

A417 Missing Link
TR010056

6.4 Environmental Statement
Appendix 8.20 Terrestrial Invertebrate
Survey Report

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and Procedure) Regulations 2009**

A417 Missing Link

Development Consent Order 202[x]

**6.4 Environmental Statement
Appendix 8.20 Terrestrial Invertebrate Survey Report**

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A417 MISSING LINK, BIRDLIP, GLOUCESTERSHIRE

INVERTEBRATE SURVEY

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Preliminary Ecological Appraisals • Protected Species Surveys and Licensing • NVC • EclA • HRA • Management Plans
Habitats • Badger • Bats • Hazel Dormouse • Birds • Reptiles • Amphibians • Invertebrates • Riparian and Aquatic Species


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A417 MISSING LINK, BIRDLIP, GLOUCESTERSHIRE

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EXECUTIVE SUMMARY

ECOSA were commissioned by Ove Arup and Partners Ltd 'Arup' to carry out an invertebrate survey to inform the A417 Missing Link Scheme. The invertebrate surveys were undertaken by ECOSA between June and August 2019. Additional surveys were undertaken in May and early June 2020. The main findings of the surveys are:

- A total of three Red Data Book species and twenty-nine Nationally Scarce species of invertebrate were recorded showing that the area has considerable local entomological importance. Additionally, five Species of Principal Importance were recorded;
- Sites 5, 6, 7 and 10 are the most important entomologically and are of regional significance, with Site 1 also being of considerable local significance. Sites 3 and 9 are also considered to be of moderate local importance. Sites 2, 2a and 8 are considered to be of limited entomological value at a local level;
- Provisional outline recommendations have been made for providing habitat enhancements which should be incorporated into the scheme design; and
- As the early part of the invertebrate season was missed in 2019 due to late commissioning of the survey work, a spring survey was carried out in 2020.

1.0 INTRODUCTION

1.1 Background

ECOSA were commissioned by Ove Arup and Partners Ltd 'Arup' to undertake terrestrial invertebrate surveys at a total of 11 sites close to the A417 in the Birdlip area, Gloucestershire during the summer of 2019. One site (Site 2) was divided into two subsections. Each site was visited on at least three occasions; once each in June, July and August 2019. Further survey was undertaken in May and June 2020. Locations of the surveyed sites are shown on **Map 1**.

1.2 Survey Area

The total survey area extends southward and westward in two 'arms' from approximately 500 metres north of the Air Balloon roundabout on the A417, following two branches of the A417. The area covered is approximately 2.5 kilometres from west to east and north to south and encompasses the existing road corridor and the proposed route of the road improvement scheme.

The survey area covers 475 hectares and is characterised by arable farmland with large fields bisected by hedgerows, rural roads, and areas of calcareous grassland and broadleaved woodland. The majority of the site is on the Cotswold plateau, but in the west of the survey area, the land falls away steeply to the west.

The wider landscape consists of further areas of farmland, woodland copses and small villages. The cities of Cheltenham and Gloucester lie approximately four kilometres to the north and west respectively.

Within this area 11 sites were selected by Mott Macdonald for invertebrate survey based on the presence of species rich semi-natural habitat identified during Phase 1 habitat surveys. The majority of these sites are located in the Birdlip area. The most southerly site is Site 1 located to the north of the Cowley roundabout.

1.3 Aims and Scope of Report

Invertebrate surveys were undertaken by ECOSA between June 2019 and August 2019 in order to establish the importance of invertebrate communities present at the site and to identify rare and scarce species present. Additional survey was undertaken in May and June 2020 to cover the spring species.

This report presents the findings of the invertebrate surveys carried out by ECOSA between June and August 2019 and May to June 2020.

1.4 Scheme Proposals

The proposed scheme would provide a dual carriageway to improve the current Missing Link section of single carriageway of the A417 between Cowley roundabout and Crickley Hill. The proposed scheme aims to increase capacity by creating a free-flowing link between the Brockworth Bypass and the Cowley roundabout and remove the at-grade junction with the A436 (Air Balloon roundabout). This Missing Link will provide a free-flowing journey between Swindon (M4 Junction 15) and Gloucester / Cheltenham (M5 Junction 11). The preferred route for the Scheme was confirmed as Option 30 by the Secretary of State in March 2019. The Scheme comprises the construction of a new dual carriageway to replace the existing single carriageway section between Brockworth bypass and Cowley Roundabout. It is predominately an “offline” Scheme but approximately a third of the route follows the existing A417 route corridor at Crickley Hill. A new link road would be built between the slip road junction at Shab Hill and the existing A417 to connect traffic to and from Birdlip and the A436 with the new A417. This new link road would end in a new roundabout near Barrow Wake. A new single carriageway is proposed to connect the existing A436, just east of the existing Air Balloon roundabout, to the proposed Shab Hill Junction.

2.0 PLANNING POLICY CONTEXT

2.1 Introduction

This section summarises the planning policy in relation to ecology and biodiversity within the Tewkesbury and Cotswold Council administrative areas. The west of the survey area lies within Tewkesbury, whilst the east is within Cotswold.

2.2 Planning Policy

2.2.1 National Policy

The National Policy Statement for National Networks (NPSNN) sets out the need for, and government's policies to deliver Nationally Significant Infrastructure Projects on the national road network in England.

Chapter 3 of the NPSNN identifies that in order to be sustainable and to improve people's quality of life, the need for development must be seen in the context of the Government's wider policies on economic performance, environment, safety, technology, sustainable transport and accessibility, as well as journey reliability and the experience of road - rail users. Wider policies relate to:

- Environmental and social impacts – national road networks should be designed to minimise social and environmental impacts and improve quality of life. In delivering new schemes, the Government expects applicants to avoid and mitigate environmental and social impacts in line with the principles set out in the National Planning Policy Framework (NPPF) and the Government's planning guidance.

Chapter 5 of the NPSNN outlines the possible impacts that would be relevant to any type of national networks infrastructure and sets out how these impacts should be considered. The sections include consideration of biodiversity.

The National Planning Policy Framework (NPPF) sets out the government's requirements for the planning system in England. The original document was published in 2012 with the revised NPPF published in July 2018 and updated in February 2019. A number of sections of the NPPF are relevant when taking into account development proposals and the environment. As set out within Paragraph 11 of the NPPF "*Plans and decisions should apply a presumption in favour of sustainable development*". However, Paragraph 177 goes on to state that "*The presumption in favour of sustainable development does not apply where development*

requiring appropriate assessment because of its potential impact on a habitats site¹ is being planned or determined”.

The general impetus of the NPPF in relation to ecology and biodiversity is for development proposals to not only minimise the impacts on biodiversity but also to provide enhancement. Paragraph 170 states that the planning system should contribute to and enhance the natural environment by “...*minimising impacts on biodiversity and providing net gains in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...*”.

A number of principles are set out in Paragraph 175, including that where harm cannot be adequately avoided then it should be mitigated for, or as a last resort, compensated for. Where impacts occur on nationally designated sites, the benefits must clearly outweigh any adverse impact and incorporating biodiversity in and around developments should be encouraged. Specific reference is also made to the protection of irreplaceable habitats². Where loss to irreplaceable habitats occur planning permission would normally be refused unless there are wholly exceptional reasons and an adequate compensation strategy is in place. Paragraph 175 also states “*development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity*”. Protection of sites proposed as Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites or acting as compensation for SPAs, SACs and Ramsar sites, should receive the same protection as habitat sites.

In addition to the NPPF, Circular 06/05 provides guidance on the application of the law relating to planning and nature conservation as it applies in England. Paragraph 98 states “*the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat*”. Whilst paragraph 99 states “*it is essential that the presence or otherwise of a protected species, and the extent that they may be affected by the proposed development, is established before planning permission is granted*”.

¹ The NPPF defines a habitats site as “*Any site which would be included within the definition at regulation 8 of the Conservation of Habitats and Species Regulations 2017 for the purpose of those regulations, including candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation, Special Protection Areas and any relevant Marine Sites.*”

² The NPPF defines irreplaceable habitats as “*Habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, salt marsh and lowland fen.*”

2.2.2 **Local Policy**

A single policy within the Cotswold District Local Plan (2011-2031) refers to ecology and biodiversity:

- **Policy EN8:** Biodiversity and Geodiversity: Features, Habitats and Species. Development will be permitted that conserves and enhances biodiversity and geodiversity, providing net gains where possible. Proposals that would result in significant habitat fragmentation and loss of ecological connectivity will not be permitted. Proposals that reverse habitat fragmentation and promote creation, restoration and beneficial management of ecological networks, habitats and features will be permitted, particularly in areas subject to landscape-scale biodiversity initiatives. Developer contributions may be sought in this regard. Development with a detrimental impact on protected species and species and habitats “of principal importance for the purpose of conserving biodiversity” will not be permitted unless adequate provision can be made to ensure the conservation of the species or habitat.

The Joint Core Strategy for Gloucester, Cheltenham and Tewkesbury (2011-2031) also considers biodiversity through policy:

- **Policy SD9 (Biodiversity and Geodiversity):** The biodiversity and geological resource of the JCS area will be protected and enhanced in order to establish and reinforce ecological networks that are resilient to current and future pressures. This will be achieved by ensuring that European Protected Species and National Protected Species are safeguarded in accordance with the law; encouraging new development to contribute positively to biodiversity and geodiversity whilst linking with wider networks of green infrastructure; encouraging the creation, restoration and beneficial management of priority landscapes, priority habitats and populations of priority species. Where there is a risk of harm as a consequence of development, this should be mitigated by integrating enhancements into the scheme that are appropriate to the location and satisfactory to the local planning authority. If harm cannot be mitigated onsite then, exceptionally, compensatory enhancements off-site may be acceptable.

3.0 METHODS

3.1 Introduction

This section details the methods used during the invertebrate surveys undertaken at the A417 site between June and August 2019, and in May and June 2020.

3.2 Survey Methodology

Invertebrate surveys were undertaken by Simon Colenutt and Adam Wright of ECOSA Ltd. Three surveys were carried between June and August and while this covered the peak in invertebrate activity the spring period was missed due to the date of the commissioning of the survey. Subsequent survey was undertaken in May and June 2020 to compensate for this.

Survey methods involved visual searching of nectaring sites and basking areas, the use of a sweep net and pooter to capture individual species, sweeping vegetation, beating foliage and grubbing. This range of techniques allowed the sampling of a range of species with different habits from the groups selected for survey.

Specimens of some of the more critical/difficult groups were taken in a pooter and identified under the microscope with the aid of specialist keys.

The species groups selected for survey were those considered most likely to be useful in informing site value. These were:

- Diptera (primarily hoverflies, soldier-flies and their allies and picture-winged flies);
 - Aculeate Hymenoptera (bees and wasps);
 - Coleoptera (primarily leaf-beetles, longhorn-beetles and click-beetles);
 - Lepidoptera (primarily butterflies but also any day-flying moths); and
 - Orthoptera (grasshoppers and crickets).
- Incidental species records were made of readily identified species from a range of groups.

In addition, night-time moth trapping surveys were undertaken at Site 1 on two occasions in 2019, using a battery-operated portable moth trap. This site was chosen as one where the equipment could be left unattended overnight. The trap

was operated on a light sensor and inspected at 08:30 in the morning. **Table 1** provides details of each survey visit.

Table 1: Invertebrate Survey Details

Survey Date	Survey Type	Weather Conditions
Site 1		
27 th June 2019	Day	Sunny, wind f.3, 16c.
15 th July 2019	Day	Sunny spells, wind f.1, 18c.
15 th July 2019	Night	Wind f.2, 15c.
16 th July 2019	Day	Sunny, wind f.1, 27c.
5 th August 2019	Day	Sunny spells, wind f.2, 22c.
5 th August 2019	Night	Wind f.3, 16c.
20 th May 2020	Day	Sunny spells, wind f.1. 24c.
4 th June 2020	Day	Cloudy with sunny spells, wind f.2 15c
5 th June 2020	Day	Sunny spells, wind f.3 15c
Site 2a		
26 th June 2019	Day	Sunny spells, wind f.2, 19c.
5 th August 2019	Day	Sunny, wind f.2, 20c.
4 th June 2020	Day	Cloudy with sunny spells, wind f.2 15c
Site 2b		
15 th July 2019	Day	Sunny spells, wind f.1, 18c.
4 th June 2020	Day	Cloudy with sunny spells, wind f.2 15c
Site 3		
26 th June 2019	Day	Mainly overcast, wind f.3, 17c.
27 th June 2019	Day	Sunny, wind f.2, 24c.
15 th July 2019	Day	Sunny spells, wind f.1, 19c.
6 th August 2019	Day	Sunny spells, wind f.4, 18c.
Site 5		
28 th June 2019	Day	Sunny, wind f.1, 22c.
16 th July 2019	Day	Sunny, wind f.1, 27c.
17 th July 2019	Day	Sunny, wind f.1, 22c.
7 th August 2019	Day	Sunny, wind f.2, 21c.
5 th June 2020	Day	Sunny spells, wind f.3 15c
Site 6		
28 th June 2019	Day	Sunny, wind f.2, 20c.
17 th July 2019	Day	Sunny, wind f.1, 19c.
7 th July 2019	Day	Sunny, wind f.2, 21c.
8 th August 2019	Day	Sunny, wind f.1, 20c.
21 st May 2020	Day	Sunny spells, wind f. 2. 18c
Site 7		
28 th June 2019	Day	Sunny spells, wind f.2, 18c.
17 th July 2019	Day	Hazy sunshine, wind f.1, 20c.
6 th August 2019	Day	Sunny spells, wind f.2, 19c.
7 th August 2019	Day	Sunny, wind f.2, 19c.
21 st May 2020	Day	Sunny spells, wind f. 2. 18c
4 th June 2020	Day	Cloudy with sunny spells, wind f.2 15c

Site 8		
26 th June 2019	Day	Sunny spells, wind f.2, 19c.
15 th July 2019	Day	Sunny, wind f.1, 21c.
6 th August 2019	Day	Sunny spells, wind f.3, 19c.
20 th May 2020	Day	Sunny spells, wind f.1. 24c.
Site 9		
27 th June 2019	Day	Sunny, wind f.2, 24c.
16 th June 2019	Day	Sunny, wind f.1, 27c.
26 th June 2019	Day	Sunny spells, wind f.2, 21c.
Site 10		
27 th June 2019	Day	Sunny, wind f.2, 19c.
16 th July 2019	Day	Sunny spells, wind f.1, 25c.
8 th August 2019	Day	Sunny spells, wind f.1, 19c.
20 th May 2020	Day	Sunny spells, wind f.1. 24c.
5 th June 2020	Day	Sunny spells, wind f.3 15c

3.3 Survey Limitations

There were no significant limitations to the invertebrate surveys carried out during the summer period in 2019. However, the date at which surveys were commissioned meant that many spring species would have completed their period of adult activity before survey commenced. Therefore a further suite of surveys was undertaken in May and June 2020.

The weather during the summer of 2019 was generally unsettled with few prolonged periods of warm and sunny weather. As a result, during some of the site visits weather conditions were suboptimal for invertebrate surveys. Where this was the case the sites were revisited in more suitable conditions.

The weather during the 2020 surveys were generally suitable, however, during the early June surveys cloudy spells were encountered, during these periods, the survey was temporarily ceased until the sun returned.

At the scoping stage 10 sites were identified as requiring invertebrate surveys, however, access was denied to Site 4 and therefore the site has not been surveyed. In 2020 no access was granted to Sites 3, 4 and 9 and therefore these were not surveyed.

During the initial surveys carried out Site 2a was assessed as having low potential to support scarce invertebrate species since it was dominated by stinging nettle beds, therefore, on the second survey visit a substitute site was surveyed, 2b. However, during the third visit this had been entirely mown and so site 2a was surveyed once again.

4.0 RESULTS

4.1 Introduction

This section details the results of the invertebrate surveys undertaken at the A417 sites in 2019 and 2020. Paragraph 4.2 discusses the habitats of importance to invertebrates at each site while Paragraph 4.3 discusses the status of the notable and rare species recorded. For the national status definitions refer to **Appendix 2**.

4.2 Summary of Habitat Characteristics Relevant to Invertebrates

4.2.1 Site 1

The site consists of a disused limestone quarry, currently used for low-level recreational motorcycling activities (**Figure 1**, **Figure 2** and **Figure 3**). The area includes a small ash *Fraxinus excelsior* dominated woodland element, although this woodland has a high incidence of ash dieback. There is a considerable matrix of bare ground partly maintained by motorcycle activities, short sward vegetation, rank grassland, dead wood and scrub. There are small pond areas mainly formed in cycle ruts and hollows within the quarry.

The flora is varied, with the following species present considered to be of particular attraction to insects: common bird's-foot trefoil *Lotus corniculatus*, bitter vetch *Lathyrus linifolius*, meadow vetchling *Lathyrus pratensis*, black medick *Medicago lupulina*, tufted vetch *Vicia cracca*, mouse-ear hawkweed *Pilosella officinarum*, cat's-ear *Hypochaeris radicata*, ribbed melilot *Melilotus officinalis*, clovers *Trifolium* species, field scabious *Knautia arvensis*, red bartsia *Odontites vernus*, wild parsnip *Pastinaca sativa*, hogweed *Heracleum sphondylium*, ragworts *Senecio* species, woolly thistle *Cirsium eriophorum* and spear thistle *Cirsium vulgare*. The areas of scrub are dominated by bramble *Rubus fruticosus* aggregate.



Figure 1 – Site 1



Figure 2 – Site 1



Figure 3 – Site 1

4.2.2 Site 2a

A valley dominated by rank grassland and partially shaded by adjacent beech *Fagus sylvatica* woodland (**Figure 4**). A damp ditch extends through the lower section of the site. Large quantities of stinging nettle *Urtica dioica* are present, whilst hogweed is abundant in places. Small amounts of common bird's-foot trefoil, rough hawkbit *Leontodon hispidus*, field scabious and woolly thistle are also present.

Because the habitat was assessed as being poor for invertebrates, during the July 2019 survey an adjacent hay meadow was selected as an alternative site (Site 2b).



Figure 4 – Site 2a

4.2.3 Site 2b

A flower rich hay meadow which unfortunately had been cut at the time of the survey (**Figure 5**), although a four metre border around the field edge had been left uncut and was thus surveyed. Invertebrate forage resources included clovers, hogweed, ox-eye daisy *Leucanthemum vulgare*, meadow vetchling, field scabious, cat's-ear, tufted vetch, bush vetch *Vicia sepium*, and nipplewort *Lapsana communis*. The meadow is rather flat and homogeneous lacking a diversity of invertebrate habitat.



Figure 5 – Site 2b

4.2.4 Site 3

Site 3 is a gently sloping abandoned paddock with a disused horse stable (**Figure 6**), the grassland has evidently not been grazed for a period of several years and is heavily scrubbed over. The paddock is dominated by rank grassland and bramble scrub, with small patches of bare ground and short sward grassland. There are several areas of bare soil utilised by nesting hymenoptera. Plants favoured by insects included common bird's-foot trefoil, medick *Medicago* species, hogweed, black knapweed *Centaurea nigra*, greater knapweed *Centaurea scabiosa*, field scabious,

woolly thistle, common rockrose *Helianthemum nummularia*, nipplewort and St. John's-wort *Hypericum* species. No access to complete the survey was possible to this area in 2020.



Figure 6 – Site 3

4.2.5 Site 5

The main survey area was dominated by tussocky grassland containing clovers, common bird's-foot trefoil, black knapweed, hogweed, rough hawkbit, cat's-ear, yellow rattle *Rhinanthus minor*, woolly thistle and large quantities of red bartsia (**Figure 7**). There are numerous anthills with areas of bare ground. To the north and east of this area are sections of rather poor plantation woodland which were not surveyed in detail.



Figure 7 – Site 5

4.2.6 Site 6

The site is a mix of closed woodland, scattered mature trees and semi-improved grassland (**Figure 8**). A large area of the site consists of mature woodland dominated

by beech *Fagus sylvatica* with a holly *Ilex aquifolium* understory. The woodland is densely shaded with few open areas. A considerable dead wood element is present (**Figure 9**). There is a scrubby margin to this woodland in places, with bramble, hogweed and teasel *Dipsacus fullonum* present.

The south-eastern area of the site is more open, containing rank grassland with mature scattered oak, there are a number of standing dead trees. Insect forage resources within this area include common bird's-foot trefoil, common rockrose, rough hawkbit, hogweed, clovers, black knapweed, greater knapweed, woolly thistle and large quantities of red bartsia

In 2019 the National Trust were undertaking detailed surveys for saproxylic and xylophagous invertebrates within the woodland, thus ECOSA surveyors spent most of their time surveying the more open habitats within the survey area in order to reduce duplication of records.



Figure 8 – Site 6



Figure 9 – Dead wood on Site 6

4.2.7 Site 7

The survey area is divided into two sections, separated by a near-vertical limestone cliff.

The lower section (**Figure 10**) comprises steeply sloping rank grassland with black knapweed, greater knapweed, common bird's-foot trefoil, common rockrose, rough hawkbit and viper's bugloss *Echium vulgare*, harebell *Campanula rotundifolia* present. Scattered sycamore are present up the slope while at the foot of the slope is dense sycamore woodland bordering the survey area. The base of the site is scrubby, with stinging nettle, hogweed and woolly thistle.



Figure 10 – Lower section of Site 7

The upper section (**Figure 11**) of the survey area is a plateau of limestone grassland with a shorter sward, and a matrix of low scrub. Forage resources for insects include field scabious, small scabious *Scabiosa columbaria*, woolly thistle, harebell, cat's-ear, red bartsia, common rockrose, clovers and bramble. The grassland is bordered by woodland and scrub and a raised earthwork runs across the site.



Figure 11 – Upper section of Site 7

4.2.8 Site 8

The northern section of the site consists of densely shaded young mixed woodland with a stream running westwards through the woodland. The ground flora is dominated by stinging nettle. Small amounts of dead wood are present. The southern section of the site is cattle grazed pasture and contains areas of creeping thistle *Cirsium arvense* and marsh thistle *Cirsium palustre* (**Figure 12**). The flora is rather poor, containing small amounts of clovers, cat's-ear, creeping buttercup *Ranunculus repens* and marsh thistle. Two small wet flushes are present adjacent to the woodland edge.



Figure 12 – Site 8

4.2.9 Site 9

Site 9 consists of a pasture which is managed through light and seasonal horse grazing in 2019. The southern section of the site was ungrazed in 2019 (**Figure 13**). It comprises a matrix of short sward and longer grassland, containing an abundance of common bird's-foot trefoil, black knapweed, greater knapweed, ox-eye daisy, small scabious, clovers and a small quantity of mignonette *Reseda lutea*. No access to complete the survey was possible to this area in 2020.



Figure 13 – Northern section of Site 9

The northern section of the site (**Figure 14**) was grazed by horses during all visits, resulting in short sward grassland. Ox-eye daisy was particularly abundant here. Small patches of harebell and mignonette were present. No access to complete the survey was possible to this area in 2020.



Figure 14 – Southern section of Site 9

4.2.10 Site 10

The survey area is a steeply sloping, west-facing limestone escarpment, dominated by moderately tall flower-rich grassland, with some areas of shorter sward (**Figure 15** and **Figure 16**). Invertebrate forage resources were abundant, comprising common bird's-foot trefoil, common rockrose, clovers, cat's-ear, rough hawksbit, mouse-eared hawkweed *Pilosella officinalum*, field scabious, small scabious, woolly thistle, hogweed, harebell and red bartsia. Scattered patches of scrub are present these are dominated by bramble. To the north and south the site is bordered by mixed woodland. The west facing element to this site results in much shaded in the

mornings this has the effect of lowering the sites temperature perhaps reducing diversity of invertebrate species that inhabit the site.



Figure 15 – Southern section of Site 10



Figure 16 – Northern section of Site 10

4.3 Scarce and Rare Species Recorded

4.3.1 *Lepidoptera*

Small heath *Coenonympha pamphilus* **NERC Species of Principal Importance**

Recorded from Site 2b (4th May 2020), Site 5 (28th June and 7th August 2019), Site 7 (28th June and 17th July 2019, 21st May and 4th June 2020), Site 8 (20th May 2020). Site 9 (27th June 2019) and Site 10 (27th June, 16th July 2019 and 8th August 2019, 20th May and 5th June 2020).

Larvae of this butterfly feed on fine grasses such as annual meadow grass *Poa annua*. The small heath is primarily associated with open grassland sites. It is widespread in Britain, but due to a considerable recent national decline has been

added to the NERC list as a Species of Principal Importance listings for monitoring purposes. The small heath remains a relatively common butterfly in Gloucestershire.

Pearl-bordered fritillary *Boloria euphrosyne*. **Nationally Scarce N. NERC Species of Principal Importance.**

Recorded from Site 7 (21st May 2020).

A single fresh individual was recorded nectaring on a range of plants on Site 7. Common dog violet *Viola riviniana* is the most frequently used larval foodplant for this species. Formerly, the pearl-bordered fritillary was a locally common species, but populations have declined significantly in recent decades due to cessation of coppicing and changes in grazing regimes. It now has a widely scattered distribution in the UK. This species flies from late April to June.

Dingy Skipper *Erynnis tages* **NERC Species of Principal Importance**

Recorded from Site 1 (20th May 2020), Site 7 (21st May 2020), Site 10 (20th May 2020).

Larvae of this butterfly feed primarily on common bird's-foot trefoil and horseshoe vetch *Hippocrepis comosa*. It is found in a wide variety of habitats in sheltered situations. It is widely distributed in central and southern England.

Cistus Forester *Adscita geryon* **Nationally Scarce Nb**

Recorded from Site 7 (21st May 2020), Site 10 (27th June 2019, 20th May 2020).

Larvae of the Cistus forester feed on common rock-rose, and also overwinter in this stage. The larval foodplant is abundant on Site 10. Cistus forester is local on chalk and limestone grassland in southern England through the Midlands north to Cumbria and Durham. Welsh populations are very localised and are mainly in the north of that country. There are a number of previous records of the cistus forester within the local area.

Six-belted Clearwing *Bembecia ichneumoniformis* **Nationally Scarce Na**

Recorded from Site 1 (16th July and 5th August 2019).

Several specimens of the six-belted clearwing were recorded on both dates, flying around common bird's-foot trefoil, the larval foodplant for this species. Nationally this species has a scattered distribution through England as far north as Yorkshire. It has also been recorded in Wales. There are existing records for the six-belted clearwing from an adjacent 10 kilometre square.

Cinnabar Moth *Tyria jacobaeae* NERC Species of Principal Importance

Recorded from Site 1 (27th June, 16th July and 5th August 2019, 5th June 2020), Site 2a (15th July 2019), Site 3 (26th June and 6th August 2019), Site 5 (16th July and 7th August 2019), Site 6 (28th June, 17th July and 7th August 2019), Site 7 (6th August 2019), Site 8 (26th June and 6th August 2019), Site 9 (16th July 2019), and Site 10 (27th June 2019).

A common species whose larvae develop on ragwort, a plant that is present on most of the survey areas. The cinnabar moth remains widespread and frequent through much of the British Isles, including Gloucestershire. It has, however declined considerably over the last 35 years, and for this reason is listed as a Species of Principal Importance under the NERC Act.

4.3.2 Diptera

A cranefly *Ctenophora pectinicornis* Nationally Scarce N

Recorded from Site 6 (21st May 2020).

A single specimen was recorded basking on a hazel leaf at the woodland edge in Site 6. This species has a requirement for old broadleaved woodland with dead or diseased trees in which the larvae develop. Although records are widely scattered across Britain, Falk (1991a) notes a strong southern bias. There are a number of records for Gloucestershire.

A robberfly *Machimus rusticus* Nationally Scarce N

Recorded from Site 7 (17th July 2019).

Two individuals of this species were recorded from short sward grassland on the upper section of Site 7. Adults of *Machimus rusticus* are active predators, with acute eyesight, launching themselves in rapid “capture darts” at a variety of insects including butterflies, beetles and hoverflies. Larvae are believed to be predatory and live in the soil. Robberflies generally are thermophilous species and may be observed basking on warm bare ground on sunny days. *Machimus rusticus* is confined largely to chalk, limestone and base-rich grasslands in southern England. The map provided by Harvey (2018), shows that there are existing records for the area. This species has recently been downgraded from Vulnerable (RDB 2) to Nationally Scarce N.

Downland Villa *Villa cingulata* Rare RDB 3

Recorded from Sites 5 (28th June and 16th July 2019) and Site 6 (17th July 2019).

Specimens were found during general sweeping on Site 5 on both dates, whilst a single specimen was seen nectaring at hogweed along the woodland margin in Site 6. It is believed that the *Villa cingulata* is associated with calcareous soils, although little is known of the life history of this species. It is suggested that the larvae are parasitoids of lepidopterous larvae, based on continental data. *Villa cingulata* was considered to be a great rarity, and possibly extinct in the United Kingdom, with no records after 1935 until its rediscovery at two sites in the Cotswolds in 2000. There are now a number of recent records, and *Villa cingulata* appears to be increasing in frequency and expanding its range, with modern records for Hampshire and central England (Harvey, 2018). There are existing recent records for Gloucestershire. This species has recently been downgraded from Endangered (RDB 1) to Rare (RDB 3).

A hoverfly *Callicera aurata* Nationally Scarce N

Recorded from Site 6 (17th July 2019).

A single specimen of this elusive hoverfly was found basking on a dead tree trunk at the eastern end of the survey area. Larvae of *Callicera aurata* are believed to develop as filter-feeders in water-filled rot holes, primarily in beech trees, although they have also been found in rot holes in birch *Betula pendula*. *Callicera aurata* is widely but thinly distributed in England, with the majority of records from southern counties. Ball *et al.*, (2011) suggest that the species may be increasing in frequency, particularly in midland counties. There are two previous records for nearby localities.

A picture-winged fly *Acanthiophilus helianthi* Nationally Scarce N

Recorded from Sites 5 (7th August 2019) and Site 6 (8th August 2019).

Specimens were swept from the flowers of black knapweed in low numbers. In the United Kingdom larvae of *Acanthiophilus helianthi* develop in the seed heads of black knapweed, and possibly greater knapweed. Nationally, this species is largely confined to southern English counties. The maps provided by the national recording scheme for Tephritid flies (Clemons, 2018) show previous records for *Acanthiophilus helianthi* near to the current survey areas.

A picture-winged fly *Oxyna nebulosa* Rare RDB 3

Recorded from Site 9 (16th July 2019).

A single adult of *Oxya nebulosa* was swept from ox-eye daisy in the northern section of Site 9. Larvae are believed to induce root galls in the host plant ox-eye daisy. This would appear to be a scarce species nationally with few modern records, and a bias towards western England. Recent records exist for north Somerset and east Gloucestershire.

A picture-winged fly *Rhagoletis alternata* **Provisionally Nationally Scarce N**

Recorded from Site 6 (17th July 2019).

A single specimen was captured whilst basking on a bramble leaf bordering the main woodland. Larvae develop in the fruit of *Rosa* spp. Dog rose *Rosa canina* was present near to the capture site. Although not accorded Nationally Scarce status by Falk (1991a), Clemons (1996) suggests that the status of *Rhagoletis alternata* should be upgraded. *Rhagoletis alternata* is recorded across the United Kingdom, although records are thinly distributed. There are previous records for Gloucestershire.

A picture-winged fly *Terellia longicauda* **Provisionally Nationally Scarce N**

Recorded from Sites 1 (16th July and 5th August 2019), 2 (5th August 2019), 3 (6th August 2019), 5 (16th July, 7th August 2019), 6 (17th July and 7th August 2019), 7 (17th July, 6th August and 7th August 2019), and 10 (16th July and 8th August 2019).

Terellia longicauda was recorded in good numbers from most of the sites where woolly thistle occurred. Larvae of this fly develop in the seed heads of woolly thistle, which was common on many sites. Although not accorded Nationally Scarce status by Falk (1991a), Clemons (1996) suggests that the status of *Terellia longicauda* should be upgraded. Many records are from the midland counties of England. There are also a number of records from Gloucestershire. Records from the south of England are sparser.

A tachinid fly *Lophosia fasciata* **Nationally Scarce N**

Recorded from Site 1 (16th July 2019).

A single specimen of this distinctive fly was found visiting the flowers of wild parsnip in the north-east of the site. *Lophosia fasciata* larvae are parasitic on the hawthorn shield bug *Acanthosoma haemorrhoidale*. It is associated with downland, coastal grassland and dry woodland, and confined to southern England. There is a record for Glamorgan in Wales, and another from the Bristol area, but it would appear to be previously unrecorded in the local area. Falk & Ismay (unpublished) cite 20 post 1960 records nationally for this species.

4.3.3 *Hymenoptera*

Median Wasp *Dolichovespula media* **Nationally Scarce Na**

Recorded from Site 1 (27th June 2019), Site 2 (5th August 2019), Site 3 (6th August 2019), Site 5 (7th August 2019), Site 7 (4th June 2020) and Site 10 (8th August 2019).

Several specimens of *Dolichovespula media* were recorded at some of the survey sites. *Dolichovespula media* is an aerial nester, suspending its nest from the branches of trees and bushes. The median wasp is a relatively recent colonist in Britain, having first been found in East Sussex in 1980. It spread quickly to become established in south-eastern England, and is now been recorded from Kent to Cornwall, in north Wales and as far north as Durham and Cumbria. Because of this rapid establishment, the status of *Dolichovespula media* is no longer accurate and should be downgraded in any future review (Edwards, 1997). There are previous records for Gloucestershire.

A yellow-faced bee *Hylaeus signatus* **Nationally Scarce Nb**

Recorded from Site 9 (16th July 2019).

Several specimens were recorded visiting mignonette *Reseda lutea* on both sections of the site. This plant was not common on site, with relatively few plants present. *Hylaeus signatus* is believed to have an obligate association with *Reseda* species. for pollen collection. It nests in dead woody stems of plants such as bramble and roses. Falk & Lewington (2015) state that *Hylaeus signatus* is widespread but patchily distributed in England as far north as Yorkshire, excluding the south-west. There are also records for south Wales. However, the map given by Else & Edwards (2018) shows no records for some distance around Birdlip, although it is known from West Gloucestershire.

A mining bee *Andrena bucephala* **Nationally Scarce (Na)**.

Recorded from Site 1 (20th May 2020).

A female of this species was found during general sweeping. *Andrena bucephala* is a spring species most often found foraging at trees and shrubs such as hawthorn, maples *Acer* sp. and sycamore *Acer pseudoplatanus*. Although widely distributed in southern England and South Wales, it is generally rare and very local. *Andrena bucephala* is known from various habitats, but many records are from chalk grassland. It is unusual amongst *Andrena* species in that females share entrance

burrows (although it is believed that they have individual nests within the burrow). On occasion this can lead to large numbers of *Andrena bucephala* queuing to gain access to the entrance burrow. There are a small number of other modern records for *Andrena bucephala* in Gloucestershire.

A mining bee *Andrena trimmerana* **Nationally Scarce Nb**

Recorded from Site 7 (6th August 2019).

A single female of *Andrena trimmerana* was collected from the lower section of the site. *Andrena trimmerana* is a predominantly southern species, particularly associated with warm coastal grassland, although other habitats including woodland edge are also utilised. *Andrena trimmerana* is a double-brooded species utilising a variety of plant species for pollen collection. There is a possibility that the two broods actually represent two distinct closely related species, but at present research to establish whether or not this is the case is ongoing. Falk (1991b) notes a considerable decline at inland sites. Data from Else & Edwards (2018) shows the species has previously been recorded from a nearby site.

A mining bee *Lasioglossum malachurum* **Nationally Scarce Nb**

Recorded from Site 6 (17th July 2019).

A single specimen of the mining bee *Lasioglossum malachurum* was recorded during sweeping at the eastern end of the site. *Lasioglossum malachurum* is polylectic, collecting pollen from a wide variety of plants. It has been recorded from a variety of habitats where there is warm disturbed ground. Typical breeding sites are in bare clayey soil on coastal cliffs and landslips, but it also occurs inland in quarries, grassland and heaths. *Lasioglossum malachurum* is primarily restricted to southern England. Previously a very local and scarce species, *Lasioglossum malachurum* has become far more frequent recently and is currently expanding its British range (Edwards & Broad, 2005). The status of *Lasioglossum malachurum* requires review and downgrading, since it is now common over much of southern England. However, there do not appear to be previous records for the Birdlip area (Else & Edwards, 2018).

A mining bee *Lasioglossum pauxillum* **Nationally Scarce Na**

Recorded from Site 7 (28th June and 17th July 2019).

This species was found during general sweeping on the upper section of the site. *Lasioglossum pauxillum* nests in sparsely vegetated light soils in warm, sunny conditions. It may be found in a variety of habitats including calcareous grassland,

soft rock coastal cliffs and heathland. Previously, *Lasioglossum pauxillum* was a scarce species restricted to south east England, but in the last decade it has increased in frequency and expanded its range northwards and westwards (Edwards and Broad, 2005). Its current Nationally Scarce (Na) status now requires downgrading. There appear to be few, if any records from the Birdlip area.

A cuckoo bee *Sphecodes crassus* **Nationally Scarce Nb**

Recorded from Site 3 (15th July 2019).

A single specimen was found during flying around a patch of bare ground containing *Lasioglossum* nest holes. *Sphecodes crassus* is a cleptoparasite of mining bees of the genus *Lasioglossum*. Several species of *Lasioglossum* have been suggested as possible hosts. Because of its cleptoparasitic nature, there is no need for *Sphecodes crassus* to collect pollen. It has been recorded nectaring at a range of flowers including umbellifers and composites. *Sphecodes crassus* is widely distributed in southern and central England as far north as north Yorkshire, and from Wales. It occurs in a range of habitats with warm bare ground or a short sward that are suitable for the host's nests. Such habitats include calcareous grassland, heathland, quarries and soft-rock cliffs. There are previous records of *Sphecodes crassus* from the Birdlip area.

A cuckoo bee *Sphecodes rubicundus* **Nationally Scarce Na**

Recorded from Site 10 (20th May 2020).

A single specimen was recorded during general sweeping. *S. rubicundus* is confined to southern England. One of its host bees *Andrena labialis* has declined significantly recently, particularly at inland sites; inevitably this has led to the cleptoparasitic bee *Sphecodes rubicundus* increasing in scarcity. *S. rubicundus* also uses *Andrena flavipes* as a host; this species was recorded with some frequency during the current survey. There are several modern records for *Sphecodes rubicundus* in Gloucestershire.

A mining bee *Melitta haemorrhoidalis* **Provisionally Nationally Scarce (N)**

Recorded from Site 7 (7th August 2019) and Site 10 (8th August 2019).

Specimens were recorded visiting the flowers of harebell at both sites. *Melitta haemorrhoidalis* is an oligolectic species collecting pollen only from bellflower and harebell (*Campanulacae*). Nationally, *Melitta haemorrhoidalis* is most frequently found on chalk grassland in south east England. Although not listed by Falk (1991b), recent work reveals a significant decline in the distribution of this species and Edwards (1998) states that its status requires review. There are recent records from

Gloucestershire, although none appear to be in the vicinity of the survey areas (Else & Edwards, 2018).

A mining bee *Melitta leporina* **Provisionally Nationally Scarce (N)**

Recorded from Site 5 (17th July 2019) and Site 6 (17th July 2019).

Single specimens were recorded from each site. *Melitta leporina* is believed to be oligolectic on Fabaceae, and is most frequently encountered visiting, or flying around clovers. *Melitta leporina* is associated with open grassland habitats on calcareous, sandy and clay soils. It has a wide distribution in southern England, with most records from the south east. It is scarce in Wales and very rare in northern England. There appear to be no Scottish records. *Melitta leporina* is known to form nesting aggregations in the soil. In view of its restricted distribution Edwards, R. (1998) suggests that the status of *Melitta leporina* requires review and upgrading to Nationally Scarce. There are previous records from the Birdlip area.

A mining bee *Melitta tricincta* **Nationally Scarce Nb**

Recorded from Site 5 (7th August 2019).

A single specimen was recorded collecting pollen from red bartsia at the western end of the site, where this plant was abundant. *Melitta tricincta* has an obligate relationship with red bartsia, apparently the sole plant from which it collects pollen. Nationally, *Melitta tricincta* is mainly recorded from central southern and south-east England, particularly on calcareous grassland, although red bartsia is not restricted to calcareous situations. Falk (1991b) notes a national decline for this species. Data given by Else & Edwards (2018) shows only one previous record for *Melitta tricincta* in Gloucestershire.

A mining bee *Osmia bicolor* **Nationally Scarce Nb**

Recorded from Site 1 (20th May 2020), Site 3 (27th June and 15th July 2019), Site 7 (28th June and 17th July 2019, 21st May 2020), and Site 10 (27th June 2019, 20th May 2020).

Individuals were recorded visiting common bird's-foot trefoil. *Osmia bicolor* constructs its nest in an empty snail shell, where each cell is partitioned with masticated leaves. The space between the last cell and the plug sealing the cell is filled with tiny shells or small pieces of chalk. Once completed, the nest shell is concealed by a covering of dead grass stems or leaf cuttings. *Osmia bicolor* is associated with chalk and limestone grassland and open woodland on calcareous soils. It is regularly seen visiting flowers such as common bird's-foot trefoil, horseshoe vetch and dandelions.

Most records for *Osmia bicolor* are from southern England and south Wales. It is rare or absent in the south-west, and from the midland counties northwards. There are a number of recent records of *Osmia bicolor* from Gloucestershire, although it appears to be previously unrecorded from the Birdlip area.

A nomad bee *Nomada fucata* **Nationally Scarce (Na)**

Recorded from Site 7 (7th August 2019).

This bee proved to be scarce within the survey areas, with only a single specimen noted in the upper section of Site 7. *Nomada fucata* is a cleptoparasite of the mining bee *Andrena flavipes*, which was recorded here on the same date. The host is associated with bare or sparsely vegetated soils in a variety of habitats, where it collects pollen from a wide range of plant species. *Andrena flavipes* is widespread in southern England and south Wales, and appears to have expanded its range in recent decades (Edwards, R. & Telfer, 2002). *Nomada fucata* is now similarly widespread in southern England and south Wales. It is currently a frequently encountered species, although in the 1970s, it endured a period of great scarcity and has in the past been subject to considerable fluctuations in population size and distribution. If *Nomada fucata* continues to prosper at present levels nationally, its status will require review (Edwards, R. & Telfer, 2002). There are a number of recent records of this bee in Gloucestershire.

A nomad bee *Nomada lathburiana* **Rare RDB 3**

Recorded from Site 6 (21st May 2020).

Nomada lathburiana is a cleptoparasite of the mining bee *Andrena cineraria*, which was found to be present at the site on the same date. Formerly essentially a northern species in its UK distribution, *Andrena cineraria* has expanded southwards over the last few decades. It has also increased in frequency. The cleptoparasite *Nomada lathburiana* is most common in northern England, but has also expanded its range southwards with its host. The map in Edwards & Telfer (2002) demonstrates the recent range expansion, and they suggest that the status of *Nomada lathburiana* may require downgrading. There are number of recent records in Gloucestershire.

Brown-banded Carder Bee *Bombus humilis* **Provisionally Nationally Scarce N, NERC Species of Principal Importance**

Recorded from Site 1 (15th July and 5th August 2019), Site 5 (17th July and 7th August 2019) and Site 7 (7th August 2019).

A queen was recorded at Site 1 visiting flowers of meadow vetchling on 15th July 2019 two workers were recorded from the upper section of Site 7 on 7th August 2019. All other records were of single workers.

This is a medium-sized, pale ginger-brown bumblebee, lacking any trace of black hairs on the abdomen (unlike the common *Bombus pascuorum*) and possessing just a few black hairs above the wing base. *Bombus humilis* is associated with large expanses of tall, open flower-rich grasslands. Pollen is collected from a variety of plants, although species such as clovers, labiates, knapweeds and red bartsia are preferred. Queens emerge from hibernation in May and early-June. Workers are active from June to September, and males appear in August and September. Small nests are constructed on the ground surface in moderately tall, but non-tussocky grassland and are covered with moss and dead grass gathered initially by the queen and later by the workers. Nests seldom contain as many as 100 workers. *Bombus humilis* is a southern species in Britain, with most records from the south and west coasts of England and Wales. The most northerly recent British records are from Anglesey, although old records extend north to Cumberland. *Bombus humilis* has suffered a considerable decline and is now absent from many former sites, particularly away from the coast. Because of its decline, *Bombus humilis* is listed as a Species of Principal Importance under the NERC Act and it is considered that its threat status should be upgraded (Edwards, R. & Telfer, 2002). There are a number of recent records of *Bombus humilis* for Gloucestershire.

4.3.4 *Coleoptera*

A weevil *Cleopomiarus graminis* **Nationally Scarce Nb**

Recorded from Site 7 (6th and 7th August 2019).

Specimens of this small, grey-black weevil were swept from harebells in both sections of Site 7. The foodplants of *Cleopomiarus graminis* are bellflowers and harebells, which are restricted to chalk and limestone grasslands in England. *Cleopomiarus graminis* has a similar British distribution, but is much more localised, only being found where large populations of its host plant occur. There are a number of previous records for this weevil from Gloucestershire.

A leaf beetle *Cryptocephalus bipunctatus* **Nationally Scarce Nb**

Recorded from Site 8 (21st May 2020).

A single specimen of this attractive beetle was recorded from the upper section of the site. This species utilises a wide range of host plants including hazel and rock rose,

both of which are present on the site. it is widespread but local in a variety of habitats, including downland and broad - leaved woodland. there are several recent records for East Gloucestershire.

A flea beetle *Epitrix atropae* **Nationally Scarce Nb**

Recorded from Site 7 (21st May 2020) and Site 8 (20th May 2020).

Specimens of this diminutive beetle were found by sweeping the host plant deadly nightshade *Atropa belladonna*. The beetle was found to be present in some numbers on the host plant at both sites. Nationally there is a widespread but rather disjunct distribution in England. There is a cluster of records for the Birdlip area (Cox, 2007).

A tumbling flower beetle *Variimorda villosa* **Nationally Scarce Nb**

Recorded from Site 7 (28th June 2019).

A single specimen taken whilst sweeping vegetation in the upper section of Site 7. *Variimorda villosa* is associated with semi-natural broad-leaved woodland, where it is thought to develop in either dead wood or plant stems. The latter is believed more likely. Adults are most frequently found at umbel inflorescences. Although widespread in the southern half of England and in south Wales, the distribution of *Variimorda villosa* within this area is localised. It has been previously recorded in Gloucestershire.

Black-headed Cardinal Beetle *Pyrochroa coccinea* **Nationally Scarce Nb**

Recorded from Site 8 (15th July 2019).

A specimen of this beetle was recorded on a deadwood stump along the woodland edge. Larvae of *Pyrochroa coccinea* develop over a period of two or three years in freshly dead deciduous trees, where they develop in dead wood and under bark. *Pyrochroa coccinea* has strong associations with ancient broadleaved woodland and is listed as a Grade 3 ancient woodland indicator *Pyrochroa coccinea* is widely distributed but local in England and Wales. Further recent records for Gloucestershire are recorded.

A chafer *Omaloplia ruricola* **Nationally Scarce Nb**

Recorded from Site 7 (4th June 2020) and Site 10 (27th June 2019)

This chafer is associated with dry calcareous grassland. *Omaloplia ruricola* flies during the late morning and also in the evening. It is believed that the species is myrmecophilous. Although widely distributed in southern England, it has a scattered occurrence. Previous records exist for east Gloucestershire.

4.3.5 *Mollusca*

Roman Snail *Helix pomatia* **Schedule 5 Wildlife & Countryside Act protected.**

Recorded from Site 7 (17th July and 7th August 2019, 4th June 2020).

No live specimens of the roman snail were recorded during the 2019 survey, but small numbers of empty shells were found in both the upper and lower sections of Site 7. However, on 4th June 2020 twenty-one live specimens were recorded on the lower section of the site. These animals were present in a damp bowl at the foot of the slope and were actively feeding a pair were also recorded in copulation. Further records of this species, gathered by Arup surveyors, are shown in **Map 2**, all records are from the Crickley Hill area. *Helix pomatia* is associated with limestone soils, in open woodland, scrub and on downland. Gloucestershire is one of the strongholds for the Roman snail. The species is well known in the Birdlip area, where it can be frequent in spring and early summer.

5.0 EVALUATION, IMPACTS AND RECOMMENDATIONS

5.1 Introduction

This section presents an assessment of the value of the sites surveyed for invertebrates.

5.2 Site Evaluation

The invertebrate surveys carried out at sites close to the A417 around Birdlip during 2019 and 2020 yielded a total of three Red Data Book species and twenty-nine Nationally Scarce species of insect, showing that the area has importance at County Level for its invertebrate fauna. Additionally, five species (small heath butterfly, pearl-bordered fritillary butterfly, dingy skipper, cinnabar moth and *Bombus humilis*) are listed under the NERC Act as being Species of Principal Importance.

Amongst the Nationally Scarce species recorded, the mining bees *Lasioglossum malachurum* and *Lasioglossum pauxillum* have both expanded considerably in range and frequency in recent decades and are now relatively common species. This is also true of the nomad bees *Nomada fucata* and *Nomada lathburiana*. It is likely that the status of these four bees would be downgraded in any future review of status.

The most productive sites for scarce species of invertebrate are considered to be Sites 1, 5, 6, 7 and 10, all of which are of County Level importance for their invertebrate fauna. Whilst Site 9 had fewer species of scarce and threatened insects than the sites mentioned above, it is noteworthy in that it was the only site where either the Rare (RDB3) fly *Oxya nebulosa* or the Nationally Scarce bee *Hylaeus signatus* were recorded during the surveys. Site 9 is considered to be of entomological importance at the Vice-County Level. Site 3 was shown to have four Nationally Scarce insect species present and is considered to be of entomological importance at a Local Level. The least important sites in terms of their insect fauna were Sites 2, 2a and 8, all of which had rather few species of significance. The following provides a summary of each sites value for invertebrates:

Site 1

The survey produced records for six species of Nationally Scarce invertebrate, three of which are specifically associated with chalk or limestone grasslands. These included several specimens of the six-belted clearwing *Bembecia ichneumoniformis* which was not recorded elsewhere during the surveys. Site 1 has a considerable amount of good quality limestone grassland habitat and is considered to be of **County Level importance** for its invertebrate fauna.

Site 2a

The survey produced records of two Nationally Scarce species, one of which, the median wasp *Dolichovespula media*, no longer meets the criteria for its Nationally Scarce assignment. The habitat is dominated by nettles and is generally floristically poor. Site 2 is considered to be of **Low Level importance** for its invertebrate fauna.

Site 2b

No scarce or threatened species of invertebrate were recorded here during the 2019 survey. Survey was restricted to the field margins, as the main body of the field had been cut by the time of the visit. It is possible that the results may have been better had the survey been conducted prior to the main area of the field having been cut but based on the results achieved this site is considered to be of **Low Level importance** for its invertebrate fauna. This was supported by the visit on 4th June 2020, when the field was uncut but still failed to produce any Nationally Scarce species.

Site 3

The survey produced records of four Nationally Scarce species of invertebrate, of which the picture-winged fly *Terellia longicauda* and the mining bee *Osmia bicolor* are specifically associated with chalk or limestone grasslands. Other, more common species associated with this habitat were also present. Although much of the survey area has become rank, it still retains some elements of limestone grassland, and is considered to be of **Local Level importance** for its invertebrate fauna.

Site 5

One Red Data Book species and six Nationally Scarce species of invertebrate were recorded during the survey. Of these, the Red Data Book bee fly *Villa cingulata*, and the Nationally Scarce species *Acanthophilus helianthi*, *Terellia longicauda*, *Melitta tricincta* and *Bombus humilis* are associated with chalk or limestone grasslands. Site 5 is considered to be of **County Level importance** for its invertebrate fauna.

Site 6

The survey produced records of two Red Data Book species and eight Nationally Scarce species of insect. It is likely that the status of the bee *Nomada lathburiana* will be downgraded from Rare (RDB 3) in any future review. The Red Data Book bee fly *Villa cingulata*, and the Nationally Scarce species *Acanthophilus helianthi*, *Terellia longicauda* and *Osmia bicolor* are associated with chalk or limestone grassland. Two Nationally Scarce species of fly, the hoverfly *Callicera aurata* and the picture-winged fly *Rhagoletis alternata* are primarily associated with woodland habitats, with the former having a strong association with rot holes in beech. Site 6 contains some good

limestone grassland as well as excellent beech woodland, and is considered to be of **County Level importance** for its invertebrate fauna.

Site 7

The survey produced records of fifteen species of scarce or threatened invertebrates, eight of which were not recorded elsewhere during the survey. These were the pearl-bordered fritillary butterfly, *Machimus rusticus*, *Andrena trimmerana*, *Lasioglossum pauxillum*, *Nomada fucata*, *Cleopomiarus graminis*, *Cryptocephalus bipunctatus* and *Helix pomatia*. The following eight species are associated wholly or primarily with chalk or limestone grassland; cistus forester moth, *Machimus rusticus*, *Terellia longicauda*, *Melitta haemorrhoidalis*, *Osmia bicolor*, *Bombus humilis*, *Cleopomiarus graminis* and *Helix pomatia*. Site 7 includes areas of good quality limestone grassland and is considered to be of **County Level importance** for its invertebrate fauna. It produced more scarce insect species than any other survey area.

Site 8

The survey produced a record of the Nationally Scarce black-headed cardinal beetle *Pyrochroa coccinea*, a species whose larvae develop in dead wood. The Nationally Scarce flea beetle *Epitrix atropae* was also recorded here. The woodland component of the site is densely shaded with a very poor ground flora, whilst the grassland element of the site also contains a very limited flora. It is considered that Site 8 is of **Low Level importance** for its invertebrate fauna.

Site 9

The Red Data Book picture-winged fly *Oxyna nebulosa* and the Nationally Scarce bee *Hylaeus signatus* were recorded from the site. Neither species were recorded elsewhere during the survey. *Oxyna nebulosa* is associated with ox-eye daisy; there appear to be no other published recent records for this species in the Birdlip area. *Hylaeus signatus* has an obligate association with mignonette or weld; there appear to be no other recent published records for this species in the Birdlip area. Both insects are associated with chalk or limestone grassland. Site 9 has some areas of good quality limestone grassland. Although only two scarce species were recorded during the survey, it is possible further survey could yield more scarce species. It is significant that both scarce species recorded here have apparently not been recently recorded from other sites in the Birdlip area. For this reason, Site 9 is considered to be of **County importance** for its invertebrate fauna.

Site 10

Survey produced records of six Nationally Scarce insect species. Five Nationally Scarce species - the cistus forester moth, the picture-winged fly *Terellia longicauda*,

the mining bees *Melitta haemorrhoidalis* and *Osmia bicolor* and the chafer *Omaloplia ruricola* are associated with chalk or limestone habitats. Much of Site 10 comprises good quality limestone grassland, and the site is considered to be of **County Level importance** for its invertebrate fauna.

In conclusion, it is considered that Sites 5, 6, 7 and 10 are the most important entomologically of those surveyed and are of County Level importance, with Sites 1 and 9 being of importance at the County level importance. Site 3 is considered to be of Local Level importance. Sites 2, 2a and 8 are considered to be of Low Level importance.

5.3 Outline Recommendations

The detailed design of the road improvement scheme should seek to include the following enhancements:

- Ideally, alignment of the road should avoid Site 1 which is of value for invertebrates and a range of other species groups such as reptiles, birds and plant species. Where realignment is not possible then impacts should be avoided or minimised;
- Road verges should be planted with species rich wildflower mixes using . plants and seeds of local provenance. Species mixes should seek to include plants that provide a food source for scarce species identified. This mix should include;
 - Native fine grasses such as red fescue, crested dog's-tail, sweet vernal grass and rough meadow grass;
 - Common bird's-foot trefoil;
 - Black knapweed;
 - Red bartsia;
 - Yellow rattle;
 - Ox-eye daisy;
 - Common rock-rose; and
 - Marjoram.
- A proportion of the re-aligned verges should be managed so that areas of bare rocky ground and sparsely vegetated well drained and calcareous soils are present. The A417 cutting at Baunton (SP 0254 0494) provides a good example of what should be achieved;

- Additional areas of land should be sought for habitat enhancement purposes. Site 2b would be suitable, for example, as it is currently floristically rich in areas. Appropriate management such as the taking of a hay cut in late-summer (around the end of August) followed by light winter grazing could result in enhancements to this site and expansion of the floristically rich areas;
- Any cord wood of trees to be felled should be retained on site as habitat piles. It may also be possible to erect larger sections of trees as ‘monoliths’ providing habitat for species associated with standing deadwood habitats;
- Production of a Construction Environmental Management Plan (CEMP) to be implemented during the construction phase of the scheme in order to minimise potential impacts to invertebrates; and
- Production of an Ecological Management Plan (EMP) to provide recommendations to maintain and enhance compensation areas post development.

The recommendations should be updated once the design of the scheme is finalised.

6.0 REFERENCES

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Map 1 Site Location Map



**A417 ROAD IMPROVEMENT SCHEME,
BIRDLIP, GLOUCESTERSHIRE**

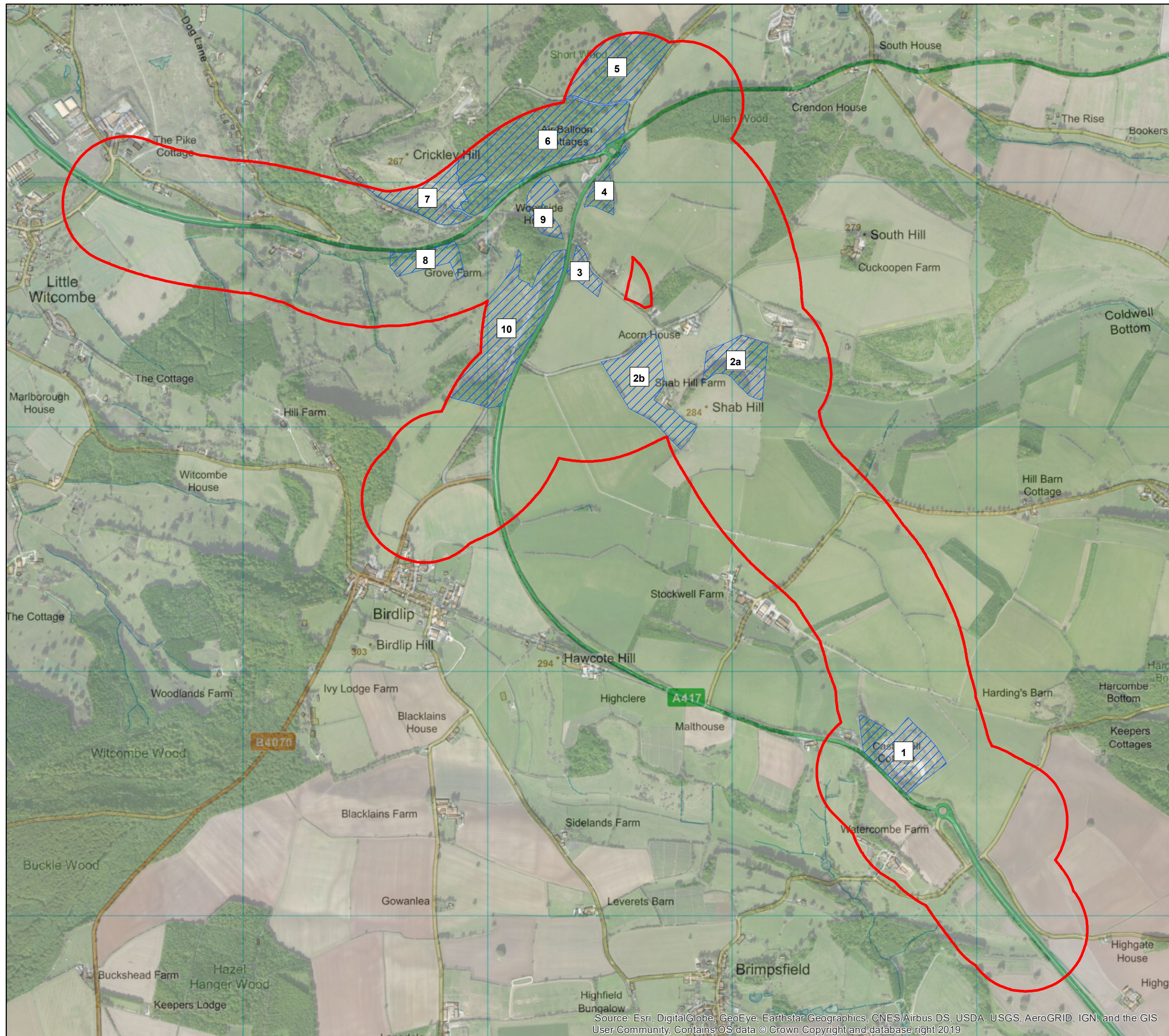
INVERTEBRATE SURVEY

Map 1 - Location of Survey Areas

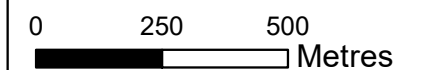
Client:	Ove Arup and Partners Ltd.
Date:	July 2020
Status:	Final

KEY

-  Site Boundary
-  Invertebrate Survey Areas 2019 (as labelled)



Scale at A3: 1:15,000



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Map 2 Location of Roman Snail Records




**A417 ROAD IMPROVEMENT SCHEME,
BIRDLIP, GLOUCESTERSHIRE**

INVERTEBRATE SURVEY

Map 2 - Location of Roman Snail Records

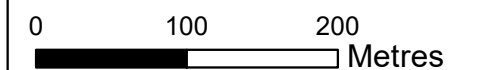
Client:	Ove Arup and Partners Ltd.
Date:	July 2020
Status:	Final

KEY

-  Site Boundary
-  Roman Snail Records 2018 - 2020 (amalgamated ECOSA, Arup and Mott MacDonald records)
-  21 Live Roman Snail Recorded on 4th June 2020 in Damp Bowl at Foot of Slope



Scale at A3: 1:5,000



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Appendix 1 Invertebrate Species Lists

Site 1

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	27/06/2019	15 & 16/07/2019	05/08/2019	20/05/2020 & 4 & 5/06/2020	STATUS
ORTHOPTERA		Grasshoppers & Crickets							
		Chorthippus	brunneus	Field grasshopper			1	1	Common, Widespread
		Chorthippus	parallelus	Meadow grasshopper	1	1	1		Common, Widespread
		Conocephalus	discolor	Long - winged conehead		1	1		Common Widespread
		Metrioptera	roeselii	Roesel's bush cricket			1		Common, Widespread
		Omocestes	viridulus	Common green grasshopper	1	1	1	1	Common, Widespread
DERMAPTERA		Earwigs							
		Forficula	auricularia	Common earwig		1		1	Common, Widespread
HEMIPTERA		True Bugs							
	Coreidae	Squash Bugs							
		Coreus	marginatus		1				Common, Widespread
ODONATA		Dragonflies & Damselflies							
	Aeshnidae	Hawkers							
		Aeshna	cyanea	Southern hawker			1		Common, Widespread
		Aeshna	mixta	Migrant hawker			1		Common, Widespread
LEPIDOPTERA		Butterflies & Moths							
		Aglais	urticae	Small tortoiseshell		1		1	Common, Widespread
		Aphantopus	hyperantus	Ringlet	1	1			Common, Widespread
		Erynnis	tages	Dingy skipper				1	Species of Principal importance NERC
		Inachis	io	Peacock			1		Common, Widespread
		Maniola	jurtina	Meadow brown	1	1		1	Common, Widespread
		Melanargia	galathea	Marbled white		1			Common, Widespread
		Ochlodes	faunus	Large skipper	1	1		1	Common, Widespread
		Pieris	brassicae	Large white			1		Common, Widespread
		Polygonia	c - album	Comma			1		Common, Widespread
		Polyommatus	icarus	Common blue	1		1	1	Common, Widespread
		Pyronia	tithonus	Gatekeeper		1	1		Common, Widespread
		Thymelicus	lineola	Essex skipper			1		Common, Widespread
		Thymelicus	sylvestris	Small skipper			1		Common, Widespread
		Vanessa	atalanta	Red admiral	1		1		Common, Widespread
		Vanessa	cardui	Painted lady	1				Common, Widespread
		Agapeta	hammana				1		Common Widespread
		Agrophylla	straminella				1		Common Widespread
		Agrophylla	tristella				1		Common Widespread
		Agrotis	exclamationis	Heart and dart		1			Common, Widespread
		Agrotis	segetum	The turnip		1			Common, Widespread
		Apamea	monoglypha	Dark arches		1			Common, Widespread
		Autographa	gamma	Silver Y	1				Common, Widespread
		Bembecia	ichneumoniformis	Six - belted clearwing		1	1		Nationally Scarce Na
		Camptogramma	bilineata	Yellow shell				1	Common, Widespread
		Catoptria	pinella				1		Common Widespread
		Chloroclysta	truncata	Common marbled carpet			1		Common Widespread
		Chloroclystis	rectangulata	Green pug		1			Common, Widespread
		Cosmia	trapezina	Dun - bar			1		Common Widespread
		Crambus	perlella			1			Common, Widespread
		Crocalis	elinguaria	Scalloped oak			1		Common Widespread
		Cucullia	verbasci	Mullein moth				1	Common, Widespread
		Ecliptoptera	silacea	Small phoenix			1		Common Widespread

ORDER	FAMILY	SCIENTIFIC NAME	ENGLISH NAME	27/06/2019	15 & 16/07/2019	05/08/2019	20/05/2020 & 4 & 5/06/2020	STATUS
		Ectropis	bistortata	Engrailed		1		Common Widespread
		Eilema	complana	Scarce footman	1	1		Common, Widespread
		Eilema	griseola	Dingy footman		1		Common Widespread
		Eilema	lurideola	Common footman	1	1		Common Widespread
		Ennomos	quercinaria	August thorn		1		Common Widespread
		Epirrhoe	alternata	Common carpet		1		Common Widespread
		Eudonia	mercurella		1	1		Common, Widespread
		Hoplodrina	alsines	Uncertain		1		Common, Widespread
		Hoplodrina	blanda	Rustic		1		Common Widespread
		Hypena	proboscidalis	The snout	1			Common, Widespread
		Lacanobia	oleracea	Bright - line brown eye	1			Common, Widespread
		Laothoe	populi	Poplar hawk moth		1		Common Widespread
		Luperina	testacea	Flounced rustic		1		Common Widespread
		Lygephila	pastinum	Blackneck	1			Common, Widespread
		Mesapamea	secalis	Common rustic agg.	1	1		Common, Widespread
		Mniotype	adusta	Dark brocade	1			Common, Widespread
		Mythimna	conigera	Brown - line bright eye	1			Common, Widespread
		Mythimna	ferrago	The clay	1			Common, Widespread
		Mythimna	impura	Smoky wainscot	1	1		Common, Widespread
		Mythimna	pallens	Common wainscot	1			Common, Widespread
		Nemophora	metallica			1		Local Widespread
		Noctua	janthe	Lesser broad-bordered yellow underwing		1		Common Widespread
		Noctua	pronuba	Large yellow underwing	1	1		Common, Widespread
		Nola	confusalis	Least black arches	1			Common, Widespread
		Notocelia	uddmanniana		1			Common, Widespread
		Nudaria	mundana	Muslin footman	1			Local Widespread
		Peribatodes	rhomboidaria	Willow beauty		1		Common Widespread
		Pheosia	tremula	Swallow prominent		1		Common Widespread
		Pleuroptya	ruralis	Mother of pearl		1		Common, Widespread
		Rheumaptera	undulata	Scallop shell	1			Common, Widespread
		Selenia	dentaria	Early thorn		1		Common, Widespread
		Tyria	jacobaeae	Cinnabar moth	1	1	1	Species of Principal Importance (NERC)
		Udea	lutealis			1		Common Widespread
		Udea	olivalis		1			Common, Widespread
		Xanthorhoe	montanata	Silver ground carpet	1			Common, Widespread
		Zygaena	filipendulae	Six - spot burnet	1			Common, Widespread
DIPTERA		True Flies						
	Tipulidae	Craneflies						
		Nephrotoma	flavescens		1			Common Widespread
	Stratiomyidae	Soldier Flies						
		Chloromyia	formosa		1		1	Common, Widespread
		Stratiomys	potamida		1			Local Widespread
	Asilidae	Robber Flies						
		Leptogaster	cylindrica		1	1	1	Common, Widespread
	Dolichopodidae	Long - headed Flies						
		Dolichopus	ungulatus		1			Common, Widespread
		Poecilobothrus	nobilitatus		1			Common, Widespread
	Syrphidae	Hoverflies						
		Cheilosia	bergenstammi		1			Common, Widespread
		Cheilosia	illustrata		1			Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME	ENGLISH NAME	27/06/2019	15 & 16/07/2019	05/08/2019	20/05/2020 & 4 & 5/06/2020	STATUS
		Cheilosia pagana				1		Common, Widespread
		Cheilosia soror				1		Common, Widespread
		Chrysotoxum bicinctum		1	1		1	Common, Widespread
		Episyrphus balteatus		1	1	1	1	Common, Widespread
		Eristalis arbustorum		1		1		Common, Widespread
		Eristalis pertinax		1		1	1	Common, Widespread
		Eristalis tenax		1			1	Common, Widespread
		Eupeodes corollae					1	Common, Widespread
		Eupeodes luniger		1	1		1	Common, Widespread
		Helophilus pendulus		1				Common, Widespread
		Melangyna umbellatarum			1			Common, Widespread
		Melanostoma mellinum			1	1		Common, Widespread
		Melanostoma scalare			1	1		Common, Widespread
		Paragus haemorrhous					1	Common, Widespread
		Pipizella viduata		1	1		1	Common, Widespread
		Platycheirus albimanus		1	1	1		Common, Widespread
		Scaeva pyrastris			1		1	Common, Widespread
		Sphaerophoria scripta		1	1	1		Common, Widespread
		Syritta pipiens		1	1	1	1	Common, Widespread
		Syrphus ribesii		1	1			Common, Widespread
		Syrphus vitripennis		1	1	1		Common, Widespread
		Volucella bombylans		1			1	Common, Widespread
		Volucella pelluscens		1		1		Common, Widespread
		Volucella zonaria				1		Common, Widespread
		Xanthogramma pedisequum			1	1	1	Common, Widespread
	Conopidae	Thick - headed Flies						
		Physocephala rufipes			1	1		Common, Widespread
		Sicus ferrugineus		1	1			Common, Widespread
	Tephritidae	Picture - winged Flies						
		Tephritis formosa				1		Common, Widespread
		Terellia longicauda			1	1		Provisionally Nationally Scarce N
		Terellia tussilaginis				1		Common, Widespread
	Ulidiidae	Ulidiid flies						
		Herina longistylata		1	1		1	Common Widespread
	Scathophagidae	Dung flies						
		Scathophaga stercoraria		1				Common Widespread
	Sciomyzidae	Snail Killing Flies						
		Pherbellia cinerella		1				Common, Widespread
	Tachinidae	Tachinid Flies						
		Lophosia fasciata			1			Nationally Scarce N
		Phasia hemiptera				1		Common, Widespread
		Phasia obesa				1		Common, Widespread
		Phasia pusilla		1			1	Common, Widespread
HYMENOPTERA		Bees, Wasps, Ants & Relatives						
	Eumenidae	Potter & Mason Wasps						
		Ancistrocerus gazella			1			Common, Widespread
	Vespidae	Social Wasps						
		Dolichovespula media	Median wasp	1				Nationally Scarce Na
		Vespula vulgaris	Common wasp			1		Common, Widespread
	Crabronidae	Digger Wasps						

ORDER	FAMILY	SCIENTIFIC NAME	ENGLISH NAME	27/06/2019	15 & 16/07/2019	05/08/2019	20/05/2020 & 4 & 5/06/2020	STATUS
		Ectemnius cephalotes		1				Common, Widespread
		Ectemnius continuus				1	1	Common, Widespread
		Passaloecus singularis					1	Common, Widespread
		Pemphredon lugubris					1	Common, Widespread
	Apoidea	Bees						
	Colletidae	Mining & Yellow - faced Bees						
		Hylaeus dilatatus			1			Common, Widespread
		Hylaeus hyalinatus					1	Common, Widespread
	Andrenidae	Mining Bees						
		Andrena bucephala					1	Nationally Scarce Na
		Andrena nitida					1	Common, Widespread
	Halictidae	Mining & Cuckoo Bees						
		Halictus tumulorum			1	1	1	Common, Widespread
		Lasioglossum albipes			1		1	Common, Widespread
		Lasioglossum cupromicans		1				Common, Widespread
		Lasioglossum pauxillum			1	1		Nationally Scarce Na
		Lasioglossum smeathmanellum				1		Common, Widespread
		Lasioglossum villosulum		1	1		1	Common, Widespread
	Megachilidae	Solitary Bees						
		Megachile centuncularis				1		Common, Widespread
		Osmia bicolor					1	Nationally Scarce Nb
		Osmia caerulescens		1				Common, Widespread
		Osmia spinulosa		1				Common, Widespread
	Anthophoridae	Mining and nomad bees						
		Nomada flavoguttata					1	Common, Widespread
	Apidae	Social & Cuckoo Bees						
		Apis mellifera	Honey bee	1	1	1	1	Common, Widespread
		Bombus humilis	Brown - banded carder bee		1	1		Provisionally Nationally Scarce N and Species of Principal Importance (NERC)
		Bombus hypnorum	Tree bumblebee	1		1		Recent colonist
		Bombus lapidarius	Red - tailed bumblebee	1	1	1	1	Common, Widespread
		Bombus lucorum	White - tailed bumblebee	1		1		Common, Widespread
		Bombus pascuorum	Common carder bee	1	1	1	1	Common, Widespread
		Bombus pratorum	Early bumblebee				1	Common, Widespread
		Bombus terrestris/lucorum worker	A bumblebee	1	1		1	Common, Widespread
		Bombus terrestris	Buff - tailed bumblebee	1		1		Common, Widespread
COLEOPTERA		Beetles						
	Cantharidae	Soldier Beetles						
		Rhagonycha fulva			1			Common, Widespread
	Cerambycidae	Longhorn Beetles						
		Leptura melanura			1			Common, Widespread
	Coccinellidae	Ladybirds						
		Coccinella 7 - punctata	Seven - spot ladybird		1	1		Common, Widespread
		Harmonia axyridis	Harlequin ladybird		1			Common, Widespread
	Elateridae	Click Beetles						
		Agriotes acuminatus			1			Common, Widespread
	Oedemeridae	Oedemerid Beetles						
		Oedemera nobilis		1	1	1	1	Common, Widespread

Site 2a

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	26/06/2019	05/08/2019	04/06/2020	STATUS
ORTHOPTERA		Grasshoppers & Crickets						
		Chorthippus	parallelus	Meadow grasshopper		1		Common, Widespread
		Metrioptera	roeselii	Roesel's bush cricket	1	1	1	Common, Widespread
		Omocestes	viridulus	Common green grasshopper		1		Common, Widespread
LEPIDOPTERA		Butterflies & Moths						
		Inachis	io	Peacock		1	1	Common, Widespread
		Maniola	jurtina	Meadow brown	1	1		Common, Widespread
		Melanargia	galathea	Marbled white		1		Common, Widespread
		Ochlodes	faunus	Large skipper		1		Common, Widespread
		Pararge	aegeria	Speckled wood	1			Common, Widespread
		Pieris	brassicae	Large white		1		Common, Widespread
		Polyommatus	icarus	Common blue		1		Common, Widespread
		Pyronia	tithonus	Gatekeeper		1		Common, Widespread
		Thymelicus	sylvestris	Small skipper				Common, Widespread
		Vanessa	cardui	Painted lady	1			Common, Widespread
		Agrophylla	straminella				1	Common, Widespread
		Campptogramma	bilineata	Yellow shell		1		Common, Widespread
		Odezia	atrata	Chimney sweeper			1	Local, Widespread
		Petrophora	chlorosata	Brown silver - line	1			Common, Widespread
		Rheumaptera	undulata	Scallop shell	1			Common, Widespread
		Udea	lutealis			1		Common, Widespread
		Xanthorhoe	fluctuata	Garden carpet	1			Common, Widespread
		Xanthorhoe	montanaata	Silver ground carpet	1		1	Common, Widespread
DIPTERA		True Flies						
		Stratiomyidae	Soldier Flies					
		Beris	chalybata				1	Common, Widespread
		Chloromyia	formosa		1		1	Common, Widespread
		Stratiomys	potamida			1		Local Widespread
		Rhagionidae	Snipe Flies					
		Rhagio	tringarius		1			Common, Widespread
		Tabanidae	Horse Flies					
		Haematopota	pluvialis	Notch - horned cleg		1		Common, Widespread
		Asilidae	Robber Flies					
		Dioctria	rufipes		1			Common, Widespread
		Leptarthrus	brevirostris	Slender - footed robberfly	1			Local Widespread
		Machimus	atricapillus			1		Common, Widespread
		Syrphidae	Hoverflies					
		Cheilosia	illustrata		1	1		Common, Widespread
		Cheilosia	impressa		1			Common, Widespread
		Cheilosia	pagana			1		Common, Widespread
		Cheilosia	vulpina			1		Common, Widespread
		Chrysotoxum	bicinctum		1	1		Common, Widespread
	Chrysotoxum	festivum			1		Common, Widespread	
	Dasysyrphus	albostrigatus			1		Common, Widespread	
	Episyrphus	balteatus		1	1	1	Common, Widespread	
	Eristalis	pertinax		1			Common, Widespread	
	Eristalis	tenax		1	1	1	Common, Widespread	
	Eupeodes	corollae				1	Common, Widespread	
	Eupeodes	luniger		1	1		Common, Widespread	

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	26/06/2019	05/08/2019	04/06/2020	STATUS
		Leucozonia	laternaria			1		Common, Widespread
		Leucozonia	lucorum		1			Common, Widespread
		Melanostoma	scalare			1		Common, Widespread
		Pipizella	virens			1		Local, Widespread
		Platycheirus	albimanus		1	1		Common, Widespread
		Syrpitta	pipiens		1			Common, Widespread
		Syrphus	ribesii		1	1		Common, Widespread
		Syrphus	vitripennis		1	1	1	Common, Widespread
		Volucella	bombylans		1	1	1	Common, Widespread
		Volucella	pelluscens		1			Common, Widespread
	Tephritidae	Picture - winged Flies						
		Terellia	longicauda			1		Provisionally Nationally Scarce N
	Palloptheridae	Palloptherid flies						
		Palloptera	modesta			1		Common, Widespread
	Scathophagidae	Dung Flies						
		Scathophaga	stercoraria	Common yellow dung fly			1	Common, Widespread
	Tachinidae	Tachinid Flies						
		Macquartia	praefica		1			Common, Widespread
		Phasia	obesa			1		Common, Widespread
		Phasia	pusilla				1	Common, Widespread
HYMENOPTERA		Bees, Wasps, Ants & Relatives						
	Vespidae	Social Wasps						
		Dolichovespula	media	Median wasp		1		Nationally Scarce Na
	Apidae	Social & Cuckoo Bees						
		Bombus	lapidarius	Red - tailed bumblebee		1		Common, Widespread
		Bombus	lucorum	White - tailed bumblebee		1		Common, Widespread
		Bombus	lucorum/terrestris worker	White - tailed bumblebee			1	Common, Widespread
		Bombus	pascuorum	Common carder bee		1	1	Common, Widespread
		Bombus	vestalis	A cuckoo bumblebee		1		Common, Widespread
COLEOPTERA		Beetles						
	Cantharidae	Soldier Beetles						
		Cantharis	nigricans		1			Common, Widespread
		Rhagonycha	fulva			1		Common, Widespread
		Rhagonycha	limbata				1	Common, Widespread
	Chrysomelidae	Leaf Beetles						
		Phaedon	cochleariae			1		Common, Widespread
	Coccinellidae	Ladybirds						
		Coccinella	7 - punctata	Seven spot ladybird			1	Common, Widespread
		Harmonia	axyridis	Harlequin ladybird	1			Common, Widespread
	Oedemeridae	Oedemerid Beetles						
		Oedemera	nobilis		1	1		Common, Widespread

Site 2b

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	15/07/2019	04/06/2020	STATUS
ORTHOPTERA		Grasshoppers & Crickets					
		Chorthippus	brunneus	Field grasshopper	1		Common, Widespread
		Metrioptera	roeselii	Roesel's bush cricket	1		Common, Widespread
		Omocestes	viridulus	Common green grasshopper	1		Common, Widespread
DERMAPTERA		Earwigs					
		Forficula	auricularia	Common earwig	1		Common, Widespread
HEMIPTERA		True Bugs					
	Pentatomidae	Shield Bugs					
		Dolycoris	baccarum		1	1	Common, Widespread
LEPIDOPTERA		Butterflies & Moths					
		Aphantopus	hyperantus	Ringlet	1		Common, Widespread
		Coenonymphus	pamphilus	Small heath		1	Species of Principal Importance (NERC)
		Maniola	jurtina	Meadow brown	1	1	Common, Widespread
		Melanargia	galathea	Marbled white	1		Common, Widespread
		Ochlodes	faunus	Large skipper	1	1	Common, Widespread
		Pieris	brassicae	Large white	1		Common, Widespread
		Thymelicus	lineola	Essex skipper	1		Common, Widespread
		Thymelicus	sylvestris	Small skipper	1		Common, Widespread
		Chrysoteuchia	culmella		1		Common, Widespread
		Campptogramma	bilineata	Yellow shell		1	Common, Widespread
		Myelois	circumvoluta	Thistle ermine	1		Common, Widespread
		Tyria	jacobaeae	Cinnabar moth	1		Species of Principal Importance (NERC)
		Zygaena	filipendulae	Six - spot burnet	1		Common, Widespread
DIPTERA		True Flies					
	Tipulidae	Craneflies					
		Nephrotoma	flavescens		1		Common Widespread
		Tipula	lunata			1	Common, Widespread
	Stratiomyidae	Soldier Flies					
		Chloromyia	formosa		1		Common, Widespread
		Chorisops	tibialis		1		Common, Widespread
		Pachygaster	atra		1		Common, Widespread
	Tabanidae	Horse Flies					
		Haematopota	pluvialis	Notch - horned cleg	1		Common, Widespread
	Asilidae	Robber Flies					
		Leptarthus	brevirostris	Slender - footed robberfly	1		Local Widespread
		Leptogaster	cylindrica		1	1	Common, Widespread
	Dolichopodidae	Long - headed Flies					
		Dolichopus	trivialis			1	Common, Widespread
	Syrphidae	Hoverflies					
		Episyrphus	balteatus		1	1	Common, Widespread
		Eristalis	tenax		1	1	Common, Widespread
		Eupeodes	corollae			1	Common, Widespread
		Eupeodes	luniger		1	1	Common, Widespread
		Melangyna	umbellatarum		1		Common, Widespread
		Melanostoma	mellinum		1	1	Common, Widespread
		Melanostoma	scalare		1		Common, Widespread
		Platycheirus	albimanus		1		Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	15/07/2019	04/06/2020	STATUS
		Scaeva	pyrastris			1	Common, Widespread
		Sphaerophoria	scripta		1		Common, Widespread
		Sphaerophoria	taeniata			1	Common, Widespread
		Syrpita	pipiens		1		Common, Widespread
		Syrphus	ribesii		1		Common, Widespread
		Syrphus	vitripennis		1		Common, Widespread
		Volucella	bombylans			1	Common, Widespread
		Volucella	pelluscens		1		Common, Widespread
		Xanthogramma	pedisequum			1	Common, Widespread
	Conopidae	Thick - headed Flies					
		Sicus	ferrugineus		1		Common, Widespread
	Tephritidae	Picture - winged Flies					
		Tephritis	vespertina		1	1	Common, Widespread
		Terellia	tussilaginis		1		Common, Widespread
	Scathophagidae	Dung Flies					
		Scathophaga	atercoraria	Common yellow dung fly		1	Common, Widespread
	Sciomyzidae	Snail Killing Flies					
		Limnia	unguicornis		1		Common, Widespread
		Pherbellia	cinerella		1	1	Common, Widespread
	Opomyzidae	Opomyzid flies					
		Opomyza	germinationis		1		Common Widespread
HYMENOPTERA		Bees, Wasps, Ants & Relatives					
	Halictidae	Mining & Cuckoo Bees					
		Halictus	tumulorum		1		Common, Widespread
	Apidae	Social & Cuckoo Bees					
		Apis	mellifera	Honey bee	1	1	Common, Widespread
		Bombus	lapidarius	Red - tailed bumblebee	1	1	Common, Widespread
		Bombus	pasuorum	Common carder bee	1	1	Common, Widespread
		Bombus	terrestris/lucorum worker	A bumblebee	1	1	Common, Widespread
COLEOPTERA		Beetles					
	Cantharidae	Soldier Beetles					
		Cantharis	lateralis		1		Common, Widespread
		Cantharis	nigra		1	1	Common, Widespread
		Rhagonycha	fulva		1		Common, Widespread
	Cerambycidae	Longhorn Beetles					
		Agapanthia	villosviridescens		1		Local Widespread
		Leptura	melanura		1		Common, Widespread
	Coccinellidae	Ladybirds					
		Coccinella	7 - punctata	Seven - spot ladybird	1		Common, Widespread
	Elateridae	Click Beetles					
		Agriotes	acuminatus		1		Common, Widespread
	Malachiidae	Pollen Beetles					
		Malachius	bipustulatus			1	Common, Widespread
	Oedemeridae	Oedemerid Beetles					
		Oedemera	nobilis		1	1	Common, Widespread

Site 3

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	26 & 27/06/2019	15/07/2019	06/08/2019	STATUS
ORTHOPTERA		Grasshoppers & Crickets						
		Chorthippus	brunneus	Field grasshopper		1	1	Common, Widespread
		Chorthippus	parallelus	Meadow grasshopper		1		Common, Widespread
		Conocephalus	discolor					Common, Widespread
		Metrioptera	roeselii	Roesel's bush cricket	1		1	Common, Widespread
		Omocestes	viridulus	Common green grasshopper	1	1	1	Common, Widespread
HEMIPTERA		True Bugs						
	Acanthosomidae	Shield Bugs						
		Acanthosoma						Common, Widespread
		Elasmotethus						Common, Widespread
	Coreidae	Squash Bugs						
		Coriomeris	denticulatus		1			Common, Widespread
	Pentatomidae	Shield Bugs						
		Palomena	prasina	Green shieldbug			1	Common, Widespread
LEPIDOPTERA		Butterflies & Moths						
		Aphantopus	hyperantus	Ringlet		1		Common, Widespread
		Lycaena	phlaeas	Small copper			1	Common, Widespread
		Maniola	jurtina	Meadow brown	1	1	1	Common, Widespread
		Melanargia	galathea	Marbled white	1	1	1	Common, Widespread
		Ochlodes	faunus	Large skipper	1	1		Common, Widespread
		Pieris	brassicae	Large white	1	1		Common, Widespread
		Polyommatus	icarus	Common blue	1		1	Common, Widespread
		Thymelicus	lineola	Essex skipper		1		Common, Widespread
		Vanessa	atalanta	Red admiral	1		1	Common, Widespread
		Vanessa	cardui	Painted lady	1		1	Common, Widespread
		Epirrhoe	alternata	Common carpet			1	Common, Widespread
		Euclidia	glyphica	Burnet companion	1			Common, Widespread
		Myelois	circumvoluta	Thistle ermine	1			Common, Widespread
		Mythimna	impura	Smoky wainscot		1		
		Nemophora	metallica				1	Common, Widespread
		Pterophorus	pentadactyla	Common white plume	1			Common, Widespread
		Scotopteryx	chenopodiata	Shaded broad - bar			1	Common, Widespread
		Semiothisa	clathrata	Latticed heath	1			Common, Widespread
		Tyria	jacobaeae	Cinnabar moth	1		1	Species of Principal Importance (NERC)
		Udea	lutealis				1	Common, Widespread
		Zygaena	filipendulae	Six - spot burnet		1	1	Common, Widespread
		Zygaena	trifolii	Five - spot burnet	1			Common, Widespread
DIPTERA		True Flies						
	Stratiomyidae	Soldier Flies						
		Chloromyia	formosa		1			Common, Widespread
	Rhagionidae	Snipe Flies						
		Chrysopilus	asiliformis			1		Common, Widespread
		Rhagio	tringarius				1	Common, Widespread
	Tabanidae	Horse Flies						
		Haematopota	pluvialis	Notch - horned cleg	1	1		Common, Widespread
	Asilidae	Robber Flies						
		Leptathrus	brevirostris	Slender - footed robberfly	1			Local Widespread
		Leptogaster	cylindrica		1			Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	26 & 27/06/2019	15/07/2019	06/08/2019	STATUS
	Syrphidae	Hoverflies						
		Cheilosia	illustrata		1			Common, Widespread
		Cheilosia	vernalis		1			Common, Widespread
		Chrysogaster	solstitialis				1	Common, Widespread
		Chrysotoxum	bicinctum		1	1	1	Common, Widespread
		Episyrphus	balteatus		1	1	1	Common, Widespread
		Eristalis	arbustorum			1		Common, Widespread
		Eristalis	pertinax		1	1	1	Common, Widespread
		Eristalis	tenax		1	1	1	Common, Widespread
		Eupeodes	corollae		1			Common, Widespread
		Eupeodes	luniger		1	1		Common, Widespread
		Helophilus	pendulus			1		Common, Widespread
		Melanostoma	mellinum			1	1	Common, Widespread
		Merodon	equestris		1			Common, Widespread
		Myathropa	florea				1	Common, Widespread
		Pipizella	viduata		1			Common, Widespread
		Pipizella	virens		1			Local, Widespread
		Platycheirus	albimanus		1	1		Common, Widespread
		Platycheirus	clypeatus			1		Common, Widespread
		Rhingia	campestris				1	Common, Widespread
		Scaeva	pyrastris		1			Common, Widespread
		Sphaerophoria	scripta		1	1	1	Common, Widespread
		Syritta	pipiens		1	1	1	Common, Widespread
		Syrphus	ribesii			1	1	Common, Widespread
		Syrphus	vitripennis			1		Common, Widespread
		Volucella	bombylans		1			Common, Widespread
		Xanthandrus	comtus			1		Local, Widespread
		Xanthogramma	pedisequum		1			Common, Widespread
	Tephritidae	Picture - winged Flies						
		Chaetostomella	cylindrica		1	1	1	Common, Widespread
		Terellia	colon				1	Common, Widespread
		Terellia	longicauda				1	Provisionally Nationally Scarce N
		Terellia	ruficauda			1		Common, Widespread
		Terellia	tussilaginis			1		Common, Widespread
		Urophora	jaceana			1		Common, Widespread
	Ulidiidae	Ulidiid flies						
		Herina	longistylata		1	1		Common Widespread
	Pipunculidae	Big - headed flies						
		Verrallia	aucta		1			Common widespread
	Sciomyzidae	Snail Killing Flies						
		Coramacera	marginata		1			Common, Widespread
	Tachinidae	Tachinid Flies						
		Eriothrix	rufomaculatus				1	Common, Widespread
HYMENOPTERA		Bees, Wasps, Ants & Relatives						
	Vespidae	Social Wasps						
		Dolichovespula	media	Median wasp			1	Nationally Scarce Na
		Vespula	germanica	German wasp			1	Common, Widespread
		Vespula	vulgaris	Common wasp			1	Common, Widespread
	Crabronidae	Digger Wasps						
		Ectemnius	continuus				1	Common, Widespread
		Pemphredon	inornata			1		Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	26 & 27/06/2019	15/07/2019	06/08/2019	STATUS
	Apoidea	Bees						
	Colletidae	Mining & Yellow - faced Bees						
		Hylaeus	brevicornis		1			Common, Widespread
		Hylaeus	dilatatus			1		Common, Widespread
	Andrenidae	Mining Bees						
		Andrena	chrysoceles		1			Common, Widespread
		Andrena	dorsata				1	Common, Widespread
		Andrena	semilaevis		1			Common, Widespread
	Halictidae	Mining & Cuckoo Bees						
		Halictus	tumulorum		1	1		Common, Widespread
		Lasioglossum	fulvicorne			1	1	Common, Widespread
		Sphecodes	crassus			1		Nationally Scarce Nb
		Sphecodes	geoffrellus		1			Common, Widespread
		Sphecodes	hyalinatus			1		Common, Widespread
	Megachilidae	Solitary Bees						
		Megachile	centuncularis				1	Common, Widespread
		Osmia	bicolor		1	1		Nationally Scarce Nb
		Osmia	spinulosa		1			Common, Widespread
	Anthophoridae	Flower & Nomad Bees						
		Nomada	fabriciana		1			Common, Widespread
	Apidae	Social & Cuckoo Bees						
		Apis	mellifera	Honey bee	1	1		Common, Widespread
		Bombus	hortorum	Large garden bumblebee			1	Common, Widespread
		Bombus	hypnorum	Tree bumblebee	1			Recent colonist
		Bombus	lapidarius	Red - tailed bumblebee	1	1		Common, Widespread
		Bombus	lucorum	White - tailed bumblebee	1	1	1	Common, Widespread
		Bombus	pascurorum	Common carder bee	1	1	1	Common, Widespread
		Bombus	pratorum	Early bumblebee	1			Common, Widespread
		Bombus	terrestris	Buff - tailed bumblebee	1		1	Common, Widespread
		Bombus	terrestris/lucorum worker	A bumblebee		1	1	Common Widespread
COLEOPTERA		Beetles						
	Cantharidae	Soldier Beetles						
		Cantharis	cryptica		1			Common, Widespread
		Cantharis	nigra		1			Common, Widespread
		Rhagonycha	fulva			1	1	Common, Widespread
	Cerambycidae	Longhorn Beetles						
		Agapanthia	villosviridescens		1	1		Local Widespread
		Grammoptera	ruficornis		1			Common, Widespread
		Leptura	melanura		1			Common, Widespread
	Chrysomelidae	Leaf Beetles						
		Cryptocephalus	moraei		1			Local, Widespread
	Coccinellidae	Ladybirds						
		Coccinella	7 - punctata	Seven - spot ladybird		1	1	Common, Widespread
		Harmonia	axyridis	Harlequin ladybird	1			Common, Widespread
		Subcoccinella	24 - punctata	Twenty - four - spot ladybird		1	1	Common, Widespread
	Dascillidae	Orchid beetles						
		Dascillus	cervinus	Orchid beetle	1			Common Widespread
	Elateridae	Click Beetles						
		Athous	haemorrhoidalis		1			Common, Widespread
	Oedemeridae	Oedemerid Beetles						
		Oedemera	nobilis		1	1	1	Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	26 & 27/06/2019	15/07/2019	06/08/2019	STATUS
	Scarabaeidae	Chafers & Dung Beetles						
		Onthophagus	joannae		1			Common, Widespread
	Staphylinidae	Rove beetles						
		Staphylinus	olens	Devil's coach - horse		1		Common Widespread

Site 5

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	16 & 17/07/2019	07/08/2019	05/06/2020	STATUS
ORTHOPTERA		Grasshoppers & Crickets							
		Chorthippus	parallelus	Meadow grasshopper		1	1	1	Common, Widespread
		Conocephalus	discolor	Long - winged conehead		1	1		Common, Widespread
		Leptophyes	punctatissima	Speckled bush cricket				1	Common, Widespread
		Metrioptera	roeselii	Roesel's bush cricket	1	1	1		Common, Widespread
		Omocestes	viridulus	Common green grasshopper	1	1	1	1	Common, Widespread
HEMIPTERA		True Bugs							
	Scutelleridae	Tortoise bugs							
		Eurygaster	testudinaria	Common tortoise bug		1			Common Widespread
ODONATA		Dragonflies & Damselflies							
	Libellulidae	Skimmers, Chasers & Darters							
		Orthetrum	cancellatum	Black - tailed skimmer	1				Common, Widespread
LEPIDOPTERA		Butterflies & Moths							
		Aglais	urticae	Small tortoiseshell				1	Common, Widespread
		Aphantopus	hyperantus	Ringlet	1	1			Common, Widespread
		Coenonympha	pamphilus	Small heath	1		1		Species of Principal Importance (NERC)
		Inachis	io	Peacock			1		Common, Widespread
		Lycaena	phlaeas	Small copper			1		Common, Widespread
		Maniola	jurtina	Meadow brown	1	1	1	1	Common, Widespread
		Melanargia	galathea	Marbled white	1	1			Common, Widespread
		Neozephyrus	quercus	Purple hairstreak		1			Common, Widespread
		Ochlodes	faunus	Large skipper	1			1	Common, Widespread
		Pararge	aegeria	Speckled wood	1				Common, Widespread
		Pieris	brassicae	Large white			1		Common, Widespread
		Polyommatus	icarus	Common blue				1	Common Widespread
		Pyronia	tithonus	Gatekeeper		1	1		Common, Widespread
		Thymelicus	lineola	Essex skipper		1			Common, Widespread
		Thymelicus	sylvestris	Small skipper		1			Common, Widespread
		Vanessa	atalanta	Red admiral	1				Common, Widespread
		Vanessa	cardui	Painted lady	1		1		Common, Widespread
		Campptogramma	bilineata	Yellow shell				1	Common, Widespread
		Tyria	jacobaeae	Cinnabar moth		1	1		Species of Principal Importance (NERC)
		Zygaena	filipendulae	Six - spot burnet			1		Common Widespread
DIPTERA		True Flies							
	Tipulidae	Crane Flies							
		Tipula	lunata					1	Common, Widespread
	Stratiomyidae	Soldier Flies							
		Chloromyia	formosa			1			Common, Widespread
		Pachygaster	atra			1			Common, Widespread
	Rhagionidae	Snipe Flies							
		Rhagio	tringarius				1		Common, Widespread
	Tabanidae	Horse Flies							
		Haematopota	pluvialis	Notch - horned cleg	1				Common, Widespread
		Tabanus	bromius					1	Common, Widespread
	Asilidae	Robber Flies							
		Dioctria	rufipes					1	Common, Widespread
		Leptarthrus	brevirostris	Slender - footed robberfly	1			1	Common, Widespread
		Leptogaster	cylindrica		1	1		1	Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	16 & 17/07/2019	07/08/2019	05/06/2020	STATUS
		Machimus	atricapillus			1	1		Common, Widespread
	Bombyliidae	Bee Flies							
		Villa	cingulata	Downland Villa	1	1			Rare RDB 3
	Dolichopodidae	Long - headed Flies							
		Sciapus	contristans s.l.			1			Common, Widespread
	Syrphidae	Hoverflies							
		Chrysotoxum	bicinctum			1		1	Common, Widespread
		Episyrphus	balteatus		1	1		1	Common, Widespread
		Eristalis	interruptus			1	1	1	Common, Widespread
		Eristalis	pertinax					1	Common, Widespread
		Eristalis	tenax				1	1	Common, Widespread
		Eupeodes	corollae					1	Common, Widespread
		Eupeodes	luniger		1	1			Common, Widespread
		Helophilus	pendulus					1	Common, Widespread
		Melangyna	compositarum/labiatarum					1	Common, Widespread
		Melanostoma	mellinum		1	1	1	1	Common, Widespread
		Melanostoma	scalare					1	Common, Widespread
		Pipiza	noctiluca					1	Common, Widespread
		Platycheirus	albimanus		1				Common, Widespread
		Platycheirus	peltatus					1	Common, Widespread
		Rhingia	campestris				1	1	Common, Widespread
		Scaeva	pyrastris					1	Common, Widespread
		Sphaerophoria	scripta			1	1		Common, Widespread
		Syritta	pipiens				1		Common, Widespread
		Syrphus	ribesii		1				Common, Widespread
		Syrphus	vitripennis		1				Common, Widespread
		Volucella	bombylans					1	Common, Widespread
		Volucella	pelluscens			1		1	Common, Widespread
		Xanthogramma	pedisequum			1		1	Common, Widespread
	Conopidae	Thick - headed Flies							
		Physocephala	rufipes			1			Common, Widespread
	Tephritidae	Picture - winged Flies							
		Acdanthiophilus	helianthi				1		Nationally Scarce N
		Terellia	longicauda			1	1		Provisionally Nationally Scarce N
		Urophora	stylata		1				Common, Widespread
		Urophora	quadrifasciata				1		Common, Widespread
	Sciomyzidae	Snail Killing Flies							
		Limnia	unguicornis		1	1		1	Common, Widespread
	Palloptheridae	Palloptherid flies							
		Pallopthera	modesta				1		Common Widespread
	Scathophagidae	Dung Flies							
		Scathophaga	stercoraria	Common yellow dung fly				1	Common, Widespread
	Muscidae	House flies							
		Mesembrina	meridiana		1				Common Widespread
	Tachinidae	Tachinid Flies							
		Eriothrix	rufomaculatus				1		Common, Widespread
		Nowickia	ferox				1		Common, Widespread
HYMENOPTERA		Bees, Wasps, Ants & Relatives							
	Tiphiidae	Tiphiid Wasps							
		Tiphia	femorata				1		Common, Widespread
	Vespidae	Social Wasps							

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	16 & 17/07/2019	07/08/2019	05/06/2020	STATUS
		Dolichovespula	media	Median wasp			1		Nationally Scarce Na
		Vespula	vulgaris	Common wasp			1		Common, Widespread
	Crabronidae	Digger Wasps							
		Crossocerus	pusillus			1			Common, Widespread
	Apoidea	Bees							
	Colletidae	Mining & Yellow - faced Bees							
		Hylaeus	communis			1			Common, Widespread
	Andrenidae	Mining Bees							
		Andrena	cineraria					1	Common, Widespread
	Halictidae	Mining & Cuckoo Bees							
		Halictus	tumulorum		1	1			Common, Widespread
		Lasioglossum	albipes		1				Common, Widespread
		Lasioglossum	calceatum				1		Common, Widespread
		Lasioglossum	leucozonium					1	Common, Widespread
	Mellitidae	Mining Bees							
		Melitta	leporina			1			Provisionally Nationally Scarce N
		Melitta	tricincta				1		Nationally Scarce Nb
	Megachilidae	Solitary Bees							
		Megachile	ligniseca				1		Common, Widespread
		Megachile	willughbiella					1	Common, Widespread
	Apidae	Social & Cuckoo Bees							
		Apis	mellifera	Honey bee			1	1	Common, Widespread
		Bombus	humilis	Brown - banded carder bee		1	1		Provisionally Nationally Scarce N and Species of Principal Importance (NERC)
		Bombus	hypnorum	Tree bumblebee				1	Common, Widespread
		Bombus	lapidarius	Red - tailed bumblebee	1	1	1	1	Common, Widespread
		Bombus	lucorum	White - tailed bumblebee			1	1	Common, Widespread
		Bombus	pascuorum	Common carder bee	1	1	1	1	Common, Widespread
		Bombus	pratorum	Early bumblebee				1	Common, Widespread
		Bombus	terrestris	Buff - tailed bumblebee			1	1	Common, Widespread
		Bombus	terrestris/lucorum worker	A bumblebee	1	1			Common, Widespread
COLEOPTERA		Beetles							
	Cantharidae	Soldier Beetles							
		Cantharis	rustica					1	Common, Widespread
		Rhagonycha	fulva		1	1	1		Common, Widespread
	Cerambycidae	Longhorn Beetles							
		Grammoptera	ruficornis					1	Common, Widespread
		Leptura	melanura		1				Common, Widespread
	Chrysomelidae	Leaf Beetles							
		Sermylassa	halensis			1	1		Common, Widespread
	Coccinellidae	Ladybirds							
		Harmonia	axyridis	Harlequin ladybird			1	1	Common, Widespread
		Subcoccinella	24 - punctata	Twenty-four spot ladybird			1	1	Common, Widespread
	Malachiidae	Pollen Beetles							
		Malachius	bipustulatus		1			1	Common, Widespread
	Oedemeridae	Oedemerid Beetles							
		Oedemera	nobilis		1	1		1	Common, Widespread
	Scarabaeidae	Dung Beetles & chafers							
		Phyllopertha	horticola					1	Common, Widespread

Site 6

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	17/07/2019	07 & 08/08/2019	21/05/2020	STATUS
ORTHOPTERA		Grasshoppers & Crickets							
		Chorthippus	brunneus	Field grasshopper			1		Common, Widespread
		Chorthippus	parallelus	Meadow grasshopper			1		Common, Widespread
		Conocephalus	discolor	Long - winged conehead			1		Common, Widespread
		Leptophyes	punctatissima	Speckled bush cricket	1	1			Common, Widespread
		Metrioptera	roeselii	Roesel's bush cricket	1	1	1		Common, Widespread
		Omocestes	viridulus	Common green grasshopper		1	1		Common, Widespread
DERMAPTERA		Earwigs							
		Forficula	auricularia	Common earwig				1	Common, Widespread
HEMIPTERA		True Bugs							
		Pentatomidae	Shield Bugs						
		Palomena	prasina	Green shield bug			1		Common, Widespread
ODONATA		Dragonflies & Damselflies							
		Coenagriidae	Damselflies						
		Ischnura	elegans	Common blue damselfly	1				Common, Widespread
		Aeshnidae	Hawkers						
		Aeshna	mixta	Migrant hawkler			1		Common, Widespread
LEPIDOPTERA		Butterflies & Moths							
		Aglais	urticae	Small tortoiseshell		1			Common, Widespread
		Aphantopus	hyperantus	Ringlet	1				Common, Widespread
		Argynnis	aglaja	Dark green fritillary		1			Common, Widespread
		Argynnis	paphia	Silver - washed fritillary			1		Common, Widespread
		Gonepteryx	rhamni	Brimstone			1		Common, Widespread
		Lycaena	phlaeas	Small copper			1		Common, Widespread
		Maniola	jurtina	Meadow brown	1		1		Common, Widespread
		Melanargia	galathea	Marbled white	1	1			Common, Widespread
		Neozephyrus	quercus	Purple hairstreak		1	1		Common, Widespread
		Ochlodes	faunus	Large skipper	1	1			Common, Widespread
		Pieris	brassicae	Large white			1	1	Common, Widespread
		Pieris	napi	Green - veined white		1		1	Common, Widespread
		Polygonia	c - album	Comma	1		1		Common, Widespread
		Polyommatus	icarus	Common blue			1		Common, Widespread
		Pyronia	tithonus	Gatekeeper		1	1		Common, Widespread
		Thymelicus	lineola	Essex skipper		1	1		Common, Widespread
		Thymelicus	sylvestris	Small skipper		1	1		Common, Widespread
		Vanessa	atalanta	Red admiral	1	1			Common, Widespread
		Calostege	mi	Mother shipton				1	Common, Widespread
	Panomeria	tenebrata	Small yellow underwing				1	Common, Widespread	
	Scotopteryx	chenopodiata	Shaded broad - bar			1		Common Widespread	
	Tyria	jacobaeae	Cinnabar moth	1	1	1		Species of Principal Importance (NERC)	
	Zygaena	filipendulae	Six - spot burnet		1	1		Common Widespread	
DIPTERA		True Flies							
		Tipulidae	Crane Flies						
		Ctenophora	pectinicornis					1	Nationally Scarce N
		Tipula	lunata					1	Common, Widespread
		Stratiomyidae	Soldier Flies						
		Chloromyia	formosa		1				Common, Widespread
	Pachygaster	atra		1				Common, Widespread	
	Rhagionidae	Snipe Flies							

ORDER	FAMILY	SCIENTIFIC NAME	ENGLISH NAME	28/06/2019	17/07/2019	07 & 08/08/2019	21/05/2020	STATUS
		Chrysopilus	asiliformis		1			Common, Widespread
		Rhagio	scolopaceus				1	Common, Widespread
	Asilidae	Robberflies						
		Dioctria	rufipes				1	Common, Widespread
	Bombyliidae	Bee Flies						
		Villa	cingulata	Downland Villa	1			Rare RDB 3
	Syrphidae	Hoverflies						
		Callicera	aurata		1			Nationally Scarce N
		Cheilosia	albitarsis s.l.				1	Common, Widespread
		Cheilosia	illustrata	1	1	1		Common, Widespread
		Cheilosia	soror		1			Common, Widespread
		Chrysotoxum	bicinctum		1			Common, Widespread
		Epistrophe	eligans				1	Common, Widespread
		Episyrphus	balteatus	1	1	1		Common, Widespread
		Eristalis	interruptus				1	Common, Widespread
		Eristalis	pertinax	1	1	1	1	Common, Widespread
		Eumerus	tenax	1	1	1		Common, Widespread
		Eupeodes	luniger	1			1	Common, Widespread
		Helophilus	pendulus	1		1	1	Common, Widespread
		Leucozona	glaucia		1			Common, Widespread
		Leucozona	laternaria	1				Common, Widespread
		Melanostoma	mellinum			1		Common, Widespread
		Myathropa	florea			1	1	Common, Widespread
		Platycheirus	albimanus			1	1	Common, Widespread
		Rhingia	campestris			1	1	Common, Widespread
		Sphaerophoria	scripta		1	1		Common, Widespread
		Sphaerophoria	taeniata			1		Common, Widespread
		Syritta	pipiens			1		Common, Widespread
		Syrphus	ribesii	1	1	1		Common, Widespread
		Syrphus	vitripennis	1		1		Common, Widespread
		Tropidia	scita	1			1	Common, Widespread
		Volucella	bombylans	1		1		Common, Widespread
		Volucella	inanis			1		Common, Widespread
		Volucella	inflata	1				Local, Widespread
		Volucella	pelluscens	1	1	1		Common, Widespread
		Volucella	zonaria			1		Common, Widespread
		Xanthogramma	pedisequum		1			Common, Widespread
	Conopidae	Thick - headed Flies						
		Conops	quadrifasciatus			1		Common, Widespread
		Physocephala	rufipes			1		Common, Widespread
		Sicus	ferrugineus	1	1	1		Common, Widespread
	Tephritidae	Picture - winged Flies						
		Acanthiophilus	helianthi			1		Nationally Scarce N
		Chaetorellia	jaceae		1		1	Common, Widespread
		Rhagoletis	alternata		1			Provisionally Nationally Scarce N
		Terellia	longicauda		1	1		Provisionally Nationally Scarce N
		Urophora	jaceana	1	1			Common, Widespread
		Urophora	quadrifasciata	1	1	1		Common, Widespread
	Tachinidae	Tachinid Flies						
		Eriothrix	rufomaculatus			1		Common, Widespread
		Nowickia	ferox			1		Common, Widespread
		Tachina	fera				1	Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME	ENGLISH NAME	28/06/2019	17/07/2019	07 & 08/08/2019	21/05/2020	STATUS
HYMENOPTERA		Bees, Wasps, Ants & Relatives						
	Chrysididae	Cuckoo Wasps						
		Trichrysis	cyanea		1	1		Common Widespread
	Tiphiidae	Tiphiid Wasps						
		Tiphia	femorata			1		Common, Widespread
	Pompilidae	Spider - hunting Wasps						
		Anoplius	nigerrimus			1		Common Widespread
		Dipogon	subintermedius	1				Local Widespread
	Eumenidae	Potter & Mason Wasps						
		Ancistrocerus	scoticus			1		Common, Widespread
		Symmorphus	bifasciatus			1		Local, Widespread
	Crabronidae	Digger Wasps						
		Cerceris	rybyensis		1	1		Common, Widespread
		Crossocerus	cetratus				1	Common, Widespread
		Crossocerus	megacephalus				1	Common, Widespread
		Ectemnius	continuus	1	1	1	1	Common, Widespread
		Ectemnius	lituratus		1	1		Common, Widespread
		Pemphredon	lethifera		1			Common, Widespread
		Psenulus	pallipes		1			Common, Widespread
	Apoidea	Bees						
	Colletidae	Mining & Yellow - faced Bees						
		Hylaeus	communis			1		Common, Widespread
	Andrenidae	Mining Bees						
		Andrena	cineraria				1	Common, Widespread
		Andrena	flavipes			1		Common, Widespread
		Andrena	nigroaenea				1	Common, Widespread
		Andrena	semilaevis	1			1	Common, Widespread
	Halictidae	Mining & Cuckoo Bees						
		Halictus	tumulorum			1	1	Common, Widespread
		Lasioglossum	albipes			1		Common, Widespread
		Lasioglossum	calceatum			1		Common, Widespread
		Lasioglossum	fulvicorne	1				Common, Widespread
		Lasioglossum	leucopus			1		Common, Widespread
	Lasioglossum	leucozonium			1		Common, Widespread	
	Lasioglossum	malachurum		1			Nationally Scarce Nb	
Mellitidae	Mining Bees							
	Melitta	leporina		1			Provisionally Nationally Scarce N	
Megachilidae	Solitary Bees							
	Chelostoma	florisomne				1	Common, Widespread	
	Coelioxys	elongata		1			Local, Widespread	
	Megachile	ligniseca			1		Common, Widespread	
	Osmia	bicolor				1	Nationally Scarce Nb	
Anthophoridae	Mining & Nomad Bees							
	Nomada	flavoguttata				1	Common, Widespread	
	Nomada	lathburiana				1	Rare RDB 3	
Apidae	Social & Cuckoo Bees							
	Apis	mellifera	Honey bee	1		1	1	Common, Widespread
	Bombus	hortorum	Large garden bumblebee			1		Common, Widespread
	Bombus	hypnorum	Tree bumblebee			1		Recent colonist
	Bombus	lapidarius	Red - tailed bumblebee	1		1		Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	17/07/2019	07 & 08/08/2019	21/05/2020	STATUS
		Bombus	lucorum	White - tailed bumblebee	1	1	1		Common, Widespread
		Bombus	pascuorum	Common carder bee		1	1		Common, Widespread
		Bombus	pratorum	Early bumblebee	1				Common, Widespread
		Bombus	terrestris	Buff - tailed bumblebee			1		Common, Widespread
COLEOPTERA		Beetles							
	Attelabidae	Weevils							
		Apoderus	coryli		1				Common Widespread
	Cantharidae	Soldier Beetles							
		Cantharis	nigricans					1	Common, Widespread
		Cantharis	rustiica					1	Common, Widespread
		Rhagonycha	fulva			1	1		Common, Widespread
		Rhagonycha	limbata		1			1	Common, Widespread
	Cerambycidae	Longhorn Beetles							
		Grammoptera	ruficornis					1	Common, Widespread
		Rutpela	maculata	Spotted longhorn beetle	1				Common, Widespread
	Chrysomelidae	Leaf Beetles							
		Cassida							Common, Widespread
		Chrysolina							Local, Widespread
		Chrysomela							Local, Widespread
		Donacia							Common, Wetland
	Coccinellidae	Ladybirds							
		Coccinella	7 - punctata	Seven - spot ladybird			1		Common, Widespread
		Harmonia	axyridis	Harlequin ladybird	1	1			Common, Widespread
	Elateridae	Click Beetles							
		Athous	haemorrhoidalis					1	Common, Widespread
	Malachiidae	Pollen Beetles							
		Malachius	bipustluatus					1	Common, Widespread
	Oedemeridae	Oedemerid Beetles							
		Oedemera	nobilis		1			1	Common, Widespread

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ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	17/07/2019	06 & 07/08/2019	21/05/2020 & 4/6/2020	STATUS
ORTHOPTERA		Grasshoppers & Crickets							
		Chorthippus	brunneus	Field grasshopper		1	1	1	Common, Widespread
		Chorthippus	parallelus	Meadow grasshopper		1	1		Common, Widespread
		Conocephalus	discolor	Long - winged conehead		1	1		Common, Widespread
		Metrioptera	roeseli	Roesel's bush cricket	1	1	1	1	Common, Widespread
		Omocestes	viridulus	Common green grasshopper	1	1	1	1	Common, Widespread
		Stenobothrus	lineatus	Stripe - winged grasshopper			1		Local Widespread
DERMAPTERA		Earwigs							
		Forficula	auricularia	Common earwig	1				Common, Widespread
HEMIPTERA		True Bugs							
	Pentatomidae	Shield Bugs							
		Dolycoris	baccarum	Sloe bug	1			1	Common, Widespread
	Scutelleridae	Tortoise bugs							
		Eurygaster	testudinaria			1	1		Common Widespread
	Aphrophoridae	Froghoppers							
		Cercopis	vulnerata	Common froghopper	1				Common Widespread
ODONATA		Dragonflies & Damselflies							
	Libellulidae	Skimmers, Chasers & Darters							
		Orthetrum	cancellatum	Black - tailed skimmer		1			Common, Widespread
LEPIDOPTERA		Butterflies & Moths							
		Aglais	urticae	Small tortoiseshell		1		1	Common, Widespread
		Aphantopus	hyperantus	Ringlet	1	1			Common, Widespread
		Aricia	agestis	Brown argus	1		1	1	Common, Widespread
		Boloria	euphrosyne	Pearl - bordered fritillary				1	Species of Principal importance (NERC)
		Callophrys	rubi	Green hairstreak				1	Common, Widespread
		Coenonympha	pamphilus	Small heath	1	1		1	Species of Principal Importance (NERC)
		Erynnis	tages	Dingy skipper				1	Species of Principal Importance (NERC)
		Lysandra	coridon	Chalkhill blue		1	1		Local Widespread
		Maniola	jurina	Meadow brown	1	1	1	1	Common, Widespread
		Melanargia	galathea	Marbled white	1	1	1		Common, Widespread
		Ochlodes	faunus	Large skipper	1	1	1		Common, Widespread
		Polygonia	c - album	Comma			1		Common, Widespread
		Polyommatus	icarus	Common blue	1		1	1	Common, Widespread
		Pyronia	tithonus	Gatekeeper		1	1		Common, Widespread
		Thymelicus	lineola	Essex skipper		1	1		Common, Widespread
		Thymelicus	sylvestris	Small skipper		1	1		Common, Widespread
		Vanessa	cardui	Painted lady	1		1		Common, Widespread
		Adscita	geryon	Cistus forester				1	Nationally Scarce Nb
		Odezia	atrata	Chimney sweeper				1	Local, Widespread
		Pleuroptya	ruralis	Mother of pearl		1	1		Common, Widespread
		Scotopteryx	chenopodiata	Shaded broad bar			1		Common, Widespread
		Semiothisa	clathrata	Latticed heath	1			1	Common, Widespread
		Tyria	jacobaeae	Cinnabar moth			1		Species of Principal Importance (NERC)
		Zygaena	filipendulae	Six - spot burnet		1	1		Common, Widespread
DIPTERA		True Flies							
	Stratiomyidae	Soldier Flies							
		Chorisops	tibialis			1			Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	17/07/2019	06 & 07/08/2019	21/05/2020 & 4/6/2020	STATUS
		Pachygaster	atra			1			Common, Widespread
	Tabanidae	Horse Flies							
		Haematopota	pluvialis	Notch - horned cleg	1				Common, Widespread
	Asilidae	Robber Flies							
		Leptarthrus	brevirostris	Slender - footed robberfly	1				Local Widespread
		Machimus	atricapillus				1		Common, Widespread
		Machimus	rusticus			1			Nationally Scarce N
	Dolichopodidae	Long - headed Flies							
		Dolichopus	trivialis			1			Common, Widespread
	Syrphidae	Hoverflies							
		Cheilosia	illustrata		1				Common, Widespread
		Cheilosia	impressa				1		Common, Widespread
		Cheilosia	scutellata				1		Common, Widespread
		Cheilosia	soror				1		Common, Widespread
		Cheilosia	vulpina				1		Common, Widespread
		Chrysotoxum	bicinctum				1		Common, Widespread
		Dasysyrphus	albostratus				1		Common, Widespread
		Epistrophe	grossulariae		1	1	1		Common, Widespread
		Episyrphus	balteatus		1	1	1	1	Common, Widespread
		Eristalis	arbustorum		1				Common, Widespread
		Eristalis	interruptus			1	1		Common, Widespread
		Eristalis	pertinax				1		Common, Widespread
		Eristalis	tenax		1	1	1		Common, Widespread
		Eupeodes	corollae		1			1	Common, Widespread
		Eupeodes	luniger		1		1		Common, Widespread
		Ferdinandea	cuprea		1		1		Local, Widespread
		Helophilus	pendulus				1		Common, Widespread
		Meliscaeva	auricollis				1		Common, Widespread
		Melanostoma	mellinum			1	1		Common, Widespread
		Melanostoma	scalare				1		Common, Widespread
		Paragus	haemorrhous			1		1	Common, Widespread
		Platycheirus	albimanus		1				Common, Widespread
		Scaeva	pyrastris		1				Common, Widespread
		Sphaerophoria	scripta		1	1	1	1	Common, Widespread
		Syrpna	pipiens					1	Common, Widespread
		Syrphus	ribesii		1	1	1		Common, Widespread
		Syrphus	vitripennis		1	1	1		Common, Widespread
		Volucella	bombylans		1	1		1	Common, Widespread
	Conopidae	Thick - headed Flies							
		Thecophora	atra			1	1	1	Local, Widespread
	Tephritidae	Picture - winged Flies							
		Tephritis	neesii			1			Common, Widespread
		Terellia	longicauda			1	1		Provisionally Nationally Scarce N
		Terellia	ruficauda			1		1	Common, Widespread
		Terellia	serratulae				1		Common, Widespread
		Terellia	tussilaginis			1			Common, Widespread
		Urophora	jaceana			1			Common, Widespread
		Urophora	quadrifasciata				1		Common, Widespread
	Sciomyzidae	Snail Killing Flies							
		Coramacera	marginata		1	1	1		Common, Widespread
		Limnia	unguicornis		1	1			Common, Widespread
		Pherbellia	cinerella		1	1		1	Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	17/07/2019	06 & 07/08/2019	21/05/2020 & 4/6/2020	STATUS
	Tachinidae	Tachinid Flies							
		Nowickia	ferox				1		Common, Widespread
		Phasia	pusilla			1			Common, Widespread
HYMENOPTER A		Bees, Wasps, Ants & Relatives							
	Tiphiidae	Tiphiid Wasps							
		Tiphia	femorata				1		Common, Widespread
	Pompilidae	Spider - hunting Wasps							
		Anoplius	nigerrimus					1	Common, Widespread
	Vespidae	Social Wasps							
		Dolichovespula	media	Median wasp				1	Nationally Scarce Na
		Vespula	vulgaris	Common wasp	1		1		Common, Widespread
	Crabronidae	Digger Wasps							
		Lindeni	albilabris			1			Common, Widespread
	Apoidea	Bees							
	Andrenidae	Mining Bees							
		Andrena	bicolor			1			Common, Widespread
		Andrena	cineraria					1	Common, Widespread
		Andrena	dorsata				1		Common, Widespread
		Andrena	flavipes				1		Common, Widespread
		Andrena	minutula			1			Common, Widespread
		Andrena	trimmerana				1		Nationally Scarce Nb
	Halictidae	Mining & Cuckoo Bees							
		Halictus	tumulorum		1	1	1	1	Common, Widespread
		Lasioglossum	albipes			1	1		Common, Widespread
		Lasioglossum	calceatum				1		Common, Widespread
		Lasioglossum	fulvicorne		1	1	1	1	Common, Widespread
		Lasioglossum	leucopus				1	1	Common, Widespread
		Lasioglossum	leucozonium		1			1	Common, Widespread
		Lasioglossum	morio			1	1	1	Common, Widespread
		Lasioglossum	pauxillum		1	1			Nationally Scarce Na
		Lasioglossum	villosulum		1			1	Common, Widespread
		Lasioglossum	zonulum				1		Common, Widespread
		Sphecodes	ephippius				1		Common, Widespread
		Sphecodes	geoffrellus					1	Common, Widespread
		Sphecodes	gibbus					1	Common, Widespread
	Mellitidae	Mining Bees							
		Melitta	haemorrhoidalis				1		Provisionally Nationally Scarce N
	Megachilidae	Solitary Bees							
		Osmia	aurulenta					1	Common, Widespread
		Osmia	bicolor		1	1		1	Nationally Scarce Nb
		Osmia	spinulosa		1	1	1	1	Common, Widespread
	Anthophoridae	Flower & Nomad Bees							
		Nomada	flavoguttata				1		Common, Widespread
		Nomada	fucata				1		Nationally Scarce Na
	Apidae	Social & Cuckoo Bees							
		Apis	mellifera	Honey bee	1	1	1	1	Common, Widespread
		Bombus	humilis	Brown - banded carder bee			1		Provisionally Nationally Scarce N and Species of Principal Importance (NERC)
		Bombus	hypnorum	Tree bumblebee	1				Recent colonist
		Bombus	lapidarius	Red - tailed bumblebee	1	1	1	1	Common, Widespread
		Bombus	lucorum	White - tailed bumblebee	1		1		Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	28/06/2019	17/07/2019	06 & 07/08/2019	21/05/2020 & 4/6/2020	STATUS
		Bombus	pascuorum	Common carder bee	1	1	1	1	Common, Widespread
		Bombus	pratorum	Early bumblebee				1	Common, Widespread
		Bombus	terrestris	Buff - tailed bumblebee			1		Common, Widespread
		Bombus	terrestris/lucorum worker	A bumblebee	1	1		1	Common, Widespread
COLEOPTERA		Beetles							
	Cantharidae	Soldier Beetles							
		Cantharis	rustica					1	Common, Widespread
		Rhagonycha	fulva		1		1		Common, Widespread
	Cerambycidae	Longhorn Beetles							
		Leptura	melanura		1				Common, Widespread
	Chrysomelidae	Leaf Beetles							
		Cryptocephalus	aureolus		1		1	1	Local, Widespread
		Cryptocephalus	bipunctatus					1	Nationally Scarce Nb
		Epitrix	atropae					1	Nationally Scarce Nb
	Coccinellidae	Ladybirds							
		Coccinella	7 - punctata	Seven - spot ladybird		1			Common, Widespread
		Propylea	14 - punctata	Fourteen- spot ladybird		1			Common, Widespread
		Subcoccinella	24 - punctata	Twenty - four- spot ladybird		1			Common, Widespread
	Curculionidae	Weevils							
		Cleopomiarus	graminis				1		Nationally Scarce Nb
	Dascillidae	Orchid beetles							
		Dascillus	cervinus		1				Common Widespread
	Oedemeridae	Oedemerid Beetles							
		Oedemera	nobilis		1	1	1	1	Common, Widespread
	Malachiidae	Pollen Beetles							
		Malachius	bipustulatus					1	Common, Widespread
	Mordellidae	Flower Beetles							
		Variimorda	villosa		1				Nationally Scarce Nb
	Scarabaeidae	Dung Beetles & Chafers							
		Omaloplia	ruricola					1	Nationally Scarce Nb
		Phyllopertha	horticola					1	Common, Widespread
MOLLUSCA		Slugs & Snails							
		Helix	pomatia	Roman snail		1	1	1	Schedule 5 protected

Site 8

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	26/06/2019	15/07/2019	06/08/2019	20/05/2020	STATUS
ORTHOPTERA		Grasshoppers & Crickets							
		Chorthippus	brunneus	Field grasshopper			1		Common, Widespread
		Chorthippus	parallelus	Meadow grasshopper		1			Common, Widespread
		Leptophyes	punctatissima	Speckled bush cricket			1		Common, Widespread
HEMIPTERA		Matrioptera	roeselii	Roesel's bush cricket			1		Common, Widespread
		True Bugs							
		Pentatomidae	Shield Bugs						
	Dolycoris	baccarum	Sloe bug				1	Common, Widespread	
LEPIDOPTERA		Butterflies & Moths							
		Aglais	urticae	Small tortoiseshell		1			Common, Widespread
		Aphantopus	hyperantus	Ringlet	1				Common, Widespread
		Aricia agestis	Brown Argus					1	Common, Widespread
		Coenonympha	pamphilus	Small heath				1	Species of Principal Importance (NERC)
		Lycaena	phlaeas	Small copper				1	Common, Widespread
		Maniola	jurtina	Meadow brown	1	1	1		Common, Widespread
		Ochlodes	faunus	Large skipper	1				Common, Widespread
		Pararge	aegeria	Speckled wood		1	1		Common, Widespread
		Pieris	brassicae	Large white		1	1		Common, Widespread
		Pieris	napi	Green - veined white			1	1	Common, Widespread
		Polygonia	c - album	Comma		1			Common, Widespread
		Pyronia	tithonus	Gatekeeper		1			Common, Widespread
		Thymelicus	sylvestris	Small skipper		1			Common, Widespread
		Vanessa	cardui	Painted lady	1				Common, Widespread
		Autographa	gamma	Silver Y				1	Common, Widespread
		Pleuroptya	ruralis	Mother of pearl			1		Common, Widespread
		Petrophora	chlorosata	Brown silver - line				1	Common, Widespread
	Tyria	jacobaeae	Cinnabar moth	1		1		Species of Principal Importance (NERC)	
DIPTERA		True Flies							
		Tipulidae	Craneflies						
			Nephrotoma	flavipalpis				1	Common, Widespread
		Stratiomyidae	Soldier Flies						
			Chloromyia	formosa	1	1			Common, Widespread
			Pachygaster	atra	1	1			Common, Widespread
		Rhagionidae	Snipe Flies						
			Chrysopilus	cristatus	1				Common, Widespread
			Rhagio	tringarius	1	1	1		Common, Widespread
		Tabanidae	Horse Flies						
			Haematopota	pluvialis	Notch - horned cleg	1			Common, Widespread
		Dolichopodidae	Long - headed Flies						
			Poecilobothrus	nobilitatus			1		Common, Widespread
		Syrphidae	Hoverflies						
		Cheilosia	albitarsis				1	Common, Widespread	
		Chrysogaster	solstitialis				1	Common, Widespread	
		Chrysotoxum	bicinctum			1		Common, Widespread	
		Dasysyrphus	albostrigatus				1	Common, Widespread	
		Episyrphus	balteatus	1	1	1		Common, Widespread	
		Eristalis	arbustorum			1		Common, Widespread	

ORDER	FAMILY	SCIENTIFIC NAME	ENGLISH NAME	26/06/2019	15/07/2019	06/08/2019	20/05/2020	STATUS
		Eristalis	interruptus		1	1		Common, Widespread
		Eristalis	pertinax			1		Common, Widespread
		Eristalis	tenax	1		1		Common, Widespread
		Eupeodes	luniger	1				Common, Widespread
		Ferdinandea	cuprea			1		Local, Widespread
		Helophilus	pendulus	1		1		Common, Widespread
		Melanostoma	mellinum		1	1		Common, Widespread
		Platycheirus	albimanus	1				Common, Widespread
		Rhingia	campestris				1	Common, Widespread
		Sphaerophoria	scripta	1	1			Common, Widespread
		Sphaerophoria	taeniata		1			Common, Widespread
		Syritta	pipiens		1	1		Common, Widespread
		Syrphus	ribesii	1	1	1		Common, Widespread
		Syrphus	vitripennis	1				Common, Widespread
		Volucella	pelluscens			1		Common, Widespread
		Volucella	zonaria			1		Common, Widespread
		Xylota	segnis	1				Common, Widespread
	Tephritidae	Picture - winged Flies						
		Tephritis	vespertina	1	1		1	Common, Widespread
		Terellia	tussilaginis			1		Common, Widespread
	Opomyzidae	Opomyzid flies						
		Opomyza	florum			1		Common Widespread
		Opomyza	petrei	1				Common Widespread
	Scathophagidae	Dung flies						
		Scathophaga	atercoraria	1	1			Common Widespread
	Sciomyzidae	Snail Killing Flies						
		Limnia	unguicornis		1		1	Common, Widespread
		Tetanocera	elata	1				Common, Widespread
	Tachinidae	Tachinid Flies						
		Eriothrix	rufomaculatus			1		Common, Widespread
HYMENOPTERA		Bees, Wasps, Ants & Relatives						
	Vespidae	Social Wasps						
		Vespula	germanica	German wasp		1		Common, Widespread
		Vespula	vulgaris	Common Wasp		1		Common, Widespread
	Crabronidae	Digger Wasps						
		Oxybelus	uniglumis		1			Local, Widespread
	Apoidea	Bees						
	Colletidae	Mining & Yellow - faced Bees						
		Hylaeus	communis		1	1		Common, Widespread
		Hylaeus	confusus			1		Common, Widespread
	Halictidae	Mining & Cuckoo Bees						
		Lasioglossum	fulvicorne			1		Common, Widespread
	Apidae	Social & Cuckoo Bees						
		Apis	mellifera	Honey bee		1	1	Common, Widespread
		Bombus	lapidarius	Red - tailed bumblebee	1	1	1	Common, Widespread
		Bombus	lucorum	White - tailed bumblebee			1	Common, Widespread
		Bombus	pascuorum	Common carder bee	1	1	1	Common, Widespread
		Bombus	terrestris	Buff - tailed bumblebee			1	Common, Widespread
		Bombus	lucorum/terrestris worker	a bumblebee	1	1	1	Common, Widespread
COLEOPTERA		Beetles						
	Cantharidae	Soldier Beetles						
		Cantharis	decepiens					Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	26/06/2019	15/07/2019	06/08/2019	20/05/2020	STATUS
		Cantharis	lateralis		1				Common, Widespread
		Cantharis	rustica					1	Common, Widespread
		Rhagonycha	fulva			1	1		Common, Widespread
	Chrysomelidae	Leaf Beetles							
		Epitrix	atropae					1	Nationally Scarce Nb
	Coccinellidae	Ladybird Beetles							
		Coccinella	7 - punctata	Seven spot ladybird				1	Common, Widespread
	Elateridae	Click Beetles							
		Athous	bicolor			1			Common, Widespread
	Malachiidae	Pollen Beetles							
		Malachius	bipustulatus					1	Common, Widespread
	Oedemeridae	Oedemerid Beetles							
		Oedemera	nobilis		1			1	Common, Widespread
	Pyrochroidae	Cardinal Beetles							
		Pyrochroa	coccinea	Black - headed cardinal			1		Nationally Scarce Nb

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ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	27/06/2019	16/07/2019	06/08/2019	STATUS
ORTHOPTERA		Grasshoppers & Crickets						
		Chorthippus	brunneus	Field grasshopper			1	Common, Widespread
		Chorthippus	parallelus	Meadow grasshopper		1	1	Common, Widespread
		Metrioptera	roeselii	Roesel's bush cricket		1	1	Common, Widespread
		Omocestes	viridulus	Common green grasshopper		1	1	Common, Widespread
HEMIPTERA		True Bugs						
	Pentatomidae	Shield Bugs						
		Dolycoris	baccarum	Sloe bug	1			Common, Widespread
LEPIDOPTERA		Butterflies & Moths						
		Aphantopus	hyperantus	Ringlet		1		Common, Widespread
		Aricia agestis	Brown argus				1	Common, Widespread
		Coenonympha	pamphilus	Small heath	1			Species of Principal Importance (NERC)
		Maniola	jurtina	Meadow brown	1	1		Common, Widespread
		Melanargia	galathea	Marbled white	1	1		Common, Widespread
		Pieris	brassicae	Large white		1		Common, Widespread
		Polyommatus	icarus	Common blue	1		1	Common, Widespread
		Pyronia	tithonus	Gatekeeper			1	Common, Widespread
		Thymelicus	lineola	Essex skipper		1		Common, Widespread
		Thymelicus	sylvestris	Small skipper		1		Common, Widespread
		Vanessa	cardui	Painted lady	1	1	1	Common, Widespread
		Agrophylla	tristella				1	Common, Widespread
		Autographa	gamma	Silver Y	1			Common, Widespread
		Chrysoteucella	culmella			1		Common, Widespread
		Epirrhoe	alternata	Common carpet			1	Common, Widespread
		Euclidia	glyphica	Burnet companion	1			Common, Widespread
		Lygephila	pastinum	Blackneck	1			Common, Widespread
		Nemophora	metallica			1	1	Local Widespread
		Syncopacma	larseniella			1		Local Widespread
		Thalpophila	matura	Straw underwing			1	Common, Widespread
		Tyria	jacobaeae	Cinnabar moth		1		Species of Principal Importance (NERC)
		Zygaena	filipendulae	Six - spot burnet			1	Common, Widespread
DIPTERA		True Flies						
	Stratiomyidae	Soldier Flies						
		Chloromyia	formosa		1			Common, Widespread
		Pachygaster	atra		1	1		Common, Widespread
	Tabanidae	Horse Flies						
		Haematopota	pluvialis	Notch - horned cleg	1			Common, Widespread
	Asilidae	Robber Flies						
		Leptogaster	cylindrica		1	1		Common, Widespread
		Machimus	atricapillus			1		Common, Widespread
	Syrphidae	Hoverflies						
		Cheilosia	proxima				1	Common, Widespread
		Episyrphus	balteatus			1		Common, Widespread
		Eristalis	arbustorum				1	Common, Widespread
		Eristalis	tenax		1	1	1	Common, Widespread
		Eupeodes	luniger		1	1		Common, Widespread
		Melangyna	umbellatarum				1	Common, Widespread
		Melanostoma	mellinum				1	Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	27/06/2019	16/07/2019	06/08/2019	STATUS
		Orthonevra	nobilis				1	Common, Widespread
		Pipizella	viduata			1		Common, Widespread
		Platycheirus	albimanus		1	1		Common, Widespread
		Scaeva	pyrastris			1		Common, Widespread
		Sphaerophoria	scripta		1	1	1	Common, Widespread
		Sphaerophoria	taeniata				1	Common, Widespread
		Syrpna	pipiens		1	1		Common, Widespread
		Syrphus	ribesii		1			Common, Widespread
	Conopidae	Thick - headed Flies						
		Sicus	ferrugineus			1		Common, Widespread
		Thecophora	atra				1	Local, Widespread
	Tephritidae	Picture - winged Flies						
		Oxyna	nebulosa			1		Rare RDB 3
		Tephritis	neesii			1		Common, Widespread
		Terellia	ruficauda		1	1		Common, Widespread
		Terellia	tussilaginis			1		Common, Widespread
		Urophora	jaceana		1	1		Common, Widespread
		Urophora	quadrifasciata		1			Common, Widespread
	Opomyzidae	Opomyzid flies						
		Opomyza	germinationis		1			Common Widespread
	Pallopteridae	Pallopterid flies						
		Palloptera	modesta			1		Common Widespread
	Sciomyzidae	Snail Killing Flies						
		Limnia	unguicornis				1	Common, Widespread
	Tachinidae	Tachinid Flies						
		Phasia	obesa		1		1	Common, Widespread
		Tachina	grossa		1			Common, Widespread
HYMENOPTERA		Bees, Wasps, Ants & Relatives						
	Tiphiidae	Tiphiid Wasps						
		Tiphia	femorata				1	Common, Widespread
	Crabronidae	Digger Wasps						
		Cerceris	rybyensis			1	1	Common, Widespread
		Ectemnius	continuus			1		Common, Widespread
	Apoidea	Bees						
	Colletidae	Mining & Yellow - faced Bees						
		Colletes	daviesanus			1		Common, Widespread
		Hylaeus	signatus			1		Nationally Scarce Nb
	Andrenidae	Mining Bees						
		Andrena	bicolor				1	Common, Widespread
		Andrena	dorsata			1		Common, Widespread
		Andrena	minutula			1		Common, Widespread
	Halictidae	Mining & Cuckoo Bees						
		Halictus	tumulorum			1	1	Common, Widespread
		Lasioglossum	albipes		1	1		Common, Widespread
		Lasioglossum	calceatum			1	1	Common, Widespread
		Lasioglossum	fulvicorne		1		1	Common, Widespread
		Lasioglossum	leucopus				1	Common, Widespread
		Lasioglossum	leucozonium				1	Common, Widespread
		Lasioglossum	morio					Common, Widespread
	Megachilidae	Solitary Bees						
		Chelostoma	campanularum			1		Local, Widespread
		Osmia	spinulosa			1		Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	27/06/2019	16/07/2019	06/08/2019	STATUS
	Apidae	Social & Cuckoo Bees						
		Apis	mellifera	Honey bee	1	1	1	Common, Widespread
		Bombus	lapidarius	Red - tailed bumblebee	1	1	1	Common, Widespread
		Bombus	lucorum	White - tailed bumblebee	1		1	Common, Widespread
		Bombus	pascuorum	Common carder bee	1		1	Common, Widespread
		Bombus	terrestris	Buff - tailed bumblebee			1	Common, Widespread
COLEOPTERA		Beetles						
	Cantharidae	Soldier Beetles						
		Rhagonycha	fulva			1	1	Common, Widespread
	Coccinellidae	Ladybirds						
		Subcoccinella	24 - punctata	Twenty - four - spot ladybird			1	Common, Widespread
	Oedemeridae	Oedemerid Beetles						
		Oedemera	nobilis		1			Common, Widespread
	Scarabaeidae	Chafers & Dung Beetles						
		Geotrupes	spiniger				1	Common, Widespread

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ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	27/06/2019	16/07/2019	08/08/2019	20/05/2020 & 05/06/2020	STATUS
ORTHOPTERA		Grasshoppers & Crickets							
		Chorthippus	brunneus	Field grasshopper		1	1		Common, Widespread
		Chorthippus	parallelus	Meadow grasshopper			1		Common, Widespread
		Conocephalus	discolor	Long - winged conehead			1		Common Widespread
		Leptophyes	punctatissima	Speckled bush cricket				1	Common, Widespread
		Metrioptera	roeselii	Roesel's bush cricket		1	1		Common, Widespread
		Omocestes	viridulus	Common green grasshopper	1	1	1	1	Common, Widespread
HEMIPTERA		True Bugs							
	Pentatomidae	Shield Bugs							
		Dolycoris	baccarum	sloe bug	1		1	1	Common, Widespread
	Scutelleridae	Tortoise bugs							
		Eurygaster	testudinaria	Common tortoise bug		1	1		Common Widespread
LEPIDOPTERA		Butterflies & Moths							
		Aglais	urticae	Small tortoiseshell	1				Common, Widespread
		Aphantopus	hyperantus	Ringlet	1	1			Common, Widespread
		Aricia	agestis	Brown argus	1		1	1	Common, Widespread
		Callophrys	rubi	Green hairstreak				1	Common, Widespread
		Coenonympha	pamphilus	Small heath	1	1	1	1	Species of Principal Importance (NERC)
		Erynnis	tages	Dingy skipper				1	Species of Principal Importance (NERC)
		Inachis	io	Peacock			1		Common, Widespread
		Lysandra	coridon	Chalkhill blue			1		Local Widespread
		Maniola	jurtina	Meadow brown	1	1	1	1	Common, Widespread
		Melanargia	galathea	Marbled white	1	1	1		Common, Widespread
		Ochlodes	faunus	Large skipper	1	1	1	1	Common, Widespread
		Pieris	brassicae	Large white				1	Common, Widespread
		Pieris	napi	Green - veined white				1	Common, Widespread
		Polygonia	c - album	Comma			1		Common, Widespread
		Polyommatus	icarus	Common blue	1		1		Common, Widespread
		Pyronia	tithonus	Gatekeeper		1	1		Common, Widespread
		Thymelicus	lineola	Essex skipper		1	1		Common, Widespread
		Thymelicus	sylvestris	Small skipper		1	1		Common, Widespread
		Vanessa	cardui	Painted lady			1		Common, Widespread
		Adscita	geryon	Cistus forester	1			1	Nationally Scarce Nb
		Callistege	mi	Mother Shipton	1			1	Common, Widespread
		Euclidia	glyphica	Burnet companion	1			1	Common, Widespread
		Nemophora	metallica				1		Local Widespread
		Odezia	atrata	Chimney sweeper	1				Common, Widespread
		Pseudopanthera	macularia	Speckled yellow	1			1	Common, Widespread
		Pyrausta	nigrata				1		Common Widespread
		Semiothisa	clathrata	Latticed heath	1				Common, Widespread
		Tyria	jacobaeae	Cinnabar moth	1				Species of Principal Importance (NERC)
		Zygaena	filipendulae	Six - spot burnet			1		Common, Widespread
DIPTERA		True Flies							
	Tipulidae	Craneflies							
		Nephrotoma	flavescens		1				Common Widespread
	Stratiomyidae	Soldier Flies							

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	27/06/2019	16/07/2019	08/08/2019	20/05/2020 & 05/06/2020	STATUS
		Chloromyia	formosa		1	1			Common, Widespread
		Pachygaster	atra			1			Common, Widespread
	Tabanidae	Horse Flies							
		Haematopota	pluvialis	Notch - horned cleg	1	1			Common, Widespread
	Rhagionidae	Snipe Flies							
		Rhagio	tringarius					1	Common, Widespread
	Asilidae	Robber Flies							
		Leptarthrus	brevirostris	Slender - footed robberfly	1				Local Widespread
		Leptogaster	guttiventris		1	1			Local Widespread
	Dolichopodidae	Long - headed Flies							
		Hercostomus	gracilis			1			Common, Widespread
		Sciapus	contristans s.l.			1			Common, Widespread
	Syrphidae	Hoverflies							
		Cheilosia	illustrata		1		1		Common, Widespread
		Cheilosia	proxima				1		Common, Widespread
		Cheilosia	scutellata				1		Common, Widespread
		Cheilosia	vernalis					1	Common, Widespread
		Chrysotoxum	bicinctum		1	1	1	1	Common, Widespread
		Chrysotoxum	festivum				1		Common, Widespread
		Chrysotoxum	verralli			1			Common, Widespread
		Dasysyrphus	venustus		1				Common, Widespread
		Episyrphus	balteatus			1	1	1	Common, Widespread
		Eristalis	arbustorum		1				Common, Widespread
		Eristalis	interruptus					1	Common, Widespread
		Eristalis	pertinax					1	Common, Widespread
		Eristalis	tenax		1		1	1	Common, Widespread
		Eupeodes	corollae		1				Common, Widespread
		Eupeodes	luniger		1		1	1	Common, Widespread
		Helophilus	pendulus					1	Common, Widespread
		Helophilus	trivittatus				1		Common, Widespread
		Leucozona	laternaria				1		Common, Widespread
		Melangyna	compositarum		1		1	1	Common, Widespread
		Meliscaeva	auricollis		1				Common, Widespread
		Melanostoma	mellinum			1	1	1	Common, Widespread
		Melanostoma	scalare				1		Common, Widespread
		Myathropa	florea				1		Common, Widespread
		Orthonevra	nobilis				1		Common, Widespread
		Pipizella	viduata					1	Common, Widespread
		Platycheirus	albimanus		1	1		1	Common, Widespread
		Scaeva	pyrastris		1				Common, Widespread
		Scaeva	selenitica		1				Local, Widespread
		Sphaerophoria	interrupta				1		Common, Widespread
		Sphaerophoria	scripta		1	1	1		Common, Widespread
		Syrpitta	pipiens		1	1	1	1	Common, Widespread
		Syrphus	ribesii		1	1	1		Common, Widespread
		Syrphus	vitripennis		1	1		1	Common, Widespread
		Volucella	bombylans					1	Common, Widespread
		Volucella	pelluscens			1	1		Common, Widespread
		Xanthogramma	pedisequum					1	Common, Widespread
	Tephritidae	Picture - winged Flies							
		Chaetostomella	cylindrica				1		Common, Widespread

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	27/06/2019	16/07/2019	08/08/2019	20/05/2020 & 05/06/2020	STATUS
		Terellia	longicauda			1	1		Provisionally Nationally Scarce N
		Terellia	ruficauda			1			Common, Widespread
		Terellia	tussilaginis			1	1		Common, Widespread
		Urophora	quadrifasciata				1		Common, Widespread
	Ulidiidae	Ulidiid flies							
		Herina	longistylata		1	1			Common Widespread
	Opomyzidae	Opomyzid flies							
		Opomyza	petrei			1			Common Widespread
	Scathophagidae	Dung flies							
		Scathophaga	stercoraria		1				Common Widespread
	Sciomyzidae	Snail Killing Flies							
		Coramacera	marginata			1			Common, Widespread
	Tachinidae	Tachinid Flies							
		Nowickia	ferox			1	1		Common, Widespread
		Phasia	hemiptera				1		Common, Widespread
		Phasia	pusilla					1	Common, Widespread
HYMENOPTERA		Bees, Wasps, Ants & Relatives							
	Chrysididae	Cuckoo Wasps							
		Trichrysis	cyanea		1				Common Widespread
	Tiphiidae	Tiphiid Wasps							
		Tiphia	femorata				1		Common, Widespread
	Vespidae	Social Wasps							
		Vespa							Local, Widespread
		Dolichovespula	media	Median wasp			1		Nationally Scarce Na
		Vespula	germanica	German wasp	1				Common, Widespread
		Vespula	vulgaris	Common wasp		1			Common, Widespread
	Crabronidae	Digger Wasps							
		Crossocerus	megacephalus				1		Common, Widespread
		Ectemnius	lituratus				1		Common, Widespread
		Pemphredon	inornata				1		Common, Widespread
	Apoidea	Bees							
	Andrenidae	Mining Bees							
		Andrena	chrysoceles		1				Common, Widespread
		Andrena	flavipes					1	Common, Widespread
		Andrena	haemorrhoea		1			1	Common, Widespread
		Andrena	nitida		1			1	Common, Widespread
		Andrena	semilaevis					1	Common, Widespread
	Halictidae	Mining & Cuckoo Bees							
		Halictus	tumulorum		1			1	Common, Widespread
		Lasioglossum	albipes		1		1		Common, Widespread
		Lasioglossum	fulvicorne		1		1		Common, Widespread
		Lasioglossum	leucopus			1		1	Common, Widespread
		Lasioglossum	villosulum		1				Common, Widespread
		Sphecodes	rubicundus					1	Nationally Scarce Na
	Mellitidae	Mining Bees							
		Melitta	haemorrhoidalis				1		Provisionally Nationally Scarce N
	Megachilidae	Solitary Bees							
		Megachile	versicolor			1			Common, Widespread
		Osmia	bicolor		1			1	Nationally Scarce Nb
		Osmia	spinulosa		1	1			Common, Widespread
	Apidae	Social & Cuckoo Bees							

ORDER	FAMILY	SCIENTIFIC NAME		ENGLISH NAME	27/06/2019	16/07/2019	08/08/2019	20/05/2020 & 05/06/2020	STATUS
		Apis	mellifera	Honey bee	1	1	1	1	Common, Widespread
		Bombus	hortorum	Garden bumblebee				1	Common, Widespread
		Bombus	hypnorum	Tree bumblebee	1			1	Recent colonist
		Bombus	lapidarius	Red - tailed bumblebee	1	1	1	1	Common, Widespread
		Bombus	lucorum	White - tailed bumblebee			1		Common, Widespread
		Bombus	pascuorum	Common carder bee	1		1		Common, Widespread
		Bombus	pratorum	Early bumblebee				1	Common, Widespread
		Bombus	terrestris	Buff - tailed bumblebee			1		Common, Widespread
		Bombus	terrestris/lucorum worker	a bumblebee	1	1		1	Common, Widespread
COLEOPTERA		Beetles							
	Cantharidae	Soldier Beetles							
		Cantharis	rustica					1	Common, Widespread
		Rhagonycha	fulva			1	1		Common, Widespread
	Cerambycidae	Longhorn Beetles							
		Agapanthia	villosviridescens					1	Local, Widespread
		Leptura	melanura		1				Common, Widespread
		Phytoecia	cylindrica					1	Local, Widespread
	Chrysomelidae	Leaf Beetles							
		Cryptocephalus	aureolus		1	1		1	Local, Widespread
	Coccinellidae	Ladybirds							
		Coccinella	7 - punctata	Seven - spot ladybird	1	1	1		Common, Widespread
		Harmonia	axyridis	Harlequin ladybird	1	1	1		Common, Widespread
		Propylea	14 - punctata	Fourteen - spot ladybird		1			Common, Widespread
	Elateridae	Click Beetles							
		Athous	haemorrhoidalis					1	Common, Widespread
	Malachiidae	Pollen Beetles							
		Malachius	bipustulatus		1				Common, Widespread
	Oedemeridae	Oedemerid Beetles							
		Oedemera	nobilis		1	1	1	1	Common, Widespread
	Scarabaeidae	Chafers & Dung Beetles							
		Omaloplia	ruricola		1				Nationally Scarce Nb
		Phyllopertha	horticola		1			1	Common, Widespread

Appendix 2 Invertebrate Status Definitions and Relevant Legislation

RDB 1 - Endangered

Taxa in danger of extinction and whose survival is unlikely if causal factors continue operating.

- Species which are known or believed to occur as only a single population within one 10km square of the National Grid.
- Species which only occur in habitats known to be particularly vulnerable.
- Species which have shown a rapid or continuous decline over the last twenty years and are now estimated to exist in five or fewer 10km squares.
- Species which are possibly extinct but have been recorded in the 20th century and if rediscovered would need protection.

RDB 2 - Vulnerable

Taxa believed likely to move into the endangered category in the near future if the causal factors continue operating.

- Species declining throughout their range.
- Species in vulnerable habitats.

RDB 3 - Rare

Taxa with small populations that are not at present Endangered or Vulnerable, but are at risk.

- Species which are estimated to exist in only fifteen or fewer post 1970 10km squares. This criterion may be relaxed where populations are likely to exist in over fifteen 10km squares but occupy small areas of especially vulnerable habitat.

Nationally Scarce (Na)

Taxa which do not fall within the RDB categories but which are none - the - less uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid.

Nationally Scarce (Nb)

Taxa which do not fall within the RDB categories but which are none - the - less uncommon and thought to occur in between 31 and 100 10km squares of the national Grid.

Nationally Scarce (N)

Species which are estimated to occur within the range of 16 to 100 10km squares.

Local

These species may have a restricted geographical range in the UK, for example a requirement for warmth (southern species - usually denoted by species that occur wholly or mainly South of the Severn - Wash line), or cooler environments (northern species occurring wholly or mainly North of the Severn - Wash line) or upland species occurring only in more montane regions in the UK e.g. Dartmoor, Scottish Highlands or Snowdonia. However, within these geographic ranges such species may occur in some abundance in a variety of habitats. Alternatively, some local species have a wide geographical national distribution but occur only in a specific habitat type due to foraging or nesting requirements. For example, some species breed only in sand, or collect pollen and/or nectar only from plants occurring on chalk grassland or their larval development is dependant upon fen conditions or water seepages. Nonetheless, local species may be abundant within areas supporting their specific requirements, differentiating them from Nationally Scarce or threatened species which often have a combination of very exacting geographical and microhabitat requirements.

Common and Widespread

This denotes species that occur over a wide geographical area in the UK, and which have fairly undemanding requirements in terms of habitat type for larval development. Examples include species which develop in decaying vegetation, feed on aphids, live in stems of scrubby plants with no specific host requirement, feed on a variety of grasses or develop in any type of water body (even puddles). Alternatively, they may be mass migrants from continental Europe - some hoverflies e.g. *Episyrphus balteatus* or some common *Eupeodes* species arrive in millions each year and have no exacting habitat requirements.

Species of Principal Importance in England

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The England Biodiversity List is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions. There are currently 413 terrestrial invertebrate species of principal importance included on the England Biodiversity List.

Wildlife and Countryside Act 1981 (as amended)

A number of invertebrate species are listed Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (see table below). Large blue, Fisher’s estuarine moth and Snail, Lesser Whirlpool Ram’s-horn Schedule 2 of the Conservation of Habitats and Species Regulations 2017. Where species are listed as fully protected under Schedule 5 of the Wildlife and Countryside Act or under Schedule 2 of the Conservation of Habitats and Species Regulations it is an offence to:

- Deliberately capture, injure or kill any such animal;
- Deliberately disturb any such animal, including in particular any disturbance which is likely:
 - To impair its ability to survive, breed, or rear or nurture their young;
 - To impair its ability to hibernate or migrate;
 - To affect significantly the local distribution or abundance of that species;
- Damage or destroy a breeding site or resting place of any such animal;
- Intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

The following species are listed Schedule 5 of the Wildlife and Countryside Act 1981:

Scientific Name	English Name	Sections of Act Applicable
<i>Apatura iris</i>	Purple emperor	Sale only S.9(5)
<i>Argynnis adippe</i>	High brown fritillary	Full protection
<i>Aricia artaxerxes</i>	Northern brown argus	Sale only S.9(5)
<i>Boloria euphrosyne</i>	Pearl-bordered fritillary	Sale only S.9(5)
<i>Carterocephalus palaemon</i>	Chequered skipper	Sale only S.9(5)
<i>Coenonympha tullia</i>	Large heath	Sale only S.9(5)
<i>Cupido minimus</i>	Small blue	Sale only S.9(5)
<i>Erebia epiphron</i>	Mountain ringlet	Sale only S.9(5)
<i>Eurodryas aurinia</i>	Marsh fritillary	Full protection
<i>Hamearis lucina</i>	Duke of Burgundy	Sale only S.9(5)
<i>Hesperia comma</i>	Silver-spotted	Sale only S.9(5)
<i>Leptidea sinapis</i>	Wood white	Sale only S.9(5)

Scientific Name	English Name	Sections of Act Applicable
<i>Lycaena dispar</i>	Large copper	Full protection
<i>Lysandra bellargus</i>	Adonis blue	Sale only S.9(5)
<i>Lysandra coridon</i>	Chalkhill blue	Sale only S.9(5)
<i>Maculinea arion</i>	Large blue	Full protection
<i>Melitaea cinxia</i>	Glanville fritillary	Sale only S.9(5)
<i>Mellicta athalia</i>	Heath fritillary	Full protection
<i>Nymphalis polychloros</i>	Large tortoiseshell	Sale only S.9(5)
<i>Papilio machaon</i>	Swallowtail	Full protection
<i>Plebejus argus</i>	Silver-studded blue	Sale only S.9(5)
<i>Strymonidia pruni</i>	Black hairstreak	Sale only S.9(5)
<i>Strymonidia w-album</i>	White-letter hairstreak	Sale only S.9(5)
<i>Thecla betulae</i>	Brown hairstreak	Sale only S.9(5)
<i>Thymelicus acteon</i>	Lulworth skipper	Sale only S.9(5)
Moths		
<i>Acosmetia caliginosa</i>	Reddish buff	Full protection
<i>Bembecia chrysidiformis</i>	Fiery clearwing	Full protection
<i>Gortyna borelii</i>	Fisher's estuarine moth	Full protection
<i>Pareulype berberata</i>	Barberry carpet	Full protection
<i>Siona lineata</i>	Black-veined	Full protection
<i>Thalera fimbrialis</i>	Sussex emerald	Full protection
<i>Thetidia smaragdaria</i>	Essex emerald	Full protection
<i>Zygaena viciae</i>	New Forest burnet	Full protection
Beetles		
<i>Chrysolina cerealis</i>	Rainbow leaf beetle	Full protection
<i>Curimopsis nigrita</i>	Mire pill beetle	Damage/destruction of place of shelter/protection S.9(4)(a) only
<i>Graphoderus zonatus</i>	Water beetle	Full protection
<i>Hydrochara caraboides</i>	Lesser silver water beetle	Full protection
<i>Hypebaeus flavipes</i>	Beetle	Full protection
<i>Limoniscus violaceus</i>	Violet click beetle	Full protection
<i>Lucanus cervus</i>	Stag beetle	Sale only S.9(5)
<i>Paracymus aeneus</i>	Water beetle	Full protection
Hemipteran bugs		
<i>Cicadetta montana</i>	New Forest cicada	Full protection
Crickets		
<i>Decticus verrucivorus</i>	Wart-biter	Full protection
<i>Gryllotalpa gryllotalpa</i>	Mole cricket	Full protection
<i>Gryllus campestris</i>	Field cricket	Full protection

Scientific Name	English Name	Sections of Act Applicable
Dragonflies		
<i>Aeshna isosceles</i>	Norfolk aeshna	Full protection
<i>Coenagrion mercuriale</i>	Southern damselfly	Full protection
Spiders		
<i>Dolomedes plantarius</i>	Fen raft spider	Full protection
<i>Eresus niger (cinaberinus)</i>	Ladybird spider	Full protection
Crustaceans		
<i>Austropotamobius pallipes</i>	White-clawed crayfish	Taking S.9(1) (part); sale S.9(5)
<i>Chirocephalus diaphanus</i>	Fairy shrimp	Full protection
<i>Gammarus insensibilis</i>	Lagoon sand shrimp	Full protection
<i>Triops cancriformis</i>	Apus	Full protection
Molluscs		
<i>Atrina fragilis</i>	Fan mussel	Killing & injuring S.9(1); possession S9(2); sale S.9(5)
<i>Caecum armoricum</i>	De Folin's lagoon snail	Full protection
<i>Catinella arenaria</i>	Sandbowl snail	Full protection
<i>Margaritifera margaritifera</i>	Pearl mussel	Full protection
<i>Myxas glutinosa</i>	Glutinous snail	Full protection
<i>Paludinella littorina</i>	Lagoon snail	Full protection
<i>Tenellia adpersa</i>	Lagoon sea slug	Full protection
<i>Thyasira gouldi</i>	Northern hatchet-shell	Full protection
<i>Helix pomatia</i>	Roman Snail	in respect of section 9(1), (2) and (5) only and with respect to England only