Ecological Survey of Box Cemetery

Report prepared for Box Parish Council

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1. Executive summary

Box Cemetery has high ecological value to the local area, with the potential to support a wide array of plants, lichens and wildlife. Evidence already exists of a variety of insects and common hedgerow birds using the site as a foraging and potential nesting habitat.

The site is well managed, with conservation in mind, offering areas of longer semi-improved grassland meadows to establish, while accessible areas around gravestones are kept short with more improved grassland species dominant. Furthermore, the historic nature of the hedgerows and veteran trees on site, provide high quality species-rich hedgerows and good nesting and foraging habitat for bats.

Maintaining the ecological value of the site should be of high importance to Box Parish Council, while recommendations have been provided to demonstrate how the site could be further improved for wildlife.

2. Introduction

2.1. Site Location

Box Cemetery is situated on the western outskirts of Box village and adjacent to the north is the main road A4 between Bath and Chippenham. To the west of the Cemetery lies an agricultural field and then Budgens Garage, while to the south lies further large agricultural fields bordered by hedgerows (Figure 1).

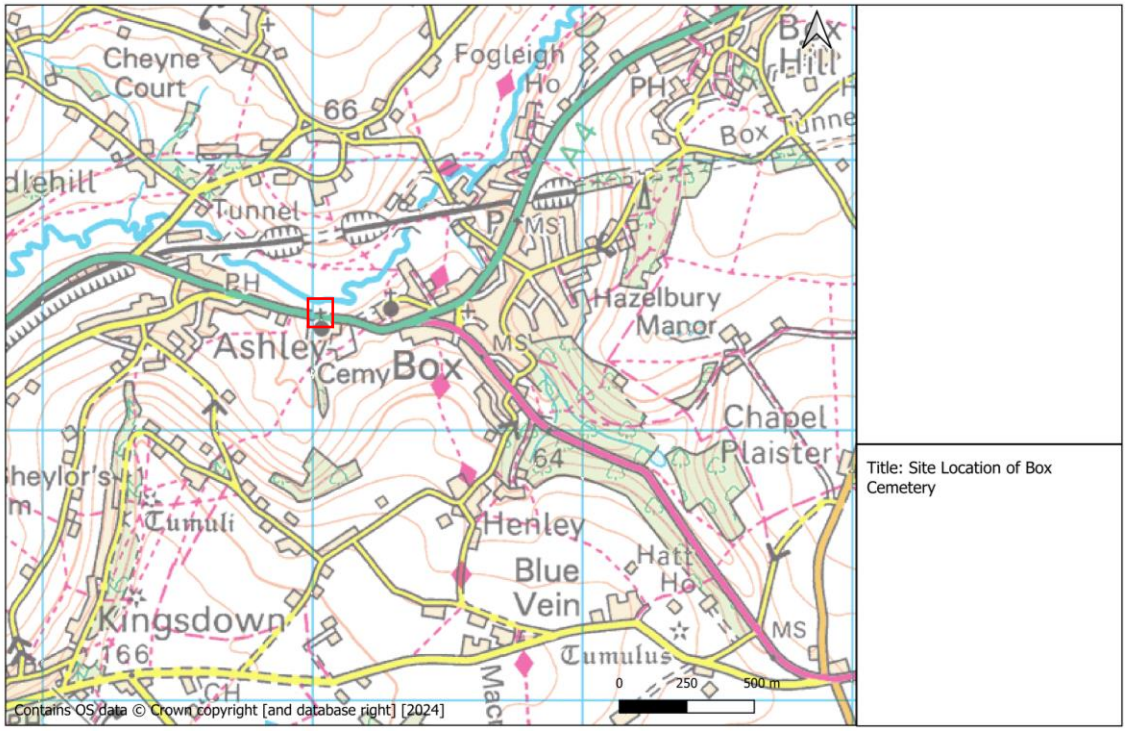


Figure 1 Site Location of Box Cemetery

3. Methodology

3.1. Field Survey

An initial site walkover was undertaken on the 17th June 2024, followed by a further survey on the 6th July 2024 to 1) record habitats present, and 2) assess the value of the habitats present for protected and notable species. A list of vascular plants and a description of the vegetation was made, including the location and extent of any Schedule 9 (WCA 1981) plants. Photos of the habitats and any field present signs are provided in Appendix 1.0.

3.1.1. Habitats and vascular plants

The site was walked with all distinct vegetation and habitat types as well as any features of interest identified using the Phase 1 Habitat Survey methodology (JNCC, 2010). Care was taken to record as many species as possible.

3.1.2. Amphibians and reptiles

a) Amphibians

The terrestrial habitat suitability of the site was assessed with respect to refugia and foraging habitat based on the known preferences of GCN and widespread amphibians such as common frog (*Rana temporaria*), smooth newt (*Lissotriton vulgaris*), and common toad (*Bufo bufo*). No ponds are present on site, although one pond is recorded 180m north east of the site bisected by the A4.

b) Reptiles

Habitats on and around the cemetry were assessed with respect to the known foraging and refuge preferences of widespread reptile species, in particular grass snake (*Natrix natrix*) due to the stream which borders the western boundary of the cemetry.

3.1.3. Bats

a) Tree Roost Assessment

Existing trees were visually checked to assess their suitability for supporting roosting bats using the following criteria:

1. All Potential Roosting Features (PRFs) (e.g. natural cavities, rot holes, woodpecker holes, splits, peeling bark) were inspected from the ground, using binoculars where necessary;

2. All potential niches would be assigned a category according to Bat Conservation Trust (BCT) protocols (Collins, 2016). These categories are listed below:

• High Suitability: Trees with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat;

• Moderate Suitability: Trees with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation;

• Low Suitability: A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.

• Negligible Suitability: Trees with negligible bat roost potential.

3.1.4. Nesting birds

The value of the site was assessed in relation to nesting birds. This was supplemented with field records of birds seen or heard within the site, or nests observed.

3.1.5. Badger

The cemetry was surveyed for evidence of badger activity including setts, day beds, latrines, diggings/snuffle holes, paths/runs, scratching posts, hair, and footprints. Any potential sett found was then assessed for evidence of recent use by badger and classified as per current guidance (Scottish Badgers, 2018).

3.1.6. S.41 habitats and species

The site was surveyed to determine the presence of any S. 41 habitats such as native species-rich hedgerows. The site's suitability for S. 41 list species such as hedgehog and brown hare was assessed based on their habitat preferences.

3.1.7. Non-native invasive plant species

The site was inspected for Schedule 9 species such as Japanese knotweed and giant hogweed.

3.2. Survey Constraints

Given the nature of the site and the accessibility, the timing of the survey visit was considered appropriate for this report.

4. Results

4.1. Introduction

This chapter summarises the results of the desk and field surveys.

4.2. Baseline Ecological Conditions – Desk Survey

4.2.1. Designated Sites

Locally designated sites (e.g. County Wildlife Sites [CWS]) nationally designated sites, and internationally designated sites (Appendix 2.0) within 2km of Box cemetry are listed in Table 4.1.

Table 1 Designated Sites within 2Km of Box Cemetry

Site Name and designation
Box Mine Site of Special Scientific Interest (SSSI)
Bath & Bradford on Avon Bats Special Area of Conservation (SAC)
Cotswolds Area of Outstanding Natural Beauty (AONB)

4.2.2. Priority Habitats

4.2.2.1. Wood pasture and parkland BAP Priority Habitat

Box Bottom is designated as Biodiversity Action Plan (BAP) priority wood pasture and parkland habitat within 2Km of Box Cemetery.

4.2.2.2. Priority Habitat Inventory – Traditional Orchards

There are 2 traditional orchards within 2Km of Box Cemetery, one adjacent to the Devizes Road in Box and one in Middlehill.

4.2.2.3. Ancient Woodland

White Wood is a site of 8.3hectares of ancient replanted woodland adjacent to the Devizes Road in Box. In addition, England's Wood is a 1.7 hectare site of ancient and semi-natural woodland to the south-west of the cemetery.

4.3. Baseline Ecological Conditions – Field Survey

4.3.1. Hedgerows

Hedgerows are present around multiple boundaries of the site:

Hedgerow H1 (Figure 2) is an intact native species-poor hedge comprising common hawthorn (*Crataegus monogyna*), and a number of standard trees including beech (*Fagus sylvatica*), field maple (*Acer campestre*), yew (*Taxus baccata*), cherry tree (*Prunus avium*) and Leyland cypress (*Cupressus leylandii*). Understory vegetation comprises creeping buttercup (*Ranunculus repens*), creeping thistle (*Cirsium arvense*), common nettle (*Urtica dioica*), plantain (*Plantago major*), broad-leaved dock (*Rumex obtusifolius*), and bramble (*Rubus fruticosus*).

Hedgerow H2 (Figure 3) is a well-established species-rich hedgerow located adjacent to the stream and is comprised of hawthorn, hazel (*Corylus avellana*), elder (*Sambucus nigra*), yew, willow (*Salix* sp.), with a veteran standard oak (). There are a large number of ivy -clad standard tees and dog rose (*Rosa canina*) weaving through the hedgerow. The understorey of plants and flowering hedgerow species attract a vast number of pollinators, which were seen during the survey (Figures 4-5).

Hedgerow H3 is species-rich hedgerow comprising dogwood, cherry laurel (*Prunus laurocerasus*), hawthorn, elder, dog rose, and honeysuckle (*Lonicera periclymenum*) which grows through parts of the hedgerow, providing excellent food source for pollinators. A carpet of greater periwinkle (*Vinca major*) dominates the understorey .

Hedgerow H4 is a well-established species-rich hedgerow comprising elder, beech, ash, hawthorn, holly, wild cherry, field maple, and blackthorn. A number of standard trees are situated adjacent to the hedgerow, including silver birch (*Betula pendula*) and copper beech (*Fagus sylvatica* f. *purpurea*) but are not within the hedge line itself. Bramble, hedge bindweed (*Calystegia sepium)* and honeysuckle weave their way through the hedgerow.

Hedgerow H5 is species-poor and predominantly comprised of wild privet (*Ligustrum vulgare*) (Figure 6).

Hedgerow H6 is comprised of two short sections of hedgerow that are dissected by the access track and footpath around the cemetery (Figure 7).

Figure 2 Hedgerow H1 along the northern boundary, adjacent to the A4

Figure 3 Well established species-rich hedgerow (H2) adjacent to the stream.

Figure 4 Bumblebee on bramble flowers

Figure 5 Meadow brown on bramble leaves

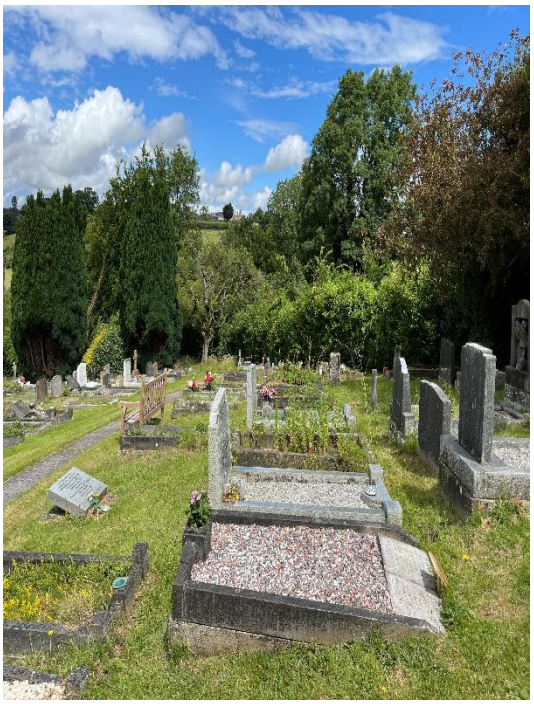


Figure 6 Species-poor hedgerow (H5).

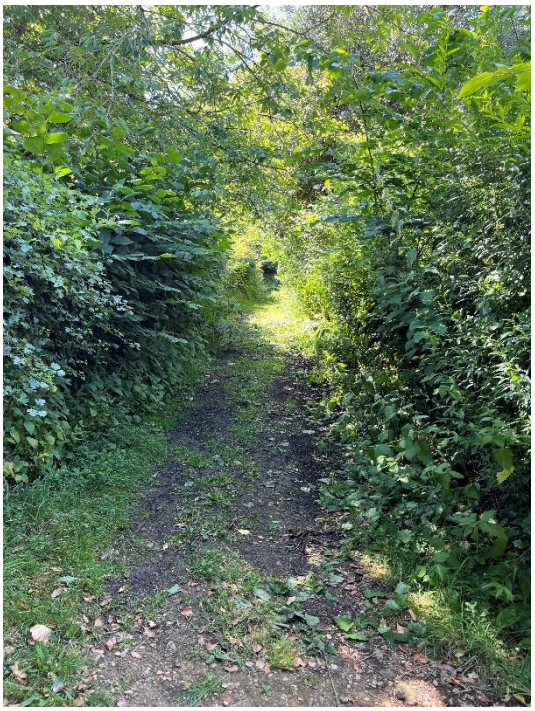


Figure 7 Two short-section hedgerows either side of access track (H6).

4.3.2. Improved Grassland

The majority of the grassland at the cemetery is improved grassland with a limited sward comprised of more than 50% perennial ryegrass (*lolium perenne*), creeping buttercup, white clover (*trifolium repens*), dandelion (*Taraxacum officinale*) and common daisy (*bellis perennis*) (Figure 8).

The management regime of these areas requires regular mowing and the removal of cut grass in order to ensure graves and footpaths are accessible to the public and beneficiaries.

Figure 8 Improved grassland dominates the main area of the cemetery.

4.3.3. Semi-improved grassland

There are three areas of semi-improved grassland at the cemetery where the mowing regime has been ceased to allow a more diverse sward of grasses and herbs to develop including Yorkshire fog (*Holcus lanatus*), perennial ryegrass, meadow foxtail (*Alopecurus pratensis*), crested dog's tail (*Cynosurus cristatus*), cock's foot (*Dactylis glomerata*), meadow buttercup (*Ranunculus acris*), meadow thistle (*Cirsium dissectum*), hemp agrimony (*Eupatorium cannabinum*), bird's foot trefoil (*Lotus corniculatus*) (Figure 10), wild carrot (*Daucus carota*), dandelion, broad-leaved dock, common ragwort (*Senecio jacobaea*), common knapweed (*Centaurea nigra*), Mouse-ear hawkweed (*Pilosella officinarum*), Betony (*Betonica officinalis*) and lady's bedstraw (*Galium verum*) (Figure 9).

These areas were brimming with the sound of insects during the survey, including common field grasshopper (*Chorthippus brunneus*), hoverfly sp., common green shield bug (*Palomena prasine*), white-tailed bumblebee (*Bombus lucorum*), large white butterfly (*Pieris brassicae*), bee fly sp. (*Bombyliidae*), small skipper (*Chorthippus brunneus*), and meadow brown (*Maniola jurtina*) (Figures 11 and 12) . This area of long grassland was also

of interest to an Emperor dragonfly (*Anax imperator*) which spent a long time flying around the grasses and using the long leaves as perches (Figure 13). The proximity of the stream to these areas of long grassland/ meadow areas makes them of particular importance as they act as foraging habitat for a broad range of invertebrate species.

Figure 9 Semi-improved grassland habitat.

Figure 10 Bird's-foot trefoil

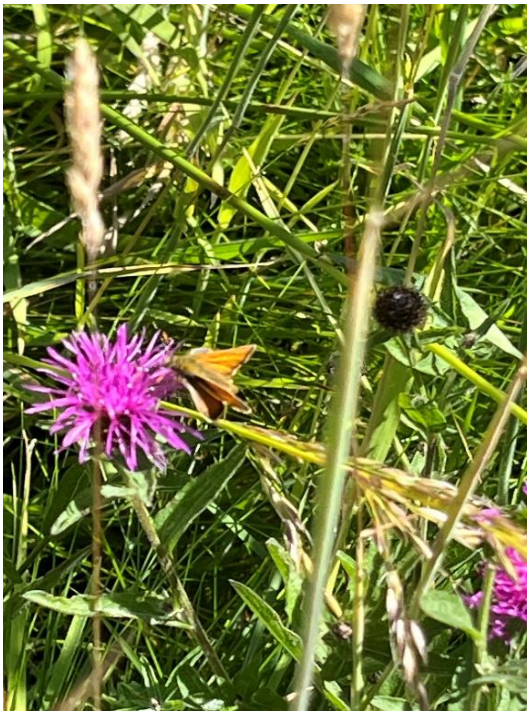


Figure 11 Small skipper on knapweed

Figure 12 Pollinators on flowering plants in long grassland areas.

Figure 13 Emperor dragonfly on long grass.

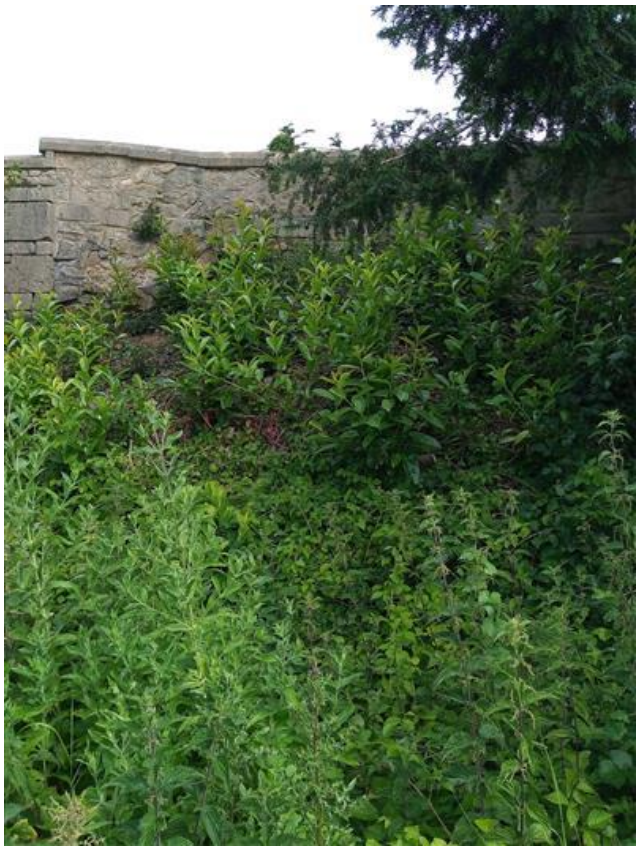
4.3.4. Running Water

The stream is situated along the western boundary of the cemetery and has a relatively straight planform with natural gradually sloping banks. The stream is heavily shaded by the hedgerow and a number of standard trees. The substantial overshading of the stream reduces the ecological value of the habitat. The ideal ratio of light to shade is 60:40 in order to allow sufficient light in for aquatic macrophyte growth. There are however good amounts of woody debris within the stream which provide excellent habitat for freshwater invertebrate species.

4.3.5. Tall ruderal

An area of tall ruderals is planted along the wall of the northern boundary of the cemetery which are comprised of typical garden plants rather than wildflowers and includes species such as day lily (*Hemerocalis* sp.), verbena (Verbena bonariensis), meadow cranesbill (Geranium pratense), sedum (*Hylotelephium sp.), Bergenia (Bergenia cordifolia), hellebore (Helliborus sp.) and lungwort (Pulmonaria sp.).*

Figure 14 Tall ruderals comprised of pollinator plants such as verbena.



An area of bare ground, and low vegetation is present among the tall ruderals on the northern boundary of the cemetery (Figure 15). The mosaic of habitat of tall ruderal, stone wall and bare earth areas is excellent habitat for ground-nesting bees.

Figure 15 Bare ground areas are important for ground-nesting bees.

A third area of tall ruderals is present adjacent to the stream. This area is comprised of common nettle, white dead-nettle (*Lamium album*), creeping buttercup, meadowsweet (*Filipendula ulmaria*), hedgerow cranesbill (*Geranium pyrenaicum*), and common vetch (*Vicia sativa*), creating a fantastic riparian habitat area for species such as butterfly, ladybird, bees, and damselflies that were all observed during the survey. Due to the proximity of this tall ruderal area to the stream, it would also act as a good habitat for amphibians and reptiles such as grass snake that favour damp and wet habitats.

4.3.6. Standard Trees

There are a number of standard trees situated at the cemetery and some of which are important veteran standards. A separate veteran tree survey has been undertaken of the cemetery (Part, 2024) which identifies the importance and long-term management of these trees.

The standard trees at the cemetery are distributed within the hedgerows and boundaries of the cemetery and comprise a wide range of native broad-leaved species, including beech, oak, birch, holly, yew, willow, ash, elder, hazel, and copper beech.

The range of species and ages within the cemetery provides a wide range of habitats for foraging and nesting birds and invertebrates. Fallen limbs provide essential wood for ground-dwelling invertebrates and mycorrhizal fungi, a much deprived habitat within the UK, yet one with immense value to wildlife and the local ecology.

Figure 16 Veteran trees with cracks

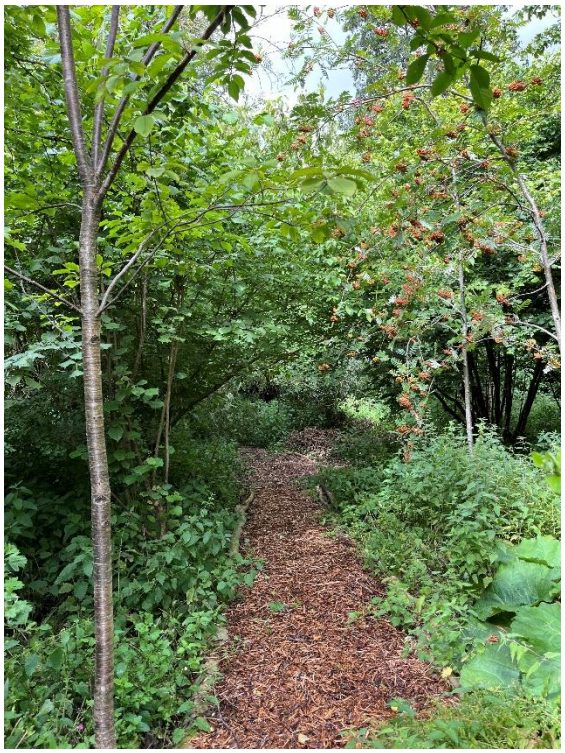


Figure 17 Bark paths within the plantation.

4.3.7. Plantation Woodland

An area of plantation woodland has been created towards the south west boundary of the cemetery. The plantation has a circular path within it comprised of wood chip and a range of native broad-leaved species present including, Rowan (*Sorbus aucuparia*), dogwood (*Cornus sanguinea*), wild cherry (*Prunus avium*), elder, hazel, and field maple (*Acer campestre*). Where the paths have been laid gives way to light glade areas that enables an understorey of plants to establish including common nettle, cleavers (*Galium*

aprarine), red campion (*Silene dioica*), broad-leaved dock, hart's tongue fern (*Asplenium scolopendrium*) and bracken (*Pteridium aquilinum*).

4.3.8. Boundaries

An old stone wall is situated along the northern boundary of the cemetery (Figure 18). There are a number of cracks and gaps in the wall which provide excellent habitat for invertebrates, including red masonry bee (*Osmia bicornis*) which favour this habitat.

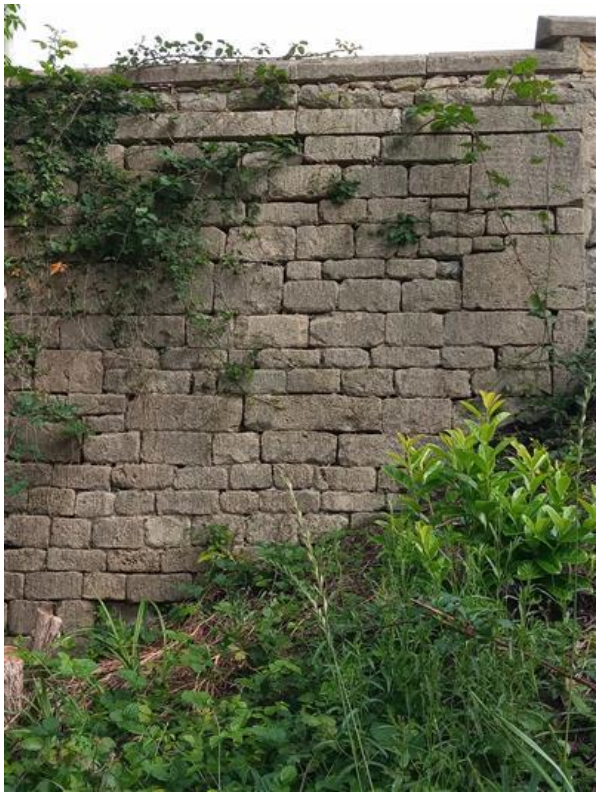


Figure 18 Stone wall on northern boundary.

4.3.9. Amphibians and reptiles

a) Amphibians

The cemetery provides **Low Suitability** for amphibians. It is possible that some toads may inhabit the damp areas around the back of the compost bins and adjacent the stream area, however, due to the lack of standing open water there is limited habitat provision for species such as frogs and newts.

b) Reptiles

The cemetery provides an **High Suitability** for reptiles, in particular grass snake and slow worm (*Anguis fragilis*). The two compost heaps situated within the north west and north

east corners of the cemetery provide ideal nesting habitat for grass snake and slow worm as they lay their eggs in these warm conditions that the heap provides.

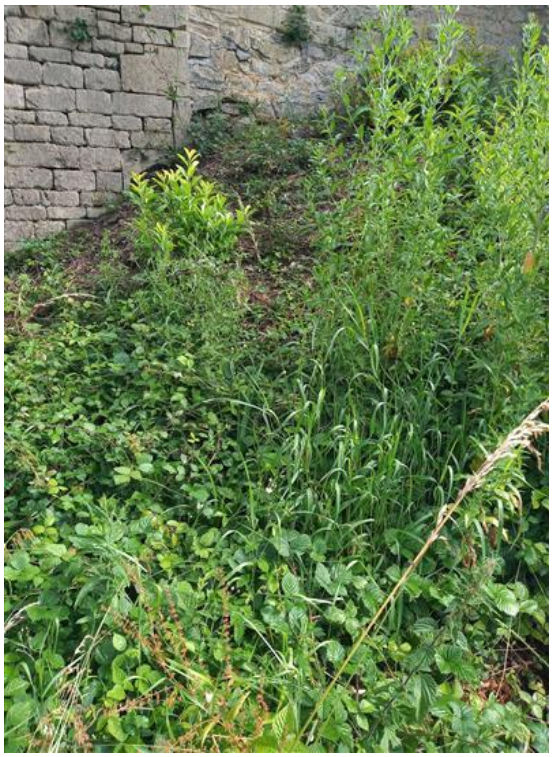


Figure 19 Basking habitat for reptiles.

Figure 20 Compost heap excellent retile habitat.

4.3.10. Bats

a) Tree Roost Assessment

Hedgerow trees as well as standard trees, including oak, were assessed as having **High Suitability** bat roost potential with plenty of cracked bark, and ivy-covered tree trunks.

b) Foraging/ commuting habitat

The foraging and commuting value of habitats on site was assessed as being **Moderate Suitability**. The hedgerows provide the best foraging potential for species such as common and soprano pipistrelles that use the linear habitats on site and importantly their connection to the wider landscape around the cemetery. The long areas of semi-improved grassland provide Low to Moderate potential for foraging bats. These areas, despite support a broad range of insect species are limited in size and are more likely to favour foraging swifts (*Apus apus*) and swallows (*Hirundo rustica*).

The adjacent arable and permanent pasture fields support insect species and provide foraging grounds for brown long eared bat (*Plecotus auratus*), lesser horseshoe (*Rhinolophus hipposideros*) and greater horseshoe (*Rhinolophus ferrumequinum*) known to roost in Box Woods SSSI/SAC.

4.3.11. Nesting birds

The cemetery provides **High Suitability** for nesting birds. A Song thrush (*Turdus philomelos)* (Amber status; S.41) was observed in the scrub area adjacent the stream during the walkover survey, indicating potential nesting sites may be present in the cemetery.

Great tit (*Parus major*), blackbird (*Turdus merula*), and woodpigeon (*Columba palumbus)* were also observed flying between the hedgerows at the cemetery. The dense hedgerows with an undergrowth of thistle, nettle, honeysuckle and meadowsweet provide a diversity of plants upon which insects and thus local bird species can thrive.

The hedgerows have the potential to support dunnock (*Prunella modularis*) (Amber Status), wren (*Troglodytes troglodytes*) and yellowhammer (*Emberiza citrinella*) (Red Status; S. 41).

4.3.12. Badger

There was no evidence of badger seen on the site.

4.3.13. Hedgehog

Box Cemetery provides **High Suitability** for foraging and hibernacula habitat for hedgehog, particularly the linear corridors of dense hedgerows to provide cover and the areas of semi-improved grassland and tall ruderals that host a variety of insects, in particular slugs and snails. The hedgerows and plantation woodland habitat and the area around the shed are suitable areas to support hibernating hedgehogs. It was noted that a hole has been cut out in the door of the shed which may be to accommodate hibernating hedgehogs.

Figure 21 Hole cut in shed possibly for hedgehogs.

Figure 22 Burrowing mammals in long grassland.

4.3.14. Other species

There was evidence of small mammals using the long semi-improved grassland areas for foraging and nesting (Figure 22).

4.3.15. Target Notes

TN1 Stone wall with cracks, good habitat for Carder bees

TN2 Hole in shed door suitable for hedgehog hibernating hedgehog

TN3 Bare banks, good for basking reptiles and ground-nesting bees

TN4 Ivy-clad standard and veteran trees act as good bat roost potential

TN5 Burrows in semi-improved grassland from a small mammal

TN6 Compost heaps make excellent breeding habitat for reptiles

5. Recommendations

1. Introduce log piles at the back of the shed to act as hibernacula for hedgehog and reptiles.
2. Maintain and expand areas of long semi-improved grassland in areas that are not frequently used for the main cemetery activities. These areas are demonstrating to be of high ecological value and expanding these areas where possible would encourage greater numbers of invertebrates, particularly pollinators.
3. Plant more native hedgerow species into hedge H5 to increase the value of this habitat to wildlife.
4. Maintain areas of low ruderals and bare earth near the shed and dry stone wall as habitat for ground-nesting bees and open habitat for basking retiles.
5. Selective coppicing along the stream will enable more light to penetrate and encourage the establishment of aquatic macrophytes and support a greater diversity of macroinvertebrates. Ensure trees that are coppiced are those which are not ivy-clad and suitable bat roosts.
6. Introduce an owl box into one of the veteran oak trees adjacent to the fields to encourage barn owl (*Tyto alba*) to roost.
7. Grass cutting regime. Grassland management is nearly always the most important aspect of churchyard management and can make a huge difference through encouraging native plants to grow which provide nectar for insects. It is recommended that you maintain three different grass lengths in the summer months. Identify areas which can be left as long grass to create a wildflower meadow, areas where grass can be cut at a medium length and those areas which need a short close cut e.g. pathways.
    a. Cut the long grass (30-40 cm) in May and September (although flexibility will be needed depending on growing conditions)

b. Cut the medium length grass (15-25 cm) in May, June, August and October.

c. Cut the short grass (5 cm) weekly or fortnightly.

After mowing, remove all cuttings to reduce the nutrient-richness of the soil which will enable wildflowers to thrive.

8. Gravestones are very important sites for a large range of different lichen and frequently mosses which offer great botanical interest. Wherever possible make sure that they are not disturbed or scrubbed as they do no harm to the stone, the exception being war graves.
9. Install a series of insect hotels, bird and bat boxes to encourage more wildlife to the site.
10. Improve signage, make greater use of church notice boards to promote nature conservation within burial groups and within Box Parish Council and local residents via the Box Parish Magasine.

6. References

Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition), Bat Conservation Trust, London.

Eaton, M.A., Brown, A.F., Noble, D.G., Musgrove, A.J., Hearn, R., Aebischer, N.J., Gibbons, D.W., Evans, A. and Gregory, R.D. (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds 102, pp296-341.

JNCC (2010) Handbook for Phase 1 habitat survey – A technique for environmental audit, JNCC, Peterborough.

Appendix 1.0


TN2
TN1
TN3
TN4
H1
H2
H3
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H5
H6
TN5
TN6
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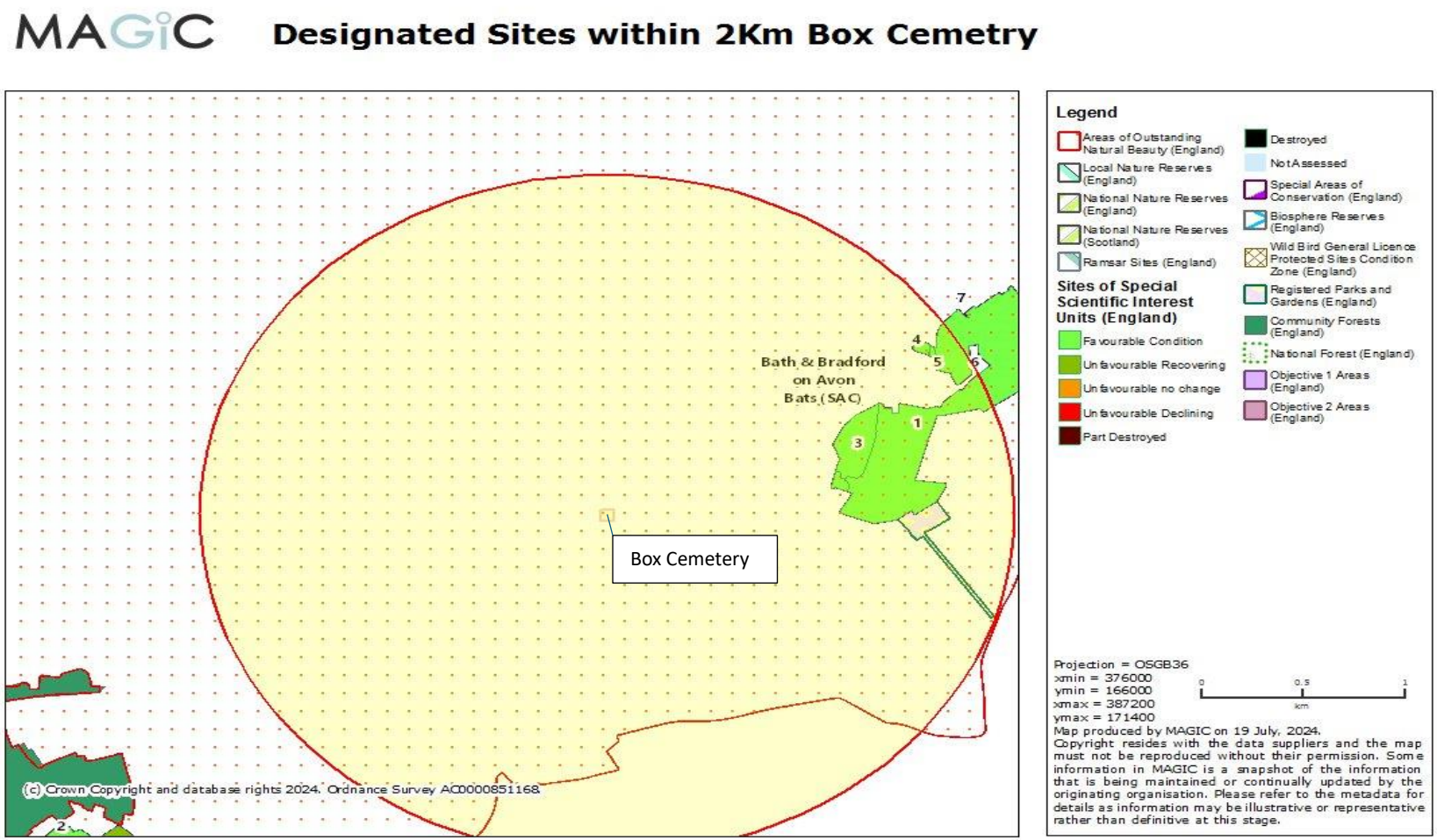
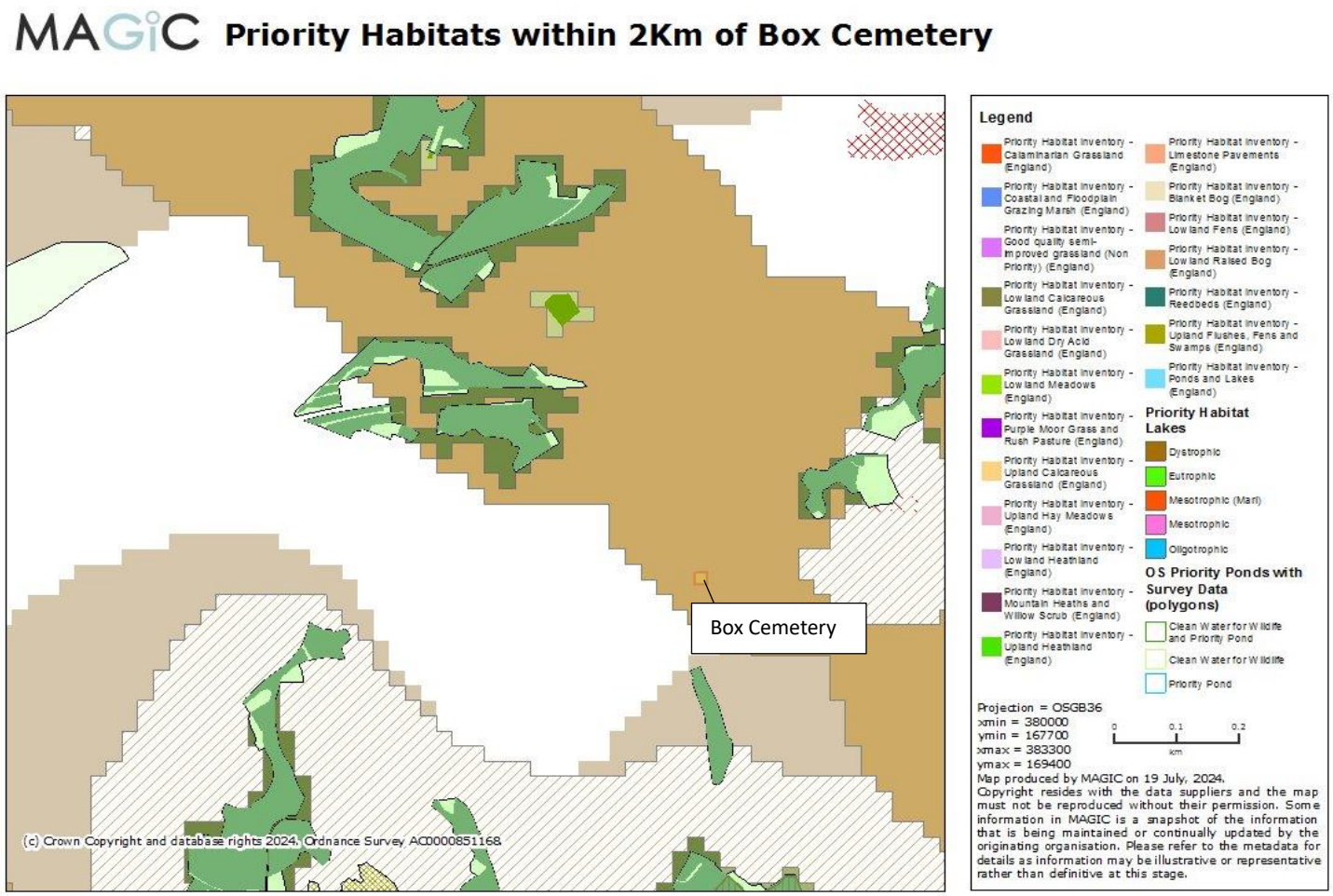
Boundary- Wall
Running water
Hedgerow
Plantation
Tall Ruderal
Semi-Improved grassland
Improved grassland
Standard Tree
Title:
Phase 1 Habitat Survey of Box Cemetery

Appendix 2.0

A2.1 Designated Sites



A2.2 Priority Habitats



MAGIC Priority Woodland within 2Km of Box Cemetery