# Loddon Garden Village

## Technical Appendix 11.7 – Invertebrates

Prepared on behalf of

University of Reading

Final Report

10 September 2025

23/42-11C

# Loddon Garden Village

## Technical Appendix 11.7 – Invertebrates

## Report Release Sheet

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|---|---|
| **Draft/Final:** | Final Report |
| **Issue Number:** | 23/42-11C |
| **Date:** | 10 September 2025 |
| **Client:** | University of Reading<br>Whiteknights Campus<br>Reading<br>RG6 6UR |
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# Loddon Garden Village

## Technical Appendix 11.7 – Invertebrates

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# Loddon Garden Village
## Technical Appendix 11.7 – Invertebrates

## 1. INTRODUCTION

### Scope

1.1 This Technical Appendix supports **Chapter 11 (Biodiversity)** of the Environmental Statement (ES). It sets out the detailed methodologies and results of the survey work undertaken to inform:

- The baseline evaluation of the invertebrate assemblage supported by the Zone of Influence of the Proposed Development;
- The assessment of likely impacts on the invertebrate assemblage;
- The design of impact avoidance and mitigation measures; and
- The design of biodiversity enhancements for invertebrates.

### Site and Development Description

1.2 The Site is a large area of land to the west of Wokingham, between the villages of Shinfield, Arborfield and Sindlesham. It is located outside of the Green Belt and is largely made up of agricultural land and grasslands, with pockets of woodland and the River Loddon running through the centre of the Site.

1.3 The description of development for the application is as follows:

*"Application for the phased development of a new community at Loddon Garden Village, comprising, in outline:*

- *up to 2,800 residential units to include up to 100 custom and self-build plots;*
- *2 primary schools (up to 3 forms of entry) to include early years provision and 1 secondary school (up to 12 forms of entry);*
- *one District Centre, to incorporate up to 11,000m2 of Class E (Commercial, business and Service, to include a food store of around 2,500m2), and Class F (Local Community and Learning);*
- *one Local Centre; to incorporate up to 2,400m2 of Class E;*
- *a Sports Hub to include sports pitches and pavilion space;*
- *up to 4,250m2 of further Class E, Class F, and sui generis development to include commercial, health care and public house;*
- *comprehensive green infrastructure including a Country Park, landscaping and public open space, and ecological enhancement measures;*
- *20 gypsy and traveller pitches;*

- *comprehensive drainage and flood alleviation measures to include Sustainable Urban Drainage Systems (SUDS) and engineering measures within Loddon Valley for the River Loddon;*
- *internal road network including spine road with pedestrian and cycle connections and associated supporting infrastructure;*
- *new and modified public rights of way;*
- *associated utilities, infrastructure, and engineering works, including the undergrounding of overhead lines;*
- *Ground reprofiling to accommodate infrastructure, flood alleviation and development parcels;*
- *Up to 0.5ha of land adjoining St Bartholomew's church for use as cemetery;*
- *Electricity substation (up to 1.5ha).*

*All matters reserved other than access, incorporating:*

- *a new pedestrian, cycle and vehicular access to Lower Earley Way via a new 4th arm to the Meldreth Way roundabout;*
- *a new pedestrian, cycle and vehicular bridge over the M4;*
- *a new pedestrian, cycle and vehicular bridge over the River Loddon;*
- *a new vehicular access to the A327 Reading Road, via a new arm to the Observer Way roundabout;*
- *a new pedestrian, cycle and vehicular access to Thames Valley Science Park;*
- *an initial phase of internal roads with associated drainage, landscape and engineering works and ground reprofiling, between the A327 and the south eastern boundary of the site.*

*Application includes full permission for the change of use of 40.4 hectares of agricultural land to Suitable Alternative Natural Greenspace (SANG), 18.35 hectares of SANG link, and provision of Biodiversity Net Gain measures, the demolition and clearance of 20,809 m2 of buildings and structures at the Centre for Dairy Research (CEDAR) and at Hall Farm, the demolition of 3 existing dwellings on Carter's Hill Lane, and the retention of specified buildings at Hall Farm."*

## Policy and Legislative Context

1.4 Full details of the legislation and planning policy of relevance to ecology and nature conservation are included in **Appendix 11.1,** however those of particular relevance to invertebrates are summarised below.

## *Legislation*

*Environment Act 2021*

1.5 The Environment Act 2021 places a requirement on the Secretary of State to make regulations setting out long-term targets for a number of environmental priorities, including halting the decline in biodiversity

*Wildlife and Countryside Act 1981 (as amended)*

1.6 The Wildlife and Countryside Act 1981 (as amended) provides for the designation of sites of national importance for flora and fauna (Sites of Special Scientific Interest or SSSIs).

*Natural Environment and Rural Communities (NERC) Act 2006 (as amended)*

1.7 Section 40 of the NERC Act 2006 requires all public bodies, including Local Planning Authorities, to have regard to the conservation of biodiversity when carrying out their normal functions. Habitats and species listed under Section 41 of the Act, known as Habitats/Species of Principal Importance for Nature Conservation in England ('Section 41 species', previously referred to as 'BAP species') are a material consideration in the planning process.

1.8 Current 376 species of invertebrate are listed under S41.

*White-clawed Crayfish*

1.9 The White-Clawed Crayfish *Austropotamobius pallipes* is a NERC Act S41 Species of Principal Importance in England. Outside designated sites (e.g. SACs), the White-Clawed Crayfish receives limited protection under Schedule 5 (Sections 9.1, 9.5a and 9.5b) of the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2017 (as amended) and the Salmon and Freshwater Fisheries Act 1975. This legislation does not provide strict protection of individual crayfish or their habitats but it does prevent prohibit the capture of this species without a licence. A conservation licence must therefore be obtained from Natural England before conducting any mitigation involving the capture and handling of this species.

## *Planning Policies and Biodiversity Strategies*

*National Planning Policy Framework*

1.10 The National Planning Policy Framework (NPPF) (2024) sets out the Government's planning policies for England and how they should be applied. With regard to protecting the natural environment, Section 15 of the NPPF requires that planning decisions should enhance the natural environment and provide net gains for biodiversity.

*Local Planning Policy*

1.11 The Wokingham Borough Council Adopted Core Strategy: Development Plan Document (January 2010) sets out the framework for the development of the borough, through a series of policies and strategies. Of particular relevance to invertebrates is Policy CP7 – Biodiversity.

1.12 The Wokingham Borough Local Plan Update 2023-2040 was submitted to the Secretary of State for examination by an independent Planning Inspector in February 2025. Whilst not currently enforced, consideration has been given to these emerging policies during the course of the impact assessment, and design of mitigation, compensation and enhancement strategies.

*Berkshire Local Nature Recovery Strategy*

1.13 The draft Berkshire Local Nature Recovery Strategy was published in February 2025, with finalisation of the strategy anticipated in the summer of 2025. Formed as a requirement of The Environment Act 2021, Local Nature Recovery Strategies aim to identify priority actions for local biodiversity, including habitat and species, to create a collaborative landscape level approach to nature restoration.

1.14 Twenty-four species of invertebrate are included within the draft species list (Royal Borough of Windsor and Maidenhead, 2025). These include both groups of associated species such as 'Beetles of Deadwood' and individual species including White-clawed Crayfish which survives in Barkham Brook to the northeast of the Site.

# 2. SURVEY AND ASSESSMENT METHODOLOGY

2.1 The approach to ecological impact assessment taken in this report is in line with guidance from the Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment (CIEEM, 2018 v1.3), as set out in **Appendix 11.2**.

## Defining the Zone of Influence

2.2 The area over which the activities as associated with the Proposed Development are considered to potentially affect the invertebrate assemblage, the Zone of Influence (ZoI), has been predicted by considering the activities and resultant biophysical changes arising during the construction and operational phases, as summarised below.

### *Likely Biophysical Changes*

2.3 The predicted biophysical changes of relevance to the invertebrate assemblage are as follows:

*Activities and Resultant Biophysical Changes During the Construction Phase*

- Ground preparation works, including the excavation and movement of soils and vegetation may lead to damage to, or the loss of habitats which support invertebrates; including from siltation of water bodies and water courses.

*Activities and Resultant Biophysical Changes During the Operational Phase*

- Implementation of habitat management plans, resulting in the enhancement of existing and creation of new habitats for invertebrates; and
- Introduction of artificial lighting along roads and of dwellings and other buildings, affecting nocturnal invertebrates.

## Desktop Study Methodology

2.4 A biological records search was commissioned from Thames Valley Environmental Records Centre (TVERC) in July 2024, to obtain existing records of protected and notable invertebrates species within a 2km radius of the Site, thereby incorporating the potential ZoI and providing context with other invertebrate populations in the local area.

## Field Survey Methodology

### *Invertebrate Assemblage*

2.5 An assessment of the Site's value for terrestrial and aquatic invertebrates was carried out by Dr Jonty Denton, an expert entomologist, on behalf of EPR. This baseline invertebrate survey involved a series of invertebrate survey visits undertaken during June to October 2022 and April to June 2023.

2.6 Standard field techniques were employed to sample the invertebrate fauna across the Site. These included sweeping vegetation with a wide mouthed sweep net, beating trees and bushes over a beating tray, and grubbing amongst tussocks and key host plant rosettes.

2.7 It is impracticable to survey all the invertebrates within a site, and so only specific groups of species were examined during fieldwork. These groups are sufficiently well known as to allow meaningful comparisons to be made with other sites, both locally and nationally. They are also important as indicators of the quality of a site and the habitats present (see Brooks 1993).

2.8 Groups covered during the survey are outlined at **Table 2.1** below.

**Table 2.1 Invertebrate groups surveyed**

| Order (common name) |
|---|
| Mollusca (slugs and snails) |
| Arachnida (spiders, harvestmen & pseudoscorpions) |
| Isopoda (woodlice) |
| Thysanura (bristletails) |
| Ephemeroptera (mayflies) |
| Odonata (dragonflies & damselflies) |
| Plecoptera (stoneflies) |
| Orthoptera (grasshoppers & crickets) |
| Dictyoptera (cockroaches) |
| Dermaptera (earwigs) |
| Hemiptera-Heteroptera (true-bugs) |
| Hemiptera-Homoptera (hoppers) |
| Neuroptera (lace-wings) |
| Mecoptera (scorpion-flies) |
| Lepidoptera (butterflies & moths) |
| Trichoptera (caddis flies) |
| Diptera (true flies) |
| Aculeate Hymenoptera (ants, bees & wasps) |
| Coleoptera (beetles) |

2.9 A 0.5mm mesh GB net was used to sample the ponds and flowing water.

2.10 The surveys were undertaken on the following dates:

- 2022 – 16, 17 June, 23, 24 July, 4 August, 28 September, 25 October; and

- 2023 – 19 April, 18 May, 19 June.

*White-clawed Crayfish*

2.11 White-clawed Crayfish environmental DNA (eDNA) surveys were undertaken on 18th July 2023. Three sites for eDNA sampling were identified along the River Loddon. This would allow the accurate identification any fragmented populations within the river and more accurately pinpoint the exact location of any population. where a population of White-clawed crayfish may lie. Two further sample sites were identified along the Barkham Brook, where the watercourse entered and exited the Site, to more accurately be able to determine whether populations existed within the Site or upstream.

2.12 The sample collection approach was based upon the SureScreen Scientifics enclosed filter method. At each of the five sample collection sites a filtered water sample was collected following the detailed filtration sample collection guidance outlined by SureScreen Scientific (**Annex 1**).

2.13 In brief, 20 subsamples of river water (50ml) were collected and pooled from evenly spaced locations within each site (total volume 1L) in order to obtain a representative eDNA sample. Sampling was conducted working from a downstream to upstream direction to avoid the disruption of sediment into the sample. Sample collection was focussed around areas within each site deemed likely to be habitable to white clawed crayfish. The pooled sample was homogenized by shaking for 10sec, then, 50ml was taken using a syringe and manually pressure filtered through the enclosed filter unit. Additional volumes of 50ml were passed through the filter until 500ml of water sample was filtered, or the filter became clogged or saturated with filtrate. Once all water had passed through the filter unit, the filter casing was filled with preserving solution and sealed to preserve the filter. Samples were stored in a refrigerator before collection and qPCR analysis by SureScreen Scientific.

2.14 Following consultation with Wokingham Borough Council, a habitat suitability assessment was undertaken on Barkham Brook by licenced surveyor Dr Jonty Denton (2016-19669-CLS-CLS) on 28th May 2025. The habitats at each sampling point were assessed for their potential to support for White-clawed crayfish.

2.15 Environmental conditions were recorded including shade, flow rate, depth and water quality. In addition, where possible a 3-minute kick sample was undertaken. During the kick sample all the micro-habitats were surveyed so as to maximise the diversity of invertebrates caught. In addition, submerged root tangles, overhanging banks and tree trunks were netted, and logs and debris were overturned and searched for caddis larvae, snails etc.

## Survey Limitations and Constraints

2.16 No observations were made by the surveyor, although there was a drought across much of southern England in summer 2022, and this was responsible for reducing numbers of many invertebrates, especially aculeate Hymenoptera.

## Evaluation Methodology

### *Habitat Assessment Using Pantheon to Measure Site Quality*

2.17 To evaluate the invertebrate value of a site for the purpose of Ecological Impact Assessment, invertebrate ecologists use the Pantheon database tool developed by Natural England and the Centre for Ecology and Hydrology.

2.18 Pantheon is an online tool whereby data from a site is entered into a spreadsheet which is then used by the Pantheon software to analyse invertebrate sample data and assess assemblage data for favourable versus unfavourable condition of the invertebrate assemblage of a Specific Assemblage Type (SAT). Hence, if a SAT is found to be in favourable condition this would indicate that the site is likely to be of significant importance for invertebrates for this SAT at least. Further details are included in **Appendix 3**.

2.19 The relevant Broad Biotopes, Habitats and SATs used in this report are set out in **Table 2.2**. These are the Pantheon categories and corresponding numbers of species (given in parentheses).

**Table 2.2: Pantheon Habitats and SATs of relevance to the Site**

| Broad Biotope | Habitat | Specific Assemblage Type (SAT) |
|---|---|---|
| F1 Open Habitats (4364) | F21 Tall Sward & Scrub (2652) | F001 scrub edge (228) |
| | | F002 rich flower resource (243) |
| | | F003 scrub-heath & moorland (347) |
| | F23 Short Sward & Bare Ground (1295) | F111 bare sand & chalk (444) |
| | | F112 open short sward (200) |
| T1 Tree-associated (3567) | DW1 Decaying Wood (1186) | A211 heartwood decay ( |
| | | A212 sapwood & bark decay (753) |
| | | A213 fungal fruiting bodies (xx) |
| | | A215 epiphyte fauna (xx) |
| W1 Wetland (xx) | W24 Marshland (xx) | W211 open water on disturbed mineral sediments (xx) |
| | | W221 undisturbed fluctuating marsh (xx) |
| | W25 Peatland (xx) | W314 reed-fen & pools (xx) |

(*) Number of species within each habitat ‘trait’ in Pantheon database

### *Evaluation Criteria*

2.20 The invertebrate assemblage is valued according to the CIEEM (2018 v1.3) Ecological Impact Assessment Guidelines on a geographical frame of reference, at either a Zone of Influence, Local/Parish, District, County, Regional, National, European or International level.

# 3. ECOLOGICAL BASELINE

## Desktop Study

### *Records From TVERC*

3.1 A summary of more relevant invertebrate records returned by TVERC in 2024 follows.

3.2 There are no records returned for the Site but those within 2km include relatively few records except from one of two locations. For example, there is a cluster of records from Dinton Pastures to the northeast and Whiteknights to the north of the Site.

3.3 The exception to this is records of Stag Beetle which are numerous.

3.4 There is a 2020 record of White-clawed Crayfish to the east of the Site.

3.5 The emerging Berkshire LNRS includes White-clawed Crayfish as a priority species with reference to their presence in Barkham Brook. This is within 500m of the Site to the northeast, north of the M4.

3.6 There are records of two species of mollusc but these are close to the Site boundary. These are Fine-lined Pea Mussel from 2000/1 within 1km to the northeast and Lagoon Spire Snail from 2008 within 500m to the southwest. These are both S41 Priority Species.

3.7 The Fine-lined Pea Mussel is NS has frequent records in central southern England in the Oxford-Reading area (with reference to NBN Atlas).

3.8 The Lagoon Spire Snail is Nationally Rare with very few records on NBN Atlas. This was from the Reading Science Park disused reservoir. The origin of this is unknown as the only other population is in coastal marsh on Thorney Island in Hampshire.

3.9 There are a number of butterfly records but most relate to one or two locations.

## Field Survey Results

### *Invertebrate Assemblage*

3.10 A total of 852 species of invertebrate were recorded across the Site in 2022/23 (see list in **Table A1.1** in **Appendix 1**).

3.11 **Table 3.1** lists the 25 species recorded which have a conservation designation at some level.

**Table 3.1: Species recorded with a conservation designation**

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Ballus chalybeius* | Salticidae | Araneae | NS |
| *Marpissa muscosa* | Salticidae | Araneae | NS |
| *Episinus maculipes* | Theridiidae | Araneae | NS |
| *Theridiosoma gemmosum* | Theridiosomatidae | Araneae | NS |
| *Rhagonycha lutea* | Cantharidae | Coleoptera | NS |

| | | | |
|---|---|---|---|
| *Bembidion octomaculatum* | Carabidae | Coleoptera | NS |
| *Longitarsus symphyti* | Chrysomelidae | Coleoptera | NS |
| *Lythraria salicariae* | Chrysomelidae | Coleoptera | NS |
| *Opilo mollis* | Cleridae | Coleoptera | NS |
| *Gymnetron villosulum* | Curculionidae | Coleoptera | [Nb] |
| *Polydrusus formosus* | Curculionidae | Coleoptera | [Na] |
| *Rhinocyllus conicus* | Curculionidae | Coleoptera | [Nb] |
| *Abdera flexuosa* | Melandryidae | Coleoptera | NS |
| *Mordellistena neuwaldeggiana* | Mordellidae | Coleoptera | NS |
| *Eulagius filicornis* | Mycetophagidae | Coleoptera | DD (European) |
| *Platypus cylindrus* | Platypodidae | Coleoptera | [Nb] |
| *Silvanus bidentatus* | Silvanidae | Coleoptera | Nb |
| *Synchita separanda* | Zopheridae | Coleoptera | NS |
| *Helius pallirostris* | Limoniidae | Diptera | Notable |
| *Cicadula flori* | Cicadellidae | Hemiptera | Nb |
| *Iassus scutellaris* | Cicadellidae | Hemiptera | Na |
| *Andrena florea* | Andrenidae | Hymenoptera | [RDB 3] |
| *Lasius brunneus* | Formicidae | Hymenoptera | Na |
| *Macropis europaea* | Melittidae | Hymenoptera | Na |
| *Tyria jacobaeae (*Cinnabar*)* | Erebidae | Lepidoptera | Section 41 Priority Species - research only |

3.12 The pockets of floodplain fen supported a diverse assemblage with nationally scarce taxa including the sedge feeding leafhopper *Cicadula flori*. Yellow Loosestrife was host to the Loosestrife Bee *Macropis europaea* and the flea beetle *Lythraria salicariae*. The ray spider *Theridiosoma gemmosum* and the beautiful and very local *Araneus marmoreus* var *pyramidatus* were frequent in the sedge beds. Comfrey supported the scarce flea beetle *Longitarsis symphyti* and the flowers were home to *Meligethes symphyti*; both recently discovered species in Britain.

3.13 Standing shaded water yielded the Carabid beetle *Bembidion octomaculatum* which may be the first for Berkshire of a species extinct in UK for over a Century which his now spreading back: presumably from a new wave of immigration.

## Habitat Assessment using Pantheon

3.14 The habitats within the Site are shown on **Map 11.7.2**. Whilst the majority of the land is under intensive agriculture with large fields of arable or grassland crops, there is also a mosaic of woodland and wetland habitats, particularly along the River Loddon riparian corridor and these are highlighted as having the potential to support invertebrate assemblages of higher importance (see **Map 11.7.3**).

3.15 **Table 3.2** shows the scores generated by Pantheon from sampling invertebrates (see Evaluation Methodology above).

**Table 3.2: SAT Scores for Habitat Elements**

| Code | SAT | No. of species | Reported condition |
|---|---|---|---|
| A212 | bark & sapwood decay | 46 | Favourable (46 species, 19 required) |
| A213 | fungal fruiting bodies | 9 | Favourable (9 species, 8 required) |
| A211 | heartwood decay | 7 | Favourable (7 species, 6 required) |
| F001 | scrub edge | 15 | Favourable (15 species, 11 required) |
| F002 | rich flower resource | 13 | Unfavourable (13 species, 15 required) |
| F003 | scrub-heath & moorland | 7 | Unfavourable (7 species, 9 required) |
| W314 | reed-fen & pools | 4 | Unfavourable (4 species, 11 required) |
| F111 | bare sand & chalk | 3 | Unfavourable (3 species, 19 required) |
| A215 | epiphyte fauna | 2 | Unfavourable (2 species, 3 required) |
| F112 | open short sward | 2 | Unfavourable (2 species, 13 required) |
| W211 | open water on disturbed mineral sediments | 2 | Unfavourable (2 species, 6 required) |
| W221 | undisturbed fluctuating marsh | 2 | Unfavourable (2 species, 4 required) |

3.16 Using the Pantheon programme to analyse the survey data, 12 SATs were represented on the Site, with four of the assemblages in Favourable condition, those associated with bark & sapwood decay, fungal fruiting bodies, heartwood decay and scrub edge.

### *Description of Habitat Typically Supporting the Assemblage*

3.17 To provide context, a summary description from the Pantheon website of the habitat typically supporting the assemblage follows for each of the assemblages in Favourable condition.

*A212 bark & sapwood decay*

3.18 The assemblage type is found in and around trees and shrubs generally, but especially in older specimens. The assemblage is primarily associated with death and decay of the outer woody tissues of the trees or shrubs - the sapwood and bark.

3.19 This assemblage type is mainly characterised by beetles.

*A213 fungal fruiting bodies*

3.20 The assemblage type is found in and around trees and shrubs generally, but especially in older specimens. A large variety of wood-decay fungi are active in all types of woody tissues from heartwood through to twigs and roots. All produce fruiting bodies on the outside of the decaying wood and above ground, which are exploited by this assemblage type.

3.21 This assemblage type is mainly characterised by beetles, limonid craneflies and platypezid flies.

*A211 heartwood decay*

3.22 The assemblage type is found in and around mature and ancient trees and shrubs.

3.23 This assemblage type is mainly characterised by beetles and two-winged flies.

*F001 scrub edge*

3.24 The assemblage type is found where scrub or woodland grades into or is interspersed with open areas of grassland, heathland or early successional vegetation types. The juxtaposition of open vegetation with woody development is important to insects with complex life cycles that require different microhabitats at different stages of development.

3.25 This assemblage type is characterised by a wide range of invertebrates but especially aculeates (ants, bees and wasps).

### *White-clawed Crayfish*

3.26 All water samples collected during the eDNA returned negative results for the presence of White-clawed Crayfish (**Annex 4**). Sample locations are shown on **Map 11.7.4**.

3.27 The habitat assessment determined that the upper section of the Barkham Brook (sections 1-3 in **Table 3.3**) had extensive root tangles trailing into the water column from the margins. These are highly favoured by White-clawed crayfish.

3.28 The presence of Bullhead *Cottus gobio*, and a good mix of other invertebrates including large numbers of gammarids and numerous larvae of *Calopteryx* indicate that the water quality is currently good.

3.29 The middle section (sections 4-6) also locally had extensive root tangles trailing into the water column from the margins and overhanging banks providing shelter which are also habitats favoured by White-clawed crayfish.

3.30 The lower reaches (sections 7-9) have a different character with deeper silty substrate dense emergent vegetation in the unshaded areas which are considered to be of low suitability to support White-clawed Crayfish.

3.31 The environmental conditions and species recorded are summarised in **Table 3.3** below and photos of each sample stations are shown in **Annex 5.**

**Table 3.3. White-clawed Crayfish Habitat Assessment - Environmental conditions and Invertebrate records, 28.5.2025**

| | Barkham Brook East 1 | Barkham Brook East 2 | Barkham Brook East 3 | Barkham Brook middle 4 | Barkham Brook middle 5 | Barkham Brook middle 6 | Barkham Brook North 7 Road bridge | Barkham Brook north 8 | Barkham Brook north 9 footbridge |
|---|---|---|---|---|---|---|---|---|---|
| Grid reference | SU76606815 | SU76636821 | SU76646835 | SU76586843 | SU76436867 | SU76436867 | SU76066915 | SU75966925 | SU76066915 |
| ***Environmental variables*** | | | | | | | | | |
| flow rate | high | moderate | moderate | moderate | moderate | moderate | low | low | low |
| max depth (cm) | 50 | 70 | 70 | 60 | 70 | 80 | >100 | >100 | 90 |
| bank profile | steep | moderate | steep | steep | steep | steep | steep | steep | steep |
| Shade (%) | 95 | 90 | 90 | 90 | 95 | 90 | 20 | 10 | 70 |
| Grazing (%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Emergent plant cover (%) | 0 | 0 | 10 | 0 | 0 | 0 | 80 | 100 | 0 |
| Base clay (1-3) | 1 | 2 | 1 | 2 | 3 | 3 | 3 | 3 | 3 |
| Base gravel (1-3) | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Submerged root tangles present | y | y | y | y | | y | | | y |
| Adjacent field land use | pasture | arable/pasture | pasture | pasture | pasture | pasture | pasture (cattle) | pasture (cattle) | pasture (cattle) |
| | | | | | | | | | |
| *Calopterygidae* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Libellulidae* | | 1 | | | | | | | |
| *Polycentropidae* | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 |
| *Gammaridae* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Coenagrionidae* | | | | | | | 1 | | |
| *Gerridae* | | | | | | | 1 | | |
| *Haliplidae* | | | | | 1 | | 1 | 1 | |
| *Hydrophilidae/Hydraenidae* | | | | | | | 1 | 1 | |
| *Elmidae* | 1 | | | | | | | | |
| *Hydropsychidae* | | | | 1 | | | | | |
| *Planariidae/Dugesiidae* | | 1 | | | | | 1 | | |
| *Baetidae* | | | | | | | | | |
| *Sialidae* | | | | | | | | 1 | |
| *Hydrobiidae/Bithinidae* | | | | | | | | | |
| *Lymnaeidae* | | | | | | | 1 | 1 | |
| *Glossophonidae* | | 1 | | | | | | 1 | |
| *Erpobdellidae* | | | | | | | | | |
| *Asellidae* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| *Chironomidae* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Oligochaeta* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | | | | | | | | |
| **White clawed crayfish suitability** | **high** | **high** | **high** | **moderate** | **moderate** | **moderate** | **low** | **low** | **low** |
| | | | | | | | | | |
| Other observations | | | | | | | | | |
| | | | | | | | | | |
| Bullhead | | 1 | 1 | | | | | | |
| Three-spined stickleback | 1 | 1 | 1 | | | | | 1 | |
| Otter spraint | | 1 | | | | | | | |

# 4. EVALUATION

*Invertebrate Assemblage*

4.1 852 species have been recorded, 25 of which have some conservation status.

4.2 The principal Habitat association is with various elements of 'Decaying wood', in particular, Pantheon scores the assemblages associated with A212 bark & sapwood decay, A213 fungal fruiting bodies and A211 heartwood decay as being in Favourable condition.

4.3 Otherwise, the assemblage associated with F001 scrub edge is also Favourable.

4.4 Overall, the invertebrate assemblage within the ZoI is judged to be of no more than **Local** importance.

4.5 In the absence of the Proposals, it is likely that the conservation status of the invertebrate assemblage within the potential ZoI would remain unfavourable and declining.

4.6 Unfavourable, since it is likely that the invertebrate assemblage will continue to be supported by the unfavourably managed habitats within the intensively managed farmland, both of which do not benefit invertebrates; and

4.7 Declining, since species diversity and population abundance is likely to continue to decline in line with national and regional trends. Even in the absence of the Proposals the trends are likely to continue.

*White-clawed Crayfish*

4.8 The results of the eDNA surveys indicate the White-clawed Crayfish are likely absent from Site, despite the presence of suitable habitats at the upstream sections of Barkham Brook.

4.9 Given their known population within the local watercourse network they are included within this impact assessment on a precautionary basis. The White-clawed Crayfish population is therefore considered to be of **Local** importance, whilst the conservation status is considered to be unfavourable and declining given the numerous challenges facing the species.

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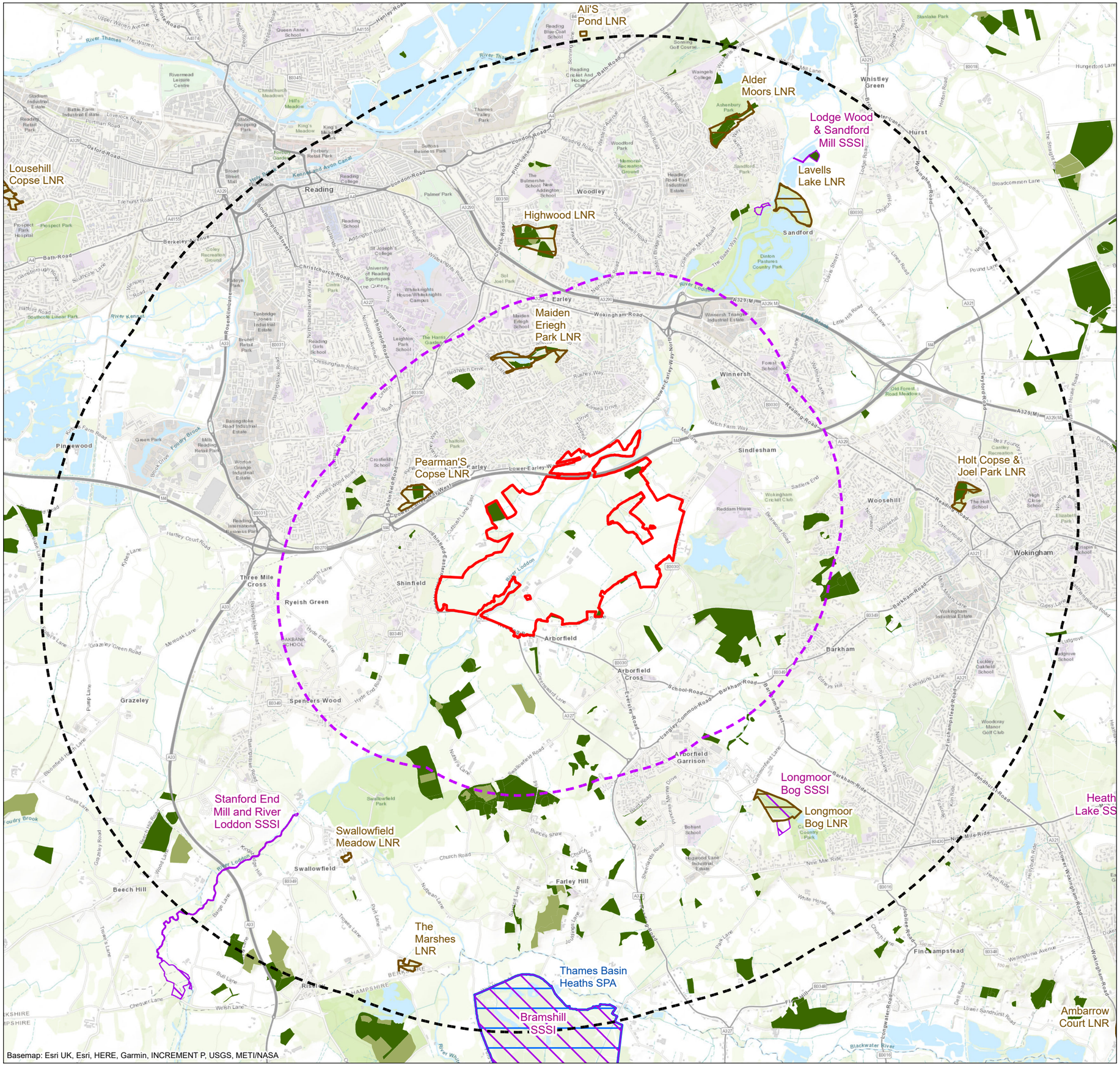


MAP 11.7.1 Site Location & Nature Conservation Designations

KEY

- Site boundary
- 2km linear distance from site boundary
- 5km linear distance from site boundary

Statutory Sites

- Special Protection Areas (SPA)
- Sites of Special Scientific Interest (SSSI)
- Local Nature Reserves (LNR)

Natural England's Provisional Ancient Woodland Inventory

- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland

SCALE: 1:47,500 at A3

0 500 1,000 1,500 2,000 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

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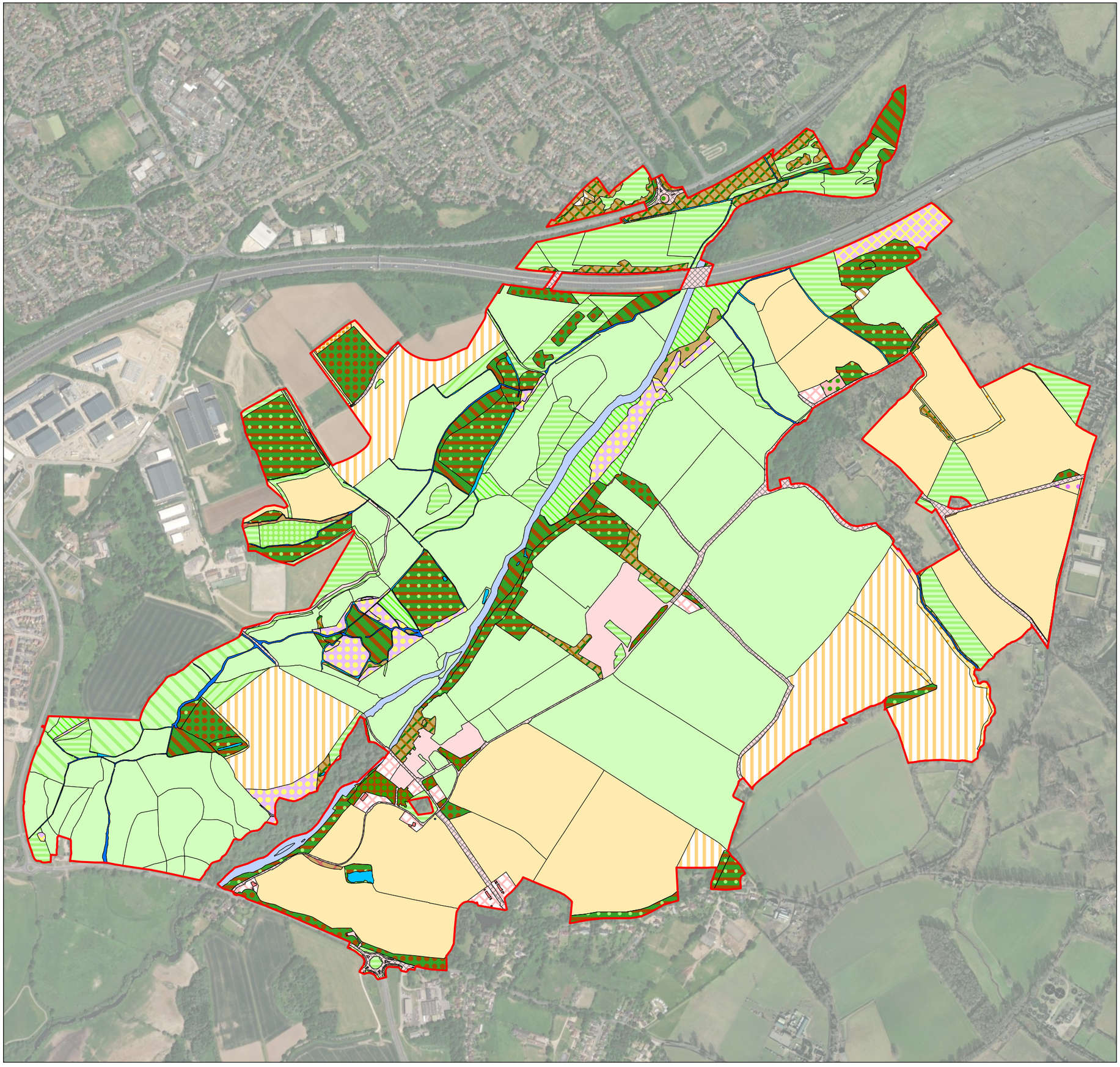

# MAP 11.7.2 UK Habitat Classification

KEY

- Site boundary
- c1a - Arable field margins
- c1a5 - Arable field margins – tussocky
- c1a6 - Arable field margins – pollen and nectar
- c1b - Temporary grass and clover leys
- c1c - Cereal crops
- f2b - Purple moor-grass and rush pastures
- f2e - Reedbeds
- f2f - Other wetlands
- g3a - Lowland meadows
- g3c - Other neutral grassland
- g3c5 - Arrhenatherum neutral grassland
- g3c7 - Deschampsia neutral grassland
- g3c8 - Holcus-Juncus neutral grassland
- g4 - Modified grassland
- h3 - Dense scrub
- h3a - Blackthorn scrub
- h3a6 - Other blackthorn scrub
- h3d - Bramble scrub
- h3h - Mixed scrub
- h3j - Willow scrub
- r1g - Other standing water
- r2a - Rivers (priority habitat)
- r2b - Other rivers and streams
- u1 - Built-up areas and gardens
- u1b - Developed land, sealed surface
- u1b5 - Buildings
- u1b6 - Other developed land
- u1c - Artificial unvegetated, unsealed surface
- u1f - Sparsely vegetated urban land
- w - Woodland and forest
- w1d - Wet woodland
- w1f - Lowland mixed deciduous woodland
- w1f7 - Other lowland mixed deciduous woodland
- w1g - Other broadleaved woodland
- w1h - Other woodland, mixed

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\Technical Appendices\Invertebrates\Map 11.7.2_UKHabitatClassification_P2342_3965_010825.aprx



Aerial Image: Maxar, Microsoft

MAP 11.7.3 Invertebrate Habitats

KEY

- Site boundary
- Areas with high quality habitats
- Super hotspots

SCALE: 1:9,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

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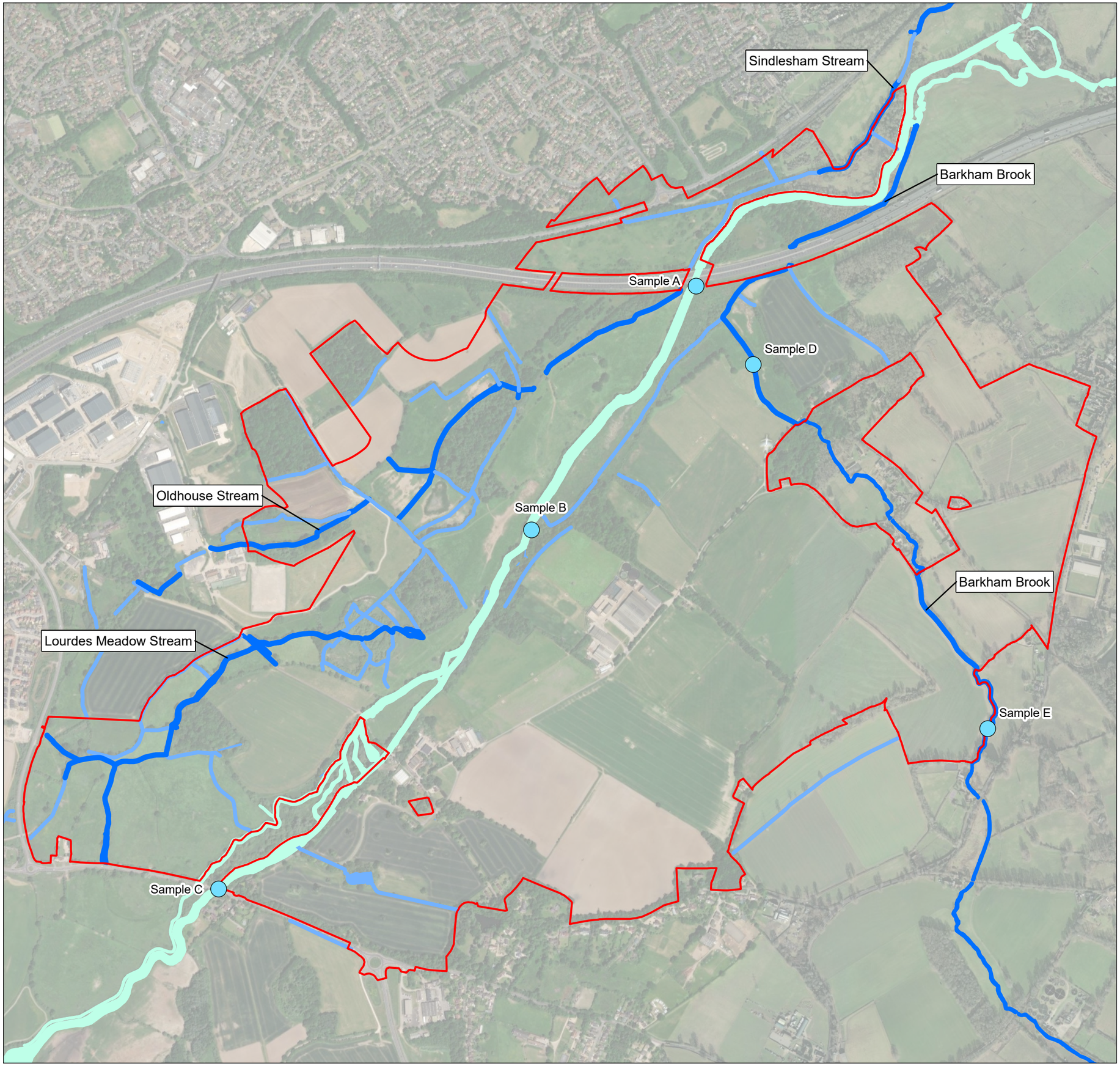
Aerial Image: Maxar, Microsoft




MAP 11.7.4 White-clawed Crayfish eDNA Locations

KEY

- Site boundary
- eDNA samples collected - negative
- r1g Other standing water - 50 Ditches
- r2b Other rivers and streams
- r2a Rivers (priority habitat)

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

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P23/42

Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

# Annex 1
## Invertebrate Species Lists

**Table A1.1 Invertebrates recorded at Loddon Garden Village in 2022/23**

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Pacifastacus leniusculus* | Astarcidae | Amphipoda | Naturalised alien |
| *Crangonyx pseudogracilis* | Gammaridae | Amphipoda | common |
| *Gammarus pulex sens. lato* | Gammaridae | Amphipoda | common |
| *Agelena labyrinthica* | Agelenidae | Araneae | common |
| *Amaurobius fenestralis* | Amaurobiidae | Araneae | common |
| *Amaurobius similis* | Amaurobiidae | Araneae | common |
| *Anyphaena accentuata* | Anyphaenidae | Araneae | common |
| *Araneus diadematus* | Araneidae | Araneae | common |
| *Araneus marmoreus var pyramidatus* | Araneidae | Araneae | local |
| *Araneus quadratus* | Araneidae | Araneae | local |
| *Araniella opisthographa* | Araneidae | Araneae | common |
| *Gibbaranea gibbosa* | Araneidae | Araneae | common |
| *Larinioides cornutus* | Araneidae | Araneae | common |
| *Mangora acalypha* | Araneidae | Araneae | common |
| *Neoscona adianta* | Araneidae | Araneae | local |
| *Nuctenea umbratica* | Araneidae | Araneae | common |
| *Zilla diodia* | Araneidae | Araneae | local |
| *Zygiella atrica* | Araneidae | Araneae | common |
| *Zygiella x-notata* | Araneidae | Araneae | common |
| *Clubiona brevipes* | Clubionidae | Araneae | common |
| *Clubiona comta* | Clubionidae | Araneae | common |
| *Clubiona phragmitis* | Clubionidae | Araneae | local |
| *Clubiona reclusa* | Clubionidae | Araneae | common |
| *Dictyna uncinata* | Dictynidae | Araneae | common |
| *Lathys humilis* | Dictynidae | Araneae | common |
| *Nigma walckenaeri* | Dictynidae | Araneae | local |
| *Harpactea hombergi* | Dysderidae | Araneae | common |
| *Bathyphantes gracilis* | Linyphiidae | Araneae | common |
| *Dismodicus bifrons* | Linyphiidae | Araneae | common |
| *Erigone atra* | Linyphiidae | Araneae | common |
| *Erigone dentipalpis* | Linyphiidae | Araneae | common |
| *Hypomma bituberculatum* | Linyphiidae | Araneae | common |
| *Hypomma cornutum* | Linyphiidae | Araneae | common |
| *Linyphia triangularis* | Linyphiidae | Araneae | common |
| *Lophomma punctatum* | Linyphiidae | Araneae | common |
| *Monocephalus fuscipes* | Linyphiidae | Araneae | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Neriene peltata* | Linyphiidae | Araneae | common |
| *Tenuiphantes tenuis* | Linyphiidae | Araneae | common |
| *Pardosa pullata* | Lycosidae | Araneae | common |
| *Pirata piraticus* | Lycosidae | Araneae | common |
| *Trochosa terricola* | Lycosidae | Araneae | common |
| *Philodromus albidus* | Philodromidae | Araneae | common |
| *Philodromus cespitum* | Philodromidae | Araneae | common |
| *Philodromus dispar* | Philodromidae | Araneae | common |
| *Tibellus oblongus* | Philodromidae | Araneae | common |
| *Pisaura mirabilis* | Pisauridae | Araneae | common |
| *Ballus chalybeius* | Salticidae | Araneae | NS |
| *Marpissa muscosa* | Salticidae | Araneae | NS |
| *Segestria senoculata* | Segestriidae | Araneae | common |
| *Metellina mengei* | Tetragnathidae | Araneae | common |
| *Metellina segmentata* | Tetragnathidae | Araneae | common |
| *Pachygnatha degeeri* | Tetragnathidae | Araneae | common |
| *Tetragnatha extensa* | Tetragnathidae | Araneae | common |
| *Tetragnatha montana* | Tetragnathidae | Araneae | common |
| *Anelosimus vittatus* | Theridiidae | Araneae | common |
| *Enoplognatha ovata* | Theridiidae | Araneae | common |
| *Episinus maculipes* | Theridiidae | Araneae | NS |
| *Paidiscura pallens* | Theridiidae | Araneae | common |
| *Phylloneta sisyphia* | Theridiidae | Araneae | common |
| *Platnickina tincta* | Theridiidae | Araneae | local |
| *Theridiosoma gemmosum* | Theridiosomatidae | Araneae | NS |
| *Misumena vatia* | Thomisidae | Araneae | common |
| *Ozyptila praticola* | Thomisidae | Araneae | common |
| *Xysticus cristatus* | Thomisidae | Araneae | common |
| *Zora spinimana* | Zoridae | Araneae | common |
| *Anobium fulvicorne* | Anobiidae | Coleoptera | local |
| *Anobium inexspectatum* | Anobiidae | Coleoptera | NS |
| *Anobium punctatum* | Anobiidae | Coleoptera | common |
| *Ochina ptinoides* | Anobiidae | Coleoptera | local |
| *Ptilinus pectinicornis* | Anobiidae | Coleoptera | common |
| *Xestobium rufovillosum* | Anobiidae | Coleoptera | local |
| *Anthicus antherinus* | Anthicidae | Coleoptera | common |
| *Omonadus floralis* | Anthicidae | Coleoptera | common |
| *Aphodius ater* | Aphodiidae | Coleoptera | common |
| *Aphodius contaminatus* | Aphodiidae | Coleoptera | common |
| *Aphodius fossor* | Aphodiidae | Coleoptera | common |
| *Aphodius rufipes* | Aphodiidae | Coleoptera | common |
| *Aphodius sphacelatus* | Aphodiidae | Coleoptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Apion frumentarium* | Apionidae | Coleoptera | common |
| *Eutrichapion ervi* | Apionidae | Coleoptera | common |
| *Exapion ulicis* | Apionidae | Coleoptera | common |
| *Ischnopterapion loti* | Apionidae | Coleoptera | common |
| *Perapion violaceum* | Apionidae | Coleoptera | common |
| *Protapion apricans* | Apionidae | Coleoptera | common |
| *Protapion fulvipes* | Apionidae | Coleoptera | common |
| *Agrilus laticornis* | Buprestidae | Coleoptera | local |
| *Agrilus sinuatus* | Buprestidae | Coleoptera | common |
| *Cantharis cryptica* | Cantharidae | Coleoptera | common |
| *Cantharis decipiens* | Cantharidae | Coleoptera | common |
| *Cantharis lateralis* | Cantharidae | Coleoptera | common |
| *Cantharis livida* | Cantharidae | Coleoptera | common |
| *Cantharis nigra (=thoracica) red scutellum* | Cantharidae | Coleoptera | common |
| *Cantharis nigricans* | Cantharidae | Coleoptera | common |
| *Cantharis rustica* | Cantharidae | Coleoptera | common |
| *Crudosilis ruficollis* | Cantharidae | Coleoptera | common |
| *Malthinus flaveolus* | Cantharidae | Coleoptera | common |
| *Malthinus seriepunctatus* | Cantharidae | Coleoptera | common |
| *Malthodes marginatus* | Cantharidae | Coleoptera | common |
| *Malthodes minimus* | Cantharidae | Coleoptera | common |
| *Rhagonycha fulva* | Cantharidae | Coleoptera | common |
| *Rhagonycha lignosa* | Cantharidae | Coleoptera | common |
| *Rhagonycha lutea* | Cantharidae | Coleoptera | NS |
| *Abax parallelepipedus* | Carabidae | Coleoptera | common |
| *Acupalpus dubius* | Carabidae | Coleoptera | common |
| *Amara familiaris* | Carabidae | Coleoptera | common |
| *Anchomenus dorsalis* | Carabidae | Coleoptera | common |
| *Badister bullatus* | Carabidae | Coleoptera | common |
| *Bembidion biguttatum* | Carabidae | Coleoptera | common |
| *Bembidion lampros* | Carabidae | Coleoptera | common |
| *Bembidion octomaculatum* | Carabidae | Coleoptera | NS |
| *Bembidion tetracolum* | Carabidae | Coleoptera | common |
| *Calodromius spilotus* | Carabidae | Coleoptera | common |
| *Carabus granulatus* | Carabidae | Coleoptera | local |
| *Demetrias atricapillus* | Carabidae | Coleoptera | common |
| *Dromius quadrimaculatus* | Carabidae | Coleoptera | common |
| *Harpalus affinis* | Carabidae | Coleoptera | common |
| *Harpalus rufipes* | Carabidae | Coleoptera | common |
| *Nebria brevicollis* | Carabidae | Coleoptera | common |
| *Notiophilus biguttatus* | Carabidae | Coleoptera | common |
| *Notiophilus substriatus* | Carabidae | Coleoptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Olisthopus rotundatus* | Carabidae | Coleoptera | common |
| *Oxypselaphus obscurus* | Carabidae | Coleoptera | common |
| *Paradromius linearis* | Carabidae | Coleoptera | common |
| *Paranchus albipes* | Carabidae | Coleoptera | common |
| *Philorhizus melanocephalus* | Carabidae | Coleoptera | common |
| *Pterostichus madidus* | Carabidae | Coleoptera | common |
| *Stenolophus mixtus* | Carabidae | Coleoptera | local |
| *Trechus quadristriatus* | Carabidae | Coleoptera | common |
| *Clytus arietis* | Cerambycidae | Coleoptera | common |
| *Grammoptera ruficornis* | Cerambycidae | Coleoptera | common |
| *Phymatodes testaceus* | Cerambycidae | Coleoptera | local |
| *Pseudovadonia livida* | Cerambycidae | Coleoptera | common |
| *Pyrrhidium sanguineum* | Cerambycidae | Coleoptera | local |
| *Rutpela maculata* | Cerambycidae | Coleoptera | common |
| *Agelastica alni* | Chrysomelidae | Coleoptera | common |
| *Altica lythri* | Chrysomelidae | Coleoptera | common |
| *Bruchidius varius* | Chrysomelidae | Coleoptera | common |
| *Bruchus loti* | Chrysomelidae | Coleoptera | common |
| *Bruchus rufimanus* | Chrysomelidae | Coleoptera | common |
| *Bruchus rufipes* | Chrysomelidae | Coleoptera | common |
| *Cassida viridis* | Chrysomelidae | Coleoptera | common |
| *Crepidodera aurata* | Chrysomelidae | Coleoptera | common |
| *Crepidodera aurea* | Chrysomelidae | Coleoptera | common |
| *Crepidodera fulvicornis* | Chrysomelidae | Coleoptera | common |
| *Cryptocephalus pusillus* | Chrysomelidae | Coleoptera | common |
| *Donacia simplex* | Chrysomelidae | Coleoptera | common |
| *Epitrix pubescens* | Chrysomelidae | Coleoptera | common |
| *Galerucella calmariensis* | Chrysomelidae | Coleoptera | common |
| *Galerucella lineola* | Chrysomelidae | Coleoptera | common |
| *Galerucella nymphaeae* | Chrysomelidae | Coleoptera | local |
| *Gastrophysa viridula* | Chrysomelidae | Coleoptera | common |
| *Hermaeophaga mercurialis* | Chrysomelidae | Coleoptera | common |
| *Lochmaea crataegi* | Chrysomelidae | Coleoptera | common |
| *Longitarsus rubiginosus* | Chrysomelidae | Coleoptera | common |
| *Longitarsus symphyti* | Chrysomelidae | Coleoptera | NS |
| *Lythraria salicariae* | Chrysomelidae | Coleoptera | NS |
| *Neocrepidodera ferruginea* | Chrysomelidae | Coleoptera | common |
| *Neocrepidodera transversa* | Chrysomelidae | Coleoptera | common |
| *Phaedon tumidulus* | Chrysomelidae | Coleoptera | common |
| *Phratora laticollis* | Chrysomelidae | Coleoptera | common |
| *Phratora vulgatissima* | Chrysomelidae | Coleoptera | common |
| *Phyllotreta atra* | Chrysomelidae | Coleoptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Phyllotreta nemorum* | Chrysomelidae | Coleoptera | common |
| *Plagiodera versicolora* | Chrysomelidae | Coleoptera | common |
| *Psylliodes affinis* | Chrysomelidae | Coleoptera | common |
| *Psylliodes chrysocephala* | Chrysomelidae | Coleoptera | common |
| *Cis boleti* | Ciidae | Coleoptera | common |
| *Cis pygmaeus* | Ciidae | Coleoptera | local |
| *Ennearthron cornutum* | Ciidae | Coleoptera | common |
| *Octotemnus glabriculus* | Ciidae | Coleoptera | common |
| *Orthocis alni* | Ciidae | Coleoptera | local |
| *Opilo mollis* | Cleridae | Coleoptera | NS |
| *Anisosticta novemdecimpunctata* | Coccinellidae | Coleoptera | local |
| *Coccidula rufa* | Coccinellidae | Coleoptera | common |
| *Coccinella septempunctata* | Coccinellidae | Coleoptera | common |
| *Harmonia axyridis* | Coccinellidae | Coleoptera | common |
| *Propylea quattuordecimpunctata* | Coccinellidae | Coleoptera | common |
| *Rhyzobius chrysomeloides* | Coccinellidae | Coleoptera | common |
| *Rhyzobius litura* | Coccinellidae | Coleoptera | common |
| *Subcoccinella vigintiquattuorpunctata* | Coccinellidae | Coleoptera | common |
| *Tytthaspis sedecimpunctata* | Coccinellidae | Coleoptera | common |
| *Corylophus cassidoides* | Corylophidae | Coleoptera | common |
| *Atomaria mesomela* | Cryptophagidae | Coleoptera | local |
| *Cryptophagus dentatus* | Cryptophagidae | Coleoptera | common |
| *Ephistemus globulus* | Cryptophagidae | Coleoptera | common |
| *Micrambe ulicis* | Cryptophagidae | Coleoptera | common |
| *Telmatophilus caricis* | Cryptophagidae | Coleoptera | local |
| *Acalles misellus* | Curculionidae | Coleoptera | common |
| *Amalus scortillum* | Curculionidae | Coleoptera | local |
| *Anthonomus pedicularius* | Curculionidae | Coleoptera | common |
| *Anthonomus rubi* | Curculionidae | Coleoptera | common |
| *Archarius pyrrhoceras* | Curculionidae | Coleoptera | common |
| *Archarius salicivorus* | Curculionidae | Coleoptera | common |
| *Ceutorhynchus erysimi* | Curculionidae | Coleoptera | common |
| *Ceutorhynchus obstrictus* | Curculionidae | Coleoptera | common |
| *Ceutorhynchus pallidactylus* | Curculionidae | Coleoptera | common |
| *Curculio glandium* | Curculionidae | Coleoptera | common |
| *Datonychus melanostictus* | Curculionidae | Coleoptera | common |
| *Dryocoetes villosus* | Curculionidae | Coleoptera | local |
| *Euophryum confine* | Curculionidae | Coleoptera | common |
| *Gymnetron villosulum* | Curculionidae | Coleoptera | [Nb] |
| *Hypera plantaginis* | Curculionidae | Coleoptera | common |
| *Hypera pollux* | Curculionidae | Coleoptera | local |
| *Hypera rumicis* | Curculionidae | Coleoptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Magdalis armigera* | Curculionidae | Coleoptera | local |
| *Mecinus pascuorum* | Curculionidae | Coleoptera | common |
| *Nedyus quadrimaculatus* | Curculionidae | Coleoptera | common |
| *Orchestes fagi* | Curculionidae | Coleoptera | common |
| *Orchestes pilosus* | Curculionidae | Coleoptera | common |
| *Orchestes signifer* | Curculionidae | Coleoptera | common |
| *Otiorhynchus sulcatus* | Curculionidae | Coleoptera | common |
| *Phyllobius glaucus* | Curculionidae | Coleoptera | common |
| *Phyllobius pyri* | Curculionidae | Coleoptera | common |
| *Phyllobius roboretanus* | Curculionidae | Coleoptera | common |
| *Polydrusus formosus* | Curculionidae | Coleoptera | [Na] |
| *Rhinocyllus conicus* | Curculionidae | Coleoptera | [Nb] |
| *Rhinoncus leucostigma* | Curculionidae | Coleoptera | common |
| *Rhinoncus perpendicularis* | Curculionidae | Coleoptera | common |
| *Scolytus intricatus* | Curculionidae | Coleoptera | common |
| *Scolytus multistriatus* | Curculionidae | Coleoptera | local |
| *Sitona hispidulus* | Curculionidae | Coleoptera | common |
| *Sitona lineatus* | Curculionidae | Coleoptera | common |
| *Tychius picirostris* | Curculionidae | Coleoptera | common |
| *Agabus bipustulatus* | Dytiscidae | Coleoptera | common |
| *Agabus paludosus* | Dytiscidae | Coleoptera | common |
| *Hydroporus memnonius* | Dytiscidae | Coleoptera | common |
| *Hydroporus palustris* | Dytiscidae | Coleoptera | common |
| *Hydroporus planus* | Dytiscidae | Coleoptera | common |
| *Hydroporus pubescens* | Dytiscidae | Coleoptera | common |
| *Ilybius fuliginosus* | Dytiscidae | Coleoptera | common |
| *Platambus maculatus* | Dytiscidae | Coleoptera | common |
| *Agriotes acuminatus* | Elateridae | Coleoptera | common |
| *Agriotes sputator* | Elateridae | Coleoptera | common |
| *Athous haemorrhoidalis* | Elateridae | Coleoptera | common |
| *Dalopius marginatus* | Elateridae | Coleoptera | common |
| *Kibunea minuta* | Elateridae | Coleoptera | common |
| *Melanotus castanipes* | Elateridae | Coleoptera | common |
| *Panspaeus guttatus* | Elateridae | Coleoptera | local |
| *Elmis aenea* | Elmidae | Coleoptera | common |
| *Notaris acridulus* | Erirhinidae | Coleoptera | local |
| *Anoplotrupes stercorosus* | Geotrupidae | Coleoptera | common |
| *Geotrupes spiniger* | Geotrupidae | Coleoptera | common |
| *Gyrinus substriatus* | Gyrinidae | Coleoptera | common |
| *Haliplus fluviatilis* | Haliplidae | Coleoptera | common |
| *Haliplus lineatocollis* | Haliplidae | Coleoptera | common |
| *Heterocerus fenestratus* | Heteroceridae | Coleoptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Dendrophilus punctatus* | Histeridae | Coleoptera | local |
| *Limnebius truncatellus* | Hydraenidae | Coleoptera | common |
| *Ochthebius minimus* | Hydraenidae | Coleoptera | common |
| *Cercyon analis* | Hydrophilidae | Coleoptera | common |
| *Cercyon convexiusculus* | Hydrophilidae | Coleoptera | local |
| *Cercyon haemorrhoidalis* | Hydrophilidae | Coleoptera | common |
| *Cercyon melanocephalus* | Hydrophilidae | Coleoptera | common |
| *Cercyon lateralis* | Hydrophilidae | Coleoptera | common |
| *Cercyon pygmaeus* | Hydrophilidae | Coleoptera | common |
| *Cercyon sternalis* | Hydrophilidae | Coleoptera | local |
| *Cryptopleurum minutum* | Hydrophilidae | Coleoptera | common |
| *Cryptopleurum subtile* | Hydrophilidae | Coleoptera | common |
| *Dactylosternum abdominale* | Hydrophilidae | Coleoptera | local |
| *Helophorus brevipalpis* | Hydrophilidae | Coleoptera | common |
| *Megasternum concinnum* | Hydrophilidae | Coleoptera | common |
| *Sphaeridium scarabaeoides* | Hydrophilidae | Coleoptera | common |
| *Brachypterus glaber* | Kateretidae | Coleoptera | common |
| *Brachypterus urticae* | Kateretidae | Coleoptera | common |
| *Kateretes pusillus* | Kateretidae | Coleoptera | common |
| *Cartodere nodifer* | Latridiidae | Coleoptera | common |
| *Cortinicara gibbosa* | Latridiidae | Coleoptera | common |
| *Dorcus parallelipipedus* | Lucanidae | Coleoptera | common |
| *Axinotarsus marginalis* | Malachiidae | Coleoptera | common |
| *Cordylepherus viridis* | Malachiidae | Coleoptera | common |
| *Malachius bipustulatus* | Malachiidae | Coleoptera | common |
| *Abdera flexuosa* | Melandryidae | Coleoptera | NS |
| *Conopalpus testaceus* | Melandryidae | Coleoptera | local |
| *Monotoma picipes* | Monotomidae | Coleoptera | local |
| *Mordellistena neuwaldeggiana* | Mordellidae | Coleoptera | NS |
| *Eulagius filicornis* | Mycetophagidae | Coleoptera | DD (European) |
| *Mycetophagus quadripustulatus* | Mycetophagidae | Coleoptera | local |
| *Nanophyes marmoratus* | Nanophyidae | Coleoptera | common |
| *Epuraea aestiva* | Nitidulidae | Coleoptera | common |
| *Meligethes aeneus* | Nitidulidae | Coleoptera | common |
| *Meligethes ruficornis* | Nitidulidae | Coleoptera | common |
| *Meligethes symphyti* | Nitidulidae | Coleoptera | local |
| *Pria dulcamarae* | Nitidulidae | Coleoptera | common |
| *Oedemera lurida* | Oedemeridae | Coleoptera | common |
| *Oedemera nobilis* | Oedemeridae | Coleoptera | common |
| *Olibrus aeneus* | Phalacridae | Coleoptera | common |
| *Stilbus testaceus* | Phalacridae | Coleoptera | common |
| *Platypus cylindrus* | Platypodidae | Coleoptera | [Nb] |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Acrotrichis danica* | Ptiliidae | Coleoptera | common |
| *Acrotrichis fascicularis* | Ptiliidae | Coleoptera | common |
| *Pyrochroa serraticornis* | Pyrochroidae | Coleoptera | common |
| *Neocoenorrhinus aequatus* | Rhynchitidae | Coleoptera | common |
| *Salpingus planirostris* | Salpingidae | Coleoptera | common |
| *Aphodius ater* | Scarabaeidae | Coleoptera | common |
| *Aphodius contaminatus* | Scarabaeidae | Coleoptera | common |
| *Aphodius fossor* | Scarabaeidae | Coleoptera | common |
| *Aphodius prodromus* | Scarabaeidae | Coleoptera | common |
| *Aphodius sphacelatus* | Scarabaeidae | Coleoptera | common |
| *Anaspis fasciata* | Scraptiidae | Coleoptera | common |
| *Anaspis frontalis* | Scraptiidae | Coleoptera | common |
| *Anaspis maculata* | Scraptiidae | Coleoptera | common |
| *Anaspis pulicaria* | Scraptiidae | Coleoptera | common |
| *Anaspis regimbarti* | Scraptiidae | Coleoptera | common |
| *Anaspis rufilabris* | Scraptiidae | Coleoptera | common |
| *Silpha atrata* | Silphidae | Coleoptera | common |
| *Psammoecus bipunctatus* | Silvanidae | Coleoptera | local |
| *Silvanus bidentatus* | Silvanidae | Coleoptera | Nb |
| *Silvanus unidentatus* | Silvanidae | Coleoptera | local |
| *Uleiota planatus* | Silvanidae | Coleoptera | local |
| *Aleochara lanuginosa* | Staphylinidae | Coleoptera | common |
| *Amischa analis* | Staphylinidae | Coleoptera | common |
| *Anotylus rugosus* | Staphylinidae | Coleoptera | common |
| *Anotylus sculpturatus* | Staphylinidae | Coleoptera | common |
| *Anotylus tetracarinatus* | Staphylinidae | Coleoptera | common |
| *Astenus lyonessius* | Staphylinidae | Coleoptera | common |
| *Atheta liturata* | Staphylinidae | Coleoptera | common |
| *Atheta vaga* | Staphylinidae | Coleoptera | local |
| *Autalia impressa* | Staphylinidae | Coleoptera | common |
| *Bisnius fimetarius* | Staphylinidae | Coleoptera | common |
| *Cilea silphoides* | Staphylinidae | Coleoptera | local |
| *Cypha longicornis* | Staphylinidae | Coleoptera | common |
| *Deinopsis erosa* | Staphylinidae | Coleoptera | local |
| *Drusilla canaliculata* | Staphylinidae | Coleoptera | common |
| *Gabrius breviventer* | Staphylinidae | Coleoptera | common |
| *Gabrius splendidulus* | Staphylinidae | Coleoptera | common |
| *Hygronoma dimidiata* | Staphylinidae | Coleoptera | local |
| *Lesteva longoeleytrata* | Staphylinidae | Coleoptera | common |
| *Lesteva sicula* | Staphylinidae | Coleoptera | common |
| *Lithocharis nigriceps* | Staphylinidae | Coleoptera | common |
| *Metopsia clypeata* | Staphylinidae | Coleoptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Myllaena dubia* | Staphylinidae | Coleoptera | common |
| *Ocypus olens* | Staphylinidae | Coleoptera | common |
| *Ocyusa maura* | Staphylinidae | Coleoptera | local |
| *Oxytelus laqueatus* | Staphylinidae | Coleoptera | common |
| *Paederus riparius* | Staphylinidae | Coleoptera | common |
| *Philhygra volans* | Staphylinidae | Coleoptera | local |
| *Philonthus politus* | Staphylinidae | Coleoptera | common |
| *Philonthus quisquiliarius* | Staphylinidae | Coleoptera | local |
| *Philonthus varians* | Staphylinidae | Coleoptera | common |
| *Proteinus brachypterus* | Staphylinidae | Coleoptera | common |
| *Rugilus orbiculatus* | Staphylinidae | Coleoptera | common |
| *Stenus bifoveolatus* | Staphylinidae | Coleoptera | common |
| *Stenus boops* | Staphylinidae | Coleoptera | common |
| *Stenus brunnipes* | Staphylinidae | Coleoptera | common |
| *Stenus cicindeloides* | Staphylinidae | Coleoptera | common |
| *Stenus clavicornis* | Staphylinidae | Coleoptera | common |
| *Stenus impressus* | Staphylinidae | Coleoptera | common |
| *Stenus juno* | Staphylinidae | Coleoptera | common |
| *Stenus ossium* | Staphylinidae | Coleoptera | common |
| *Stenus pallipes* | Staphylinidae | Coleoptera | local |
| *Stenus similis* | Staphylinidae | Coleoptera | common |
| *Stenus tarsalis* | Staphylinidae | Coleoptera | common |
| *Sunius propinquus* | Staphylinidae | Coleoptera | common |
| *Tachinus rufipes* | Staphylinidae | Coleoptera | common |
| *Tachyporus chrysomelinus* | Staphylinidae | Coleoptera | common |
| *Tachyporus hypnorum* | Staphylinidae | Coleoptera | common |
| *Tachyporus pusillus* | Staphylinidae | Coleoptera | common |
| *Eledona agricola* | Tenebrionidae | Coleoptera | common |
| *Lagria hirta* | Tenebrionidae | Coleoptera | common |
| *Prionychus ater* | Tenebrionidae | Coleoptera | local |
| *Bitoma crenata* | Zopheridae | Coleoptera | local |
| *Synchita separanda* | Zopheridae | Coleoptera | NS |
| *Pacifastacus leniusculus* | Astacidae | Decapoda | common |
| *Forficula auricularia* | Forficulidae | Dermaptera | common |
| *Agromyza ferruginosa* | Agromyzidae | Diptera | common |
| *Phytomyza lappae* | Agromyzidae | Diptera | common |
| *Phytomyza spondylii* | Agromyzidae | Diptera | common |
| *Sylvicola cinctus* | Anisopodidae | Diptera | common |
| *Anthomyia liturata* | Anthomyiidae | Diptera | common |
| *Pegomya solennis* | Anthomyiidae | Diptera | common |
| *Pegoplata infirma* | Anthomyiidae | Diptera | common |
| *Machimus atricapillus* | Asilidae | Diptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Leptogaster cylindrica* | Asilidae | Diptera | common |
| *Dilophus febrilis* | Bibionidae | Diptera | common |
| *Calliphora vicina* | Calliphoridae | Diptera | common |
| *Calliphora vomitoria* | Calliphoridae | Diptera | common |
| *Lucilia sericata* | Calliphoridae | Diptera | common |
| *Dasineura crataegi* | Cecidomyiidae | Diptera | common |
| *Dasineura fraxini* | Cecidomyiidae | Diptera | common |
| *Dasineura pustulans* | Cecidomyiidae | Diptera | common |
| *Dasineura ulmaria* | Cecidomyiidae | Diptera | common |
| *Dasineura urticae* | Cecidomyiidae | Diptera | common |
| *Iteomyia capreae* | Cecidomyiidae | Diptera | common |
| *Jaapiella veronicae* | Cecidomyiidae | Diptera | common |
| *Macrodiplosis pustularis* | Cecidomyiidae | Diptera | common |
| *Macrodiplosis roboris* | Cecidomyiidae | Diptera | common |
| *Taxomyia taxi* | Cecidomyiidae | Diptera | common |
| *Chaoborus flavicans* | Chaoboridae | Diptera | common |
| *Elachiptera brevipennis* | Chloropidae | Diptera | common |
| *Oscinella frit* | Chloropidae | Diptera | common |
| *Thaumatomyia notata* | Chloropidae | Diptera | common |
| *Campsicnemus curvipes* | Dolichopodidae | Diptera | common |
| *Chrysotus gramineus* | Dolichopodidae | Diptera | common |
| *Dolichopus plumipes* | Dolichopodidae | Diptera | common |
| *Dolichopus ungulatus* | Dolichopodidae | Diptera | common |
| *Medetara truncorum* | Dolichopodidae | Diptera | common |
| *Poecilobothrus nobilitatus* | Dolichopodidae | Diptera | common |
| *Drosophila suzukii* | Drosophilidae | Diptera | common |
| *Scaptomyza pallida* | Drosophilidae | Diptera | common |
| *Hilara maura* | Empididae | Diptera | common |
| *Rhamphomyia tarsata* | Empididae | Diptera | common |
| *Hydrellia griseola* | Ephydridae | Diptera | common |
| *Hydrellia maura* | Ephydridae | Diptera | common |
| *Scatella lacustris* | Ephydridae | Diptera | common |
| *Fannia serena* | Fanniidae | Diptera | common |
| *Lipoptena cervi* | Hippoboscidae | Diptera | common |
| *Ocydromia glabricula* | Hybotidae | Diptera | common |
| *Calliopum simillimum* | Lauxaniidae | Diptera | common |
| *Peplomyza litura* | Lauxaniidae | Diptera | common |
| *Helius pallirostris* | Limoniidae | Diptera | Notable |
| *Lonchoptera lutea* | Lonchopteridae | Diptera | common |
| *Neria cibaria* | Micropezidae | Diptera | common |
| *Helina impuncta* | Muscidae | Diptera | common |
| *Hydrotaea irritans* | Muscidae | Diptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Lispe tentaculata* | Muscidae | Diptera | common |
| *Mesembrina meridiana* | Muscidae | Diptera | common |
| *Geomyza tripunctata* | Opomyzidae | Diptera | common |
| *Opomyza florum* | Opomyzidae | Diptera | common |
| *Opomyza germinationis* | Opomyzidae | Diptera | common |
| *Palloptera umbellatarum* | Pallopteridae | Diptera | common |
| *Pollenia viatica* | Polleniidae | Diptera | common |
| *Pericoma nubila* | Psychodidae | Diptera | common |
| *Pericoma trivialis* | Psychodidae | Diptera | common |
| *Ptychoptera albimana* | Ptychopteridae | Diptera | common |
| *Ptychoptera contaminata* | Ptychopteridae | Diptera | common |
| *Chrysopilus cristatus* | Rhagionidae | Diptera | common |
| *Rhagio scolopaceus* | Rhagionidae | Diptera | common |
| *Nyctia halterata* | Sarcophagidae | Diptera | common |
| *Sarcophaga carnaria* | Sarcophagidae | Diptera | common |
| *Cordilura ciliata* | Scathophagidae | Diptera | common |
| *Scathophaga furcata* | Scathophagidae | Diptera | common |
| *Scathophaga stercoraria* | Scathophagidae | Diptera | common |
| *Apiloscatopse flavicollis* | Scatopsidae | Diptera | common |
| *Bradysia nitidicollis* | Sciaridae | Diptera | common |
| *Corynoptera flavosignata* | Sciaridae | Diptera | common |
| *Ilione albiseta* | Sciomyzidae | Diptera | common |
| *Pherbellia cinerella* | Sciomyzidae | Diptera | common |
| *Pherbina coryleti* | Sciomyzidae | Diptera | common |
| *Renocera pallida* | Sciomyzidae | Diptera | common |
| *Tetanocera elata* | Sciomyzidae | Diptera | common |
| *Tetanocera ferruginea* | Sciomyzidae | Diptera | common |
| *Sepsis cynipsea* | Sepsidae | Diptera | common |
| *Themira lucida* | Sepsidae | Diptera | common |
| *Beris chalybata* | Stratiomyidae | Diptera | common |
| *Beris vallata* | Stratiomyidae | Diptera | common |
| *Chloromyia formosa* | Stratiomyidae | Diptera | common |
| *Pachygaster atra* | Stratiomyidae | Diptera | common |
| *Cheilosia albitarsis* | Syrphidae | Diptera | common |
| *Cheilosia illustrata* | Syrphidae | Diptera | common |
| *Episyrphus balteatus* | Syrphidae | Diptera | common |
| *Eristalis arbustorum* | Syrphidae | Diptera | common |
| *Eristalis pertinax* | Syrphidae | Diptera | common |
| *Eristalis tenax* | Syrphidae | Diptera | common |
| *Eupeodes corollae* | Syrphidae | Diptera | common |
| *Eupeodes luniger* | Syrphidae | Diptera | common |
| *Helophilus pendulus* | Syrphidae | Diptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Lejogaster metallina* | Syrphidae | Diptera | common |
| *Melanostoma mellinum* | Syrphidae | Diptera | common |
| *Melanostoma scalare* | Syrphidae | Diptera | common |
| *Myathropa florea* | Syrphidae | Diptera | common |
| *Neoascia podagrica* | Syrphidae | Diptera | common |
| *Platycheirus albimanus* | Syrphidae | Diptera | common |
| *Platycheirus rosarum* | Syrphidae | Diptera | common |
| *Scaeva pyrastri* | Syrphidae | Diptera | common |
| *Sphaerophoria scripta* | Syrphidae | Diptera | common |
| *Syritta pipiens* | Syrphidae | Diptera | common |
| *Syrphus ribesii* | Syrphidae | Diptera | common |
| *Volucella inanis* | Syrphidae | Diptera | common |
| *Volucella pellucens* | Syrphidae | Diptera | common |
| *Haematopota pluvialis* | Tabanidae | Diptera | common |
| *Tabanus bromius* | Tabanidae | Diptera | common |
| *Eriothrix rufomacualta* | Tachinidae | Diptera | common |
| *Lydella stabulans* | Tachinidae | Diptera | common |
| *Tachina fera* | Tachinidae | Diptera | common |
| *Anomoia purmunda* | Tephritidae | Diptera | common |
| *Tephritis neesii* | Tephritidae | Diptera | common |
| *Terellia tussilaginis* | Tephritidae | Diptera | common |
| *Urophora cardui* | Tephritidae | Diptera | common |
| *Urophora jaceana* | Tephritidae | Diptera | common |
| *Nephrotoma appendiculata* | Tipulidae | Diptera | common |
| *Melieria crassipennis* | Ulidiidae | Diptera | common |
| *Orchesella cincta* | Entomobryidae | Entomobryomorpha | common |
| *Verhoeffiella longicornis* | Entomobryidae | Entomobryomorpha | common |
| *Tomocerus vulgaris* | Tomoceridae | Entomobryomorpha | common |
| *Serratella ignita* | Ephemerellidae | Ephemeroptera | common |
| *Ephemera danica* | Ephemeridae | Ephemeroptera | common |
| *Ephemera vulgata* | Ephemeridae | Ephemeroptera | local |
| *Cyphostethus tristriatus* | Acanthosomatidae | Hemiptera | common |
| *Elasmucha grisea* | Acanthosomatidae | Hemiptera | common |
| *Acompocoris pygmaeus* | Anthocoridae | Hemiptera | common |
| *Anthocoris confusus* | Anthocoridae | Hemiptera | common |
| *Anthocoris limbatus* | Anthocoridae | Hemiptera | common |
| *Anthocoris nemoralis* | Anthocoridae | Hemiptera | common |
| *Anthocoris nemorum* | Anthocoridae | Hemiptera | common |
| *Buchananiella continua* | Anthocoridae | Hemiptera | common |
| *Cardiastethus fasciiventris* | Anthocoridae | Hemiptera | common |
| *Temnostethus gracilis* | Anthocoridae | Hemiptera | common |
| *Temnostethus pusillus* | Anthocoridae | Hemiptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Eriosoma ulmi* | Aphididae | Hemiptera | common |
| *Pemphigus bursarius* | Aphididae | Hemiptera | common |
| *Pemphigus spyrothecae* | Aphididae | Hemiptera | common |
| *Tetraneura ulmi* | Aphididae | Hemiptera | common |
| *Aphrophora alni* | Aphrophoridae | Hemiptera | common |
| *Neophilaenus lineatus* | Aphrophoridae | Hemiptera | common |
| *Philaenus spumarius* | Aphrophoridae | Hemiptera | common |
| *Aneurus avenius* | Aradidae | Hemiptera | common |
| *Alebra albostriella* | Cicadellidae | Hemiptera | common |
| *Allygus modestus* | Cicadellidae | Hemiptera | common |
| *Aphrodes makarovi* | Cicadellidae | Hemiptera | common |
| *Cicadella viridis* | Cicadellidae | Hemiptera | common |
| *Cicadula flori* | Cicadellidae | Hemiptera | Nb |
| *Conosanus obsoletus* | Cicadellidae | Hemiptera | common |
| *Edwardsiana candidula* | Cicadellidae | Hemiptera | common |
| *Empoasca vitis* | Cicadellidae | Hemiptera | common |
| *Eupteryx aurata* | Cicadellidae | Hemiptera | common |
| *Eupteryx urticae* | Cicadellidae | Hemiptera | common |
| *Euscelis incisus* | Cicadellidae | Hemiptera | common |
| *Evacanthus interruptus* | Cicadellidae | Hemiptera | local |
| *Grypotes puncticollis* | Cicadellidae | Hemiptera | common |
| *Iassus lanio* | Cicadellidae | Hemiptera | common |
| *Iassus scutellaris* | Cicadellidae | Hemiptera | NA |
| *Kybos butleri* | Cicadellidae | Hemiptera | common |
| *Macropsis prasina* | Cicadellidae | Hemiptera | common |
| *Macrosteles variatus* | Cicadellidae | Hemiptera | common |
| *Macrosteles viridigriseus* | Cicadellidae | Hemiptera | local |
| *Metidiocerus rutilans* | Cicadellidae | Hemiptera | common |
| *Oncopsis carpini* | Cicadellidae | Hemiptera | common |
| *Ribautiana ulmi* | Cicadellidae | Hemiptera | common |
| *Stenidiocerus poecilus* | Cicadellidae | Hemiptera | local |
| *Thamnotettix dilutior* | Cicadellidae | Hemiptera | common |
| *Coreus marginatus* | Coreidae | Hemiptera | common |
| *Corixa punctata* | Corixidae | Hemiptera | common |
| *Hesperocorixa sahlbergi* | Corixidae | Hemiptera | common |
| *Conomelus anceps* | Delphacidae | Hemiptera | common |
| *Javesella dubia* | Delphacidae | Hemiptera | common |
| *Stenocranus minutus* | Delphacidae | Hemiptera | common |
| *Gerris lacustris* | Gerridae | Hemiptera | common |
| *Hydrometra stagnorum* | Hydrometridae | Hemiptera | common |
| *Issus coleoptratus* | Issidae | Hemiptera | common |
| *Cymus melanocephalus* | Lygaeidae | Hemiptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Heterogaster urticae* | Lygaeidae | Hemiptera | common |
| *Ischnodemus sabuleti* | Lygaeidae | Hemiptera | common |
| *Kleidocerys resedae* | Lygaeidae | Hemiptera | common |
| *Metopoplax ditomoides* | Lygaeidae | Hemiptera | local |
| *Nysius huttoni* | Lygaeidae | Hemiptera | common |
| *Orsillus depressus* | Lygaeidae | Hemiptera | common |
| *Peritrechus geniculatus* | Lygaeidae | Hemiptera | common |
| *Peritrechus lundii* | Lygaeidae | Hemiptera | common |
| *Scolopostethus thomsoni* | Lygaeidae | Hemiptera | common |
| *Loricula elegantula* | Microphysidae | Hemiptera | common |
| *Amblytylus nasutus* | Miridae | Hemiptera | common |
| *Atractotomus magnicornis* | Miridae | Hemiptera | common |
| *Atractotomus mali* | Miridae | Hemiptera | common |
| *Campyloneura virgula* | Miridae | Hemiptera | common |
| *Capsus ater* | Miridae | Hemiptera | common |
| *Closterotomus norwegicus* | Miridae | Hemiptera | common |
| *Cyllecoris histrionius* | Miridae | Hemiptera | common |
| *Deraeocoris flavilinea* | Miridae | Hemiptera | common |
| *Deraeocoris ruber* | Miridae | Hemiptera | common |
| *Deraeocoris lutescens* | Miridae | Hemiptera | common |
| *Dicyphus epilobii* | Miridae | Hemiptera | common |
| *Dicyphus stachydis* | Miridae | Hemiptera | common |
| *Europiella artemisiae* | Miridae | Hemiptera | common |
| *Grypocoris stysi* | Miridae | Hemiptera | common |
| *Halticus luteicollis* | Miridae | Hemiptera | local |
| *Harpocera thoracica* | Miridae | Hemiptera | common |
| *Heterotoma planicornis* | Miridae | Hemiptera | common |
| *Leptopterna dolabrata* | Miridae | Hemiptera | common |
| *Liocoris tripustulatus* | Miridae | Hemiptera | common |
| *Lopus decolor* | Miridae | Hemiptera | local |
| *Lygus pratensis* | Miridae | Hemiptera | common |
| *Macrotylus horvathi* | Miridae | Hemiptera | local |
| *Malacocoris chlorizans* | Miridae | Hemiptera | common |
| *Megacoelum infusum* | Miridae | Hemiptera | common |
| *Megaloceroea recticornis* | Miridae | Hemiptera | common |
| *Miridius quadrivirgatus* | Miridae | Hemiptera | local |
| *Miris striatus* | Miridae | Hemiptera | common |
| *Monalocoris filicis* | Miridae | Hemiptera | common |
| *Notostira elongata* | Miridae | Hemiptera | common |
| *Oncotylus viridiflavus* | Miridae | Hemiptera | local |
| *Orthops campestris* | Miridae | Hemiptera | common |
| *Orthotylus marginalis* | Miridae | Hemiptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Orthotylus bilineatus* | Miridae | Hemiptera | local |
| *Phylus coryli* | Miridae | Hemiptera | common |
| *Phylus melanocephalus* | Miridae | Hemiptera | common |
| *Phytocoris varipes* | Miridae | Hemiptera | common |
| *Phytocoris tiliae* | Miridae | Hemiptera | common |
| *Pilophorus clavatus* | Miridae | Hemiptera | common |
| *Pilophorus perplexus* | Miridae | Hemiptera | common |
| *Pinalitus cervinus* | Miridae | Hemiptera | common |
| *Pithanus maerkelii* | Miridae | Hemiptera | common |
| *Plagiognathus arbustorum* | Miridae | Hemiptera | common |
| *Plagiognathus chrysanthemi* | Miridae | Hemiptera | common |
| *Psallus perrisi* | Miridae | Hemiptera | common |
| *Psallus varians* | Miridae | Hemiptera | common |
| *Salicarus roseri* | Miridae | Hemiptera | common |
| *Stenodema calcarata* | Miridae | Hemiptera | common |
| *Stenodema laevigata* | Miridae | Hemiptera | common |
| *Stenotus binotatus* | Miridae | Hemiptera | common |
| *Teratocoris antennatus* | Miridae | Hemiptera | local |
| *Tupiocoris rhododendri* | Miridae | Hemiptera | common |
| *Himacerus mirmicoides* | Nabidae | Hemiptera | common |
| *Himacerus apterus* | Nabidae | Hemiptera | common |
| *Nabis lineatus* | Nabidae | Hemiptera | common |
| *Nabis flavomarginatus* | Nabidae | Hemiptera | common |
| *Nabis rugosus* | Nabidae | Hemiptera | common |
| *Nepa cinerea* | Nepidae | Hemiptera | common |
| *Notonecta glauca* | Notonectidae | Hemiptera | common |
| *Notonecta maculata* | Notonectidae | Hemiptera | common |
| *Aelia acuminata* | Pentatomidae | Hemiptera | common |
| *Dolycoris baccarum* | Pentatomidae | Hemiptera | common |
| *Eysarcoris venustissimus* | Pentatomidae | Hemiptera | common |
| *Palomena prasina* | Pentatomidae | Hemiptera | common |
| *Pentatoma rufipes* | Pentatomidae | Hemiptera | common |
| *Piezodorus lituratus* | Pentatomidae | Hemiptera | common |
| *Cacopsylla peregrina* | Psyllidae | Hemiptera | common |
| *Psylla alni sensu stricto* | Psyllidae | Hemiptera | common |
| *Psyllopsis fraxini* | Psyllidae | Hemiptera | common |
| *Psyllopsis fraxinicola* | Psyllidae | Hemiptera | common |
| *Stictopleurus abutilon* | Rhopalidae | Hemiptera | common |
| *Saldula saltatoria* | Saldidae | Hemiptera | common |
| *Eurygaster testudinaria* | Scutelleridae | Hemiptera | common |
| *Derephysia foliacea* | Tingidae | Hemiptera | local |
| *Physatocheila dumetorum* | Tingidae | Hemiptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Tingis ampliata* | Tingidae | Hemiptera | common |
| *Tingis cardui* | Tingidae | Hemiptera | common |
| *Trioza remota* | Triozidae | Hemiptera | common |
| *Trioza urticae* | Triozidae | Hemiptera | common |
| *Microvelia reticulata* | Veliidae | Hemiptera | common |
| *Velia (Plesiovelia) caprai* | Veliidae | Hemiptera | common |
| *Ampullaceana balthica* | Lymnaeidae | Hygrophila | common |
| *Lymnaea stagnalis* | Lymnaeidae | Hygrophila | common |
| *Andrena florea* | Andrenidae | Hymenoptera | RDB 3 |
| *Andrena fulva* | Andrenidae | Hymenoptera | common |
| *Andrena haemorrhoa* | Andrenidae | Hymenoptera | common |
| *Andrena minutula* | Andrenidae | Hymenoptera | common |
| *Apis mellifera* | Apidae | Hymenoptera | common |
| *Bombus hortorum* | Apidae | Hymenoptera | common |
| *Bombus hypnorum* | Apidae | Hymenoptera | common |
| *Bombus lapidarius* | Apidae | Hymenoptera | common |
| *Bombus lucorum* | Apidae | Hymenoptera | common |
| *Bombus pascuorum* | Apidae | Hymenoptera | common |
| *Bombus pratorum* | Apidae | Hymenoptera | common |
| *Bombus terrestris* | Apidae | Hymenoptera | common |
| *Cephus pygmeus* | Cephidae | Hymenoptera | common |
| *Colletes hederae* | Colletidae | Hymenoptera | common |
| *Crabro cribrarius* | Crabronidae | Hymenoptera | common |
| *Ectemnius lituratus* | Crabronidae | Hymenoptera | common |
| *Pemphredon inornata* | Crabronidae | Hymenoptera | common |
| *Pemphredon lugubris* | Crabronidae | Hymenoptera | common |
| *Andricus aries* | Cynipidae | Hymenoptera | common |
| *Andricus kollari* | Cynipidae | Hymenoptera | common |
| *Andricus quercuscalicis* | Cynipidae | Hymenoptera | common |
| *Biorhiza pallida* | Cynipidae | Hymenoptera | common |
| *Diplolepis rosae* | Cynipidae | Hymenoptera | common |
| *Neuroterus quercusbaccarum* | Cynipidae | Hymenoptera | common |
| *Neuroterus numismalis* | Cynipidae | Hymenoptera | common |
| *Neuroterus albipes* | Cynipidae | Hymenoptera | common |
| *Lasius brunneus* | Formicidae | Hymenoptera | Na |
| *Lasius fuliginosus* | Formicidae | Hymenoptera | local |
| *Lasius niger* | Formicidae | Hymenoptera | common |
| *Lasius platythorax* | Formicidae | Hymenoptera | common |
| *Myrmica rubra* | Formicidae | Hymenoptera | common |
| *Myrmica ruginodis* | Formicidae | Hymenoptera | common |
| *Myrmica scabrinodis* | Formicidae | Hymenoptera | common |
| *Temnothorax nylanderi* | Formicidae | Hymenoptera | local |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Gasteruption jaculator* | Gasteruptiidae | Hymenoptera | common |
| *Lasioglossum morio* | Halictidae | Hymenoptera | common |
| *Amblyteles armatorius* | Ichneumonidae | Hymenoptera | common |
| *Pimpla rufipes* | Ichneumonidae | Hymenoptera | common |
| *Vulgichneumon saturatorius* | Ichneumonidae | Hymenoptera | common |
| *Macropis europaea* | Melittidae | Hymenoptera | Na |
| *Dipogon subintermedius* | Pompilidae | Hymenoptera | common |
| *Priocnemis fennica* | Pompilidae | Hymenoptera | common |
| *Aneugmenus padi* | Tenthredinidae | Hymenoptera | common |
| *Caliroa annulipes* | Tenthredinidae | Hymenoptera | common |
| *Euura proxima* | Tenthredinidae | Hymenoptera | common |
| *Stromboceros delicatulus* | Tenthredinidae | Hymenoptera | common |
| *Vespa crabro* | Vespidae | Hymenoptera | common |
| *Vespula vulgaris* | Vespidae | Hymenoptera | common |
| *Asellus aquaticus* | Asellidae | Isopoda | common |
| *Oniscus asellus* | Oniscidae | Isopoda | common |
| *Philoscia muscorum* | Philosciidae | Isopoda | common |
| *Porcellio scaber* | Porcellionidae | Isopoda | common |
| *Trichoniscus pusillus* | Trichoniscidae | Isopoda | common |
| *Tachypodoiulus niger* | Julidae | Julida | common |
| *Blastobasis adustella* | Blastobasidae | Lepidoptera | common |
| *Bucculatrix thoracella* | Bucculatricidae | Lepidoptera | common |
| *Anthophila fabriciana* | Choreutidae | Lepidoptera | common |
| *Cosmopterix zieglerella* | Cosmopterigidae | Lepidoptera | common |
| *Acentria ephemerella* | Crambidae | Lepidoptera | common |
| *Agriphila geniculea* | Crambidae | Lepidoptera | common |
| *Agriphila straminella* | Crambidae | Lepidoptera | common |
| *Agriphila tristella* | Crambidae | Lepidoptera | common |
| *Chrysoteuchia culmella* | Crambidae | Lepidoptera | common |
| *Crambus lathoniellus* | Crambidae | Lepidoptera | common |
| *Crambus pascuella* | Crambidae | Lepidoptera | common |
| *Crambus perlella* | Crambidae | Lepidoptera | common |
| *Elophila nymphaeata* | Crambidae | Lepidoptera | common |
| *Eudonia mercurella* | Crambidae | Lepidoptera | common |
| *Nomophila noctuella* | Crambidae | Lepidoptera | common |
| *Pleuroptya ruralis* | Crambidae | Lepidoptera | common |
| *Scoparia ambigualis* | Crambidae | Lepidoptera | common |
| *Udea olivalis* | Crambidae | Lepidoptera | common |
| *Udea prunalis* | Crambidae | Lepidoptera | common |
| *Agonopterix arenella* | Depressariidae | Lepidoptera | common |
| *Agonopterix heracliana* | Depressariidae | Lepidoptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Watsonalla binaria* | Drepanidae | Lepidoptera | Section 41 Priority Species - research only;VU |
| *Eilema lurideola* | Erebidae | Lepidoptera | common |
| *Lithosia quadra* | Erebidae | Lepidoptera | common |
| *Rivula sericealis* | Erebidae | Lepidoptera | common |
| *Tyria jacobaeae* | Erebidae | Lepidoptera | LC (Global);Section 41 Priority Species - research only |
| *Dyseriocrania subpurpurella* | Eriocraniidae | Lepidoptera | common |
| *Hemistola chrysoprasaria* | Geometridae | Lepidoptera | common |
| *Idaea aversata* | Geometridae | Lepidoptera | common |
| *Opisthograptis luteolata* | Geometridae | Lepidoptera | common |
| *Petrophora chlorosata* | Geometridae | Lepidoptera | common |
| *Caloptilia stigmatella* | Gracillariidae | Lepidoptera | common |
| *Cameraria ohridella* | Gracillariidae | Lepidoptera | common |
| *Phyllonorycter coryli* | Gracillariidae | Lepidoptera | common |
| *Phyllonorycter corylifoliella* | Gracillariidae | Lepidoptera | common |
| *Phyllonorycter messaniella* | Gracillariidae | Lepidoptera | common |
| *Phyllonorycter oxyacanthae* | Gracillariidae | Lepidoptera | common |
| *Phyllonorycter schreberella* | Gracillariidae | Lepidoptera | common |
| *Phyllonorycter tristrigella* | Gracillariidae | Lepidoptera | common |
| *Phyllonorycter viminiella* | Gracillariidae | Lepidoptera | common |
| *Ochlodes sylvanus* | Hesperiidae | Lepidoptera | common |
| *Thymelicus sylvestris* | Hesperiidae | Lepidoptera | common |
| *Incurvaria masculella* | Incurvariidae | Lepidoptera | common |
| *Celastrina argiolus* | Lycaenidae | Lepidoptera | common |
| *Leucoptera malifoliella* | Lyonetiidae | Lepidoptera | common |
| *Lyonetia clerkella* | Lyonetiidae | Lepidoptera | common |
| *Micropterix calthella* | Micropterigidae | Lepidoptera | common |
| *Stigmella aurella* | Nepticulidae | Lepidoptera | common |
| *Stigmella hybnerella* | Nepticulidae | Lepidoptera | common |
| *Stigmella lemniscella* | Nepticulidae | Lepidoptera | common |
| *Stigmella malella* | Nepticulidae | Lepidoptera | common |
| *Stigmella oxyacanthella* | Nepticulidae | Lepidoptera | common |
| *Stigmella perpygmaeella* | Nepticulidae | Lepidoptera | common |
| *Stigmella trimaculella* | Nepticulidae | Lepidoptera | common |
| *Stigmella ulmivora* | Nepticulidae | Lepidoptera | common |
| *Agrotis clavis* | Noctuidae | Lepidoptera | common |
| *Agrotis exclamationis* | Noctuidae | Lepidoptera | common |
| *Autographa gamma* | Noctuidae | Lepidoptera | common |
| *Nonagria typhae* | Noctuidae | Lepidoptera | common |
| *Orthosia cerasi* | Noctuidae | Lepidoptera | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Aglais io* | Nymphalidae | Lepidoptera | common |
| *Aglais urticae* | Nymphalidae | Lepidoptera | common |
| *Maniola jurtina* | Nymphalidae | Lepidoptera | common |
| *Melanargia galathea* | Nymphalidae | Lepidoptera | common |
| *Pararge aegeria* | Nymphalidae | Lepidoptera | common |
| *Pyronia tithonus* | Nymphalidae | Lepidoptera | common |
| *Vanessa atalanta* | Nymphalidae | Lepidoptera | common |
| *Vanessa cardui* | Nymphalidae | Lepidoptera | common |
| *Hofmannophila pseudospretella* | Oecophoridae | Lepidoptera | common |
| *Carcina quercana* | Peleopodidae | Lepidoptera | common |
| *Gonepteryx rhamni* | Pieridae | Lepidoptera | common |
| *Pieris brassicae* | Pieridae | Lepidoptera | common |
| *Pieris napi* | Pieridae | Lepidoptera | common |
| *Pieris rapae* | Pieridae | Lepidoptera | common |
| *Anthocharis cardamines* | Pieridae | Lepidoptera | common |
| *Plutella xylostella* | Plutellidae | Lepidoptera | common |
| *Prays fraxinella* | Praydidae | Lepidoptera | common |
| *Acrobasis advenella* | Pyralidae | Lepidoptera | common |
| *Aphomia sociella* | Pyralidae | Lepidoptera | common |
| *Endotricha flammealis* | Pyralidae | Lepidoptera | common |
| *Hypsopygia glaucinalis* | Pyralidae | Lepidoptera | common |
| *Phycita roborella* | Pyralidae | Lepidoptera | common |
| *Phycitodes binaevella* | Pyralidae | Lepidoptera | common |
| *Acleris forsskaleana* | Tortricidae | Lepidoptera | common |
| *Agapeta hamana* | Tortricidae | Lepidoptera | common |
| *Aleimma loeflingiana* | Tortricidae | Lepidoptera | common |
| *Archips podana* | Tortricidae | Lepidoptera | common |
| *Celypha lacunana* | Tortricidae | Lepidoptera | common |
| *Celypha striana* | Tortricidae | Lepidoptera | common |
| *Cydia pomonella* | Tortricidae | Lepidoptera | common |
| *Ditula angustiorana* | Tortricidae | Lepidoptera | common |
| *Endothenia marginana* | Tortricidae | Lepidoptera | common |
| *Epiphyas postvittana* | Tortricidae | Lepidoptera | common |
| *Grapholita compositella* | Tortricidae | Lepidoptera | common |
| *Gypsonoma dealbana* | Tortricidae | Lepidoptera | common |
| *Hedya nubiferana* | Tortricidae | Lepidoptera | common |
| *Lozotaenia forsterana* | Tortricidae | Lepidoptera | common |
| *Notocelia uddmanniana* | Tortricidae | Lepidoptera | common |
| *Pandemis corylana* | Tortricidae | Lepidoptera | common |
| *Tortrix viridana* | Tortricidae | Lepidoptera | common |
| *Paraswammerdamia nebulella* | Yponomeutidae | Lepidoptera | common |
| *Lithobius forficatus* | Lithobiidae | Lithobiomorpha | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Bithynia tentaculata* | Bithyniidae | Littorinimorpha | common |
| *Potamopyrgus antipodarum* | Tateidae | Littorinimorpha | common |
| *Panorpa communis* | Panorpidae | Mecoptera | common |
| *Chrysopa perla* | Chrysopidae | Neuroptera | common |
| *Aeshna cyanea* | Aeshnidae | Odonata | common |
| *Aeshna mixta* | Aeshnidae | Odonata | common |
| *Calopteryx splendens* | Calopterygidae | Odonata | common |
| *Ischnura elegans* | Coenagrionidae | Odonata | common |
| *Orthetrum cancellatum* | Libellulidae | Odonata | common |
| *Libellula depressa* | Libellulidae | Odonata | common |
| *Sympetrum striolatum* | Libellulidae | Odonata | common |
| *Dicranopalpus ramosus sensu lato* | Phalangiidae | Opiliones | common |
| *Leiobunum rotundum* | Phalangiidae | Opiliones | common |
| *Mitopus morio* | Phalangiidae | Opiliones | common |
| *Paroligolophus agrestis* | Phalangiidae | Opiliones | common |
| *Chorthippus brunneus* | Acrididae | Orthoptera | common |
| *Chorthippus parallelus* | Acrididae | Orthoptera | common |
| *Omocestus viridulus* | Acrididae | Orthoptera | common |
| *Conocephalus fuscus* | Conocephalidae | Orthoptera | common |
| *Meconema thalassinum* | Meconematidae | Orthoptera | common |
| *Leptophyes punctatissima* | Phaneropteridae | Orthoptera | common |
| *Tetrix subulata* | Tetrigidae | Orthoptera | common |
| *Pholidoptera griseoaptera* | Tettigoniidae | Orthoptera | common |
| *Roeseliana roeselii* | Tettigoniidae | Orthoptera | common |
| *Polyxenus lagurus* | Polyxenidae | Polyxenida | common |
| *Chernes cimicoides* | Chernetidae | Pseudoscorpiones | common |
| *Valenzuela flavidus* | Caeciliusidae | Psocoptera | common |
| *Ectopsocus briggsi* | Ectopsocidae | Psocoptera | common |
| *Graphopsocus cruciatus* | Stenopsocidae | Psocoptera | common |
| *Ampullaceana balthica* | Lymnaeidae | Hygrophila | common |
| *Planorbis planorbis* | Planorbidae | Hygrophila | common |
| *Arion ater agg.* | Arionidae | Pulmonata | common |
| *Arion subfuscus* | Arionidae | Pulmonata | common |
| *Cochlicopa cf. lubrica* | Cochlicopidae | Pulmonata | common |
| *Cepaea nemoralis* | Helicidae | Pulmonata | common |
| *Cornu aspersum* | Helicidae | Pulmonata | common |
| *Hygromia cinctella* | Hygromiidae | Pulmonata | common |
| *Monacha cantiana* | Hygromiidae | Pulmonata | common |
| *Limax maximus* | Limacidae | Pulmonata | common |
| *Tandonia budapestensis* | Milacidae | Pulmonata | common |
| *Oxyloma elegans* | Succineidae | Pulmonata | common |
| *Succinea putris* | Succineidae | Pulmonata | common |

| Species | Family | Order | Conservation status |
|---|---|---|---|
| *Arianta arbustorum* | Helicidae | Pulmonata | local |
| *Alboglossiphonia heteroclita* | Glossiphoniidae | Rhynchobdellida | common |
| *Glossiphonia complanata* | Glossiphoniidae | Rhynchobdellida | common |
| *Helobdella stagnalis* | Glossiphoniidae | Rhynchobdellida | common |
| *Goera pilosa* | Goeridae | Trichoptera | common |
| *Hydropsyche contubernalis* | Hydropsychidae | Trichoptera | common |
| *Mystacides azurea* | Leptoceridae | Trichoptera | common |
| *Mystacides longicornis* | Leptoceridae | Trichoptera | common |
| *Triaenodes bicolor* | Leptoceridae | Trichoptera | common |
| *Glyphotaelius pellucidus* | Limnephilidae | Trichoptera | common |
| *Limnephilus lunatus* | Limnephilidae | Trichoptera | common |
| *Molanna angustata* | Molannidae | Trichoptera | common |
| *Cyrnus trimaculatus* | Polycentropodidae | Trichoptera | common |
| *Neureclipsis bimaculata* | Polycentropodidae | Trichoptera | common |
| *Polycentropus irroratus* | Polycentropodidae | Trichoptera | common |
| *Aceria campestricola* | Eriophyidae | Trombidiformes | common |
| *Eriophyes crataegi* | Eriophyidae | Trombidiformes | common |
| *Eriophyes inangulis* | Eriophyidae | Trombidiformes | common |
| *Eriophyes laevis* | Eriophyidae | Trombidiformes | common |
| *Eriophyes tiliae* | Eriophyidae | Trombidiformes | common |
| *Sphaerium corneum* | Sphaeriidae | Veneroida | common |
| *Valvata piscinalis* | Valvatidae | | common |

# Annex 2

## Status Categories for Rare and Notable Species

**Red Data Book Category 1 (RDB 1) – Endangered**

**Definition.**
Taxa in danger of extinction in Great Britain and whose survival is unlikely if the causal factors continue operating.

Included are those taxa whose numbers have been reduced to a critical level or whose habitats have been so dramatically reduced that they are deemed to be in immediate danger of extinction. Also included are some taxa that are possibly extinct.

**Criteria.**
Species which are known or believed to occur as only a single population within one 10 km square of the National Grid.

Species which only occur in habitats known to be especially 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 10 km squares.

Species which are possibly extinct but have been recorded this century and if rediscovered would need protection.

**Red Data Book Category 2 (RDB 2) – Vulnerable**

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

Included are taxa of which most or all of the populations are decreasing because of overexploitation, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously depleted and whose ultimate security is not yet assured; and taxa with populations that are still abundant but are under threat from serious adverse factors throughout their range.

**Criteria.**
Species declining throughout their range.

Species in vulnerable habitats.

**Red Data Book Category 3 (RDB 3) – Rare**

**Definition.**
Taxa with small populations in Great Britain that are not at present endangered or vulnerable, but are at risk.

These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

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

**Nationally Scarce Category A - Notable A (Na)**

**Definition.**
Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain and are thought to occur in 30 or fewer 10 km squares of the National Grid or, for less well recorded groups, within seven or fewer vice-counties.

**Nationally Scarce Category B - Notable B (Nb)**

**Definition.**
Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 31 and 100 10 km squares of the National Grid or, for less well recorded groups, within eight and twenty vice-counties.

**Nationally Scarce - Notable (N)**

**Definition.**
Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 16 to 100 10 km squares of the National Grid. Species within this category are often too poorly known for their status to be more precisely estimated.

**Summary of the IUCN categories and criteria.**

REGIONALLY EXTINCT (RE)
A taxon is Extinct when there is no reasonable doubt that the last individual has died. In this review the last date for a record is set at fifty years before publication.

CRITICALLY ENDANGERED (CR)
A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered.

ENDANGERED (EN)
A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered.

VULNERABLE (VU)
A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable.

NEAR THREATENED (NT)
A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)
A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT (DD)
A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

NOT EVALUATED (NE)
A taxon is Not Evaluated when it is has not yet been evaluated against the criteria.

**GB Rarity Status categories and criteria**

**Nationally Rare (NR)**
Native species which have not been recorded from more than 15 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 15 hectads. This category includes species which are probably extinct.

**Nationally Scarce (NS)**
Native species which are not regarded as Nationally Rare AND which have not been recorded from more than 100 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 100 hectads.

**Other species status terminology.**

- Local. Species that are restricted in distribution either geographically or by habitat. Also used for species that are widespread but infrequently encountered, e.g. encountered in no more than 300 10km squares of the national Ordnance Survey grid since 1970. Or those species listed as such, based upon modern geographical data, by ISIS (2010) and/or relevant recording schemes.
- Widely Scattered. Generally distributed but at low densities.
- Southern. Mainly or completely confined to southern England and/or its westerly or easterly regions – as indicated.
- Common. Generally widespread throughout the UK.
- Unknown. Usually indicates a lack of available data for difficult taxa but may also imply recent taxonomic confusion.

# Annex 3
## Invertebrate Site Quality Guidance

### SSSI Selection Criteria

The JNCC updated the Guidelines for the Selection of Biological SSSIs Chapter for terrestrial and freshwater invertebrates in 2019.

The old version focussed on selection criteria for sites which supported important populations of well-studies groups, such as butterflies and dragonflies.

The current version recognises the importance of invertebrates in general terms and considers all groups where there is sufficient data available. It also considers the value of assemblages of specialised habitats for invertebrates, habitat heterogeneity/mosaics and habitat associations as much as the individual species and groups.

It also considers how site selection should include representation of international sites features, Nationally threatened species, Nationally Rare/Scarce species, and Species of country conservation priority, i.e.:

- International site features - Species listed on Annex II of the Habitats Directive and Annex 1 of the Habitats Regulations (such as Stag Beetle).
- Nationally threatened species – All sites that support species assessed as IUCN species categories of CR-Critically Endangered, EN-Endangered and VU-Vulnerable should be considered for notification.
- NT-Near Threatened species near to qualifying may be selected.
- NR-Nationally Rare species, those occurring in 1-15 10km squares, should be selected.
- NS- Nationally scarce species, those occurring in 16-100 10km squares, should be selected if locally few, or otherwise included as part of an appropriate habitat-based invertebrate assemblage.
- Species of country conservation priority-Section 41 (England) Priority species.

Ideally, site selection for species and assemblages should be based on stable populations that have been resident for at least three years.

The guidelines go on to explain that the country agencies (e.g. Natural England) are keen to promote invertebrate conservation by selecting habitat-based assemblages as well as single species. The assemblages are based on ecological coherence, either as a macro-habitat scale (e.g. grassland, woodland) or at a micro-habitat scale (e.g. bare ground).

As a consequence, Pantheon, the online analytical tool for assessing invertebrate interest, has been developed (see below and **Section 2**). This is instrumental in identifying and assessing nationally important assemblages, both as the macro and micro-habitat scale.

It is the recommendation in the guidance that consideration of inclusion of sites should be discussed with the country (e.g. Natural England) invertebrate specialist.

## Pantheon – An Overview

Pantheon is an on-line spreadsheet used to analyse invertebrate sample data and assess assemblage data for favourable versus unfavourable condition by SSSI standards. Hence, if an assemblage or suite of assemblages are found to be in favourable condition this would indicate that the site is likely to be of significant importance for invertebrates.

Users import lists of invertebrates (called “samples”) into Pantheon, which then matches the species to the preferred name in the *UK species inventory* (a list of species maintained by the Natural History Museum). Not all macro-invertebrate taxa are included in the database. To date over c13,000 species have been assessed, this being about a quarter of the total macro-invertebrate fauna (estimated at 37,000). It remains limited to those taxa and families where there is enough ecological information to give a fair level of coding accuracy. These include species such as beetles, flies, bugs and hoppers, moths, ants, bees, wasps, spiders and molluscs.

The method for defining species resources was broadly similar to that followed in Natural England Research Report 024 (Webb *et al.*, 2010).

> *‘For each species, a literature search was undertaken. All relevant ecological information was extracted and added to a spreadsheet. This included ‘structural elements of the habitats that the species is generally associated with (e.g. emergent vegetation, seed heads) and/or other environmental factors that it requires, host plant and/or animal species alongside ecological guild of larvae as well as adults where these differed, (e.g. herbivore, carnivore). Only those resources which were considered important to the species in completing its life cycle were included’.*

The assemblage types are labelled in terms that relate to their favoured habitats in order to make them accessible to non-specialists. However, they are actually defined by lists of characteristic species that are generally found together in nature. Three levels are recognised in the classification.

‘Broad Biotopes’ and ‘Habitats’ (which replace the original ‘Broad assemblage types (BATs))’. These are a comprehensive series of assemblage types that are characterised by more widespread species. They can be expressed in lists from a wide range of sites.

Specific assemblage types (SATs) are characterised by ecologically restricted species and are generally only expressed in lists from sites with conservation value.

Since 2008 there has also been a third category of assemblage types that cut across this classification. They are mainly defined by lists of species dependent on a particular environmental resource, such as flowers as a source of pollen and nectar, or carrion and dung. The assemblage type classification is given below.

Textual descriptions of each assemblage type and its habitats have been prepared for incorporation into a web-based database.

## Pantheon Guidance on Scoring Systems

The Pantheon website explains the scoring system behind the database, a principal aim of which is to help assess sample quality for nature conservation purposes.

The scoring systems make use of species richness, threat status, rarity and characteristic species for each broad biotope, habitat and resource. The four current scoring systems are described below.

***1. Count – the number of species within each category.***

***2. Conservation Status – threat and rarity status from published reviews.***

Pantheon explains that:

"The conservation status of species is complicated by the fact that there are two different systems in place – an 'old' system, that combines both threat and rarity, and a 'new' system that separates these. New reviews replace the old conservation status. The conservation status is also used to generate Species Quality Indices (SQI).

Sample quality can simply be derived from the overall number of species with a conservation status, and the number of species within each type of status."

(N.B. Some statuses are reported in square brackets e.g. [RDB3]. This is to indicate that these are considered out of date and should be used with caution).

The 'new' system is a two-pronged approach that separates rarity from threat. Threat is calculated using internationally recognise post-2001 IUCN criteria (see above).

The spiders and micro-moths are marked with a p before the status to indicated these are provisional statuses.

Two groups of flies were assessed using post-1994 IUCN criteria. The abbreviations for these are in brackets.

Rarity is calculated using the Great Britain Rarity Status:

Nationally Rare - Those species which have been recorded from between 1-15 British hectads (10km x 10km squares) within a given date class where there is reasonable confidence that exhaustive recording would not find them in more hectads.

Nationally Scarce - Those species which have been recorded from between 16-100 British hectads within a given date class where there is reasonable confidence that exhaustive recording would not find them in more hectads.

Species can have a status in both the threat and rarity categories above (e.g. *Carabus intricatus* is both Near Threatened and Nationally Rare).

The 'old' system – species having been evaluated using the pre-1994 criteria:

Including RDB 1- Endangered etc Na – Notable A etc

### *3. % representation (Percentage Representation)*

For any given broad biotope, habitat or resource, the % representation is calculated by:

- The number of species in that resource in the sample / the total number of species in that resource in the Pantheon database.

High scores suggest that the sample includes a high proportion of characteristic species, which can be an indicator quality. Scores of 10-20% may indicate good quality.

Caution should be applied where the number of species coded (assigned) to any given category is 10 or less.

### *4. SQI – Species Quality Indices*

Quality indicators have been used elsewhere already (e.g. dead wood invertebrate assemblages). Each species recorded from the sample are given a Species Quality Score (SQS) based on their conservation status (see definitions in **Table A3.1** below). Where there is robust recent information to show that the official status is no longer appropriate, the SQS assigns a rare or scarce status using the most recent information (as referenced in the Source of Rarity column).

The SQI is equal to the sum of all SQSs in any given resource, divided by the number of species. The score is then multiplied by 100 to give a 3 figure value without decimal places.

Any SQI score derived from a small number of species (15 or less) should be treated with caution.

**Table A3.1 Species Quality Scores and Definitions**

| SQS | Definition |
|---|---|
| 0 | Not native. Not all of these are listed as not native in the status review: some are given no score, but the text says that they are thought not to be native. It is not always possible to tell whether a species is native or whether the reviewer thought it is native. |
| 1 | Species that are not rare or scarce. Includes those that are New to Britain. |
| 4 | Scarce species that are not listed as threatened under post-1994 or post-2001 IUCN criteria. Rare species listed as RDB K or RDB I under pre-1994 criteria. Notable species (Na, Nb, and Notable). |
| 8 | Rare species that are not listed as threatened under post-1994 or post-2001 IUCN criteria. Rare or scarce species listed as Vulnerable under post-1994 or post-2001 criteria. Rare species listed as RDB 2 or RDB 3 under pre-1994 criteria. |
| 16 | Rare or scarce species listed as Endangered under post-1994 or post-2001 criteria. Rare species listed as RDB 1 under pre-1994 criteria. |
| 32 | Rare or scarce species listed as Critically Endangered, Critically Endangered (Possibly Extinct), Regionally Extinct, Extinct, or Extinct in the Wild under post-1994 or post-2001 criteria. |

Further information on Pantheon is available here: http://www.brc.ac.uk/pantheon/about/pantheon

## Annex 4

White-clawed Crayfish eDNA Results

SureScreen Scientifics

Folio No: E18939
Report No: 1
Purchase Order: 2342
Client: ECOLOGICAL PLANNING AND RESEARCH LTD
Contact: *** INFO (ALWAYS SEND HERE TOO PLEASE) ***

# TECHNICAL REPORT

## ANALYSIS OF ENVIRONMENTAL DNA SAMPLES FOR THE DETECTION OF CRAYFISH SPECIES AND CRAYFISH PLAGUE

### SUMMARY

All organisms continuously release small amounts of environmental DNA (eDNA) into their habitat. By collecting and analysing this eDNA from water samples from lakes, ponds or rivers we can detect the presence or absence of crayfish species including: the white-clawed crayfish (Austropotamobius pallipes), signal crayfish (*Pacifastacus leniusculus*), the marbled crayfish (*Procambarus virginalis*) and the crayfish plague (*Aphanomyces astaci*).

### RESULTS

**Date sample received at Laboratory:** 20/07/2023
**Date Reported:** 01/08/2023
**Matters Affecting Results:** None

| Lab Sample ID. | Site Name | O/S Reference | Species | Result | SIC | DC | IC | Positive Replicates |
|---|---|---|---|---|---|---|---|---|
| FK1319 | Loddon Garden Village Sample C | SU 743 677 | *White-Clawed Crayfish* | Negative | Pass | Pass | Pass | 0 |
| FK1320 | Loddon Garden Village Sample E | SU 766 682 | *White-Clawed Crayfish* | Negative | Pass | Pass | Pass | 0 |
| FK1321 | Loddon Garden Village Sample A | SU 758 695 | *White-Clawed Crayfish* | Negative | Pass | Pass | Pass | 0 |
| FK1322 | Loddon | SU 759 693 | *White-Clawed* | Negative | Pass | Pass | Pass | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Garden Village Sample D | | *Crayfish* | | | | | |
| FK1323 | Loddon Garden Village Sample B | SU 753 688 | *White-Clawed Crayfish* | Negative | Pass | Pass | Pass | 0 |

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

**Reported by:** Lauryn Jewkes **Approved by:** Jennifer Higginbottom

## METHODOLOGY

The analysis is conducted in two phases. The sample first goes through an extraction process where the filter is incubated in order to obtain any DNA within the sample. The extracted sample is then tested via real time PCR (also called q-PCR) for each of the selected target species. This process uses species-specific molecular markers (known as primers) to amplify a select part of the DNA, allowing it to be detected and measured in 'real time' as the analytical process develops. qPCR combines amplification and detection of target DNA into a single step. With qPCR, fluorescent dyes specific to the target sequence are used to label targeted PCR products during thermal cycling. The accumulation of fluorescent signals during this reaction is measured for fast and objective data analysis. The primers used in this process are specific to a part of mitochondrial DNA only found in each individual species. Separate primers are used for each of the species: white-clawed crayfish, signal crayfish and crayfish plague, ensuring no DNA from any other species present in the water is amplified.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security. These methods have been extensively tested since 2015 in a number of different environments, habitats, conditions and ecological situations in order to successfully enable the full application of eDNA for the detection of crayfish species and the crayfish plague.

## RESULTS INTERPRETATION

**SIC:** **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

**DC:** **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample, between the date it was made to the date of analysis. Degradation of the spiked DNA marker may indicate a risk of false negative results.

**IC:** **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

**Result:** **Presence of eDNA** [Positive/Negative/Inconclusive]

**Positive:** DNA was identified within the sample, indicative of species presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
**Positive Replicates:** Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for species presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative species presence.
**Negative:** eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of species absence, however, does not exclude the potential for species presence below the limit of detection.
**Inconclusive:** Controls indicate inhibition or degradation of the sample, resulting in the inability to provide conclusive evidence for species presence or absence.

# Annex 5

## Barkham Brook White-clawed Crayfish Habitat Suitability Sample Locations

**East 1 - SU7660 6815**

*Upstream*

*Downstream*

**East 2 - SU7663 6821**

*Upstream*

*Downstream*

**East 3 - SU7664 6835**

*Upstream*

*Downstream*

**Middle 4 - SU7658 6843**

*Upstream*

*Downstream*

**Middle 5 - SU7643 6867**

*Upstream*

*Downstream*

**Middle 6 - SU7643 6867**

*Upstream*

*Downstream*

**North 7 - SU7606 6915**

*Upstream*

*Downstream*

**North 8 - SU7596 6925**

*Upstream*

*Downstream*

**North 9 - SU7606 6915**

*Upstream*

*Downstream*