Saproxylic beetle survey for Cobham Woods, Shorne Woods Country Park, Ashenbank Woods, and Ranscombe Farm, Kent.

Dorcus parallelipipedus – Lesser Stag Beetle, Cobham Woods.

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1. EXECUTIVE SUMMARY

- A saproxylic invertebrate survey, focused on saproxylic beetles (species associated with dead and decaying wood, etc.), was carried out in 2024 at four woodlands in Kent (Cobham Woods, Shorne Woods, Ashenbank Woods, and Ranscombe Farm) in respect of a proposed National Nature Reserve.
- Field work was conducted over eight visits to each woodland between April and October using a variety of sampling methods, including four Flight Interception Traps (FITs) in both Ranscombe Farm and Shorne Woods. In Cobham Woods and Ashenbank Woods, five FITs were used.
- This survey identified 340 invertebrates comprising of 268 beetles, of which 155 were saproxylic.
- From the list of beetles identified, highlights are *Ischnodes sanguinicollis, Triplax lacordairii* and *Hypulus quercinus*.
- In total, 55 of the saproxylic beetles have a conservation status including European Threatened species.
- The Species Quality Index (SQI) for the entire survey area based on data gathered in this report, and utilising existing species data, is 488, based on 208 species. This places the proposed National Nature Reserve at 43rd by this metric.
- The Index of Ecological Continuity (IEC) for the entire survey area based on data gathered in this report, and utilising existing species data, is 93. This places the proposed National Nature Reserve at 15th, and the best site in Kent for saproxylic beetles.
- Considering the SQI and IEC, it is unquestionable that the survey area combined is at least nationally important for saproxylic invertebrates, especially saproxylic beetles. It could be regarded as a site of international importance for saproxylic beetles.
- Recommendations include considerations towards veteran and ancient tree management, deadwood feature creation, planting of flowering shrubs, and the implementation of a dedicated saproxylic management plan.

2. INTRODUCTION

2.1. Terms of Instruction

2.1.1. Flauna Ecology has been commission by White Horse Ecology (the Ecological Consultant) on behalf of Kent County Council (KCC) ('the Client'), to undertake an assessment of the saproxylic (*see paragraph 2.1.3*) invertebrates, chiefly Coleoptera (beetles), at four woodlands near Gravesend, Kent.

2.1.2. The work was commissioned to inform a larger ecological report relating to a National Nature Reserve (NNR) declaration.

2.1.3. 'Saproxylic invertebrates', often referred to as 'deadwood invertebrates', are organisms that rely on dead or decaying wood, or on organisms that themselves depend on such wood. While they may not require wood for their entire life cycle, at least one stage of their development is wood-dependent.

2.2. Aim of the Assessment

2.2.1. The key aims of this assessment was to:

- Carry out a desk study for records of saproxylic invertebrates within the survey area
- Perform a saproxylic invertebrate survey, focussing on Coleoptera, utilising a variety of sampling methods, including Flight Interception Traps (FITs), across the four woodlands within the survey area
- Use the results of the desk study and the field visits to complete an assessment of the survey area, using the metrics, the Index of Ecological Continuity (IEC), and the Saproxylic Quality Index (SQI).
- Highlight any protected and / or notable species and give details on there ecological and conservation status

2.3. Survey Area

2.3.1. The survey area sits within the Kent Downs Area of Outstanding Natural Beauty (Kent Downs AONB). From the initial area of woodlands provided to select which ones to survey, four were chosen. The four woodlands were:

- Shorne Woods Country Park
- Ashenbank Woods
- Ranscombe Farm
- Cobham Woods

2.3.2. The four woodlands sit between Rochester (to the east) and Gravesend (to the west), Kent. Shorne Wood Country Park is in the north of the complex of woodlands, Ashenbank to the west, Cobham Woods to the south, and Ranscombe to the east. Within the complex of woodlands, but not included within the survey area is Rochester and Cobham Golf course. Dissecting Shorne Woods Country Park from the other sites is the M2. The wider landscape

consists of arable fields criss-crossed with hedgerows, and to the south extensive areas of woodland.

2.3.3. These woodlands were selected due to their proximity to each other, the veteran and ancient tree assemblage, which is important for saproxylic invertebrates, and availability of historic data enabling a more robust analysis.

2.3.4. All four of the woodlands selected are designated as Sites of Special Scientific Interest (SSSIs); The Cobham Woods SSSI (which includes part of Ranscombe Farm); and the Shorne Woods and Ashenbank Woods SSSI.

Shorne Woods Country Park

2.3.5. The site is centred approximately at Ordinance Survey National Grid reference (OSGR) TQ 68059 70248 and covers 119ha. Three woodlands make up the larger Shorne Woods Country Park, Shorne Woods (70ha), Randall Woods (32ha) and Brewers Woods (17ha). Randall and Brewers Woods are mainly Sweet Chestnut coppice. Historically the country park was part of the grounds to the Cobham Hall Estate. Prior to the 1920s, the whole of the park was ancient semi-natural woodland. Between the 1920s and 1970s, clay extraction was carried out, clearing some areas. Some of these clay pits are being allowed to regenerate naturally and consist of Birch *Betula pendula* with other species now growing through, such as oaks *Quercus sp.*, Sweet Chestnut *Castanea sativa*, and Hornbeam *Carpinus betulus*. In the south-east and north-east are areas of broad-leaved woodland with coppice including species such as oak, Sweet Chestnut, Hornbeam, Ash *Fraxinus excelsior*, Beech *Fagus sylvatica*, Hawthorn *Crataegus monogyna*, and Sycamore *Acer pseudoplatanus*.

2.3.6. An area in the north-west of the park, known as Randall Heath or The Knoll, is lowland woodland and heathland, both local biodiversity habitats in Kent. Tree species include open grown oaks and Sweet Chestnuts.

2.3.7. Within the country park over 200 veteran or ancient trees have been recorded. The associated wide range of deadwood invertebrates utilising these habitats are one of the reasons for the park's designation as a SSSI.

Ashenbank Woods

2.3.8. The site is centred approximately at (OSGR) TQ 67516 69348 and covers 30ha. This Ancient Semi Natural Woodland (ASNW) contains a significant area of former wood pasture and historically would have been part of the wider Cobham Hall Estate. The ASNW component at Ashenbank covers approximately 40% of the Site and comprises of oak, Ash, Hornbeam, and Sweet Chestnut. In the former wood pasture areas, which cover the remaining 60% of Ashenbank, comprise of Birch, oak, and Sycamore alongside veteran Sweet Chestnut trees which were established in the late 18th century.

2.3.9. Approximately 7ha of the historic parkland within the woodland is maintained as a series of open glades, managed through cattle grazing and a manual cutting program.

2.3.10. There has been more than 100 veteran or ancient trees recorded within Ashenbank comprising of oaks, Sweet Chestnuts, Ash, Hornbeam, Sycamore and Wild Cherry *Prunus avium*.

2.3.11. Due to the richness and mixture of habitats present, along with the specialist saproxylic species that have been recorded, Ashenbank Woods was designated along with Shorne Woods to form the Shorne and Ashenbank Woods SSSI.

Ranscombe Farm

2.3.12. The site is centred approximately at (OSGR) TQ 70706 67835 and covers 250ha. The reserve contains areas of chalk grassland, arable fields, and woodland, and is better known for its flowers such as Meadow Clary *Salvia pratensis*, Marsh Mallow *Althaea officinalis*, Broad-leaved Cudweed *Filago pyramidata*, Lady Orchid *Orchis purpurea*, Ground Pine *Ajuga chamaepitys*, Venus's Looking Glass *Legousia speculum-veneris*, and Corncockle *Agrostemma githago*.

2.3.13. A large part of Ranscombe sits within the Cobham Woods SSSI, designated because of the mixture of habitats present and its wild-flower composition.

Cobham Woods

2.3.14. The site is centred approximately at (OSGR) TQ 69198 68518 242ha and historically would have formed part of the Cobham Hall Estate. The woodland and parkland are representative of acidic Thanet Sands and chalk soils with an outstanding assemblage of plants present. The woodland itself is largely Sweet Chestnut coppice with some coniferous plantations, while the parkland is now mature woodland of oak, Sweet Chestnut, Beech, Hornbeam, amongst other species.

2.3.15. Work has been done, and is carrying on into the future, to restore an area of wood pasture using Highland Cattle to combat the Bracken *Pteridium aquilinum* and bramble *Rubus sp.* encroachment.

2.3.16. There is a large collection of veteran and ancient trees within the parkland comprising of oaks, Field Maple *Acer campestris*, Ash, and Hornbeam. The wood pasture and parkland are also important habitats for mosses, lichens, fungi, and invertebrates. For these reasons the parkland and woodland have been designated a SSSI.

3. METHODS

3.1. Desk Study

3.1.1. Data was gathered from several sources, firstly by checking the Saproxylic Quality Index website (Fowles, 2024). This website is a database of SQIs and IECs for many wooded sites in the UK and ranks them according to several metrics. The website has been updated with the recent review of the SQI and IEC by Alexander (2024).

3.1.2. The Kent and Medway Biological Record Centre was contacted by White Horse Ecology who provide the species data for within 2km of the Site. This data was filtered to only show beetles recorded from within the four study woodlands.

3.1.3. Additional survey data for Shorne Woods was provided by Chris Bentley (*pers. comm.*) who has been completing invertebrate surveys for other invertebrate groups which has included the use of Flight Interception Traps outside and around deadwood features.

3.2. Fieldwork and Identification

Surveyor

3.2.1. Fieldwork was carried out by Wil J. Heeney, an ecologist with over ten years of experience working with invertebrates. Since 2016 he has managed the National Longhorn Beetle Recording Scheme and sits on the committee of the Coleopterists Society of Britain and Ireland as the Conservation Officer. Wil has carried out contracts for the commercial, charitable, and conservation sector specialising in Coleoptera, although he is familiar with a wide range of taxonomic groups.

Site Visits

3.2.2. Fieldwork was undertaken between April and October 2024, eight visits per site which included a scoping visit (*table 3.1*).

Table 3.1. A summary of the Site visits to the four woodlands.

Date	Site	Weather	Activities
16/04/24	Cobham Woods	13°C, Beaufort 2	Scoping
18/04/24	Cobham Woods	14°C, Beaufort 2	Setting Traps
12/05/24	Cobham Woods	27°C, Beaufort 2	Servicing Traps / Sampling
08/06/24	Cobham Woods	19°C, Beaufort 1	Servicing Traps
14/07/24	Cobham Woods	22°C, Beaufort 1	Servicing Traps / Sampling
23/08/24	Cobham Woods	22°C, Beaufort 2	Servicing Traps
26/09/24	Cobham Woods	18°C, Beaufort 3	Servicing Traps/ Sampling
30/10/24	Cobham Woods	15°C, Beaufort 2	Removal of Traps
15/04/24	Shorne Woods	12°C, Beaufort 2	Scoping
18/04/24	Shorne Woods	14°C, Beaufort 2	Setting Traps
11/05/24	Shorne Woods	24°C, Beaufort 2	Servicing Traps / Sampling
08/06/24	Shorne Woods	19°C, Beaufort 1	Servicing Traps
11/07/24	Shorne Woods	23°C, Beaufort 2	Servicing Traps / Sampling
23/08/24	Shorne Woods	22°C, Beaufort 2	Servicing Traps
26/09/24	Shorne Woods	18°C, Beaufort 3	Servicing Traps/ Sampling
30/10/24	Shorne Woods	15°C, Beaufort 2	Removal of Traps
15/04/24	Ashenbank Woods	12 °, Beaufort 2	Scoping
18/04/24	Ashenbank Woods	14 °, Beaufort 2	Setting Traps
30/04/24	Ashenbank Woods	18°C, Beaufort 1	Servicing Traps / Sampling
08/06/24	Ashenbank Woods	19°C, Beaufort 1	Servicing Traps
10/07/24	Ashenbank Woods	21°C, Beaufort 2	Servicing Traps / Sampling
23/08/24	Ashenbank Woods	22°C, Beaufort 2	Servicing Traps
26/09/24	Ashenbank Woods	18°C, Beaufort 3	Servicing Traps / Sampling
30/10/24	Ashenbank Woods	15°C, Beaufort 2	Removal of Traps
16/04/24	Ranscombe Farm	13 °, Beaufort 2	Scoping
18/04/24	Ranscombe Farm	14 °, Beaufort 2	Setting Traps
08/05/24	Ranscombe Farm	22°C, Beaufort 1	Servicing Traps / Sampling
08/06/24	Ranscombe Farm	19°C, Beaufort 1	Servicing Traps
19/07/24	Ranscombe Farm	29°C, Beaufort 1	Servicing Traps / Sampling
23/08/24	Ranscombe Farm	22°C, Beaufort 2	Servicing Traps
26/09/24	Ranscombe Farm	18°C, Beaufort 3	Servicing Traps / Sampling
30/10/24	Ranscombe Farm	15°C, Beaufort 2	Removal of Traps

Survey Methods

3.2.3. A variety of standard field survey techniques laid out by Drake *et al.* (2007) were utilised, and included the following:

- **Sweep Netting**. A sturdy net is used to dislodge resting invertebrates by sweeping it vigorously through vegetation.
- **Beating**. A cloth tray suspended by a folding frame, or an upturned umbrella, is held underneath the branches of shrubs and trees before the vegetation is tapped, dislodging any invertebrates onto the tray.
- **Spot Sampling.** Flowers are targeted for flying invertebrates with a butterfly net.
- **Sieving.** Material is sieved, such as heart rot, through various gauges of wire mesh to separate out the invertebrates from the debris.

- **Hand Searching / Direct Observation.** Searching under flaking bark, logs, stones, around the suitable floristic interests etc.

3.2.4. Flight Interception Traps (FITs), sometimes called Vane Traps, can be made to several different designs. Due to the volume of traps needed to cover four woodlands over eight months, a lightweight easy to construct and install trap was utilised.

3.2.5. This trap uses four 2l plastic drinks bottles fixed together with the caps facing down. The exposed faces of the drink bottles are cut away creating the collecting chamber. Fixed to the top of the bottles is a square section of corrugate plastic which act as a roof, and to the bottom another square of corrugated plastic which helps stabilise the trap. Collection fluid, a mixture of 50/50 propylene glycol and water with a drop or two of washing detergent to break the water surface, is added to the upside-down bottles before being suspended in a tree hollow or outside other deadwood feature (see **Appendix 3**).

3.2.6. Servicing the traps requires draining the bottles through the caps, replacing the caps and replenishing the collecting fluid.

3.2.7. To compliment the four-bottle design given above, two large FITs were used, one in Cobham Woods and one in Ashenbank Woods. Each trap consists of two corrugate plastic vanes, slotted together so they are perpendicular to each other, suspended over a container with collection fluid in (see **Appendix 3**).

3.2.8. In each woodland, four FITs were installed and GPS logged, along with two larger FITs (*table 3.2*).

Table 3.2. A summary of the trap locations and brief description of deadwood feature.

Site Name	FIT Name	Grid Reference	Trap Description
Cobham Woods	Cob1	TQ 68720 68239	Within large standing oak hollow
Cobham Woods	Cob2	TQ 68852 68490	Within large standing oak hollow
Cobham Woods	Cob3	TQ 68999 68567	Hanging outside large oak
Cobham Woods	Cob 4	TQ 69079 68520	Within fallen oak branch
Cobham Woods	Cob Big	TQ 68860 68489	At base of large, snapped oak
Shorne Woods CP	Shorne 1	TQ 67820 69501	Base of oak, large deadwood feature
Shorne Woods CP	Shorne 2	TQ 67599 70064	Outside deadwood feature in oak
Shorne Woods CP	Shorne 3	TQ 67588 70076	Within fallen oak
Shorne Woods CP	Shorne 4	TQ 67605 70159	Within hollow in oak
Ashenbank Woods	Ash 1	TQ 67698 69297	In fallen branches, various species
Ashenbank Woods	Ash 2	TQ 67763 69451	Outside snapped limb, oak
Ashenbank Woods	Ash 3	TQ 67768 69447	Outside snapped limb, oak
Ashenbank Woods	Ash 4	TQ 67826 69494	Base of snapped Ash
Ashenbank Woods	Ash Big	TQ 67820 69501	Within large hollow Ash
Ranscombe Farm	Rans 1	TQ 70220 67466	In Hazel deadwood
Ranscombe Farm	Rans 2	TQ 69933 67697	Base of Ash at hollow
Ranscombe Farm	Rans 3	TQ 69953 67684	Root plate fallen Ash
Ranscombe Farm	Rans 4	TQ 70128 67737	In fallen Sycamore trunk split

Taxonomic Coverage

3.2.9. This survey focussed on targeting saproxylic Coleoptera. All adult beetles were identified to species level by the author, apart from a few species-pairs where accurate identification is problematic (e.g. *Melanotus*), and smaller more cryptic species which were identified by Mark Telfer, a leading Coleopterist with over 25 years' experience within invertebrate consultancy.

3.2.10. Invertebrates from several other taxonomic groups were collected and identified, chiefly the 'by-catch' (non-beetle) from the FITs, as well as other potential saproxylic species. Coleoptera was identified by the author, whereas the Hymenoptera and Diptera were identified by Steven Falk.

Identification

3.2.11. Where practical, all invertebrates were identified in the field and released without harm. However, if there was a slight doubt as to the identification of the organism, one or more specimens were taken for detailed microscopic analysis. Some specimens have been retained in the authors person collection as vouchers. Photographs of some of these voucher specimens have been included in Section 4.3of this report (**Key Species Accounts**).

3.3. Analysis

Key Species and Conservation Status Categories for Invertebrates

3.3.1. In this analysis, only species that have been assigned an official rare or scarce conservation status have been used and are defined in this report as 'Key Species'.

3.3.2. Since the British Data Book for Insects by Shirt (1987), a system of conservation statues has been in use. It was amended by a series of Joint Nature Conservation Committee (JNCC) Nature Conservation Reviews. In this system, the most threatened British species are given one of the Red Data Book (RDB) statuses. Any species which do not qualify for a RDB status, but are still uncommon, are given one the National Scarce statuses.

3.3.3. Gradually replacing Shirt (1987) and the subsequent amendments by the JNCC, are conservation statuses based on the Internation Union for Conservation of Nature (IUCN) (IUCN, 2001). In this system, more emphasis is placed on factors which suggest a risk of extinction (e.g. severe declines in range or population), and less on rarity.

3.3.4. Operating in parallel with the IUCN categories described in *Section 3.3.3*., and what is a simplified version of Shirt (1987) and the JNCC amendments, is a third version of British conservation statuses. Here only two categories exist, Nationally Rare or Nationally Scarce.

3.3.5. The definition of the conservation status categories are given in more detail in **Appendix 1.**

3.3.6. There are many examples of invertebrates that have been designated a conservation status but have subsequently been found to be either more widespread and / or common. This is due to an improved understanding of how to find or identify them, or due to an actual

increase in population or range. If a conservation status is deemed to be out of date by the author, this is stated in the Key Species accounts.

Saproxylic Quality Index (SQI)

3.3.7. The Saproxylic Quality Index (Fowles *et al.,* 1999) was designed to aid the evaluation of the conservation significance of wooded habitats, in Great Britain for saproxylic Coleoptera, using a scoring system. The index uses a standard list of 605 saproxylic species (Fowles *et al.,* 1999, Alexander, 2024) which have had rarity scores assigned to them based on the known distribution. The sum of these rarity scores gives the Species Quality Score (SQS) for a site. Dividing the SQS by the number of contribution species provides the Species Quality Index (SQI). The SQI is a method for reducing observer bias or effort but is dependent on the surveyor to record all saproxylic species and not just the rarer ones. The threshold of 40 qualifying species is required before the SQI can be calculated which minimises any impact of recording a rare species in a small sample.

Index of Ecological Continuity

3.3.8. Like the SQI, the Index of Ecological Continuity (IEC) grades sites according to their conservation significance. However, the IEC assigns scores to species according to if they have been consistently recorded from areas where these is a continuity of deadwood habitat from ancient times to present, especially wood-pasture. The IEC was reviewed by Alexander (2024). Under the revised list, 180 saproxylic beetles are divided into three categories:

- Grade 1 – species which are known to have occurred in recent times only in areas believed to be ancient woodland, chiefly wood-pasture. **Score 3**
- Grade 2 – Species which occur mainly in areas believed to be ancient woodland with abundant dead-wood habitats, but which also appear to have been recorded from area that may not be ancient woodland or for which the locality data are imprecise. **Score 2**
- Grade 3 – Species which occur widely in wooded areas, but which are collectively characteristic of ancient woodland with dead-wood habitats. **Score 1**

3.4. Constraints

3.4.1. Generally, the survey ran without issue, with none of the traps failing or being vandalised. The only constraint is the specimens generated from the survey work. Although every effort has been made to work through the entire sample of specimens from the FIT's, due to budget and time constraints, there are several tubes representing FIT's from across the survey area which have not been completely identified. These are species smaller than 2mm from the more cryptic and difficult groups to identify, such as Staphylinidae. It is anticipated that while there could be saproxylic species that are new to the Site, they wouldn't affect the results significantly due to the high saproxylic species list already generated by the author on this survey. All the larger invertebrates from these traps were identified.

4. RESULTS

4.1. Desk Study Results

Online Saproxylic Data Base

4.1.1. From the online saproxylic database (Fowler, 2024), four entries were identified, chiefly for 'Ashenbank Woods', and 'Cobham Woods / Park'. Table 4.1 summarises the details for each entry.

Table 4.1. A summary of the previous surveys identified on the online saproxylic database (Fowler, 2024).

Surveyor / Date	Location	Scoring Spp.	SQI	IEC	Rank by IEC
Kirby / 1988	Cobham Park	88	376.1	29	c.105th
Kirby / 1998	Cobham & Ashenbank Wood	105	369.5	33	c.96th
Kirby / 1998	Ashenbank Woods	57	310.5	12	c.181st
Anon / 2014	Cobham Woods	70	368.6	30	c.103rd

Shorne Woods Country Park

4.1.2. A total of thirty-five saproxylic species were recorded from Shorne Woods by Bentley in 2024 while carrying out invertebrate surveying for the same wider project (*per. comm*.), which includes four Key Species; *Corticeus unicolor, Euglenes oculatus*, *Aulonthroscus brevicollis* and *Hypulus quercinus* (*table 4.2*).

Table 4.2. Saproxylic species recorded by Bentley during 2024 at Shorne Woods Country Park. Key Species are indicated in Red.

Species	Status	SQI Score	IEC Score
Ampedus balteatus		2	0
Anaspis fasciata		1	0
Anobium punctatum		1	0
Aulonothroscus brevicollis	Red Data Book 3 (RDB3)	24	1
Biphyllus lunatus		4	1
Clytus arietis		1	0
Corticeus unicolor	Nationally Scarce (NS)	8	0
Dacne bipustulata		2	0
Denticollis linearis		1	0
Dorcatoma chrysomelina		4	1
Dorcus parallelipipedus		2	0
Euglenes oculatus	Nationally Scarce (NS)	8	2
Gabrius splendidulus		1	0
Hypulus quercinus	Nationally Rare (NR)	24	3
Magdalis cerasi		4	0
Malachius bipustulatus		1	0
Malthinus flaveolus		1	0

Malthinus seriepunctatus		2	0
Malthodes marginatus		1	0
Melanotus villosus		1	0
Nemadus colonoides		2	0
Ochina ptinoides		2	0
Phymatodes testaceus		4	0
Pogonocherus hispidulus		2	0
Pogonocherus hispidus		2	0
Pteleobius vittatus		2	0
Pyrochroa coccinea		4	0
Pyrrhidium sanguineum		4	0
Rutpela maculata		1	0
Stenagostus rhombeus		4	1
Stenocorus meridianus		2	1
Tetrops praeustus		2	0
Thanasimus formicarius		4	1
Trypodendron domesticum		2	1

4.2. Overall Results

4.2.1. This survey identified a total of 341 invertebrates comprising of beetles, flies, spiders, bugs, moths, and bees. From this list of species, 69 are Key Species (species with a conservation designation).

4.2.2. From the 341 invertebrates recorded, 269 were beetles, of which 155 were saproxylic representing 67 families. From this 155 saproxylic species, 53 are Key Species.

4.2.3. For a full species list, please see **Appendix 2**.

4.3. Key Species Accounts

4.3.1. For each Key Species identified from fieldwork this year, a short account describing the distribution and ecology of that species in Britain, if known, and details of where and how it was found in the current survey, is provided. Saproxylic beetle Key Species are highlighted in **red**.

***Ischnodes sanguinicollis* (Coleoptera: Elateridae) a click beetle, Vulnerable (VU).**

4.3.2. The larvae of this species develop within wood mould in large tree hollows which are in close contact to the soil. Tree species include Ash, elm, Beech, and occasionally oak (Hymen and Parsons, 1992). Generally found in ancient broadleaved woodlands and pasture woodlands. Details on the larval feeding habits are largely unknown although it is suggested they are predatory (Nemeth and Merkl, 2009). Records are from the south of England north to Worcestershire and Derbyshire. A single adult was collected from FIT No.5 in Cobham Woods during the visit in June.

Figure 4.1. Ischnodes sanguinicollis

***Hypulus quercinus* (Coleoptera: Melandryidae) a beetle, Nationally Rare (NR), Near Threatened (NT).**

4.3.3. A very local insect occurring in Wales and sporadically in the south of England, although sometimes common where it does occur. Established woodland with lots of large oaks in various stages of decay are the general habitats this species is found in. Adults are crepuscular and nocturnal where they can be observed on old dry trunks especially oak between April and May. In Shorne Woods Country Park, two adults were collected from FIT No. 4, two on each visit, in June, July, and August.

***Axinotarsus pulicarius* (Coleoptera: Melyridae) a beetle, Nationally Rare (NR), Vulnerable (VU).**

4.3.4. Adults are found on flowering grasses; larvae feed in the stems. Vary rarely recorded away from the coast, it is unusual to pick this species up further inland. Within Shorne Woods, two individuals were collected, one by sweeping, and one within FIT no. 3, both in July.

***Pentaphyllus testaceus* (Coleoptera: Tenebrionidae) a beetle, Nationally Rare (NR), Vulnerable (VU).**

4.3.5. This species develops in large volumes of red-rotten wood which retains some moisture with abundant sheets of Chicken of the Woods *Laetiporus sulphureus* mycelia along the fracture lines, in freshly exposed heartwood of recently fallen oak trees or major boughs, and appear to require a stable environment (Alexander, 2014). It is stated by Koch (1989) that they feed on fungal spores and hyphae. A single individual was collected from FIT no. 3 within Shorne Woods in July.

***Lissodema cursor* (Coleoptera: Salpingidae) a beetle, Nationally Rare (NR), Least Concern (LC).**

4.3.6. A widespread but very local and sporadic species found in open deciduous woodland and parkland across south-eastern and central England north to Nottingham. Adults occur under bark on dry and decaying trunks and branches, most frequently associated with Ash, but also a variety of other deciduous trees, where the larvae are predatory on other deadwood beetle larvae, such as *Dryocoetes alni*. A single individual was collected from both Ashenbank Woods and Cobham Woods, in July and May, respectively, by beating dead branches.

***Euglenes oculatus* (Coleoptera: Aderidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.7. This species is associated with a range of deciduous trees, but most records are from ancient decaying oaks. The larvae develop among damp and fragmented heartwood. Adults are nocturnal but also visit blossom, such as hawthorn. In total, four individuals were collected; from Shorne Woods a single individual from FIT no. 1 and two individuals from FIT 3, both in July; from Ashenbank Woods a single individual from FIT no. 2 in July.

***Agrilus angustulus* (Coleoptera: Buprestidae) a jewel beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.8. A small green beetle that is widespread but scarce in central and southern England. The larvae bore into the dying branches of oak, especially those that are still attached. Adults are generally active during hot and sunny weather. A single individual was collected in FIT no. 4 within Cobham Woods in May. In Shorne Woods, two individuals were knocked from an oak in July, along with a single individual was from FIT no. 3.

***Rhagonycha lutea* (Coleoptera: Cantharidae) a soldier beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.9. This species is predatory within woodlands, woodland edges and scrub, but restricted to open, well-structured examples of this habitats. In Britain, this species is scarce with records scattered across England and Wales into south-west Scotland, but with most records concentrated into central and south-eastern England. A single individual was collected from FIT no. 2 within Ashenbank Woods in July.

***Brachinus crepitans* (Coleoptera: Carabidae) The Bombardier Beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.10. A locally common species across South Wales and southern and central England, absent from the West Country and most of East Anglia. Recently there has been a decline in modern records at many sites where it was once recorded more commonly. Bombardier beetles are best known for the chemical defence mechanism whereby they spray a hot corrosive liquid which is extremely irritating to the respiratory and visual systems of other insects. A single adult was seen on the central track through Ranscombe Farm in May.

***Ophonus azureus* (Coleoptera: Carabidae) a ground beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.11. This ground beetle is a habitat-specialist of relatively small, relatively isolated, early successional, and often ephemeral, habitat patches (Telfer, 2016). Generally, this is a scarce insect across England north to the Wash with scattered coastal records from the West Country, Wales, and further north to Cumbria. A single individual was taken at Ranscombe Farm in May from the central track.

***Stictoleptura scutellata* (Coleoptera: Cerambycidae) a longhorn beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.12. Adults are active generally between June and July and are attracted to flowers, such as umbellifers. Hosts include a range of deciduous trees where the larvae take two or three years to develop in the dry xylem. In the UK records are mostly from around London with scattered records over an area south of a line between Norwich to the New Forest. A single elytron was found in Shorne Woods while searching through standing Hornbeam deadwood during the visit in May.

***Cryptocephalus parvulus* (Coleoptera: Chrysomelidae) a leaf beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.13. The habitat of this species is scrubby calcareous woodland, chalk pits, commons and broadleaved woodland where the adults feed on the leaves of birch and other trees. Larvae also feed on birch leaves but prefer those that are brown and mouldy (Hubble, 2014). A single individual was swept from young birch growth within Shorne Woods in July.

***Opilo mollis* (Coleoptera: Cleridae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.14. A very attractive beetle most frequent in the southeast of England, and barely recorded from the West Country and East Anglia, or further north. Typically found in older coniferous plantations and deciduous woodlands with trees in various stages of decay. Both adults and larvae have been recorded from a wide range of trees, but are often associated with Beech, oak, or pine. Adults are active between April and July and are mostly nocturnal hunting insects on the surface of old dry wood. The larvae are predatory on other saproxylic beetles. A single adult was collected from FIT No. 2 in Shorne Woods during the visit in June. Two other adults were collected, one each from both FIT No. 1 and FIT No. 2 during June and July, respectively, from Cobham Woods.

***Tillus elongatus* (Coleoptera: Cleridae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.15. The adult and larvae both feed on other saproxylic species, especially the larvae of *Ptilinus pectinicornis* and *Anobium punctatum*. Adults are active between May and July, sometimes as late as August, and come in two different colour morphs, either with a red or black pronotum. This species is distributed widely across central and southern England. Individuals were collected from FIT's within Ranscombe Farm, Ashenbank Woods, and Cobham Woods in July and August.

***Megatoma undata* (Coleoptera: Dermestidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.16. Absent from the West Country and most of Wales, this species is recorded from the south of England and the midlands, extending north to South Yorkshire. Typically found in established woodland, parkland, and wooded boarders on heaths where adults occur under loose dry bark on decaying deciduous trees and stumps, and among detritus in avian nests in the wild or within nest boxes. The larvae emerge from eggs laid in subcortical burrows or in the nest of solitary bees and other hymenopterans where they feed on the remains of the insects, such as larval skins and faecal pellets. Adults appear to feed exclusively on pollen. A single adult was collected from FIT No. 5 in Cobham Woods during the visit in June.

***Aeletes atomarius* (Coleoptera: Histeridae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.17. This tiny beetle resembles a large mite and is found under bark or within rotten trunks, usually of Beech though records exist from other tree species such as Ash, elms, oaks, Hornbeam, and poplars (Lane, 2017). Often it has been found within the tunnels of the Lesser Stag Beetle *Dorcus parallelepipedus* and Rhinoceros Beetle *Sinodendron cylindricum* (both Lucanidae) although this association my be coincidence (Hymen and Parsons, 1992; Alexander, 2002). Recorded from Yorkshire, Kent (Alexander, 2002), Surrey (Denton, 2005), and Cambridgeshire (Damant and Kirby, 2005). There were two individuals in the large FIT within Cobham Woods in August.

***Lymexylon navale* (Coleoptera: Lymexylidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.18. This distinctive beetle is confined to ancient, wooded areas where the larvae bore into the heartwood of living and dead standing oaks, and occasionally Sweet Chestnut. They will also inhabit fallen or felled trunks, and stumps, where the bark has been damaged and has dried out the underlying sapwood. Hymen and Parsons (1992) only knew of a few records from four vice-counties. In recent years this species has expanded its range as Alexander (2014) recorded it from the Thames Basin and south-east England, and Telfer (2011) from Sussex. The author has also recorded in south Lincolnshire. Single adults were collected from all four FITs in Ranscombe Farm during the visit in August, apart from FIT No. 3 which had three adults in.

Figure 4.2. Lymexylon navale

***Abdera biflexuosa* (Coleoptera: Melandryidae) a beetle Nationally Scarce (NS), Least Concern (LC).**

4.3.19. This species is thought to breed in decaying branches and twigs, with most records from oaks, but also Ash, limes, and other broadleaved trees (Hymen and Parsons, 1992; Alexander, 2002). It is associated with wooded parkland and broadleaved woodland. Widespread across southern and southeastern Britain, northwards to Cheshire, and west to Devon and Radnorshire (Alexander, 2002). A single adult was collected from FIT No. 5 in Cobham Woods during the visit in July.

***Orchesia micans* (Coleoptera: Melandryidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.20. Adults occur over a long season between April and September or October, peaking during May and June. Typical habitats include deciduous woodland and wooded parkland with a good supply of dead and decaying trees. Adults are nocturnal and often fall to the ground when disturbed by jumping or running rapidly. Larvae and are associated with a wide range of fungi growing on various deciduous trees, developing through the summer. A single adult was beaten from hawthorn blossom in May in Cobham Woods.

***Dasytes plumbeus* (Coleoptera: Dasytidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.21. This beetle is believed to be saproxylic, but larval habitats appear uncertain. A species which is characteristic of margins and other woody transitions. Found by beating hawthorn blossom or oak. Distributed across lowland Wales and England north to Yorkshire. A single adult was collected from FIT No. 1 in Shorne Woods during the visit in June.

***Mordellistena neuwaldeggiana* (Coleoptera: Mordellidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.22. This beetle has a scattered distribution across central, eastern, and southern England with a few records from the south of Wales. Adults are found on flowering Apiaceae. Very little information is available for this species. A single adult was collected from FIT No. 4 at Ranscombe Farm during the visit in August.

***Mordellistena variegata* (Coleoptera: Mordellidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.23. Adults are found on various species of Umbellifer (Allen, 1995) and Meadowsweet (Welch, 1993) in woodland glades, wood pasture, and open farmland. The larvae are found in decaying wood (Konwerski, 2007). A single individual as collected from FIT no. 1 in Ashenbank Woods in August. From Cobham Woods, four individuals were collected in August from FIT no. 4.

***Dorcatoma dresdensis* (Coleoptera: Ptinidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.24. This tiny beetle is probably under recorded due to its size and habits. It is locally common across southern and central England, and very sporadic and scarce in Wales. Typically found in all types of woodland, wooded parkland, pasture woodland, and individual trees. It is associated with sporocarps fruiting on a wide range of deciduous and less often, coniferous trees. Numerous species of fungi have been recorded as host for this species. Adults are nocturnal. A single individual was collected from the big FIT located in Cobham Woods in July.

***Ptinus subpilosus* (Coleoptera: Ptinidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.25. Occasionally this beetle is found in the nests of the ant *Lasius spp.* although more frequently found under oak bark or in hollow trees. Males and females are sexually dimorphic. This beetle's distribution is scattered but very local across Britain as far as north-east Scotland (Hyman and Parsons, 1994). A single adult was collected from the big FIT within Cobham Woods in July.

***Anaspis costai* (Coleoptera: Scraptiidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.26. Very little information is available for this species, other than Levey (2009) noting it is beaten from elder blossom, and from other broadleaved trees and shrubs. A single individual was collected from FIT no. 4 in Shore Woods in August.

***Corticeus unicolor* (Coleoptera: Tenebrionidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.27. Records are concentrated around Sherwood Forest in Nottinghamshire, with scattered records in Yorkshire and Cheshire, and several records from the south of England. The larvae develop chiefly in fresh dead wood, mainly Birch, but also Beech and oak. It is suggested that the larvae are predatory on the beetle *Hylecoetus dermestoides* (Alexander, 2011). On the current survey, two adults were collected, one from both FIT no. 4 and no. 5, in Cobham Woods, during the visits in July and June, respectively.

***Diaperis boleti* (Coleoptera: Tenebrionidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.28. The larvae are found in large, fleshy, annual brackets that are suitably soft for larval feeding, often in well-lit situations where the warm sunshine promotes good development (Alexander, 2007). A primary host is Birch Polypore *Piptoporus betulinus*, but also Chicken of the Woods and Dryad's Saddle *Polyporus squamosus*. Adults probably overwinter in decaying wood rather than in bracket fungi. This species was once considered very rare although it has seen an increase in recent years. Multiple adults were found by tapping Birch Polypore in Shorne Woods in July. A single individual was collected from FIT no. 4 in August, also within Shorne Woods.

***Gonodera luperus* (Coleoptera: Tenebrionidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.29. Adults are usually swept in calcareous woodlands; the larvae are presumed to be saproxylic with larvae developing under bark of dead branches, but little information is available. This beetle is distributed across southern, eastern, and central England, into Wales. Adults were found in Shorne Woods, Ranscombe Farm, and Ashenbank Woods, between April and June, largely on hawthorn blossom.

***Pseudocistela ceramboides* (Coleoptera: Tenebrionidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.30. In the UK it is distributed in central southern England extending north to Yorkshire. They have been recorded from a range of broadleaved trees but seem to prefer oak. Adults are crepuscular and nocturnal between May and July. The larvae develop among wood debris in tree hollows where they feed on fungal mycelia. On the current survey, two adults were collected, one from FIT No. 5 in Ashenbank Woods during the visit in August. The second from FIT No. 2 from Cobham Woods during the visit in June.

***Colydium elongatum* (Coleoptera: Colydiidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.31. A very local beetle recorded from South Wales and central southern England. Adults are nocturnal in woodland and wood-pasture where the larvae develop under the bark of a range of broadleaved and coniferous trees. Both adults and larvae are predatory on the

early stages of other saproxylic beetles, although it is though the larvae predominantly feed on fungi within the galleries of scolytid beetles. A single adult was collected in Cobham Woods from FIT No. 4 during the visit in July.

Figure 4.4. Colydium elongatum

***Synchita humeralis* (Coleoptera: Colydiidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.32. Adults are found under fungoid bark and in rotten wood of broadleaved trees. Larvae and adults both feed on the mycelium of fungi on sappy bark or timber from a variety of broadleaved trees and shrubs. Records are scattered east of a line from Liverpool to Portsmouth, as far north as York. A single adult was collected from FIT No.4, Ranscombe Farm, during the August visit.

***Synchita separanda* (Coleoptera: Colydiidae) a beetle, Nationally Scarce (NS), Least Concern (LC).**

4.3.33. Adults are found under fungoid bark and in rotten wood of broadleaved trees. Records for this species are from around London up as far as Cambridgeshire and Norfolk, with single records from Wales, Worcestershire, and Somerset. A single adult was collected from FIT No.4, Ranscombe Farm, during the July visit.

***Ferdinandea ruficornis* (Diptera: Syrphidae) The Dark Copper Back, Nationally Scarce (NS), Least Concern (LC).**

4.3.34. This fly is widely recorded but scarce in the southern half of Britain. It is strongly associated with ancient woods, along with other locations that have old trees. The larvae feed on yeasts and bacteria in sap runs on a variety of trees and is one of a suite of species that benefits from the presence of Goat Moth *Cossus cossus*, but both species are found in areas where the other isn't. A single adult was collected from Shorne Woods in July.

***Pocota personata* (Diptera: Syrphidae) The Bumblefly, Nationally Scarce (NS), Least Concern (LC).**

4.3.35. This striking species is arguably the best bumblebee mimic in Britain. It is always associated with very old trees in wooded parkland, especially Beech but also Sycamore and Ash. The larvae develop in rot holes and other tree cavities filled with water or wet detritus. Adults

are often seen visiting and inspecting such rot holes and tree cavities. A single adult was found inspecting a rot hole on an Ash tree in Cobham Woods during the visit in May.

***Platyrhinus resinosus* (Coleoptera: Curculionidae) a beetle, Nationally Scarce (Nb).**

4.3.36. This beetle feeds on the fungus *Daldinia concentrica,* commonly known as King Alfred's Cakes, which is found on old or poor condition Ash trees, and dead branches. This species is recorded widely across southern Britain, extending into Yorkshire. A recent increase in the species would potentially warrant the conservation status downgrading. A single adult was found in May sat on an Ash log during the visit to Ranscombe Farm.

***Platystomos albinus* (Coleoptera: Anthribidae) a beetle, Nationally Scarce (Nb).**

4.3.37. A very distinctive weevil which occurs across Wales and southern and central England. Typically, an insect of established woodland, the nocturnal adults have a long season between February and October. During the day they sit about on logs or tree trunks where they are very cryptic. Generally, they occur on trees infected with King Alfred's Cakes on Ash but have been reported from a wide range of tree species. A single adult was swept during the visit in April from hawthorn blossom in Ashenbank Wood. A further two adults were collected, one each from FIT No. 2 and no. 5, in Cobham Woods during the visit in July and May, respectively.

Figure 4.3. Platystomos albinus

***Diplocoelus fagi* (Coleoptera: Biphyllidae) a beetle, Nationally Scarce (Nb).**

4.3.38. Very little information is available for this species. Adults are found on or under dry fungoid bark, often on beech, or in bracket fungi. Recorded widely across southern, central, and eastern England, extending into southern Wales. Adults were collected from FIT no. 4 and no. 1 at Ranscombe Farm during August and June, respectively.

***Cerylon fagi* (Coleoptera: Cerylonidae) a beetle, Nationally Scarce (Nb).**

4.3.39. This beetle is usually found under bark and within decaying wood. It is associated principally with oaks, but also found on Beech and Ash. This species is widely distributed

within Britain, west to Devon and Gwent and northwards to Lanarkshire. A single individual was collected in July while beating branches in Shorne Woods.

***Cis festivus* (Coleoptera: Ciidae), a beetle, Nationally Scarce (Nb).**

4.3.40. Very little information is available regarding this beetle. Generally found in bracket fungi on broadleaved trees. A single individual was collected from the big FIT within Cobham Woods in May. Another single individual was collected from FIT no. 1 during the visit in July at Ashenbank Woods.

***Orthoperus nigrescens* (Coleoptera: Corylophidae) a beetle, Nationally Scarce (Nb).**

4.3.41. Very little information is available regarding this beetle. Generally found on fungoid dead wood or in leaf litter, within broadleaved woodlands. Widespread in central and south England. A single individual was collected from FIT no. 4 in Cobham Woods during the visit in June. Another single individual was collected from FIT no. 2 in Ashenbank Woods during the visit in July.

***Acalles ptinoides* (Coleoptera: Curculionidae) a beetle, Nationally Scarce (Nb).**

4.3.42. This genus of beetle is associated with dead twigs and leaves and are usually found if you beat or shake dense bundles of twigs. Widely distributed across the whole of England and Wales north to Newcastle. One individual was found during the visit to Shorne Woods in July by beating dead Ash branches.

***Kyklioacalles roboris* (Coleoptera: Curculionidae) a beetle, Nationally Scarce (Nb).**

4.3.43. This weevil is flightless with a widespread but scatted distribution across England, southern Scotland, and Wales (Morris, 2002). There is very little information regarding its ecology although it is thought to breed in dead branches of oaks, while on the continent it is associated with Beech (Hymen and Parsons, 1992). A single individual was collected by beating dead oak branches in Shornewoods during the visit in July. Another single individual was collected in Ashenbank Woods from the big FIT during the visit in June.

***Platypus cylindrus* (Coleoptera: Curculionidae) Oak Pin-hole Borer, Nationally Scarce (Nb).**

4.3.44. Adults bore galleries of tunnels into the heartwood of oaks, but also Beech. On the walls of these galleries the ambrosia fungi develop providing food for the larvae. Mostly occurs in ancient wood-pasture, parklands, and woodlands with a preference for trees in a sunny situation. Absent from the far south-west, widespread in southern England and Wales. This species is potentially expanding its range in recent years. A single adult was collected from FIT No. 3 during the visit in July, and three adults from the same FIT during the August visit in Shorne Woods. Another three adults were collected from FIT No. 2 during the visit in August, also in Shorne Woods. From Cobham Woods, four adults were collected from FIT No. 4 during the visit in August.

***Xyleborus dryographus* (Coleoptera: Curculionidae) a beetle, Nationally Scarce (Nb).**

4.3.45. Like the Oak Pinhole Borer, this beetle is associated with ambrosia fungi having been inoculated with fungal spores transported by the parents. This species is associated with oaks and Sweet Chestnuts, and to a lesser extent Beech and elms, in ancient parkland and wood-pasture. A single individual was collected from FIT no. 3 in July from Shorne Woods. Another single individual was collected from the big FIT within Cobham Woods in July.

***Silvanus bidentatus* (Coleoptera: Silvanidae) a beetle, Nationally Scarce (Nb).**

4.3.46. This beetle is found under the sappy dead bark of various broadleaved trees, but also pine (Alexander, 2002), occurring in ancient broadleaved woodlands and wood pasture. Hymen and Parsons (1992) suggest this species may be expanding its range. Currently recorded from England northwards to Co. Durham and from a single site in western Scotland. Adults were collected in FIT no. 3 between June and July in Shorne Woods.

***Sphindus dubius* (Coleoptera: Sphindidae) a beetle, Nationally Scarce (Nb).**

4.3.47. Both larvae and adults from this family of beetles are unique within Coleoptera for being myxomycophagous, i.e., having a feeding association with slime moulds. Fruiting bodies that host this species are typically found on old tree stumps and logs (Duff, 2020). Local in central and southeast England, very local in north and southwest England. A single individual was collected from the big FIT located in Cobham Woods during the visit in July.

***Uleiota planatus* (Coleoptera: Silvanidae) a beetle, Nationally Scarce (Na).**

4.3.48. A very flat beetle adapted to living under the back of, typically, Beech and Sweet Chestnut, although other tree species have been noted (Hymen and Parson, 1992). Its distribution is generally across the southeast of England, with records from Gloucestershire, South Lancashire, Cumberland, and Aberdeenshire (Hymen and Parson, 1992). Telfer and Hammond (2007) suggest that due to an expansion in range, this species would probably have its conservation status downgraded if assessed today. Adults were found under bark in May from Ranscombe Farm and Cobham Woods. Several adults were also collected from FIT's within Cobham Woods during May and July.

Notolaemus unifasciatus (Coleoptera: Laemophloeidae) a beetle, Nationally Scarce (Na).

4.3.49. A very flat saproxylic beetle found under the back of Beech trees, also from oaks and Hornbeam (Hyman and Parsons, 1992). It is distributed across southern England northwards to Worcestershire and Herefordshire, Leicestershire and Derbyshire (Johnson, 2011). This beetle is very rarely encountered and would potentially merit an elevated conservation status (Telfer, 2022). A single individual was collected from FIT no. 3 during the July visit to Shorne Woods.

***Taphrorychus bicolor* (Coleoptera: Curculionidae) a beetle, Nationally Scarce (Na).**

4.3.50. This bark beetle develops in smaller dead branches and twigs of Beech trees, occasionally on Hornbeam, and rarely other tree species (Hymen and Parsons, 1992). It is recorded from Dorset, South Hampshire, West and East Sussex, West Kent, Surrey, South Essex, Middlesex and Berkshire (Hymen and Parsons, 1992). One individual was collected from FIT no. 3 during the visit in June at Shorne Woods. Another single individual was collected from the same trap in Shorne Woods during the visit to July.

***Stereocorynes truncorum* (Coleoptera: Curculionidae) a beetle, Nationally Scarce (Na).**

4.3.51. Associated with deadwood of broadleaved trees. Very local in central and southeast England. Adults were found in Ashenbank Woods within the big FIT during visits in June and August.

***Corticaria alleni* (Coleoptera: Latridiidae) a beetle, Nationally Scarce.**

4.3.52. Associated with areas of old deciduous oak and beech woodlands in the south and southeast England with records north to Sherwood Forest in Nottinghamshire, and East Inverness-shire. This beetle is found under loose dry bark in association with slime-moulds (Myxomycetes), and dry heartwood. A single individual was collected from the big FIT in July located in Cobham Woods.

***Enicmus brevicornis* (Coleoptera: Latridiidae) a beetle, Nationally Scarce.**

4.3.53. This species is distributed across southern and central England into Cumbria. It is associated with mouldy bark on Beech, Ash, birches, and Sycamore. In recent years it appears to have become more widespread (Telfer and Hammond, 2007) and would potentially warrant a conservation status downgrade. Adults were collected in FITs at Ranscombe Farm and Ashenbank Woods in June and July.

***Enicmus rugosus* (Coleoptera: Latridiidae) a beetle, Nationally Scarce.**

4.3.54. This beetle is widespread but local in southern England north to Derbyshire. It is associated primarily with slime moulds (Myxomycetes) from a wide range of broadleaved and coniferous trees. A recent expansion in range (Telfer and Hammond, 2007) would potentially warrant a conservation status downgrade. Adults were collected from FITs in all woodlands between June and August.

***Atheta scapularis* (Coleoptera: Staphylinidae) a rove beetle, Nationally Scarce.**

4.3.55. Little information is available about this species, although it is thought to be a parasite of Glow-worm (Col: Lampyridae) pupa (Horne and Tyler, 2009). Sometimes found in decaying fungi, probably local across England and Wales (Duff, 2024). A single individual was collected from FIT no. 4 in Cobham Woods during the visit in May.

***Gyrophaena manca* (Coleoptera: Staphylinidae) a rove beetle, Nationally Scarce.**

4.3.56. This species is widespread in England and Wales but occurs locally within the range it occupies. It breeds in the fruiting bodies of wood-decaying fungi on trees and has been

found in broadleaved woodland. Host fungi information in Britain is sparse although Dryads Saddle *Polyporus squamosus* has been recorded (Hymen and Parsons, 1994). Literature from the continent quotes Hoof Fungus *Fomes fomentarius*, Willow Bracket *Phellinus igniarius*, Red-belted Conk *Fomitopsis pinicola*, Honey Fungus *Armillaria mellea* and Smokey Bracket *Bjerkandera adusta* (Dauphin, 2005). A single individual was collected in July by sweeping in Shorne Woods.

***Neuraphes praeteritus* (Coleoptera: Staphylinidae) a rove beetle Nationally Scarce.**

4.3.57. A tiny beetle with very few records and little information regarding it. Usually found in rotten wood and plant litter. A total of 10 individuals were collected from FIT no. 4 in Ranscombe Farm during the visit in June.

***Phloeopora corticalis* (Coleoptera: Staphylinidae) a rove beetle, Nationally Scarce.**

4.3.58. The four species within this genus live under the bark of dead deciduous trees (Duff, 2024). Records are generally from central England and Wales with odd records in south England. A single individual was collected from FIT no. 4 in Cobham Woods during the visit in May.

***Rugilus angustatus* (Coleoptera: Staphylinidae) a rove beetle, Nationally Scarce.**

4.3.59. A locally common species across Norfolk and Suffolk, scarce and very local in southern England and South Wales. It is more associated with wet habitats, such as wet woodland and grasslands. A single individual was collected from FIT no. 3 in May at Shorne Woods.

***Sepedophilus testaceus* (Coleoptera: Staphylinidae) a rove beetle, Nationally Scarce.**

4.3.60. This rove beetle is widespread but very local in England, most frequently recorded in southeastern England from woodland, parkland, and on isolated trees. It is associated with fungoid wood of various deciduous trees. A single individual was collected from the big FIT in Cobham Woods during the visit in July.

***Brachysomus hirtus* (Coleoptera: Curculionidae) a beetle, Red Data Book 3 (RDB3).**

4.3.61. These small weevils are found in open woods and scrubby grassland and are probably polyphagous (Morris, 1997). Recorded from south and southeastern England, but not Wales or Scotland. A single individual was collected from FIT no. 3 located within Ranscombe Farm during the visit in June.

***Procraerus tibialis* (Coleoptera: Elateridae) a click beetle, a beetle, Red Data Book 3 (RDB3).**

4.3.62. This species breeds in hollow and decayed oaks and Beech, adults sometimes being found on nearby flowering shrubs, in wood-pasture. On the current survey, two adults were found, one from FIT No. 5 in Ashenbank Woods during the visit in June, and a second in FIT No. 2 in Cobham Woods during the visit in June.

***Triplax lacordairii* (Coleoptera: Erotylidae) a beetle, Red Data Book 3 (RDB3).**

4.3.63. A rare species across Western and southwestern Europe. In the UK it is usually common where it occurs with adults active at night on a range of broadleaved trees, especially birch

and oaks. Larvae develop within fungi throughout the summer, generally in the company of other mycetophagous (fungi eating) beetles. Records are from Kent and around Royal Tunbridge Wells. A single adult was collected from FIT No. 4 in Ranscombe Farm during the visit in August.

***Epuraea silacea* (Coleoptera: Nitidulidae) a beetle, Red Data Book 3 (RDB3).**

4.3.64. Adults are typically found in bracket fungi, at sap, under bark, or on dead branches in woods (Duff, 2020). Scattered record across central, south and northern England, as well as Wales. A single individual was swept from hawthorn blossom during the visit in May at Cobham Woods.

***Aulonothroscus brevicollis* (Coleoptera: Throscidae) a beetle, Red Data Book 3 (RDB3).**

4.3.65. This species is distributed across central and eastern England with occasional records in South England. Larvae are thought to develop in broadleaved deadwood in ancient woodland and pasture woodland. Individuals were collected from FITs in Cobham Woods (FIT no. 3 and no. 4) and Ashenbank Woods (FIT no. 2 and no. 3) in June and July, respectively.

***Nomada hirtipes* (Hymenoptera: Apidae) Hairy-horned Nomad Bee, Red Data Book 3 (RDB3).**

4.3.66. This bee is a kleptoparasite of *Andrena bucephala* with adults on the wing between April and June. Distributed across the south, southwest, and western England into Wales. A single individual was collected in May from Cobham Woods, beaten from hawthorn.

***Nephus quadrimaculatus* (Coleoptera: Coccinellidae) a ladybird, Red Data Book 2 (RDB2).**

4.3.67. One of the cryptic ladybirds due to its size compared to the more well-known larger species. This beetle is associated with ivy in woodlands and gardens. Once considered a rare species, it has seen an expansion in range since the 1990's. It is largely restricted to southeast England. One individual was collected from FIT no. 2 during the visit in June to Ashenbank Woods.

***Colon zebei* (Coleoptera: Leiodidae) a beetle, Red Data Book K (RDBK).**

4.3.68. Very little information is available regarding this species, or many from this genus, due to their cryptic lifestyle, which is thought to be subterranean fungi. A single individual was collected from FIT no. 4 in June at Ranscombe Farm.

***Ptenidium turgidum* (Coleoptera: Ptiliidae) a beetle, Red Data Book K (RDBK).**

4.3.69. The Ptiliidae, or feather-wing beetles, are a small group of beetles measuring less than a 1mm. Adults and larvae feed on fungal hyphae and spores. This species is associated with damp rotten wood of old broadleaved trees (Duff, 2020). A single individual was collected from FIT no. 4 in Ranscombe Farm in June.

***Scydmoraphes sparshalli* (Coleoptera: Staphylinidae) a beetle, Red Data Book K (RDBK).**

4.3.70. Very little information is available about this rarely recorded species. Duff (2024) states in moss or in grass litter and decaying vegetation. A single individual was collected from FIT no. 4 in Ashenbank Woods in July.

***Hydnobius latifrons* (Coleoptera: Leiodidae) a beetle, Red Data Book K (RDBK).**

4.3.71. Very little information is available for this species, but the subfamily this species is part of, the Leiodinae, is thought to feed on subterranean fungi. From Ranscombe FIT no. 3, two females were collected during the June visit.

4.4. Saproxylic Quality Index and Index of Ecological Continuity

4.4.1. A Saproxylic Quality Index (SQI), and an Index of Ecological Continuity (IEC), has been produced for each woodland surveyed by the author, individually, and as a combined survey area. Lastly, all desk study data is combined with the authors data for the combined survey area. The position each would sit within the table on the saproxylic database by IEC (Fowler, 2024) is also given in parentheses (table 4.4).

4.4.2. A breakdown of the species from the IEC categories is provided for the authors survey, both desk study and the authors survey combined (table 4.5).

Table 4.4. Summary of the SQI and IEC scores for each woodland surveyed by the author individually and combined, and a final SQI and IEC for the survey area combing the authors survey, and the desk study data. Numbers in parentheses indicate its position on the saproxylic database (Fowler, 2024) with 'c' short for 'circa'.

Heeney 2024			
Woodland	**Species**	**SQI**	**IEC**
1. Ranscombe Farm	46	435	16 (c.150th)
2. Ashen Bank Woods	59	434	24 (c.119th)
3. Cobham Deer Park	94	417	38 (c.80th)
4. Shorne Wood Country Park	74	455	26 (c.115th)
1, 2, 3, 4, combined	155	490	70 (c.30th)
All Data (Heeney 2024 + Desk Study data)	208	488	93 (15th)

Table 4.5. Breakdown of species contributions to the IEC for the authors survey, and the desk study data and authors survey data combined.

Heeney 2024 – IEC = 70			
IE C Grades	**Number of Species**	**Score**	**Contribution to Index (%)**
Grade 1	28	28	41
Grade 2	9	18	25
Grade 3	8	24	34
All Data (Heeney 2024 + Desk Study Data) – IEC = 93			
IE C Grades	**Number of Species**	**Score**	**Contribution to Index (%)**
Grade 1	43	43	47
Grade 2	13	26	27
Grade 3	8	24	26

4.4.3. Using Fowles *et al.* (1999), whereby they consider a SQI score above 500 to indicate a site of national importance, and above 590 indicating a site of international importance, none of the sites individually or collectively reach the required score to be considered of national importance.

4.4.4. Alexander (2004) uses the following criteria to assess an IEC score. A site is classed as of regional importance if it scores higher than 15, of national importance if it scores higher than 25, and of international importance if it scores higher than 80. By this metric, Cobham Woods and Shorne Woods would qualify as **Nationally Important** sites for saproxylic invertebrates. Ashenbank Woods falls short by a single point at 24, grouping it in with Ranscombe Farm as **Regional Important**.

4.4.5. Taking all the sites as a combined survey area, and using all available data known to the author, the survey area is of **International Importance** to Saproxylic Invertebrates (*table 4.4 above).*

5. DISCUSSION

5.1. Site Assessment in a Geographic Context

5.1.1. The surveys carried out across the four Sites this year has produced a long list of saproxylic beetles, adding to the current knowledge regarding the saproxylic beetles within these woodlands. When added to the other data for the proposed National Nature Reserve, this provides a solid dataset for assessment.

5.1.2. Each of the four Sites surveyed are at least regionally important for their saproxylic beetle fauna, when measured against the Index of Ecological Continuity (IEC). Two Sites, Cobham Woods and Shorne Woods, are both nationally important for their saproxylic beetle fauna, when measured against the IEC. Collectively, the whole survey area encompassing the four Sites, and using all available historic data, can be considered of international importance for saproxylic beetles due to the high IEC score of 92, surpassing the threshold of 80 suggested by Fowles *et al.,* (1999). Even though the Species Quality Index scores for the individual woodlands, and for the woodlands combined, is below the threshold of 500 for national importance, it has been suggested by Alexander (2017) that the threshold may be set too high.

5.1.3. Within a regional context, the highest scoring site on the saproxylic site database (Fowles, 2024) is Lullingstone Park in West Kent with an IEC of 42. While none of the woodlands surveyed by the author in 2024 surpass this score, collectively the surveyed area proposed as the National Nature Reserve would be placed as the best site in Kent for saproxylic beetles.

5.1.4. In a national context, the surveyed area proposed as the National Nature Reserve would sit around 15th measured by the IEC (considering duplicate sites on the saproxylic site database, Fowles 2024). Currently 23 sites sit above the threshold of an IEC of 80 or higher.

5.1.5. The international importance of the survey area for saproxylic beetles can be further reinforced by the presence of *Hypulus quercinus* (Nationally Rare), *Lissodema cursor* (Nationally Rare), *Pentaphyllus testaceus* (Nationally Rare), *Ischnodes sanguinicollis* (Vulnerable), and *Triplax lacordairii* (Endangered, RDB3). The latter species, *T. lacordairii,* being a new site in England for this European threatened species.

5.2. Recommendations and Conclusion

Tree Management

5.2.1. Many of the rarer saproxylic invertebrates occur on just a few suitable trees even where veteran trees are numerous (Whitehead, 2003), therefore sustainable management should focus on maintaining good conditions around a larger number of both veteran and maturing trees. The following suggestions cover the whole of the proposed National Nature Reserve in respect of veteran and ancient tree management with respect to saproxylic

invertebrates. Please note that regarding tree management, please consult a suitably trained arboriculturist.

- Maintain as many veteran and ancient trees as possible, allowing them to age and die naturally. Cutting up fallen trees into sections isn't as attractive to saproxylic species as leaving fallen trees in situ, considering the location of the fallen tree and any potential health and safety risks.
- Identify any trees that have a long history of pollarding. Re-pollarding will extend the life of old tree, which can otherwise be at risk of splitting.
- Ensure a supply of both young and mature trees to provide future veterans, and hopefully ancient, trees. The varied and continual production of decay and deadwood features and conditions are crucial for long-term persisting populations of specialised saproxylic invertebrates.
- Avoid heavy disturbance from livestock beneath the canopy which might damage the roots or trunk. Stock barriers around importance trees in line with the canopy are recommended. This is particularly prevalent in the wood pasture area of Cobham Woods, and in the wood pasture area of Shorne Woods.
- Avoid removing dead or decaying wood, both standing and fallen, as these provide specialist habitats for saproxylic invertebrates. If deadwood must be removed, or moved, due to health and safety concerns, leave the timber in as large as sections as manageable, and place them in a variety of situations (shade, sunny, damp, dry, etc.).
- While veteran exotic tree species, such as Sweet Chestnut, do not support the same levels of biodiversity as native species such as oaks and Ash, there can support some species via microhabitats such as rot holes and species of fungi.

Deadwood Feature Creation

5.2.2. Along with maintaining and managing the current stock of veteran and ancient trees, deadwood feature creation could be considered, chiefly via wood mould boxes. These artificial tree hollows have been designed to replicate hollow trees and can potentially act as stepping stones for saproxylic species (Skipp, 2009; Jansson *et al.,* 2009; Carlsson *et al.,* 2016).

5.2.3. The initial wood mould box idea has been credited to Ted Green whereby he re-erected fallen trees, filling them with leaves, sawdust, woodchip, eggs, and hen manure, to attract rare fungi and invertebrate species in Windsor Park. Ted Green had great success with the European threatened Violet Click Beetle *Limoniscus violaceus* being found in one of his re-erected trees at Windsor several years later (Key, 1995). While it is unlikely that the Violet Click Beetle is present at the potential National Nature Reserve, this species is an indicator of high-quality wood mould habitat, and by it using artificial wood mould boxes, it indicates that a wide range of other rare saproxylic species will also utilise it (Skipp, 2009; Jansson *et al.,* 2009; Carlsson *et al.,* 2016).

5.2.4. The installation of artificial wood mould boxes, correctly managed, across areas of the potential National Nature Reserve, could benefit the long-term preservation of saproxylic invertebrates. Also, if the artificial boxes are monitored, e.g., with FIT's, this could provide valuable information regarding the utilisation of artificial wood mould boxes by saproxylic invertebrates, and aid in the conservation of the this highly threatened fauna.

Flowering Shrubs

5.2.5. Many saproxylic species require pollen and nectar as adults. It was noted while carrying out the surveys across the woodlands in May that an increase in the presence of flowering shrubs, such as blackthorn and hawthorn, would benefit the saproxylic fauna. Other species to consider are Rowan, Sallows, roses, and Dogwood.

5.2.6. Planting small blocks of flowering trees and shrubs, especially in areas of high levels of deadwood, and managing them rotationally over several years, are highly recommended. Managing woodland edges, or any hedges across the site on a minimum of a three-year rotation, will create a range of heights and flower sequences across the landscape adding connectivity.

Dedicated Saproxylic Management Plan

5.2.7. With the possible creation of a new National Nature Reserve, a plan dedicated to the conservation of saproxylic invertebrates could be drawn up covering the whole of the potential reserve, detailing areas of high value, and areas that can be improved. By bringing together the various landowners, a larger more connected approach at a landscape level can be achieved.

Further Survey Work

5.2.8. It is evident from carrying out the surveys within the potential National Nature Reserve that the area is not just important for saproxylic invertebrates, but to a wider range invertebrate. If there was a budget for further invertebrate surveys, commissioning them across the extent of the National Nature Reserve not covered by this year's survey work is highly recommended. Also, survey work should extend to a wider range of invertebrate (Not just saproxylic) groups so the wider value of the site can be ascertained.

Conclusion

5.2.9. The collective survey area, which is proposed to become a National Nature Reserve, is certainly at least nationally important for saproxylic beetles, and therefor saproxylic invertebrates. There is justification for the site to be considered of international importance (which is the authors view) to saproxylic beetles, due to the composition of the species recorded in this report and the high IEC score. Recommendations regarding the management of trees, the creation of artificial habitats as stepping stones, and flowering shrubs has been given which would benefit the saproxylic invertebrate fauna found within the survey area.

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APPENDIX 1: BRITISH CONSERVATION STATUS CATEGORIES – DEFINITIONS

Status Categories and Criteria (Shirt, 1987)

These categories and criteria were introduced by Shirt (1987) and have been amended by later authors (e.g. Hymen and Parsons (1992, 1994)).

- **Red Data Book category Extinct**
  - Species which were formerly native to Britain but have not been recorded since 1900.
- **Red Data Book category 1, Endangered**
  - Species in danger of extinction and whose survival is unlikely if causal factors continue to operate. Endangered species either (a) occur as only a single population within one 10-km square, or (b) only occur in especially vulnerable habitats, or (c) have been declining rapidly or continuously for twenty years or more to the point where they occur in five or fewer 10-km squares, or (d) may already have been extinct.
- **Red Data Book category 2, Vulnerable**
  - Species which are likely to move into the Endangered category in the near future if causal factors continue to operate. Vulnerable species are declining throughout their range or occupy vulnerable habitats.
- **Red Data Book category 3, Rare**
  - Species which occur in small populations and although not currently either Endangered or Vulnerable are at risk. Rare species exist in 15 or fewer 10-km squares or are more widespread than this but dependent on small areas of especially vulnerable habitat.
- **Red Data Book category I, Indeterminate**
  - Species considered to be either Endangered, Vulnerable, or Rare but with insufficient information to say which. Best written as 'RDBi' rather than 'RDBI' as the latter is confused easily with 'RDB1' (Endangered).
- **Red Data Book category K, Insufficiently Known**
  - Species suspected to merit either Endangered, Vulnerable, Rare, or Indeterminate status but lacking sufficient information. Species included in this category may have only recently been discovered in Britain or may be very poorly recorded for a variety of reasons.
- **Nationally Scarce category A, Na**
  - Species which do not fall within Red Data Book categories, but which are nonetheless uncommon in Great Britain and thought to occur in 30 or fewer (typically between 16 and 30) 10-km square of the National Grid, or for less well-recorded groups, in seven or fewer vice-counties.
- **Nationally Scarce category B, Nb**
  - Species which do not fall within Red Data Book categories, but which are nonetheless uncommon in Great Britain and thought to occur in between 31 and 100 10-km squares of the National Grid, or for well-recorded groups, between eight and twenty vice-counties.
- **Nationally Scarce, N.**
  - Species which do not fall within Red Data Book categories, but which are nonetheless uncommon in Great Britain. This status category has been used where information has not been sufficient to allocate a species either Na or Nb. These species are thought to occur between 16 and 100 10-km squares of the National Grid.

Status Categories and Criteria (IUCN, 2001)

These categories and criteria are based on IUCN Red List Categories and Criteria version 3.1 (IUCN, 2001) and have been applied to an increasing number of invertebrate groups.

- **Critically Endangered (CR)**
  - A taxon is Critically Endangered when the best available evidence indicates that it is facing an extremely high risk of extinction in the wild.
- **Endangered (EN)**
  - A taxon is Endangered when the best available evidence indicates that it is facing a very high risk of extinction in the wild.
- **Vulnerable (VU)**
  - A taxon is Vulnerable when the best available evidence indicates that it is facing a high risk of extinction in the wild.

  Species in the above three categories may be collectively referred to as threatened.

- **Data Deficient (DD)**
  - A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of the 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.

  The DD category essentially replaces the Indeterminate (RDBi) and Insufficiently Known (RDBK) categories.

- **Near Threatened (NT)**
  - A taxon is Near Threatened when it has been evaluated against the criteria but does not quality 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.
- **Not Applicable (NA)**
  - A taxon is Not Applicable when it is either regarded as a non-native in Britain or occurs solely as a natural vagrant.

Status Categories and Criteria (GB Rarity Status)

These status and categories operate in parallel with the IUCN and are defined specifically for use in Britain where they provide some continuity with Shirt (1987), allowing the continued use of 'rare and scarce' species for site assessment purposes.

- **Nationally Rare (NR)**
    - Native species which have not been recorded from more than 15 British hectads in recent decades 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 in recent decades and where there is reasonable confidence that exhaustive recording would not find them in more than 100 hectads.

APPENDIX 2: SPECIES LIST

Species list for survey work carried out in 2024 by W.J.Heeney. Ash = Ashenbank Woods, Cob = Cobham Woods, Rans = Ranscombe Farm, Shorne = Shorne Woods. Asterix denotes presence.

			Ash	Cob	Rans	Shorne
Abax parallelepipedus	Carabidae	Coleoptera			*	*
Abdera biflexuosa	Melandryidae	Coleoptera		*		*
Abraeus perpusillus	Histeridae	Coleoptera	*	*		
Acalles misellus	Curculionidae	Coleoptera	*		*	*
Acalles ptinoides	Curculionidae	Coleoptera				*
Adalia decempunctata	Coccinellidae	Coleoptera	*	*	*	
Adrastus pallens	Elateridae	Coleoptera	*			*
Aeletes atomarius	Histeridae	Coleoptera		*		
Agaricochara latissima	Staphylinidae	Coleoptera			*	
Agrilus angustulus	Buprestidae	Coleoptera		*		*
Agrilus laticornis	Buprestidae	Coleoptera				*
Agriotes acuminatus	Elateridae	Coleoptera	*			
Agriotes pallidulus	Elateridae	Coleoptera	*	*		*
Agrypnus murinus	Elateridae	Coleoptera		*		
Aleochara lanuginosa	Staphylinidae	Coleoptera		*		
Aleochara sparsa	Staphylinidae	Coleoptera				*
Alosterna tabacicolor	Cerambycidae	Coleoptera	*		*	
Ampedus balteatus	Elateridae	Coleoptera		*		*
Amphimallon solstitiale	Melolonthidae	Coleoptera				*
Anaglyptus mysticus	Cerambycidae	Coleoptera		*	*	*
Anaspis costai	Scraptiidae	Coleoptera				*
Anaspis fasciata	Scraptiidae	Coleoptera				*
Anaspis frontalis	Scraptiidae	Coleoptera	*	*	*	*
Anaspis garneysi	Scraptiidae	Coleoptera	*	*	*	*
Anaspis lurida	Scraptiidae	Coleoptera		*		*
Anaspis maculata	Scraptiidae	Coleoptera	*	*	*	
Anaspis pulicaria	Scraptiidae	Coleoptera		*		
Anchomenus dorsalis	Carabidae	Coleoptera				*
Andrena dorsata	Andrenidae	Hymenoptera		*		*
Andrena fucata	Andrenidae	Hymenoptera		*		
Andrena fulvago	Andrenidae	Hymenoptera		*		
Andrena haemorrhoa	Andrenidae	Hymenoptera				*
Andrena minutula	Andrenidae	Hymenoptera			*	
Andrena scotica	Andrenidae	Hymenoptera		*	*	
Andrena subopaca	Andrenidae	Hymenoptera		*		
Anelasmocephalus cambridgei	Trogulidae	Opiliones	*			
Anguis fragilis	Anguidae	Squamata		*		
Anisotoma humeralis	Leiodidae	Coleoptera	*	*	*	
Anobium punctatum	Ptinidae	Coleoptera		*	*	*

Anotylus inustus	Staphylinidae	Coleoptera			*	
Anotylus rugosus	Staphylinidae	Coleoptera		*		
Antherophagus pallens	Cryptophagidae	Coleoptera	*		*	
Anthocharis cardamines	Pieridae	Lepidoptera	*			
Anthonomus pedicularius	Curculionidae	Coleoptera	*			
Aphthona euphorbiae	Chrysomelidae	Coleoptera			*	
Aspidiphorus orbiculatus	Sphindidae	Coleoptera	*	*	*	*
Atheta castanoptera	Staphylinidae	Coleoptera			*	
Atheta crassicornis	Staphylinidae	Coleoptera		*		
Atheta fungi	Staphylinidae	Coleoptera	*	*		*
Atheta liturata	Staphylinidae	Coleoptera		*		
Atheta scapularis	Staphylinidae	Coleoptera		*		
Atheta vaga	Staphylinidae	Coleoptera	*	*	*	*
Athous bicolor	Elateridae	Coleoptera			*	
Athous haemorrhoidalis	Elateridae	Coleoptera	*	*	*	*
Atomaria lewisi	Cryptophagidae	Coleoptera		*		
Atomaria vespertina	Cryptophagidae	Coleoptera				*
Aulonothroscus brevicollis	Throscidae	Coleoptera	*	*		
Auplopus carbonarius	Pompilidae	Hymenoptera			*	
Axinotarsus marginalis	Melyridae	Coleoptera				*
Axinotarsus pulicarius	Melyridae	Coleoptera				*
Batophila aerata	Chrysomelidae	Coleoptera			*	
Beris chalybata	Stratiomyidae	Diptera		*		
Bibio johannis	Bibionidae	Diptera				*
Bibloporus bicolor	Staphylinidae	Coleoptera				*
Biphyllus lunatus	Biphyllidae	Coleoptera		*		
Bolitochara bella	Staphylinidae	Coleoptera		*	*	*
Bombylius major	Bombyliidae	Diptera	*		*	
Brachinus crepitans	Carabidae	Coleoptera			*	
Brachypterus glaber	Kateretidae	Coleoptera				*
Brachypterus urticae	Kateretidae	Coleoptera		*		
Brachysomus hirtus	Curculionidae	Coleoptera			*	
Bruchela rufipes	Anthribidae	Coleoptera			*	
Bruchidius varius	Chrysomelidae	Coleoptera	*			
Bruchus rufipes	Chrysomelidae	Coleoptera	*			
Bryaxis curtisii	Staphylinidae	Coleoptera		*		
Byturus tomentosus	Byturidae	Coleoptera		*		*
Callophrys rubi	Lycaenidae	Lepidoptera				*
Calvia quattuordecimguttata	Coccinellidae	Coleoptera	*			
Cantharis decipiens	Cantharidae	Coleoptera	*		*	
Cantharis nigricans	Cantharidae	Coleoptera				*
Cantharis pellucida	Cantharidae	Coleoptera	*		*	
Carpophilus hemipterus	Nitidulidae	Coleoptera		*		
Carpophilus sexpustulatus	Nitidulidae	Coleoptera				*
Cartodere bifasciata	Latridiidae	Coleoptera	*		*	

Cartodere nodifer	Latridiidae	Coleoptera	*		*	*
Cerylon fagi	Cerylonidae	Coleoptera				*
Cerylon ferrugineum	Cerylonidae	Coleoptera	*	*		*
Cerylon histeroides	Cerylonidae	Coleoptera	*	*		
Cis bilamellatus	Ciidae	Coleoptera			*	
Cis boleti	Ciidae	Coleoptera		*		
Cis festivus	Ciidae	Coleoptera	*	*		
Cis micans	Ciidae	Coleoptera		*		
Cis pygmaeus	Ciidae	Coleoptera		*		
Cis submicans	Ciidae	Coleoptera				*
Cleopus pulchellus	Curculionidae	Coleoptera				*
Clytus arietis	Cerambycidae	Coleoptera		*		
Coccinella septempunctata	Coccinellidae	Coleoptera	*		*	
Coeliodes rana	Curculionidae	Coleoptera				*
Colon zebei	Leiodidae	Coleoptera			*	
Colydium elongatum	Zopheridae	Coleoptera		*		
Conopalpus testaceus	Melandryidae	Coleoptera				*
Corticaria alleni	Latridiidae	Coleoptera		*		
Corticarina similata	Latridiidae	Coleoptera	*			
Corticeus unicolor	Tenebrionidae	Coleoptera		*		*
Cortinicara gibbosa	Latridiidae	Coleoptera	*	*	*	*
Cryptocephalus labiatus	Chrysomelidae	Coleoptera				*
Cryptocephalus parvulus	Chrysomelidae	Coleoptera				*
Cryptocephalus pusillus	Chrysomelidae	Coleoptera				*
Cryptolestes duplicatus	Laemophloeidae	Coleoptera				*
Cryptophagus corticinus	Cryptophagidae	Coleoptera				*
Cryptophagus dentatus	Cryptophagidae	Coleoptera		*		*
Cryptophagus scanicus	Cryptophagidae	Coleoptera			*	*
Curculio glandium	Curculionidae	Coleoptera	*	*		*
Cychramus luteus	Nitidulidae	Coleoptera	*	*	*	
Cypha longicornis	Staphylinidae	Coleoptera	*			*
Cytilus sericeus	Byrrhidae	Coleoptera				*
Dacne bipustulata	Erotylidae	Coleoptera		*		*
Dacne rufifrons	Erotylidae	Coleoptera	*	*	*	*
Dasytes aeratus	Dasytidae	Coleoptera	*	*	*	*
Dasytes plumbeus	Melyridae	Coleoptera			*	
Delia platura	Anthomyiidae	Diptera		*	*	
Dendrocopos major	Picidae	Piciformes		*		
Dendrophilus punctatus	Histeridae	Coleoptera	*			
Denticollis linearis	Elateridae	Coleoptera			*	*
Diaperis boleti	Tenebrionidae	Coleoptera				*
Dilophus febrilis	Bibionidae	Diptera			*	
Dinaraea aequata	Staphylinidae	Coleoptera		*		
Diplocoelus fagi	Biphyllidae	Coleoptera	*		*	
Dipogon subintermedius	Pompilidae	Hymenoptera		*		

Dorcatoma chrysomelina	Ptinidae	Coleoptera		*		
Dorcatoma dresdensis	Ptinidae	Coleoptera		*		
Dorcus parallelipipedus	Lucanidae	Coleoptera	*	*		*
Drymus (Sylvadrymus) ryei	Lygaeidae	Hemiptera				*
Dryocoetes villosus	Curculionidae	Coleoptera	*	*		*
Ectemnius cephalotes	Crabronidae	Hymenoptera		*		
Elasmucha grisea	Acanthosomatidae	Hemiptera	*			
Empis livida	Empididae	Diptera	*			
Endomychus coccineus	Endomychidae	Coleoptera	*			
Enicmus brevicornis	Latridiidae	Coleoptera	*		*	
Enicmus histrio	Latridiidae	Coleoptera				*
Enicmus rugosus	Latridiidae	Coleoptera	*	*	*	*
Enicmus testaceus	Latridiidae	Coleoptera	*	*		
Enicmus transversus	Latridiidae	Coleoptera		*	*	*
Ennearthron cornutum	Ciidae	Coleoptera		*		*
Ephistemus reitteri	Cryptophagidae	Coleoptera				*
Epistrophe eligans	Syrphidae	Diptera			*	
Epuraea aestiva	Nitidulidae	Coleoptera	*		*	
Epuraea melanocephala	Nitidulidae	Coleoptera			*	
Epuraea melina	Nitidulidae	Coleoptera		*		
Epuraea pallescens	Nitidulidae	Coleoptera	*			
Epuraea silacea	Nitidulidae	Coleoptera		*		
Eristalis pertinax	Syrphidae	Diptera			*	*
Euglenes oculatus	Aderidae	Coleoptera	*			*
Eulagius filicornis	Mycetophagidae	Coleoptera		*		*
Euophryum confine	Curculionidae	Coleoptera	*	*		*
Eusphalerum sorbi	Staphylinidae	Coleoptera		*		
Exomias pellucidus	Curculionidae	Coleoptera			*	
Fannia armata	Fanniidae	Diptera		*	*	
Fannia sociella	Fanniidae	Diptera		*	*	
Ferdinandea ruficornis	Syrphidae	Diptera				*
Gabrius splendidulus	Staphylinidae	Coleoptera		*		
Gonepteryx rhamni	Pieridae	Lepidoptera	*	*	*	
Gonodera luperus	Tenebrionidae	Coleoptera	*		*	*
Grammoptera ruficornis	Cerambycidae	Coleoptera	*	*	*	*
Gyrophaena manca	Staphylinidae	Coleoptera				*
Halyzia sedecimguttata	Coccinellidae	Coleoptera	*	*		
Haploglossa villosula	Staphylinidae	Coleoptera	*	*		*
Harmonia axyridis	Coccinellidae	Coleoptera	*	*	*	
Helina depuncta	Muscidae	Diptera	*			
Heliophanus cupreus	Salticidae	Araneae			*	
Hemicoelus fulvicornis	Ptinidae	Coleoptera	*	*		*
Hemicrepidius hirtus	Elateridae	Coleoptera				*
Hermaeophaga mercurialis	Chrysomelidae	Coleoptera			*	
Heteromyza rotundicornis	Heleomyzidae	Diptera	*			

Hololepta plana	Histeridae	Coleoptera		*		
Homalenotus quadridentatus	Phalangiidae	Opiliones			*	
Hydnobius latifrons	Leioidae	Coleoptera			*	
Hylemya vagans	Anthomyiidae	Diptera		*		
Hylesinus crenatus	Curculionidae	Coleoptera		*		
Hylesinus taranio	Curculionidae	Coleoptera		*		
Hylesinus varius	Curculionidae	Coleoptera		*	*	
Hypera plantaginis	Curculionidae	Coleoptera	*			
Hypnogyra angularis	Staphylinidae	Coleoptera		*		
Hypulus quercinus	Melandryidae	Coleoptera				*
Ischnodes sanguinicollis	Elateridae	Coleoptera		*		
Ischnomera cyanea	Oedemeridae	Coleoptera	*			
Kyklioacalles roboris	Curculionidae	Coleoptera	*			
Lagria hirta	Tenebrionidae	Coleoptera	*			*
Lampyris noctiluca	Lampyridae	Coleoptera	*	*	*	*
Lasioglossum albipes	Halictidae	Hymenoptera			*	
Lasioglossum calceatum	Halictidae	Hymenoptera		*		
Lasioglossum fulvicorne	Halictidae	Hymenoptera		*		
Lasioglossum malachurum	Halictidae	Hymenoptera		*		
Lasioglossum parvulum	Halictidae	Hymenoptera			*	
Lasius fuliginosus	Formicidae	Hymenoptera	*	*		
Latridius porcatus	Latridiidae	Coleoptera	*			
Leiodes strigipennis	Leiodidae	Coleoptera		*		
Leiopus linnei	Cerambycidae	Coleoptera			*	
Leiopus nebulosus	Cerambycidae	Coleoptera	*			
Leistus rufomarginatus	Carabidae	Coleoptera				*
Leistus spinibarbis	Carabidae	Coleoptera	*			
Leptinus testaceus	Leiodidae	Coleoptera		*		
Leptothorax acervorum	Formicidae	Hymenoptera			*	
Leptusa fumida	Staphylinidae	Coleoptera	*			
Libellula depressa	Libellulidae	Odonata		*		*
Limonius poneli	Elateridae	Coleoptera				*
Lissodema cursor	Salpingidae	Coleoptera	*	*		
Litargus connexus	Mycetophagidae	Coleoptera		*		
Lithostygnus serripennis	Latridiidae	Coleoptera	*			
Lochmaea crataegi	Chrysomelidae	Coleoptera	*	*	*	
Longitarsus parvulus	Chrysomelidae	Coleoptera			*	
Lordithon lunulatus	Staphylinidae	Coleoptera			*	
Lymexylon navale	Lymexylidae	Coleoptera				*
Machimus atricapillus	Asilidae	Diptera		*		
Malachius bipustulatus	Malachiidae	Coleoptera				*
Malthinus seriepunctatus	Cantharidae	Coleoptera		*		*
Malthodes marginatus	Cantharidae	Coleoptera		*		*
Malvapion malvae	Apionidae	Coleoptera	*			
Margarinotus ventralis	Histeridae	Coleoptera		*		

Megatoma undata	Dermestidae	Coleoptera		*		
Melanotus	Elateridae	Coleoptera	*	*	*	*
Meligethes aeneus	Nitidulidae	Coleoptera	*	*	*	
Meligethes atratus	Nitidulidae	Coleoptera	*			
Meligethes carinulatus	Nitidulidae	Coleoptera		*		
Meligethes nigrescens	Nitidulidae	Coleoptera	*			
Meligethes ruficornis	Nitidulidae	Coleoptera		*		
Melolontha melolontha	Scarabaeidae	Coleoptera				*
Mesembrina meridiana	Muscidae	Diptera				*
Metopsia clypeata	Staphylinidae	Coleoptera	*			
Misumena vatia	Thomisidae	Araneae	*		*	
Mordellistena neuwaldeggiana	Mordellidae	Coleoptera			*	
Mordellistena variegata	Mordellidae	Coleoptera	*	*		
Mordellochroa abdominalis	Mordellidae	Coleoptera	*	*	*	
Musca autumnalis	Muscidae	Diptera	*			
Myathropa florea	Syrphidae	Diptera	*	*		
Mycetophagus atomarius	Mycetophagidae	Coleoptera		*		
Mycetophagus piceus	Mycetophagidae	Coleoptera		*		*
Mycetophagus quadripustulatus	Mycetophagidae	Coleoptera			*	
Mycophaga testacea	Anthomyiidae	Diptera	*			
Myopa buccata	Conopidae	Diptera			*	
Nalassus laevioctostriatus	Tenebrionidae	Coleoptera	*	*		*
Nemastoma bimaculatum	Nemastomatidae	Opiliones			*	
Neocoenorrhinus germanicus	Rhynchitidae	Coleoptera	*		*	
Nephus quadrimaculatus	Coccinellidae	Coleoptera		*	*	
Neuraphes elongatulus	Scydmaenidae	Coleoptera	*			
Neuraphes praeteritus	Staphylinidae	Coleoptera	*			
Nomada goodeniana	Apidae	Hymenoptera			*	
Nomada hirtipes	Apidae	Hymenoptera		*		
Nomada panzeri sensu lato	Apidae	Hymenoptera		*		
Notiophilus biguttatus	Carabidae	Coleoptera			*	
Notolaemus unifasciatus	Laemophloeidae	Coleoptera	*			
Octotemnus glabriculus	Ciidae	Coleoptera				*
Ocypus olens	Staphylinidae	Coleoptera	*	*		*
Oedemera nobilis	Oedemeridae	Coleoptera		*		
Olibrus affinis	Phalacridae	Coleoptera		*		*
Oligota apicata	Staphylinidae	Coleoptera		*		
Ophonus azureus	Carabidae	Coleoptera			*	
Opilo mollis	Cleridae	Coleoptera		*		*
Orchesia micans	Melandryidae	Coleoptera		*		
Orchesia undulata	Melandryidae	Coleoptera			*	
Orthocis alni	Ciidae	Coleoptera				*
Orthoperus nigrescens	Corylophidae	Coleoptera	*	*		
Palomena prasina	Pentatomidae	Hemiptera	*	*	*	
Panorpa communis	Panorpidae	Mecoptera		*		

Panorpa germanica	Panorpidae	Mecoptera	*	*		*
Panspaeus guttatus	Elateridae	Coleoptera				*
Panurgus calcaratus	Andrenidae	Hymenoptera				*
Paradromius linearis	Carabidae	Coleoptera	*			
Pararge aegeria	Nymphalidae	Lepidoptera		*		
Paromalus flavicornis	Histeridae	Coleoptera	*	*		
Pediacus dermestoides	Cucujidae	Coleoptera	*	*	*	*
Pegoplata infirma	Anthomyiidae	Diptera		*		
Pemphredon lugubris	Crabronidae	Hymenoptera			*	
Pentaphyllus testaceus	Tenebrionidae	Coleoptera				*
Pentatoma rufipes	Pentatomidae	Hemiptera	*			
Peplomyza litura	Lauxaniidae	Diptera			*	
Phaonia fuscata	Muscidae	Diptera				*
Phaonia pallida	Muscidae	Diptera				*
Phaonia subventa	Muscidae	Diptera				*
Philonthus decorus	Staphylinidae	Coleoptera				*
Phloeonomus punctipennis	Staphylinidae	Coleoptera	*			
Phloeophagus lignarius	Curculionidae	Coleoptera	*		*	
Phloeopora corticalis	Staphylinidae	Coleoptera		*		
Phloeopora testacea	Staphylinidae	Coleoptera		*		
Phosphuga atrata	Silphidae	Coleoptera	*			
Placonotus testaceus	Laemophloeidae	Coleoptera				*
Platycheirus albimanus	Syrphidae	Diptera		*		*
Platycis minutus	Lycidae	Coleoptera	*	*	*	
Platypus cylindrus	Curculionidae	Coleoptera		*		*
Platyrhinus resinosus	Anthribidae	Coleoptera			*	
Platystomos albinus	Anthribidae	Coleoptera	*	*		
Plegaderus dissectus	Histeridae	Coleoptera		*		
Pocota personata	Syrphidae	Diptera		*		
Pogonocherus hispidulus	Cerambycidae	Coleoptera		*	*	*
Pogonocherus hispidus	Cerambycidae	Coleoptera		*		
Pollenia angustigena	Polleniidae	Diptera		*		
Polygonia c-album	Nymphalidae	Lepidoptera			*	
Polyxenus lagurus	Polyxenidae	Polyxenida				*
Prionocyphon serricornis	Scirtidae	Coleoptera	*			
Prionychus ater	Tenebrionidae	Coleoptera	*		*	*
Procraerus tibialis	Elateridae	Coleoptera	*	*		
Propylea quattuordecimpunctata	Coccinellidae	Coleoptera	*		*	*
Pseudocistela ceramboides	Tenebrionidae	Coleoptera	*	*		
Ptenidium turgidum	Ptiliidae	Coleoptera			*	
Pterostichus madidus	Carabidae	Coleoptera	*	*	*	
Pterostichus niger	Carabidae	Coleoptera		*		
Ptilinus pectinicornis	Ptinidae	Coleoptera	*		*	
Ptinomorphus imperialis	Ptinidae	Coleoptera	*			
Ptinus subpilosus	Ptinidae	Coleoptera		*		

Pycnomerus fuliginosus	Zopheridae	Coleoptera		*		*
Pyrochroa coccinea	Pyrochroidae	Coleoptera		*	*	
Pyrochroa serraticornis	Pyrochroidae	Coleoptera	*	*	*	
Pyrrhidium sanguineum	Cerambycidae	Coleoptera	*			*
Quedius cruentus	Staphylinidae	Coleoptera	*		*	
Quedius mesomelinus	Staphylinidae	Coleoptera	*			
Rhagium bifasciatum	Cerambycidae	Coleoptera		*		
Rhagium mordax	Cerambycidae	Coleoptera	*	*		*
Rhagonycha lignosa	Cantharidae	Coleoptera	*		*	
Rhagonycha lutea	Cantharidae	Coleoptera	*			
Rhamphomyia tarsata	Empididae	Diptera		*		
Rhamphus pulicarius	Curculionidae	Coleoptera				*
Rhizophagus bipustulatus	Monotomidae	Coleoptera	*		*	*
Rhizophagus dispar	Monotomidae	Coleoptera			*	
Rugilus angustatus	Staphylinidae	Coleoptera				*
Rutpela maculata	Cerambycidae	Coleoptera	*			*
Salpingus planirostris	Salpingidae	Coleoptera	*	*		*
Salpingus ruficollis	Salpingidae	Coleoptera	*		*	
Saprosites mendax	Aphodiidae	Coleoptera		*		
Scaphidium quadrimaculatum	Staphylinidae	Coleoptera	*	*		*
Scaphisoma agaricinum	Staphylinidae	Coleoptera		*		*
Scathophaga stercoraria	Scathophagidae	Diptera		*		
Sciodrepoides watsoni	Leiodidae	Coleoptera		*	*	
Scolytus intricatus	Curculionidae	Coleoptera		*		*
Scutellinia scutellata	Pyronemataceae	Pezizales	*			
Scydmoraphes sparshalli	Staphylinidae	Coleoptera	*			
Sepedophilus testaceus	Staphylinidae	Coleoptera		*		
Serica brunnea	Scarabaeidae	Coleoptera	*			
Sericoderus brevicornis	Corylophidae	Coleoptera	*	*	*	*
Sericoderus lateralis	Corylophidae	Coleoptera		*	*	
Siagonium quadricorne	Staphylinidae	Coleoptera			*	
Silvanus bidentatus	Silvanidae	Coleoptera				*
Sinodendron cylindricum	Lucanidae	Coleoptera		*	*	*
Soronia grisea	Nitidulidae	Coleoptera	*	*		
Sphecodes crassus	Halictidae	Hymenoptera	*			
Sphindus dubius	Sphindidae	Coleoptera		*		
Stenagostus rhombeus	Elateridae	Coleoptera	*	*		*
Stenurella melanura	Cerambycidae	Coleoptera		*		*
Stephostethus alternans	Latridiidae	Coleoptera			*	
Stereocorynes truncorum	Curculionidae	Coleoptera	*			
Stictoleptura scutellata	Cerambycidae	Coleoptera				*
Strongylogaster multifasciata	Tenthredinidae	Hymenoptera		*		
Strophosoma melanogrammum	Curculionidae	Coleoptera	*			*
Synchita humeralis	Zopheridae	Coleoptera			*	
Synchita separanda	Zopheridae	Coleoptera			*	

Synchita undata	Zopheridae	Coleoptera			*	
Synchita variegata	Zopheridae	Coleoptera			*	
Tabanus bromius	Tabanidae	Diptera		*		
Tachinus humeralis	Staphylinidae	Coleoptera	*	*	*	
Tachyporus nitidulus	Staphylinidae	Coleoptera				*
Taphrorychus bicolor	Curculionidae	Coleoptera				*
Tasgius ater	Staphylinidae	Coleoptera		*	*	
Temnocerus nanus	Rhynchitidae	Coleoptera				*
Tetrops praeustus	Cerambycidae	Coleoptera	*		*	
Tillus elongatus	Cleridae	Coleoptera	*	*	*	
Triplax lacordairii	Erotylidae	Coleoptera			*	
Tritomegas bicolor	Cydnidae	Hemiptera			*	
Trixagus dermestoides	Throscidae	Coleoptera	*			*
Trox scaber	Trogidae	Coleoptera		*		
Tytthaspis sedecimpunctata	Coccinellidae	Coleoptera	*		*	
Uleiota planatus	Silvanidae	Coleoptera		*	*	
Vespula germanica	Vespidae	Hymenoptera		*		
Vincenzellus ruficollis	Salpingidae	Coleoptera	*		*	
Winthemia variegata	Tachinidae	Diptera		*		
Xyleborinus saxesenii	Curculionidae	Coleoptera	*	*		*
Xyleborus dryographus	Curculionidae	Coleoptera		*		*
Xyleborus monographus	Curculionidae	Coleoptera		*		*
Xylocleptes bispinus	Curculionidae	Coleoptera			*	
Xylota segnis	Syrphidae	Diptera			*	
Xysticus lanio	Thomisidae	Araneae	*	*	*	*

APPENDIX 3: FLIGHT INTERCEPTION TRAP PHOTOGRAPHS

Flight Interception Traps – Shorne Woods

Figure 3.1. Shorne Woods Country Park. Trap 1 location.

Figure 3.2. Shorne Woods Country Park. Trap 2 location.

Figure 3.3. Shorne Woods Country Park. Trap 3 location.

Figure 3.4. Shorne Woods Country Park. Trap 4 location.

Flight Interception Traps – Ashenbank Woods

Figure 3.5. Ashenbank Woods. Trap 1 location.

Figure 3.6. Ashenbank Woods. Trap 2 location.

Figure 3.7. Ashenbank Woods. Trap 3 location.

Figure 3.8. Ashenbank Woods. Trap 4 location.

Figure 3.9. Ashenbank Woods.
Trap 5 location.

Flight Interception Traps – Cobham Woods

Figure 3.10. Cobham Woods. Trap 1 location.

Figure 3.11. Cobham Woods. Trap 2 location.

Figure 3.12. Cobham Woods. Trap 3 location.

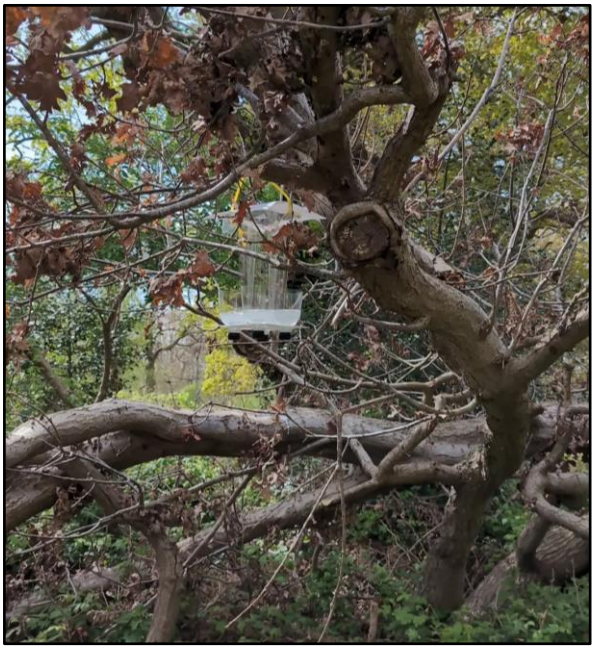

Figure 3.13. Cobham Woods. Trap 4 location.

Figure 3.14. Cobham Woods. Trap 5 location.

Flight Interceptions Traps – Ranscombe Farm

Figure 3.15. Ranscombe Farm. Trap 1 location.

Figure 3.16. Ranscombe Farm. Trap 2 location.

Figure 3.17. Ranscombe Farm. Trap 3 location.

Figure 3.18. Ranscombe Farm. Trap 4 location.