect9.1(taking) WACA-Sch5_sect9.2 WACA-Sch5_sect9.4.a WACA-Sch5_sect9.4b WACA-Sch5_sect9.5a WACA-Sch5_sect9.5b WACA-Sch5Sect9.4A* WACA-Sch5Sect9.4c WACA-Sch8	<i>all taxonomic groups</i>	

Summary

Amphibian (3 taxa)	Number of records	Date range recorded	Designations
Common Frog, <i>Rana temporaria</i>	1	1999 - 1999	Bern3, HSD5, WCA5/9.5a, WCA5/9.5b
Common Toad, <i>Bufo bufo</i>	1	1977 - 1977	Bern3, Sect.41, Sect.42, UKBAP, WCA5/9.5a, WCA5/9.5b
Smooth Newt, <i>Lissotriton vulgaris</i>	4	1977 - 2012	Bern3, LBAP:3, WCA5/9.5a, WCA5/9.5b, WO5

Bird (53 taxa)	Number of records	Date range recorded	Designations
American Robin, <i>Turdus migratorius</i>	1	2004 - 2004	GBNNSIP
Barn Owl, <i>Tyto alba</i>	12	2002 - 2012	BAmb, Bern2, CITESA, FEP7/2, LBAP:3, LBCSchedule1, ScotBL, WCA1i, WCA9, WO1i
Bewick's Swan, <i>Cygnus columbianus subsp. bewickii</i>	1	2014 - 2014	BAmb, BD1, Bern2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, ScotBL, Sect.41, Sect.42, UKBAP, WCA1i, WO1i
Black Swan, <i>Cygnus atratus</i>	40	2004 - 2014	GBNNSIP, Non-native
Brambling, <i>Fringilla montifringilla</i>	10	1979 - 2009	ScotBL, WCA1i
Bullfinch, <i>Pyrrhula pyrrhula</i>	11	1979 - 2014	BAmb, BoCC4-Amber, FEP7/2, LBAP:3, ScotBL
Canada Goose, <i>Branta canadensis</i>	1	1979 - 1979	BD2.1, CMS_A2, GBNNSIP, Non-native, WCA9
Collared Dove, <i>Streptopelia decaocto</i>	37	1979 - 2014	BD2.2, GBNNSIP
<i>Columba livia 'feral'</i>	2	2014 - 2014	BD2.1, CITESA, GBNNSIP, Non-native
Common Crossbill, <i>Loxia curvirostra</i>	5	1979 - 2011	Bern2, WCA1i, WO1i
Cuckoo, <i>Cuculus canorus</i>	16	1977 - 2014	BoCC4-Red, BRed, Sect.41, Sect.42, UKBAP
Fieldfare, <i>Turdus pilaris</i>	5	1979 - 2014	BD2.2, BoCC4-Red, BRed, WCA1i, WO1i
Goshawk, <i>Accipiter gentilis</i>	1	2010 - 2010	CITESA, CMS_A2, GBNNSIP, LBCSchedule1, Non-native, WCA1i, WCA9, WO1i
Grasshopper Warbler, <i>Locustella naevia</i>	7	1979 - 2005	BoCC4-Red, BRed, Sect.41, Sect.42, UKBAP
Grey Partridge, <i>Perdix perdix</i>	1	1979 - 1979	BD2.1, BoCC4-Red, BRed, FEP7/2, GBNNSIP, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP
Greylag Goose, <i>Anser anser</i>	1	1979 - 1979	BAmb, BD2.1, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, Non-native, WCA1ii
Hen Harrier, <i>Circus cyaneus</i>	1	1979 - 1979	BD1, BoCC4-Red, BRed, CITESA, CMS_A2, FEP7/2, LBCSchedule1, ScotBL, Sect.41, Sect.42, WCA1i, WO1i

Hobby, <i>Falco subbuteo</i>	5	2005 - 2013	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i
Hoopoe, <i>Upupa epops</i>	1	1979 - 1979	Bern2, WCA1i
House Sparrow, <i>Passer domesticus</i>	70	1977 - 2014	BoCC4-Red, BRed, LBAP:3, Sect.41, Sect.42, UKBAP
Kingfisher, <i>Alcedo atthis</i>	5	1979 - 2011	BAmb, BD1, Bern2, BoCC4-Amber, FEP7/2, LBCSchedule1, ScotBL, WCA1i, WO1i
Lapwing, <i>Vanellus vanellus</i>	1	1979 - 1979	BD2.2, BoCC4-Red, BRed, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP
Lesser Redpoll, <i>Acanthis cabaret</i>	58	2006 - 2014	BoCC4-Red, BRed, Sect.41, Sect.42, UKBAP
Linnet, <i>Linaria cannabina</i>	6	2002 - 2013	Bern2, BoCC4-Red, BRed, FEP7/2, LBAP:3, ScotBL
Little Owl, <i>Athene noctua</i>	17	2002 - 2008	Bern2, CITESA, GBNNSIP, Non-native
Mute Swan, <i>Cygnus olor</i>	2	2002 - 2009	BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP
Pheasant, <i>Phasianus colchicus</i>	15	1977 - 2014	BD2.1, GBNNSIP
Pink-footed Goose, <i>Anser brachyrhynchus</i>	2	2010 - 2010	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP, Non-native
Red Kite, <i>Milvus milvus</i>	3	2010 - 2014	BAmb, BD1, CITESA, CMS_A2, FEP7/2, LBCSchedule1, Non-native, RLGLB.NT, ScotBL, WCA1i, WCA9
Red-crested Pochard, <i>Netta rufina</i>	1	2004 - 2004	BD2.2, CMS_A2, CMS_AEWA-A2, GBNNSIP, Non-native, WCA9
Red-legged Partridge, <i>Alectoris rufa</i>	3	1979 - 2012	BD2.1, GBNNSIP, Non-native
Redshank, <i>Tringa totanus</i>	1	1979 - 1979	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3
Redwing, <i>Turdus iliacus</i>	12	1979 - 2014	BD2.2, BoCC4-Red, BRed, ScotBL, WCA1i
Reed Bunting, <i>Emberiza schoeniclus</i>	4	1979 - 2014	BAmb, Bern2, BoCC4-Amber, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP
Ring-necked Parakeet, <i>Psittacula krameri</i>	1	2008 - 2008	CITESC, GBNNSIP, Non-native, WCA9
Rock Dove, <i>Columba livia</i>	3	2009 - 2009	BD2.1, CITESA, GBNNSIP, Non-native
Skylark, <i>Alauda arvensis</i>	6	1979 - 2014	BD2.2, BoCC4-Red, BRed, FEP7/2, LBAP:3, ScotBL, Sect.41
Snipe, <i>Gallinago gallinago</i>	1	1979 - 1979	BAmb, BD2.1, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3
Song Thrush, <i>Turdus philomelos</i>	46	1977 - 2014	BD2.2, BoCC4-Red, BRed, FEP7/2, LBAP:3, ScotBL
Spotted Flycatcher, <i>Muscicapa striata</i>	13	1979 - 2013	Bern2, BoCC4-Red, BRed, CMS_A2, FEP7/2, ScotBL, Sect.41, Sect.42, UKBAP
Starling, <i>Sturnus vulgaris</i>	71	1977 - 2014	BD2.2, BoCC4-Red, BRed, FEP7/2, LBAP:3
Swift, <i>Apus apus</i>	35	1979 - 2014	BAmb, BoCC4-Amber, LBAP:3, ScotBL
Tree Pipit, <i>Anthus trivialis</i>	2	1979 - 1998	Bern2, BoCC4-Red, BRed, Sect.41, Sect.42, UKBAP, WO1i
Tree Sparrow, <i>Passer montanus</i>	3	1977 - 1980	BoCC4-Red, BRed, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP
Turtle Dove, <i>Streptopelia turtur</i>	8	1977 - 2008	BD2.2, BoCC4-Red, BRed, CITESA, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WO1i
White Stork, <i>Ciconia ciconia</i>	1	2009 - 2009	BD1, Bern2, CMS_A2, CMS_AEWA-A2, GBNNSIP
Whooper Swan, <i>Cygnus cygnus</i>	2	2007 - 2008	BAmb, BD1, Bern2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, FEP7/2, GBNNSIP, Non-native, ScotBL, WCA1i, WO1i
Wigeon, <i>Anas penelope</i>	1	1979 - 1979	BD2.1, BoCC4-Amber, CITESC, CMS_A2, CMS_AEWA-A2, GBNNSIP, WO1ii
Wood Sandpiper, <i>Tringa glareola</i>	1	1979 - 1979	BAmb, BD1, Bern2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, ScotBL, WCA1i
Wood Warbler, <i>Phylloscopus sibilatrix</i>	1	1979 - 1979	BoCC4-Red, BRed, ScotBL, Sect.41, Sect.42, UKBAP, WO1i
Wryneck, <i>Jynx torquilla</i>	1	1979 - 1979	Bern2, BRed, ScotBL, UKBAP, WCA1i
Yellow Wagtail, <i>Motacilla flava</i>	1	2003 - 2003	Bern2, BoCC4-Red, BRed, FEP7/2, LBAP:3, ScotBL, WO1i
Yellowhammer, <i>Emberiza citrinella</i>	13	1979 - 2014	Bern2, BoCC4-Red, BRed, FEP7/2, LBAP:3, Sect.41, Sect.42, UKBAP

Bony Fish (actinopterygii) (1 taxa)	Number of records	Date range recorded	Designations
European Eel, <i>Anguilla anguilla</i>	4	1994 - 1999	LBAP:3, OSPAR, RLGLB.CR, ScotBL, Sect.41, Sect.42, UKBAP

Conifer (4 taxa)	Number of records	Date range recorded	Designations
European Larch, <i>Larix decidua</i>	2	1980 - 2015	GBNNSIP, Non-native
Lawson's Cypress, <i>Chamaecyparis lawsoniana</i>	2	2015 - 2015	GBNNSIP, Non-native
Norway Spruce, <i>Picea abies</i>	2	2015 - 2015	GBNNSIP, Non-native
Western Hemlock-spruce, <i>Tsuga heterophylla</i>	1	1978 - 1978	GBNNSIP, Non-native

Flowering Plant (44 taxa)	Number of records	Date range recorded	Designations
Alkanet, <i>Anchusa officinalis</i>	1	1994 - 1994	GBNNSIP
American Willowherb, <i>Epilobium ciliatum</i>	2	1993 - 2004	GBNNSIP, Non-native
Apple, <i>Malus pumila</i>	2	2007 - 2015	GBNNSIP, Non-native
Barren Brome, <i>Bromus sterilis</i>	5	1990 - 2007	GBNNSIP
Black Bent, <i>Agrostis gigantea</i>	1	1983 - 1983	GBNNSIP, Non-native
Black Horehound, <i>Ballota nigra</i>	1	1990 - 1990	GBNNSIP
Black Poplar, <i>Populus nigra</i> subsp. <i>betulifolia</i>	1	2015 - 2015	FEP1, GBNNSIP, ScotBL
Black-grass, <i>Alopecurus myosuroides</i>	1	2004 - 2004	GBNNSIP, Non-native, ScotBL
Bluebell, <i>Hyacinthoides non-scripta</i>	10	1967 - 2015	ScotBL, WCA8
Bread Wheat, <i>Triticum aestivum</i>	1	2015 - 2015	GBNNSIP
Bristly Oxtongue, <i>Picris echioides</i>	6	1990 - 2015	GBNNSIP
Charlock, <i>Sinapis arvensis</i>	1	1980 - 1980	GBNNSIP, ScotBL
Cherry Plum, <i>Prunus cerasifera</i>	2	2015 - 2015	GBNNSIP, Non-native
Common Field-speedwell, <i>Veronica persica</i>	1	1993 - 1993	GBNNSIP, Non-native
Crack-willow, <i>Salix fragilis</i>	1	1980 - 1980	FEP1, GBNNSIP
Cut-leaved Crane's-bill, <i>Geranium dissectum</i>	8	1983 - 2007	GBNNSIP
Field Forget-me-not, <i>Myosotis arvensis</i>	6	1983 - 2007	GBNNSIP
Field Pansy, <i>Viola arvensis</i>	1	1993 - 1993	GBNNSIP, Non-native
Greater Burdock, <i>Arctium lappa</i>	1	2015 - 2015	GBNNSIP
Green Alkanet, <i>Pentaglottis sempervirens</i>	1	2007 - 2007	GBNNSIP, Non-native
Green Field-speedwell, <i>Veronica agrestis</i>	1	2007 - 2007	GBNNSIP
Hedge Mustard, <i>Sisymbrium officinale</i>	1	2007 - 2007	GBNNSIP
Hemlock, <i>Conium maculatum</i>	4	1990 - 2007	GBNNSIP
Horse-chestnut, <i>Aesculus hippocastanum</i>	3	1967 - 2015	GBNNSIP
Horse-radish, <i>Armoracia rusticana</i>	1	1983 - 1983	GBNNSIP, Non-native
Ivy-leaved Speedwell, <i>Veronica hederifolia</i>	1	2007 - 2007	GBNNSIP
Lombardy-Poplar, <i>Populus nigra</i> 'Italica'	1	1983 - 1983	GBNNSIP, ScotBL
Many-seeded Goosefoot, <i>Chenopodium polyspermum</i>	1	1993 - 1993	GBNNSIP
Mugwort, <i>Artemisia vulgaris</i>	2	1990 - 1990	GBNNSIP
Norway Maple, <i>Acer platanoide</i> s	1	1967 - 1967	GBNNSIP
Pineappleweed, <i>Matricaria discoidea</i>	2	1980 - 2015	GBNNSIP, Non-native
Scented Mayweed, <i>Matricaria chamomilla</i>	1	1993 - 1993	GBNNSIP
Scentless Mayweed, <i>Tripleurospermum inodorum</i>	1	2004 - 2004	GBNNSIP, Non-native
Snowberry, <i>Symphoricarpos albus</i>	2	1978 - 2015	GBNNSIP, Non-native
Snowdrop, <i>Galanthus nivalis</i>	1	2006 - 2006	CITESB, GBNNSIP
Spanish Bluebell, <i>Hyacinthoides hispanica</i>	1	2006 - 2006	GBNNSIP, Non-native
Sycamore, <i>Acer pseudoplatanus</i>	7	1967 - 2015	GBNNSIP
Turkey Oak, <i>Quercus cerris</i>	1	2015 - 2015	GBNNSIP, ScotBL
Walnut, <i>Juglans regia</i>	1	2015 - 2015	FEP1, GBNNSIP, Non-native
Weeping Willow, <i>Salix alba</i> x <i>babylonica</i> = <i>S. x sepulcralis</i>	1	2015 - 2015	FEP1, GBNNSIP, Non-native
White Dead-nettle, <i>Lamium album</i>	3	1990 - 2007	GBNNSIP
White Mustard, <i>Sinapis alba</i>	1	1980 - 1980	GBNNSIP, ScotBL
White Willow, <i>Salix alba</i>	1	1985 - 1985	FEP1, GBNNSIP
Wild Plum, <i>Prunus domestica</i>	1	1977 - 1977	GBNNSIP

Insect - Beetle (coleoptera) (2 taxa)	Number of records	Date range recorded	Designations
Bean Seed Beetle, <i>Bruchus rufimanus</i>	1	1986 - 1986	GBNNSIP
Cream-streaked Ladybird, <i>Harmonia quadripunctata</i>	2	1999 - 2000	GBNNSIP

Insect - Butterfly (5 taxa)	Number of records	Date range recorded	Designations
Grizzled Skipper, <i>Pyrgus malvae</i>	1	2007 - 2007	FEP7/2, RLGB.VU, Sect.41, Sect.42, UKBAP

Small Heath, <i>Coenonympha pamphilus</i>	9	1970 - 2013	RLGB.Lr(NT), Sect.41, Sect.42, UKBAP
Wall, <i>Lasiommata megera</i>	16	1990 - 2013	RLGB.Lr(NT), Sect.41, Sect.42, UKBAP
White Admiral, <i>Limenitis camilla</i>	93	1985 - 2015	RLGB.VU, Sect.41, Sect.42, UKBAP
White-letter Hairstreak, <i>Satyrrium w-album</i>	71	1983 - 2013	RLGB.EN, Sect.41, Sect.42, UKBAP, WCA5/9.5a, WCA5/9.5b

Insect - Moth (17 taxa)	Number of records	Date range recorded	Designations
Blood-Vein, <i>Timandra comae</i>	2	1994 - 1998	Sect.41, Sect.42, UKBAP
Brown-spot Pinion, <i>Agrochola litura</i>	1	1993 - 1993	Sect.41, Sect.42, UKBAP
Centre-barred Sallow, <i>Atethmia centrargo</i>	2	1993 - 1994	Sect.41, Sect.42, UKBAP
Cinnabar, <i>Tyria jacobaeae</i>	2	2006 - 2007	Sect.41, Sect.42, UKBAP
Dark-barred Twin-spot Carpet, <i>Xanthorhoe ferrugata</i>	1	1995 - 1995	Sect.41, Sect.42, UKBAP
Dot Moth, <i>Melanchra persicariae</i>	4	1991 - 2002	Sect.41, Sect.42, UKBAP
Ghost Moth, <i>Hepialus humuli</i>	2	2000 - 2002	Sect.41, Sect.42, UKBAP
Grey Dagger, <i>Acronicta psi</i>	3	1991 - 1997	Sect.41, Sect.42, UKBAP
Knot Grass, <i>Acronicta rumicis</i>	1	1997 - 1997	Sect.41, Sect.42, UKBAP
Lackey, <i>Malacosoma neustria</i>	1	1991 - 1991	Sect.41, Sect.42, UKBAP
Larch Case-bearer, <i>Coleophora laricella</i>	1	1993 - 1993	GBNNSIP
Mouse Moth, <i>Amphipyra tragopoginis</i>	1	1995 - 1995	Sect.41, Sect.42, UKBAP
Oak Hook-tip, <i>Watsonalla binaria</i>	4	1995 - 1997	Sect.41, Sect.42, UKBAP
Sallow, <i>Cirrhia icteritia</i>	1	1993 - 1993	Sect.41, Sect.42, UKBAP
Small Phoenix, <i>Ecliptopera silaceata</i>	5	1994 - 1997	Sect.41, Sect.42, UKBAP
Small Square-spot, <i>Diarsia rubi</i>	1	1988 - 1988	Sect.41, Sect.42, UKBAP
Spruce Carpet, <i>Thera britannica</i>	1	1997 - 1997	GBNNSIP

Mollusc (1 taxa)	Number of records	Date range recorded	Designations
Jenkins' Spire Snail, <i>Potamopyrgus antipodarum</i>	2	1988 - 1989	GBNNSIP, Non-native

Moss (1 taxa)	Number of records	Date range recorded	Designations
Heath Star Moss, <i>Campylopus introflexus</i>	1	1990 - 1990	GBNNSIP, Non-native

Reptile (2 taxa)	Number of records	Date range recorded	Designations
Common Lizard, <i>Zootoca vivipara</i>	1	1977 - 1977	Bern3, Sect.41, Sect.42, UKBAP, WCA5/9.1k/l, WCA5/9.5a, WCA5/9.5b, WO5
Grass Snake, <i>Natrix natrix</i>	2	1977 - 1979	Bern3, Sect.41, Sect.42, UKBAP, WCA5/9.1k/l, WCA5/9.5a, WCA5/9.5b

Terrestrial Mammal (29 taxa)	Number of records	Date range recorded	Designations
American Mink, <i>Neovison vison</i>	1	1990 - 1990	GBNNSIP, NE_EA_INNS, Non-native, WCA9
Bats, Chiroptera	151	1979 - 2014	
Brandt's Bat, <i>Myotis brandtii</i>	1	2009 - 2009	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Brown Hare, <i>Lepus europaeus</i>	4	1977 - 2004	FEP7/2, ScotBL, Sect.41, Sect.42, UKBAP
Brown Long-eared Bat, <i>Plecotus auritus</i>	26	1989 - 2014	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Brown Rat, <i>Rattus norvegicus</i>	4	1977 - 1979	GBNNSIP, Non-native
Chinese Muntjac, <i>Muntiacus reevesi</i>	15	1994 - 2012	Bern3, GBNNSIP, Non-native, WCA9
Common Pipistrelle, <i>Pipistrellus pipistrellus sensu stricto</i>	12	2003 - 2013	CMS_A2, HabRegs2, LBAP:3, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Daubenton's Bat, <i>Myotis daubentonii</i>	3	1994 - 2009	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Eastern Grey Squirrel, <i>Sciurus carolinensis</i>	18	1977 - 2014	GBNNSIP, Non-native, WCA9
Eurasian Badger, <i>Meles meles</i>	23	1977 - 2014	Bern3, PBA, ScotBL, WO5
European Otter, <i>Lutra lutra</i>	1	2011 - 2011	Bern2, CITESA, FEP7/2, HabRegs2, HSD2p, HSD4, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b

European Rabbit, <i>Oryctolagus cuniculus</i>	16	1974 - 2007	GBNNSIP, Non-native
European Water Vole, <i>Arvicola amphibius</i>	6	1994 - 2009	FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.1k/l, WCA5/9.1t, WCA5/9.2, WCA5/9.4.a, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Fallow Deer, <i>Dama dama</i>	27	1975 - 2013	Bern3, GBNNSIP, Non-native
Harvest Mouse, <i>Micromys minutus</i>	2	1977 - 1977	Sect.41, Sect.42, UKBAP
House Mouse, <i>Mus musculus</i>	2	1977 - 1977	GBNNSIP, Non-native
Lesser Noctule, <i>Nyctalus leisleri</i>	8	1992 - 2004	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Natterer's Bat, <i>Myotis nattereri</i>	17	2001 - 2012	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Noctule Bat, <i>Nyctalus noctula</i>	11	1979 - 2009	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Nyctalus Bat species, <i>Nyctalus</i>	3	2005 - 2010	CMS_A2, HabRegs2, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Pipistrelle, <i>Pipistrellus pipistrellus sensu lato</i>	14	1984 - 2004	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.42, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Pipistrelle Bat species, <i>Pipistrellus</i>	25	1999 - 2014	CMS_A2, HabRegs2, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Soprano Pipistrelle, <i>Pipistrellus pygmaeus</i>	2	2005 - 2012	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Unidentified Bat, <i>Myotis</i>	5	2002 - 2010	CMS_A2, HabRegs2, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
West European Hedgehog, <i>Erinaceus europaeus</i>	30	1974 - 2016	Bern3, Sect.41, Sect.42, UKBAP
Western Barbastelle, <i>Barbastella barbastellus</i>	16	2001 - 2014	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Whiskered Bat, <i>Myotis mystacinus</i>	3	1989 - 2012	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b
Whiskered/Brandt's Bat, <i>Myotis mystacinus/brandtii</i>	5	2006 - 2014	CMS_A2, HabRegs2, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a, WCA5/9.5b

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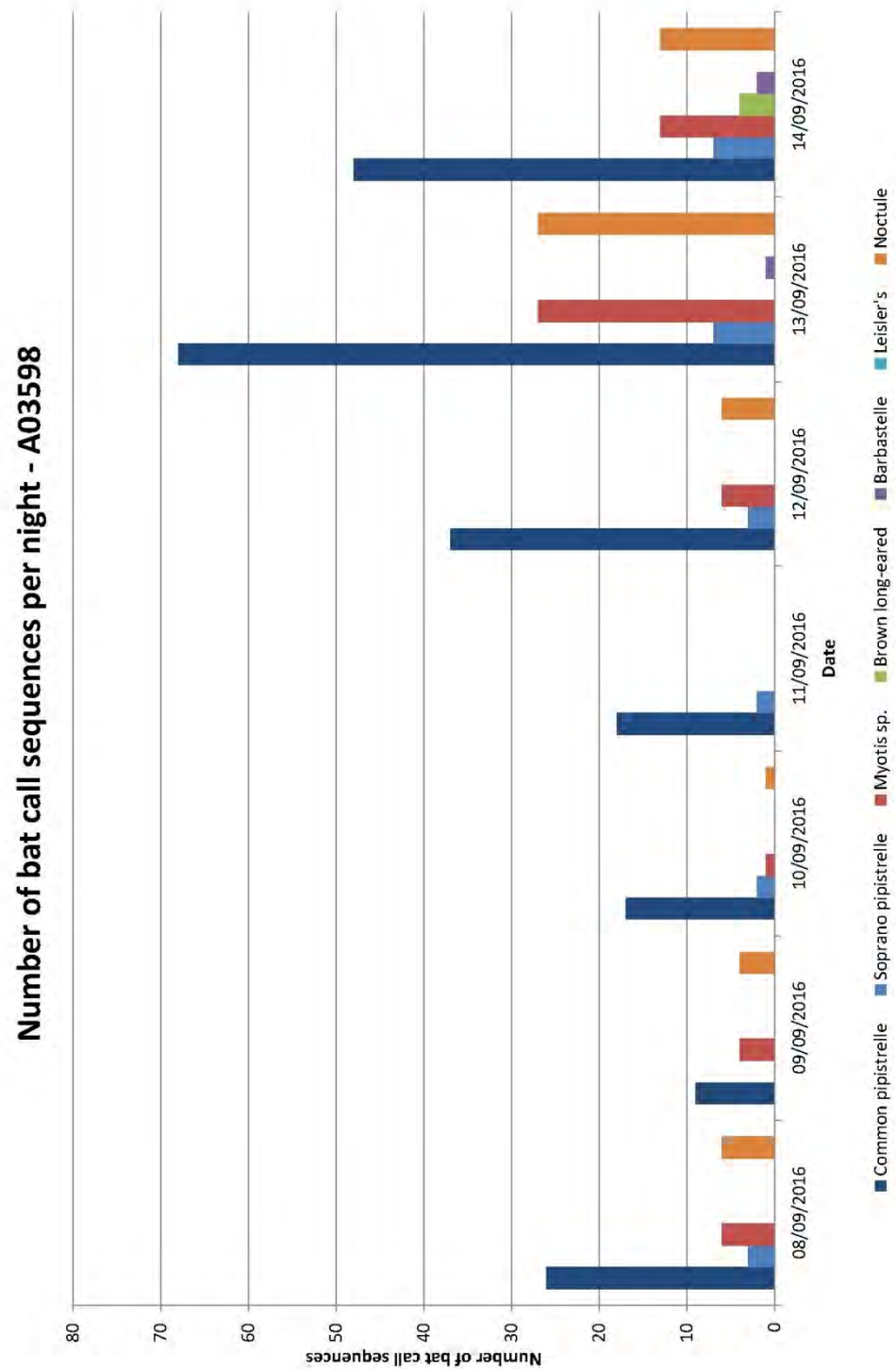
Achieving more for nature

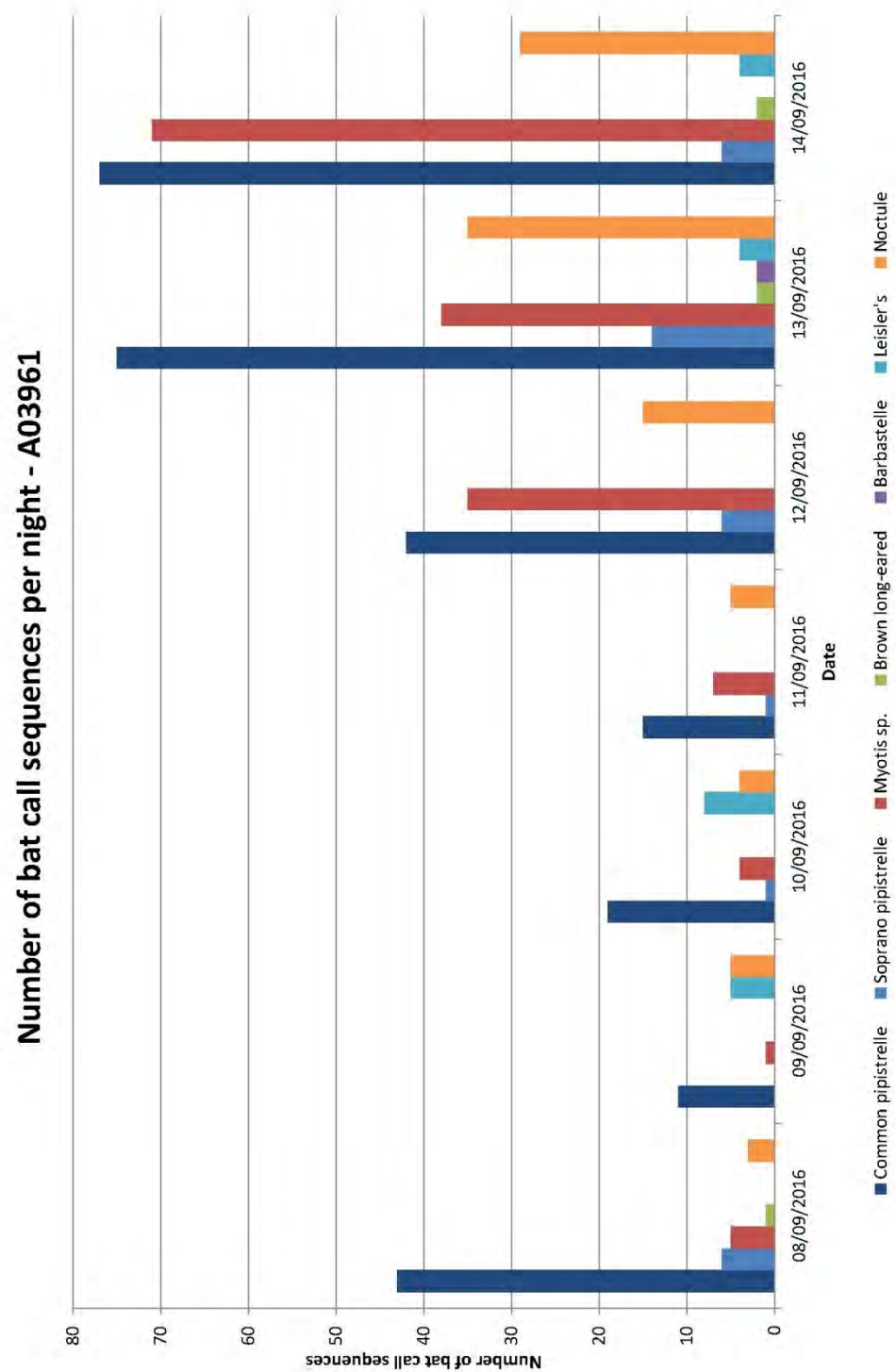


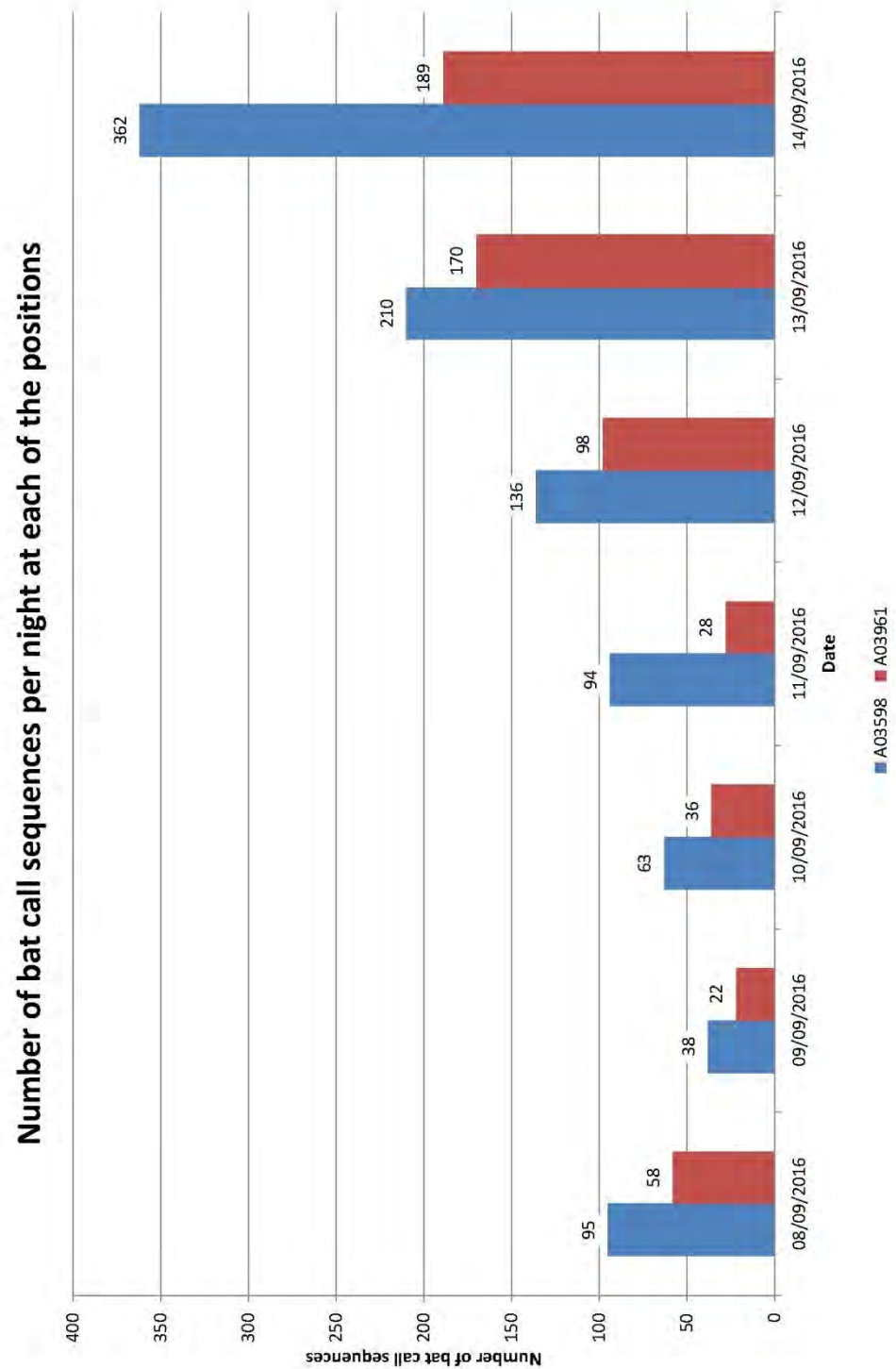
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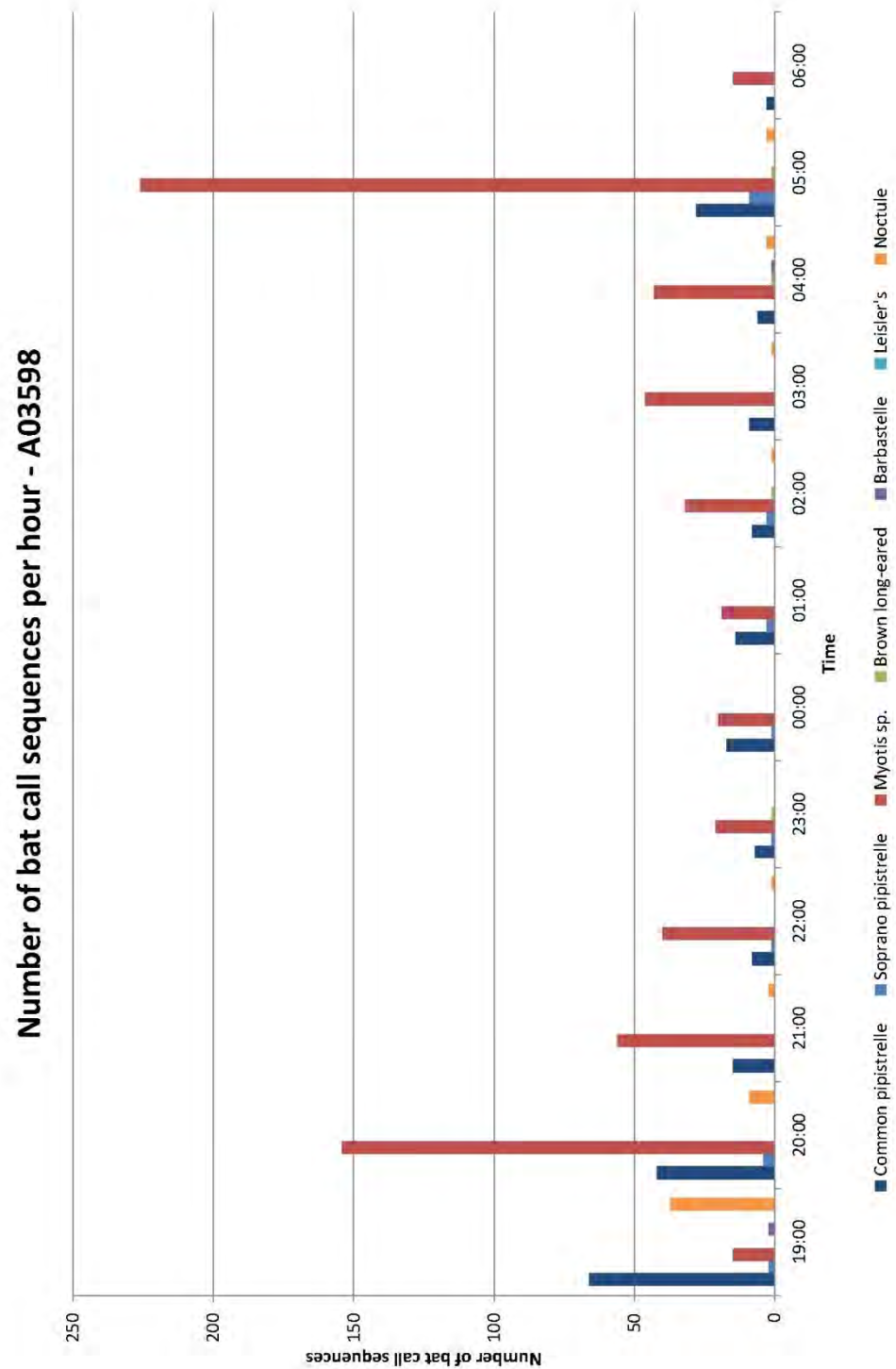
ECOLOGY AND PROTECTED SPECIES SURVEY LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

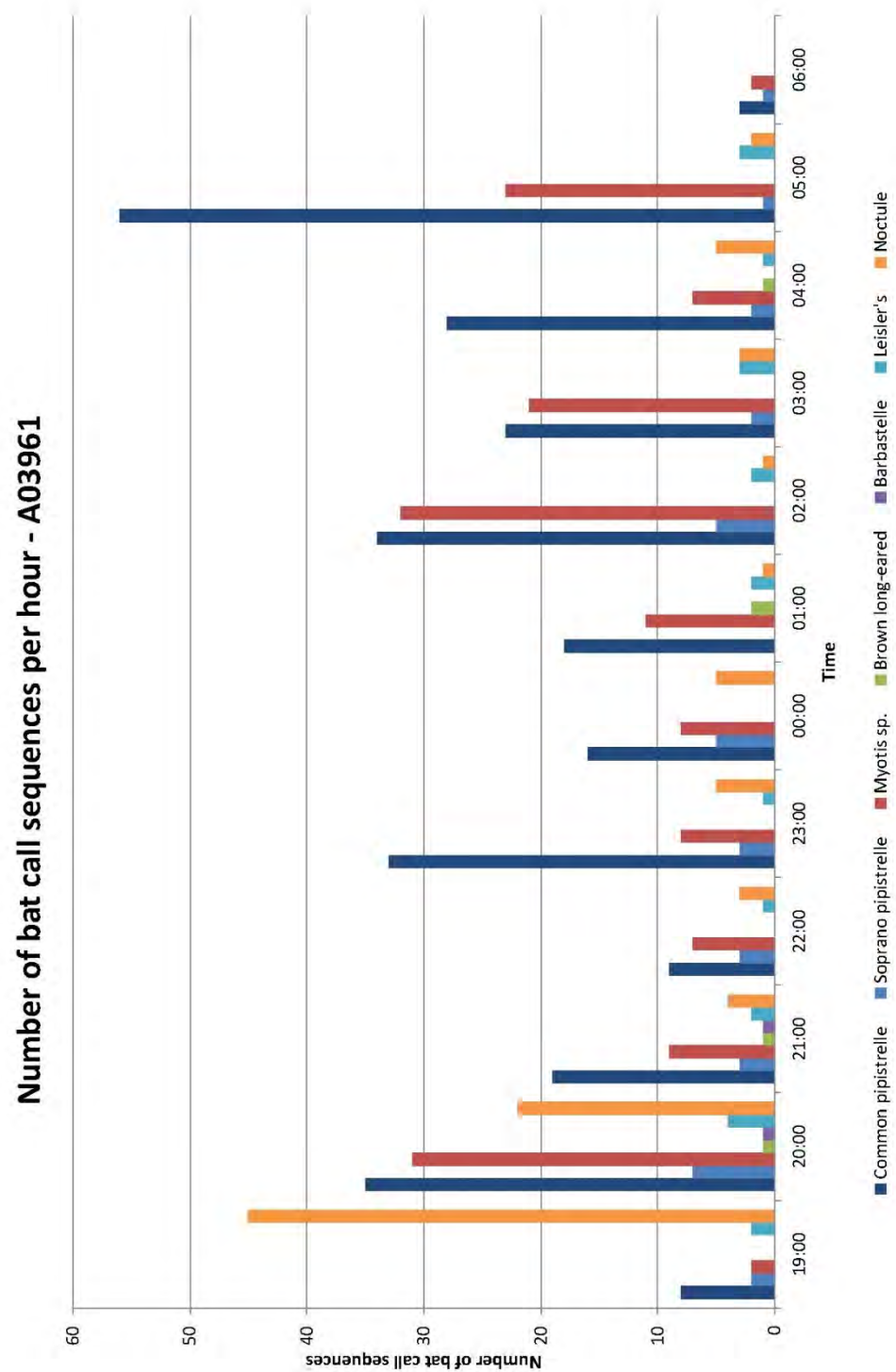
APPENDIX 3 Anabat Survey Results

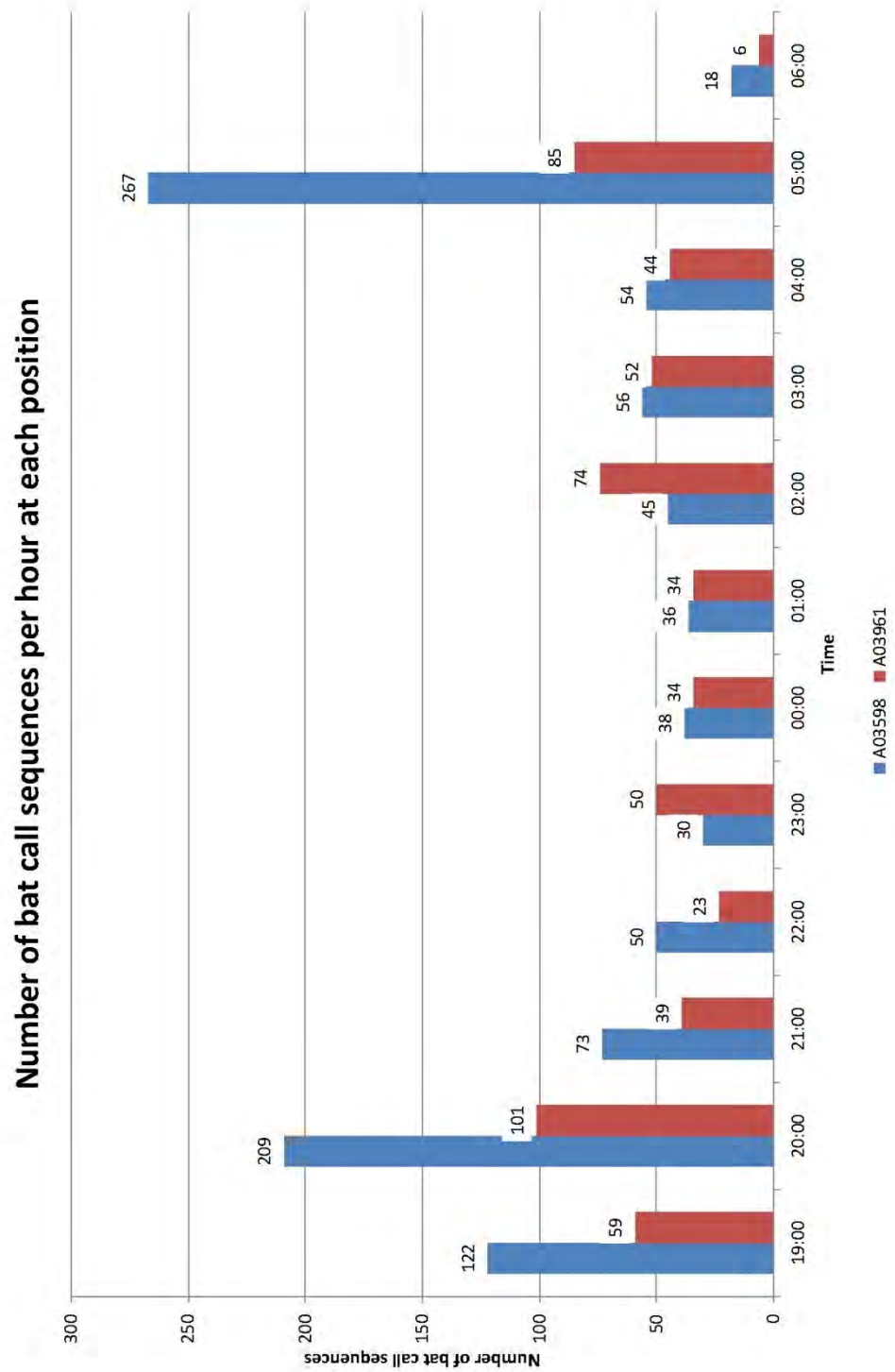












ECOLOGY AND PROTECTED SPECIES SURVEY LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

APPENDIX 4 Creating Wildlife Ponds

SPECIES DOSSIER

Creating ponds for amphibians and reptiles



Freshwater Habitats Trust

A 50-YEAR PROJECT TO CREATE A NETWORK OF CLEAN WATER PONDS FOR FRESHWATER WILDLIFE

1. Identifying which species are at risk

There are four amphibian species which make it on to the Biodiversity Action Plan (BAP) priority list in the UK (listed in Table 1). Two of these, **Great Crested Newt** *Triturus cristatus* and **Common Toad** *Bufo bufo* are not yet rare in the UK. However, they are both in decline in Britain and/or Europe, and so have become a priority for protection and conservation action.

The BAP reptile, the **Grass Snake** *Natrix natrix* is also widespread but declining. Unlike its amphibian cousins, it does not need water to breed. However, amphibians are its main food source, so it benefits from the food supply that ponds provide. Great Crested Newt, Common Toad and Grass Snake (Figure 1) remain widespread in the lowlands, but are declining markedly in the north of the country. We know that pond creation for these species can be very successful, so by taking action now we can help to prevent further declines.



Figure 1. Some of our most familiar amphibians and reptiles – Great Crested Newt (top left), Common Toad (bottom left) and Grass Snake (right). Creating ponds for these species now can help to secure their futures.

To find out which of these BAP Species occur in your area visit the *BAP Species Map*.

Key messages

- **Create clean water ponds,** these are the most wildlife rich ponds. They are free from pollution and excessive nutrients, allowing submerged plants and insects to thrive - important habitat and food for all of the UK's amphibians.
- **Locate ponds within the dispersal distance of the target species** to provide stepping stones across the landscape and to strengthen existing populations by increasing the number of potential breeding ponds. Make sure there are no barriers to dispersal between ponds.
- **Design ponds with broad shallow margins.** These will support stands of submerged, floating-leaved and emergent plants. They will also provide warm water to speed up tadpole development.
- **Don't introduce fish or non-native plants** to the pond as these will considerably reduce their value for amphibians.
- **Provide amphibian-friendly habitat adjacent to the pond.** This should include long grasses or herb rich meadows and cover in the form of scrub and fallen wood.

SPECIES DOSSIER

Table 1. Amphibians and reptiles associated with ponds

Species	BAP species	Conservation status	Distribution
Palmate Newt	Not a BAP species - Widespread	Bern Convention – App III WCA – Sch 5 protected from sale and trade IUCN – Least Concern	Widespread with a preference for more acidic soils.
Smooth Newt	Not a BAP species - Widespread	Bern Convention – App III WCA – Sch 5 protected from sale and trade IUCN – Least Concern	Widespread, but mainly absent from acidic soils.
Great Crested Newt	BAP species - Widespread	Habitats Directive Ann II, IV Bern Convention – App II WCA – Sch 5 IUCN – Least Concern	Widespread in lowland England and eastern Wales, but declining.
Common Toad	BAP species - Widespread	Bern Convention – App III WCA – Sch 5 protected from sale and trade IUCN – Least Concern	Found in lowland areas, but declining.
Natterjack Toad	BAP species - Restricted	Habitats Directive Ann IV Bern Convention – App II WCA – Sch 5 IUCN – Least Concern	Confined primarily to dune, but also some heathland habitat. Fewer than 60 sites in the UK.
Common Frog	Not a BAP species - Widespread	Habitats Directive Ann IV Bern Convention – App III WCA – Sch 5 protected from sale and trade IUCN – Least Concern	Widespread.
Pool Frog	BAP species - Restricted	Habitats Directive Ann IV Bern Convention – App III IUCN – Least Concern	Subject to reintroduction to a single site in England.
Grass Snake	BAP species - Widespread	Bern Convention – App III WCA – Sch 5 protected from killing, sale and trade IUCN – Least Concern	Found throughout much of lowland England and Wales, becoming progressively scarcer in the north.

2. Guidelines on creating ponds for amphibians and Grass Snake

Our rarest amphibians (Pool Frog and Natterjack Toad) have very specific habitat requirements. Detailed advice on creating ponds for these species is available elsewhere (see *Section 6. Further reading*). Although Great Crested Newt, Common Toad and Grass Snake differ in their exact habitat preferences, they also have a lot in common with each other and with the more common amphibians like Common Frog, Smooth Newt and Palmate Newt which provide food for Grass Snake.

Which ponds attract amphibians and Grass Snake?

1 Ponds with a clean water supply

Clean unpolluted water is always better for pond plants and invertebrates – and this in turn forms the basis for a good amphibian pond. Ponds in urban environments can be contaminated by road drains whilst those in farmed landscapes may receive high levels of nutrient pollution.

Ponds should be located where surface run-off or drains from agricultural areas and roads are minimal. Stream or ditch inflows should be avoided wherever possible, because this washes pollution straight into the pond and can bring in heavy loads of silt which quickly fill the pond, reducing its life to just a few years. [Pond Creation Toolkit Factsheet 2](#) has more detailed advice on finding a clean source of water.

Creating ponds for amphibians and reptiles

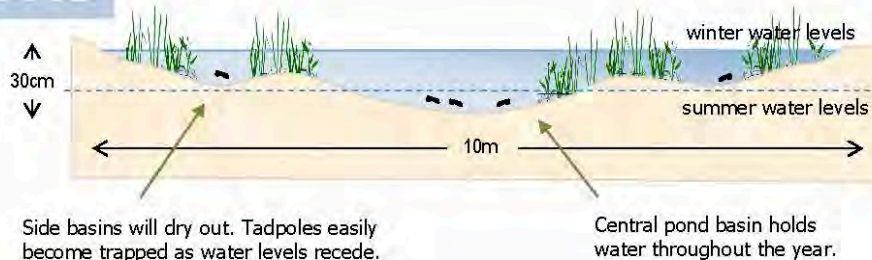
2 Variable pond depths and variable pond designs

Create shallow water areas at the pond edge (<10cm for at least 1m (5° slope)) to allow a rich community of marginal plants to develop, providing food and shelter for developing tadpoles. Shallow water also warms up quickly, providing common frogs with spawning sites in early spring and allowing the rapid growth of tadpoles of all species. Ideal maximum water depth varies for different species, with Common Toad the most tolerant of deep water. If a pond is shallow it is best to design it with a single basin so that tadpoles do not perish in sub-basins as the pond dries down in summer (Figure 2).

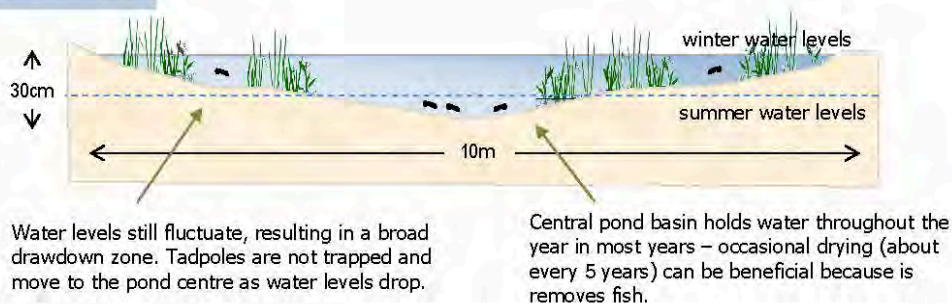
Figure 2. Pond designs for frogs, toads and newts

In large ponds a complex profile with separate basins can be very good for wildlife as it will add to the variety of the site. In small ponds, created for amphibians, create one basin which is likely to hold water throughout the breeding season.

GOOD



BETTER



3 Submerged and emergent vegetation

For all amphibians, underwater plants provide egg-laying sites as well as an area of shelter. Plants growing underwater also provide homes and food for the invertebrates upon which newts and their tadpoles feed. However **tall emergent** vegetation should not dominate the pond to the point where it shades out other less dominant plants, as this will reduce the diversity of the pond.

Most of the aquatic plants that are able to grow submerged in deeper water fare best where the pond has clean water. Make sure the pond is located in a low intensity catchment to ensure it is fed from a clean water source. Plants colonise new ponds fairly rapidly, especially if the new ponds is located near to other water bodies or wetlands. Resist the temptation to plant up a new pond, as this risks introducing undesirable non-native invasive plants or fish.

SPECIES DOSSIER

4 Fish

Amphibian species vary in their ability to co-exist with fish. In general, fish are effective predators of amphibians, particularly their tadpoles. Even small species such as sticklebacks, prey on amphibian eggs and tadpoles. It is always better to keep the pond fish-free to benefit the widest possible spectrum of BAP Priority species. Certainly, fish should not be introduced to amphibian ponds and new ponds should not be linked to ditch networks or streams, as these usually allow fish colonisation. Occasional pond drying is a useful natural technique to remove unwanted fish.

5 Waterfowl

Ducks and geese often prey on adult amphibians and their eggs. This predation is natural and amphibian populations can withstand a degree of such predation. However, large populations of ducks or geese are unsustainable. They remove vegetation and their faeces add significant nutrients to the pond which leads to eutrophication. Waterfowl should not be stocked or encouraged by providing food or by creating 'duck islands'.

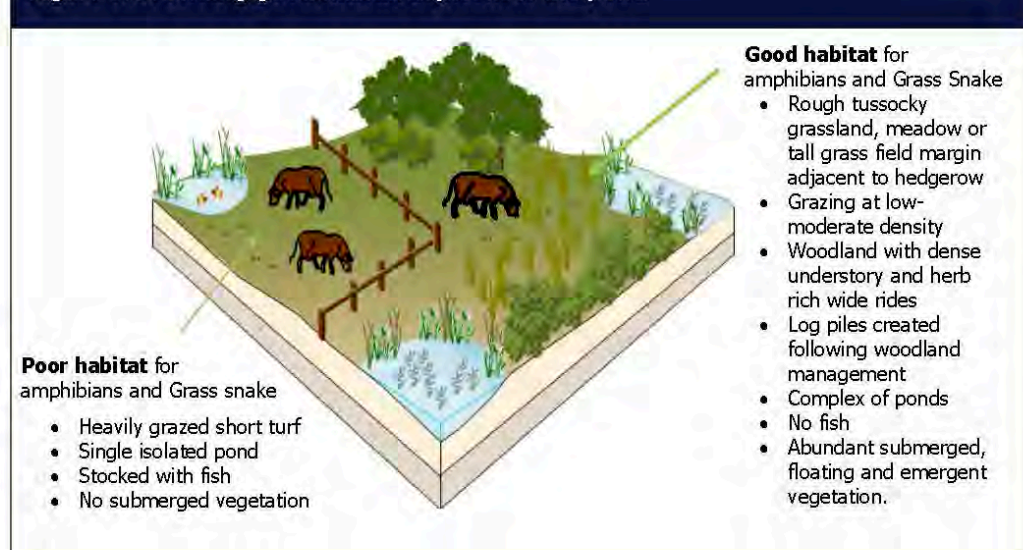
Which habitats around the pond do amphibians and Grass Snake need?

Although they breed in ponds, amphibians spend much of their time on land. Their terrestrial habitat requirements are simple – they need cover to provide damp resting places and to support the invertebrate prey on which they feed. Amphibians can find such cover in most 'natural' habitats, such as grassland, scrub and woodland. Tree stumps, mammal burrows, stone walls and the foundations and loose brickwork of old buildings may also provide places for amphibians to shelter or hibernate.

It is important that cover is present immediately around the pond (but not shading it), because young frogs, toads and newts need damp habitat to move into as they leave the water. This habitat not only provides places to hide and somewhere to find their invertebrate food, but the moisture prevents desiccation of small amphibians during the driest parts of the year.

Warm ponds are favourable for amphibian growth and development. Hence, new ponds should be located in sunny locations. A belt of trees or scrub a few metres to the north of a pond can act as a windbreak that creates a warm microclimate around the pond (Figure 3). Long-term maintenance of the pond site should aim to control other scrub and tree growth to avoid excessive shading of the pond.

Figure 3. Providing good habitat adjacent to the pond



Creating ponds for amphibians and reptiles

Hibernation sites

Hibernacula are sometimes created as overwintering shelters for amphibians (Figure 4). In practice, the benefits of these structures may be limited if the surrounding landscape is generally hospitable with adequate vegetation for the amphibians to find overwintering sites. However, hibernacula may be beneficial at sites where the natural vegetation cover is sparse. In such areas, their construction can be a convenient way of utilising spoil from pond creation or other habitat management.

Pond networks

In common with most pond plants and animals, the long-term survival of amphibians is dependent on networks of suitable ponds. Although there is a widespread belief that amphibians return to breed in the ponds where they were spawned, in fact, movement between ponds is common, and essential to the long-term success of amphibian populations.

New ponds should be created within migration distance of existing breeding sites. Frogs and Toads seem quite able to colonise ponds within one kilometre of an existing breeding site. Newts have lower effective colonisation ranges, and new ponds intended for them should be within 400-500m, at most, from existing populations.

Pond creation should be planned to create or enhance pond networks. Ideally, ponds within a network should be linked by a landscape that is amphibian friendly (as described in *habitat around the pond*). Failing that, ponds should be closely spaced, to minimise the migration distance across unsuitable habitat.

Continuous tracts of amphibian friendly habitat between ponds are ideal, but corridors of suitable habitat (e.g. field margins and hedgerows) can be used if this is the only practical option. Landscape features, such as major roads and rivers, or extensive tracts of unsuitable habitat, are barriers to dispersal. Pond networks should be planned to avoid them.

Figure 4. Creating hibernacula

Piles of debris provide excellent sheltering, egg laying and hibernation sites for amphibians and reptiles.



Hibernacula are easy to create. They can be simple piles of logs or may be partially covered over with soil dug from the newly created pond.



If the site already has lots of natural cover then this is more likely to be used than the hibernacula. They can also make good use of brash left over after management work.



SPECIES DOSSIER

3. Specific requirements

Common Toad

Pond location. Locate ponds within 1 km of existing toad ponds. They spend a large proportion of their lives in terrestrial habitats and may disperse over 2 km from the breeding pond to find woodland or grassland sites. One of the most important factors in pond location is to avoid barriers to dispersal, such as roads, particularly around breeding ponds.

Pond design. Toads tend to prefer larger water bodies than the other amphibians. Toad tadpoles and adults are also distasteful to most fish species so, in contrast to other species, they can thrive in ponds and lakes with populations of fish. In areas where large ponds are uncommon, such as the chalky areas of the Sussex Downs, toads will use smaller waterbodies if nothing else is available. However, as a general rule, typical toad ponds are at least 20 m diameter and have a water depth of 90 cm or more (Figure 5).



Figure 5. Mating toads by their breeding pond - this pond is 2.5 ha in surface area and up to 1.5 m deep.

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Clean water. Because they can tolerate fish, toads are happy in ponds linked to streams and ditches. However in the long-term, stream-fed ponds tend to fill in more quickly with silt and are often polluted with nutrients, reducing their value for other wildlife. Toads also prefer ponds with clear water, and do not tolerate high densities of stocked fish. Indeed because toad ponds can also be used by Great Crested Newts which do not tolerate fish, it is best to keep ponds fish-free.

Vegetation structure. Pond vegetation is beneficial for toads. Breeding toads wrap their spawn strings around submerged plants, and emergent vegetation can provide them with a refuge from bird predators. However, toad tadpoles also benefit from areas of water free from emergent plants. In larger waterbodies, open water areas usually occur naturally where it is too deep for vegetation to establish. However, open water can also be maintained in smaller ponds by manually removing vegetation along parts of the margin in the late summer/autumn, after toadlets have left the water.

Great Crested Newt

Pond location. Create new ponds adjacent to existing populations, because these are larger where they live as sub-populations in a complex of ponds within 250 m of one another. Create new pond complexes within 500 m of an existing complex to allow individuals to spread across the landscape. The habitat between complexes needs to be amphibian friendly, e.g. rough grassland or connecting hedgerows, without barriers such as roads.

Ponds in regularly flooded parts of the floodplain should also be avoided because they are likely to be naturally colonised by fish. Direct links to ditches and streams should be avoided for similar reasons.

Woodlands can be excellent places to create ponds for Great Crested Newt because they usually have ponds with abundant submerged plant growth and good terrestrial habitat (Figure 6).



Figure 6. A woodland pond complex used by Great Crested Newts. Clean water promotes growth of submerged aquatic plants (egg laying sites) whilst terrestrial habitat is provided by thickets of scrub and fallen logs.

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Creating ponds for amphibians and reptiles

Pond design. Great Crested Newt populations are greatest in 'medium-sized' ponds (approximately 500-1000m²), though they can thrive in ponds much smaller than this e.g. 100m². Great Crested Newts are very vulnerable to fish predation and one of the main aims of pond design for this species is to create ponds that remain fish-free.

Ponds should be shallow (e.g. maximum depth <1m) so that they are less attractive to fish. It can be an advantage if the pond dries-down to little or no water in late summer. Ponds that hold water until late summer will allow most newt-poles to complete the tadpole stage, whilst also removing any fish. If ponds occasionally dry out earlier than this (e.g. every three or four years in drought years) it is not disastrous. Great Crested Newt adults are long-lived (10+ years), so populations can survive occasional years where the young do not survive, given the benefits of a fish-free pond in the remaining years.

Ponds with frequent public access are more likely to suffer fish introductions. For more information about creating ponds in areas of public access go to [Supplementary Advice Factsheet: pond designs in areas of public access](#) for more information.

Clean water. The Great Crested Newt is tolerant of some nutrient enrichment, but to do well they need abundant submerged vegetation which will only develop where ponds are fed from a clean water source. Groundwater-fed ponds which collect water from unpolluted catchments (e.g. low intensity grasslands and woodlands) or surface water-fed ponds in low intensity farmed landscapes will be the best source of water for Great Crested Newt ponds.

Vegetation structure. The Great Crested Newt likes to have plants on which to lay eggs, such as Floating Sweet-grass *Glyceria* spp., Water Mint *Mentha aquatica* and Water Forget-me-not *Myosotis scorpioides* as part of a suit of submerged, floating and emergent leaved plant species. Ponds should also retain some open water in which mating displays can take place.

Licensing. The Great Crested Newt is strictly protected by law (from disturbance, capture, killing and damage to habitat). Hence, when creating ponds in areas where Great Crested Newts may already be present, care should be taken not to disturb potential hibernation sites from October to February. Instead, work should be carried out in these areas from April to June when the newts are more likely to be in the pond. Similarly, avoid major work close to Great Crested Newt ponds (within 50-100m) between February and September/October when newts will be migrating to and from the pond. Discuss plans to create ponds for Great Crested Newt with Natural England or the Countryside Council for Wales. They will probably ask you to prepare a method statement which will set out what work you are planning on doing and the work schedule (www.naturalengland.org.uk/ourwork/regulation/wildlife/species/epslicensing.aspx).

Grass Snake

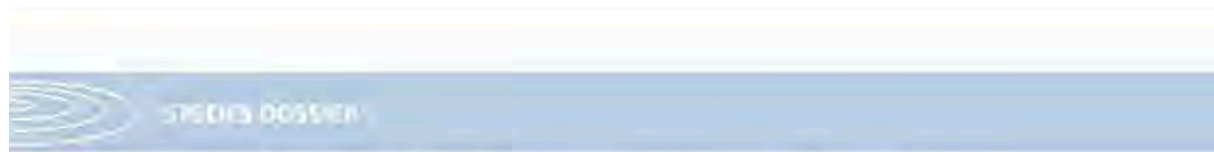
Grass Snakes are often found in or near wetland habitats, because they mainly feed on amphibians and to a lesser extent, fish. Creating 'good amphibian ponds' is therefore very important to Grass Snake conservation, i.e. small, shallow ponds (<0.5m deep) with gently shelving margins which are free from fish (Figure 7). Many wildlife garden ponds make excellent ponds for Grass Snakes.

Grass Snakes also need areas of dry, terrestrial habitat, comprising a mix of vegetation cover with some open spaces in which to bask in the sun. Spoil from pond excavation can be used to create a warm sunny bank or hibernation site. Grass Snakes need warm microhabitats to incubate their eggs. In most cases they use the heat generated from decomposing vegetation, such as found in a large compost heap or similar. Brash from pond or wetland management tasks, such as cutting reeds, can also create good egg laying sites.



Figure 7. A good amphibian pond, like this one, will attract Grass Snakes to the site.

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4. Designing garden ponds for amphibians and Grass Snake

Many garden ponds can be great places for amphibians and Grass Snake, provided that they are well designed and have amphibian friendly habitats directly adjacent to the pond.

Fill your pond with clean water. It is tempting to fill a new garden pond with tap water. However, tap water is often much higher in nutrients than rain water. These nutrients will cause algae to grow in the pond which will reduce the area of open water available for amphibians and suppress the growth of other pond plants. It's better to let ponds fill up when it rains or use rainwater stored in water butts.

Make broad, gently sloping pond margins. If you have the space available, aim for a water depth of less than 10cm over at least 1m to support lots of marginal plants. Ready-made ponds often have steep sides so it is better to use a flexible pond liner to create a more natural pond profile.

Water levels may fluctuate over the summer and that's ok, avoid topping up with tap water. If you create some deeper water, about 0.5m, the pond will probably hold some water throughout the year. Even if a pond completely dries out occasionally the pond life will come back very quickly once water returns.

Planting-up ponds. In most situations it is better not to introduce plants into newly created ponds. Pond plants will arrive very quickly on their own. However, if this is a small pond in an urban garden, you may want to add some plants. If you want a really good wildlife pond in your garden you should only use native plants. Be really careful to check that the plants you buy do not bring invasive species in with them, such as New Zealand Pigmyweed *Crassula helmsii*.

Ideally you should allow a fringe of vegetation to develop around most of the pond edge, grading into shrubs around the garden perimeter (Figure 8). Long grasses or a wildflower meadow will provide shelter as animals enter and leave the pond. Avoid putting paving slabs up to the pond edge as they will increase the risk of predation. Instead, consider creating a rocky to provide lots of hiding places and bare rocks which Grass Snake can use as basking sites.

Do not stock wildlife ponds with fish. Fish will eat the eggs and tadpoles of amphibians (except Common Toad) and few will make it to adulthood in garden ponds which are stocked with a lot of fish. If you do want fish make sure the pond is large enough to have an area with dense plant growth to provide refuges to amphibians. Fish will find it harder to get in here and frogs and newts will be able to spawn in relative safety. Even better, create another separate pond for wildlife and keep the ornamental pond for your fish.

Garden refuges. Compost heaps are great habitats for amphibians, as they provide hibernation sites and abundant supplies of insect prey. Grass snakes also make use of compost heaps as they provide excellent egg laying sites. Log piles created from the brash collected during garden maintenance will also provide good invertebrate habitat. Really large logs in a stack will have big gaps which leave amphibians feeling exposed, so create a pile using a mixture of large logs and small twigs, or a mixture of logs and turf to create lots of small cavities.

Garden pond complexes. Because most of our gardens are relatively small, it is unlikely that you will be able to create a large complex of ponds in a single garden. However, rural garden ponds may form part of a complex with ponds in the surrounding countryside. In urban gardens, your pond may form a pond complex with your neighbour's garden ponds. Encourage them to manage their ponds for wildlife as well, to create a large area of amphibian friendly habitat.

Freshwater Habitats Trust has created a free booklet - [Creating Garden Ponds for Wildlife](#) which contains detailed information on pond designs and pond creation techniques for garden ponds. We also have a [Garden Pond Blog](#) to help answer all your Garden Pond queries.

Creating ponds for amphibians and reptiles



Figure 8. Frog spawn in a shallow fish-free garden pond (left) and dense planting in a rockery adjacent to the pond (left) to provide cover for amphibians.

5. Further reading

- Baker, J., Beebee, T., Buckley, J., Gent, T. and Orchard, D. (2011). Amphibian Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.
- Beebee, T. and Denton, J. (1996) Natterjack Toad conservation handbook. English Nature.
- Beebee, T. and Griffiths, R. (2000) Amphibians and Reptiles. New Naturalist Series 87. Harper Collins.
- Edgar, P., Foster, J. and Baker, J. (2010) Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.
- Field Studies Council (1999) AIDGAP guide to the reptiles and amphibians of Britain and Ireland. FSC, Shrewsbury.
- Langton, T. Beckett, C. and Foster, J. (2001) Great Crested Newt Conservation Handbook. Froglife, Halesworth.

For further information about the Million Ponds Project and to consult other factsheets in the Pond Creation Toolkit, please visit www.freshwaterhabitats.org.uk or email enquiries to info@freshwaterhabitats.org.uk



ECOLOGY AND PROTECTED SPECIES SURVEY LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

APPENDIX 5 Meadow Mat Information



Parks, green spaces and urban planting – CUT COSTS while meeting valuable strategic goals by improving:

- Local biodiversity
- Essential wildlife corridors
- Local educational and recreational resource

Introducing Meadowmat

Meadowmat is an instant wild flower meadow on a roll!

Delivering fantastic ROI, Meadowmat is easy to install, self-perpetuating year on year, and extremely LOW maintenance. Why not improve your local environment while slashing the costs of upkeep?

At last there is a simple and cost-effective way to respond positively to the many growing pressures for more sustainable land management. And the benefits to your communities are visible and measurable too. Just look at these advantages:

1. Cutting costs

In one move you can slash routine mowing requirements, eradicate expensive herbicides – and let nature do all the hard work creating beautiful floral displays!

With today's financial restraints, maintaining an elaborate planting scheme is simply not realistic. From formal parks to planted roundabouts, even routine grass cutting is becoming an unaffordable luxury.

With Meadowmat wild flower areas, you only need ONE major mow per year! And by allowing the area to self-seed, you reduce that costly nursery-plant bill too. You don't even need expensive ground preparation – natural meadows thrive best on poor soil!

Meadowmat has to be the most cost-effective and high ROI spending choice you can make.

We're here to help you

We're not just passionate about restoring Britain's essential wild flower meadows; we're dedicated to helping YOU to do it too. So we can provide advice on:

- Type of Meadowmat
- The best location
- Size and shape of meadow
- Installation
- Simple maintenance
- Trouble shooting

So, call us NOW and let's get planning! Alternatively, visit the website to learn more about the different types of Meadowmat and the easy installation and maintenance.

www.meadowmat.com
0800 061 2653

2. Enhancing green credentials

Buglife, RHS, Plantlife, Britain in Bloom and Wildlife Trusts – all these and more are ready to give credit and kudos to any council able to support their vital biodiversity initiatives. And when it saves you money as well, it's a win-win for everybody!

Parks and green spaces are high-visibility beacons advertising your environmental successes. Simple information boards can be used to explain and show off your initiatives (including wildlife corridors, increased biodiversity, and preserving indigenous flora and fauna for the community) – earning you valuable public endorsement.

Green Flag and other awards: by introducing Meadowmat wild flower areas to your public spaces, and involving local communities in the planning, you are eligible for all kinds of official recognitions.

3. Improving neighbourhoods

Natural enhancement of the neighbourhood environment is one of the simplest and most effective legacies you can make.

We've already seen how hands-on interaction with nature has become a central part of the school curriculum. Now, research is revealing the benefits throughout our life-span, and particularly for the elderly and the vulnerable. From as little as 2 square metres, an area of wild flower meadow:

- Enhances visual and aesthetic properties
- Focuses community pride and respect
- Reduces stress and anti-social behaviour.



BENEFITS

Easy to install and incredibly low maintenance!

Traditionally, new planting schemes are slow and costly projects. Not any more!

Meadowmat is delivered ready to unroll and install, with grasses and flowers already growing. Depending on when you lay it, you may see flowers within just a few weeks in the very first year! And of course you have an instant living feature – no waiting with fingers crossed for seeds to germinate on bare soil.

Maintenance is as simple as one major cut per year, and some light mowing in the autumn.

It's even chemical-free!

A wild flower meadow is FAR greener than a flower bed or even an area of lawn.

Wild flower turf actually discourages unwanted plants and weeds. So you won't have to resort to chemical herbicides and pesticides and instead will be protecting the natural environment – another green credential to boast about!

www.meadowmat.com


0800 061 2653



ECOLOGY AND PROTECTED SPECIES SURVEY LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

APPENDIX 6 Bat Roost Units





contact numbers

sales office 0870 903 4010
design advice 0870 903 4018
technical services 0870 903 4017
literature and samples 0870 903 4030

ideas into action

eco habitats for bats





ideas into action

eco habitats for bats



IBSTOCK®
Innovators in clay

Enclosed bat box (A & B)

- Designed with the Pipistrelle Bat in mind
- Available in all brick types
- Attractive motif
- Discrete home for bats
- Various sizes
- Several roosting zones are created inside the box
- Bats are contained within the Bat Box itself
- Maintenance free as the entrance is at the bottom
- Ideal for new build & conservation work

Free Access Option (C)

- Discrete Single Bat brick
- Easy to install
- Allows bats to create a natural home habitat within the cavity of the building

www.ibstock.com

Eco Habitats for Bats - Technical Data: A

Sizes	215mm x 215mm or 215mm x 255mm
Durability	F2, S2 - fully frost resistant

Eco Habitats for Bats - Technical Data: B

Sizes	215mm x 215mm or 215mm x 255mm
Durability	F2, S2 - fully frost resistant

Eco Habitats for Bats - Technical Data: C

Size	215mm x 65mm
Durability	F2, S2 - fully frost resistant

3 Boxes for Bats

BAT ACCESS PANEL 1FE

This maintenance-free access panel can be installed in the outer skin of most cavity wall constructions due to its slim 80mm depth. The open rear also allows access into the building cavity so that bats can continue to use an existing roost space.

Size: 300x300x80mm
Weight: 7.8kg



BAT TUBE 1FR

The Bat Tube 1FR requires no maintenance or cleaning. The sloping entrance area allows droppings to simply fall out of the chamber. The 1FR mimics the cavities that species such as the pipistrelles favour and the wooden back panel helps maintain the optimum climatic conditions and also provides surface on which the bats can cling. The depth of this box (125mm) makes it ideal for use in 9" solid walls or where the outer skin of a property is of stone. The box can also be recessed into the wall and rendered over, just leaving the access section clear.

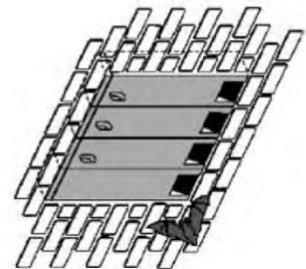
Size: 470x200x125mm
Weight: 9.5kg



BAT TUBE 2FR

This is a slightly updated version of the 1FR and several can be installed next to each other to create a larger roost. The tubes include an internal panel to increase the roost space and also an optional passage at the rear allowing access into existing cavities.

Size: 470x200x125mm
Weight: 9.5kg



BAT BRICK TYPE 27

The Type 27 Bat Brick is designed to be built into the structure of buildings and includes a removable front panel for monitoring purposes. An internal roughened wood panel increases the available roost space.

Size: 265x180x240
Weight: 9.5kg



BAT ROOST 1FQ

This is the latest in bat boxes. Designed to fit to the outside of buildings, the shape and design of the box make it equally attractive as a roost or nursery.

Size: 600x350x90mm
Weight: 15kgs

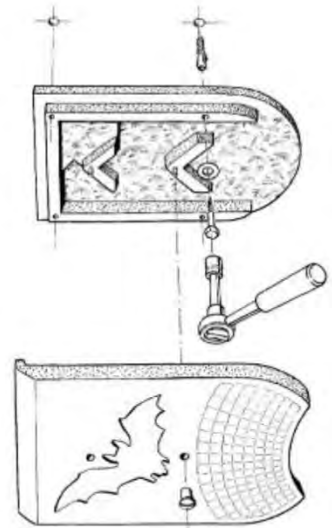


WINTER BAT ROOST 1WQ

Based on the successful 1FQ, this box has better insulation properties for use as a winter roost by bats

Size: 580x380x115
Weight: 21kg

Both of the above boxes are easily fixed to the outside of a building with two screws and a galvanised bracket as shown below.



CAVITY BAT ROOST

Wild-x

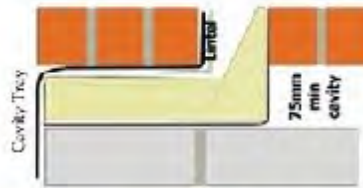


Dimensions
A Height: 440mm
B Width: 420mm
C Depth: (at base) 170mm

Weight:
12kg

KEY FEATURES

- Incorporates into structures using standard face materials
- Supplied with urethol and DPM for the cavity tray
- Creates a permanent bat roost that cannot be removed by subsequent occupiers
- Unobtrusive 'retro-fit' entrance makes little impact on building appearance
- Suitable for a wide range of bat species



Material:
Concrete/wood-plastic mix

Internal:
Internally there is approx. 350 square centimetres of roosting space. This space is divided up to form crevices ranging from 10mm to 25mm which also creates places to hide and spots where it is warmer or cooler

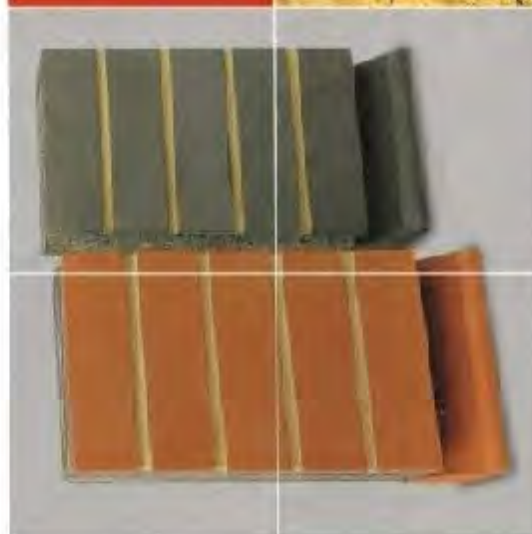
Distributor:



The entrance is 420mm wide by 40mm high which is basically the width of 2 normal house bricks. The gap of the top of the entrance ramp is approx 20-25mm which is ideal for the smaller bat species.

Wienerberger
Building Value

Bat Boxes.
To protect
and conserve.



Wienerberger has worked closely with the British Bat Society (BBS) to create a range of eco-friendly bat boxes, designed to attract and protect bats. In the UK, the Wienerberger bat box is the largest and features an innovative 'cavity' structure which helps maintain the bats' body temperature in winter for them to fly off.

The bat box is designed to encourage bats to roost in the UK, which is a protected species, and is a key part of the UK's biodiversity. The bat box is made of high-quality materials and is designed to be durable and long-lasting.

Wienerberger bat boxes are available in a range of colors to match your building. The bat boxes are made of high-quality materials and are designed to be durable and long-lasting. The bat boxes are made of high-quality materials and are designed to be durable and long-lasting.

Our bat boxes can help increase the number of bats in your area. The bat boxes are made of high-quality materials and are designed to be durable and long-lasting. The bat boxes are made of high-quality materials and are designed to be durable and long-lasting.

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Further detailed information on Wienerberger bat boxes and bat conservation is available at www.brick.co.uk/batbox or contact Design Services on 0161 461 8200

ECOLOGY AND PROTECTED SPECIES SURVEY LAND AT PARK FARM, BOURNE, LINCOLNSHIRE

APPENDIX 7 Hedgehog Mitigation

Hedgehogs will travel through a number of gardens in one night looking for food and nest sites. To allow a hedgehog access into the gardens, all it takes is a 130mm - 130mm square gap in a fence panel, under a gate or alternatively using native hedges in place of fences.

Having a series of hedgehog gaps across the site will encourage the creation of hedgehog friendly routes between gardens and other habitat, removing the need for hedgehogs to wander out onto our busy roads.

Ensure that garden ponds have at least one side that slopes gently, to allow any hedgehog to get out, or form a ramp to create an escape route.



Gap under a gate



Hole in a timber fence panel



Hole in a plastic fence panel

A nesting option for hedgehogs can also be provided, by creating a natural feature such as a compost heap or log pile. Artificial hedgehog houses may also be used by hedgehogs, and are widely available. Choose a shady, quiet area of the garden to site the hedgehog house, and ensure that there are plenty of leaves near to the box, or leave out straw and hay which can be used.



Wooden hedgehog house



Schwegler hedgehog dome

More information on how you can make your garden hedgehog-friendly can be found on the Hedgehog Street campaign website, run by the People's Trust for Endangered Species (PTES) and British Hedgehog Preservation Society: www.hedgehogstreet.org