

A survey of the saproxylic invertebrate fauna of Piercefield Park, Monmouthshire in 2023

NRW Evidence Report No. 763

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Crynodeb gweithredol

Mae'r adroddiad hwn yn disgrifio arolwg infertebratau saposylig ym Mharc Piercefield, Sir Fynwy yn 2023. Nod yr arolwg oedd asesu'r casgliad o infertebratau saposylig a'r adnoddau pren marw yn y parc, yn ogystal â bygythiadau a materion rheoli eraill sy'n berthnasol i'r rhain. Defnyddiwyd trapiau i ryng-gipio infertebratau wrth iddynt hedfan ar goed derw *Quercus*, Ynn *Fraxinus excelsior*, Ffawydd *Fagus sylvatica*, Castanwydd *Aesculus hippocastanum* a Phlanwydd Llundain *Platanus x hispanica* rhwng Ebrill a Thachwedd, a chasglwyd samplau yn uniongyrchol o gynefinoedd coed marw, blodau a ffyngau. Cofnodwyd 221 rhywogaeth o infertebratau saposylig, yn cynnwys 1 corryn, 134 o chwilod, 63 o bryfed, 1 gwir-fyg, 18 o wenyn a gwenyn feirch, 1 gwyfyn, 2 ffug-sgorpion ac 1 pryf neidr.

Mae chwech rhywogaeth yn newydd i Gymru - y chwilod clicio *Ampedus rufipennis* a *Procræus tibialis*, y chwilen rhisgl wastad streipiog *Notolaemus unifasciatus*, y chwilen llyngyr coed *Lymexylon navale*, a'r chwilen grwydrol *Scydmaenus rufus* a'r pryf *Leiomyza birkheadi*. Darparodd yr arolwg hefyd yr ail gofnod yng Nghymru o'r chwilod *Colydium elongatum*, *Corticaria alleni*, *Mycetophagus quadriguttatus* a *Taphrorychus bicolor*; y wenynen feirch unig *Stigmus pendulus*; y pryfyn ffrwythau brith *Phortica variegata*, a'r gwybedyn ffwng *Mycetophila caudata*. Mae gan 53 rhywogaeth statws cadwraeth gyhoeddedig neu statws cadwraeth dros dro. Y Mynegai Ansawdd Saposylig (SQI) ar gyfer yr arolwg cyfredol yw 539.1 yn seiliedig ar 115 o rywogaethau cymhwyso, sy'n uwch na'r trothwy ar gyfer safle o bwysigrwydd cenedlaethol. Mae'r Mynegai Parhad Ecolegol (IEC) yn 67, yn seiliedig ar 42 o rywogaethau cymhwyso. Mae'r IEC gan gynnwys rhywogaethau a gofnodwyd ers 1994 yn 76, sy'n uwch na'r trothwy ar gyfer safle o bwysigrwydd cenedlaethol, ac yn agos at werth 80 sy'n cynrychioli arwyddocâd Ewropeaidd.

Mae yna dystiolaeth ddogfennol o Barc Piercefield ers y cyfnod canoloesol, ac mae'n debyg ei fod yn cynnwys gweddillion coed pori a oedd yn dir comin, er i'r ystâd gael ei thrawsnewid a'i hehangu yn ystod y ddeunawfed ganrif. Ar hyn o bryd mae'r parc yn cynnwys llawer o nodweddion da ar gyfer infertebratau saposylig, sy'n cael eu hadlewyrchu yn yr ystod o rywogaethau o bwys cadwraethol a gofnodwyd. Mae coed marw gan gynnwys rhuddin â phydredd coch, rhuddin â phydredd gwyn a choed yn pydru yn bresennol mewn mannau agored, lled-gysgodol, a chysgodol. Mae hyn yn cynnwys coed, boncyffion a changhennau marw sy'n sefyll ac ar lawr. Mae ffyngau pydredd pren, rhediadau nodd a Draenen Wen *Crataegus monogyna* ac Ysgawen *Sambucus nigra* sy'n blodeuo hefyd ar gael. Roedd y nifer fwyaf o rywogaethau saposylig yn gysylltiedig â Derw, ac roedd coed Ynn hefyd yn bwysig. Cofnodwyd niferoedd llai o rywogaethau o bwys cadwraethol ar goed Ffawydd, y Ddraenen Wen, Castanwydd, a Phlanwydd Llundain.

Y diffyg aildyfu a phlannu coed yn ystod y degawdau diwethaf yw'r bygythiad mwyaf i infertebratau saposylig ym Mharc Piercefield. Dylai poblogaeth gynaliadwy o hen goed gael mwy o goed ym mhob grŵp oedran iau, ond mae coed derw ifanc sy'n tyfu mewn ardaloedd agored yn gwbl absennol, ac mae'n debygol nad oes yr un ohonynt wedi sefydlu ers canrif o leiaf. Dylid plannu o leiaf 50 o goed derw ifanc i fod ag unrhyw bosibilrwydd o gynnal y boblogaeth bresennol o goed hŷn, er bod yr union nifer sydd ei angen yn dibynnu ar gyfraddau marwolaethau coed a'r nifer targed o hen goed. Ymhlith y lleoliadau a allai fod yn addas yn Piercefield mae'r caeau i'r gogledd o'r cae ras, y llethr yn

ne'r parc ac ardaloedd ger clystyrau coed presennol. Mae effaith Clefyd Gwywiad Coed Ynn yn golygu efallai na fydd plannu coed Ynn neu eu hannog i aildyfu'n naturiol yn opsiwn ar hyn o bryd. Gellid plannu Ffawydd fel coeden a dyfir yn agored sy'n ffurfio pydredd gwyn, ac mae'r rhywogaeth hon eisoes yn bresennol ar ffin y parc ac yng Nghoedwig Piercefield. Efallai y bydd Castanwydd yn datblygu pydredd yn gynt na Ffawydd, ac mae mathau traddodiadol o goed afalau *Malus* spp. yn tyfu hyd yn oed yn gyflymach.

Mae cystadleuaeth yn fygythiad i ddwy goeden dderw hynafol sydd o fewn ffin hanesyddol y parc er y tu allan i'r ardal sy'n cael ei phori ar hyn o bryd. Dylid tynnu llystyfiant sy'n tyfu ar eu pwys yn ddetholus lle mae'n cysgodi'r coed hyn. Pryder arall yw bod swm y pren marw sy'n sefyll a phren marw cyfan ar lawr ym Mharc Piercefield yn llawer llai na'r disgwyl. Mae llawer o'r pren marw sydd wedi cwmpo o fewn y parcdir agored yn cael ei dorri neu ei dynnu oddi yno. **Roedd yn arbennig o bryderus bod pren marw uchel i fyny yn cael eu torri o'r coed, a bod tanau wedi'u cynnau ar waelod coed byw ac mewn coed gwag.** Mae'n anodd atal difrod gan ymwelwyr achlysurol, er y dylid gwneud trefnwyr digwyddiadau sy'n cael eu cynnal yn y parc yn ymwybodol o bwysigrwydd y safle ar gyfer pren marw, coed hynod a choed hynafol, a'r fioamrywiaeth sy'n gysylltiedig â'r rhain.

Mae Parc Piercefield yn rhan o dirwedd sapro sylig sy'n cynnwys Wyelands i'r de, a Choedwigoedd Dyffryn Gwy i'r dwyrain a'r gogledd, ardal a gydnabyddir fel un o bwysigrwydd rhyngwladol am ei ffawna infertebratau sapro sylig. Dylid ystyried pob cyfle i gefnogi cadwraeth infertebratau sapro sylig trwy gadw neu sefydlu coed a dyfir yn agored yn yr ardal hon. Wrth gydnabod gwerth coed pori a pharcdiroedd ar gyfer crynodiadau o goed hynod a hynafol, mae'r safleoedd hyn hefyd yn rhan o dirwedd ehangach. Mae gan goed y tu allan i'r ardaloedd hyn y potensial i gysylltu safleoedd presennol, gan gynyddu gwytnwch rhywogaethau cysylltiedig trwy gysylltu cynefinoedd. Byddai angen polisi cenedlaethol i hyrwyddo dwysedd dymunol gofynnol o hen goed yn tyfu'n agored ar draws ardaloedd iseldir, a gallai hyn gynnig cyfle i ddatblygu poblogaeth fawr o goed hynod a hynafol ar draws y dirwedd yn y dyfodol.

Executive summary

This report describes a saproxylic invertebrate survey at Piercefield Park, Monmouthshire in 2023. The aim of the survey was to assess the saproxylic invertebrate assemblage and deadwood resources in the park, as well as threats and other management issues relevant to these. Flight interception traps were deployed on oak *Quercus*, Ash *Fraxinus excelsior*, Beech *Fagus sylvatica*, Horse Chestnut *Aesculus hippocastanum* and London Plane *Platanus x hispanica* trees between April and November, and samples were collected directly from dead wood habitats, flowers, and fungi. 221 saproxylic invertebrate species were recorded, comprising 1 spider, 134 beetles, 63 flies, 1 true bug, 18 bees and wasps, 1 moth, 2 pseudoscorpions and 1 snakefly.

Six species are new to Wales – the click-beetles *Ampedus rufipennis* and *Procræus tibialis*, the lined flat bark beetle *Notolaemus unifasciatus*, the timberworm beetle *Lymexylon navale*, the rove beetle *Scydmaenus rufus* and the fly *Leiomyza birkheadi*. The survey also provided second Welsh records of the beetles *Colydium elongatum*, *Corticaria allenii*, *Mycetophagus quadriguttatus* and *Taphrorychus bicolor*, the solitary wasp *Stigmus pendulus*, the Variegated Fruit-fly *Phortica variegata*, and the fungus gnat *Mycetophila caudata*. Fifty-three species have a published conservation status or a provisional conservation status. The Saproxylic Quality Index (SQI) for the current survey is 539.1 based on 115 qualifying species, which is above the threshold for a site of national importance. The Index of Ecological Continuity (IEC) is 67, based on 42 qualifying species. The IEC including species recorded since 1994 is 76, which is above the threshold for a site of national importance, and close to the value of 80 representing European significance.

There is documentary evidence of Piercefield Park since the medieval period and it probably incorporates remnants of common wood-pasture, although the estate was transformed and enlarged in the 18th century. The park currently contains many good features for saproxylic invertebrates, which is reflected in the range of species of conservation concern recorded. Dead wood including red-rotten heartwood, white-rotten heartwood and wood mould is present in open, semi-shaded, and shaded situations. This includes standing and fallen dead trees, boughs and branches. Wood decay fungi, sap runs and flowering Hawthorn *Crataegus monogyna* and Elder *Sambucus nigra* are also available. The largest number of saproxylic species were associated with oak, and Ash was also important. Lesser numbers of species of conservation concern were recorded from Beech, Hawthorn, Horse Chestnut, and London Plane.

The lack of tree regeneration and planting in recent decades poses the biggest threat to saproxylic invertebrates at Piercefield Park. A sustainable population of old trees should have greater numbers of trees in each younger age group, but young open-grown oaks are entirely absent, and it is likely that none has become established in at least a century. At least 50 young oaks should be planted to have any possibility of maintaining the current population of older trees, although the exact number required depends on rates of tree mortality and the target number of old trees. Potentially suitable locations at Piercefield include the fields north of the racecourse, the slope in the south of the park and areas near existing tree clumps. The impact of Ash Dieback means that planting or encouraging natural regeneration of Ash may not be an option at present. Beech could be planted as an open-grown tree forming white-rot, and this species is already present on

the park boundary and in Piercefield Woods. Horse Chestnut may develop rot sooner than Beech, and traditional varieties of apple *Malus* spp. are even faster-growing.

Competition is a threat to two veteran oaks which are within the historic park boundary although outside the area which is grazed at present. Encroaching vegetation should be selectively removed where it is shading these trees. Another concern is that the amount of standing and intact fallen dead wood in Piercefield Park was far less than expected. Much of the fallen deadwood within the open parkland is being cut up or removed. **It was particularly concerning that aerial deadwood is being cut from trees, and that fires have been set at the base of live trees and in hollow trees.** It is difficult to prevent damage from casual visitors, although organisers of events which take place in the park should be made aware of the importance of the site for dead wood, veteran and ancient trees, and the biodiversity associated with these.

Piercefield Park is part of a saproxylic landscape that includes Wyelands to the south, and the Wye Valley Woodlands to the east and north, an area recognized as being of international importance for its saproxylic invertebrate fauna. All opportunities for supporting saproxylic invertebrate conservation through retention or establishment of open-grown trees in this area should be considered. While acknowledging the value of wood pastures and parklands for concentrations of veteran and ancient trees, these sites are also part of a wider landscape. Trees outside these areas have the potential to link existing sites, increasing the resilience of associated species by linking habitats. A national policy would be required to promote a minimum desirable density of old open-grown trees throughout lowland areas, and this could offer the opportunity to develop a large population of veteran and ancient trees across the landscape in the future.

1. Introduction

1.1. Background

The Wye Gorge supports an internationally important saproxylic invertebrate fauna (Howe *et al.*, 2022). Key woodlands are designated as part of the Wye Valley Woodlands Special Area of Conservation which includes Monmouthshire in Wales and Gloucestershire and Herefordshire in England. In recent years, some of these sites have been surveyed in detail (Alexander, 2018, 2019b, 2020). Parklands with overmature native trees are an additional feature of the Lower Wye Valley and Dingestow Court, a few miles north-west of the Wye Valley, supports a nationally important saproxylic fauna (Alexander, 2020). Other parklands close to the Wye Valley include Itton Court, Oak Grove, Penhein, Piercefield Park and Wyelands. These sites are comparatively poorly known, and none has a statutory designation for ecological features.

Penhein, Piercefield Park and Wyelands were visited briefly in July and August 1994 as part of a Wales-wide survey of parklands to evaluate stocks of mature and overmature/ancient trees and their saproxylic invertebrate interest (Hammond & Hine, 1994). Piercefield was classed in the second echelon of sites visited, as likely to have high conservation value, and with the recommendation that it should be fully surveyed for saproxylic invertebrates. A total of 32 saproxylic beetles was recorded in 1994 including *Ampedus cinnabarinus* and *Symbiotes latus* (Table 1). A subsequent visit by Adrian Fowles of the Countryside Council for Wales in 1999 found an additional 20 beetle species as well as the saproxylic bug *Xylocoris cursitans*.

Table 1. Saproxylic beetles recorded from Piercefield Park in 1994 (Hammond & Hine, 1994) and 1999.

Species	Family	Status	Year
<i>Ampedus cinnabarinus</i>	Elateridae	Nationally Rare	1994
<i>Anaspis fasciata</i>	Scraptiidae	Common	1999
<i>Anaspis frontalis</i>	Scraptiidae	Common	1999
<i>Anaspis lurida</i>	Scraptiidae	Local	1999
<i>Anaspis maculata</i>	Scraptiidae	Common	1999
<i>Anaspis pulicaria</i>	Scraptiidae	Common	1999
<i>Anaspis regimbarti</i>	Scraptiidae	Common	1999
<i>Anitys rubens</i>	Anobiidae	Nationally Scarce	1994
<i>Anobium punctatum</i>	Anobiidae	Common	1994
<i>Bitoma crenata</i>	Zopheridae	Local	1999
<i>Bolitochara bella</i>	Staphylinidae	Local	1994
<i>Cis bidentatus</i>	Ciidae	Local	1994
<i>Cis bilamellatus</i>	Ciidae	Common	1994
<i>Cis boleti</i>	Ciidae	Common	1994
<i>Cis castaneus</i>	Ciidae	Local	1994
<i>Cis pygmaeus</i>	Ciidae	Local	1999
<i>Dexiogyia corticina</i>	Staphylinidae	Nationally Scarce	1994
<i>Dorcatoma chrysomelina</i>	Anobiidae	Local	1994
<i>Dorcatoma flavicornis</i>	Anobiidae	Nationally Scarce	1994
<i>Dorcus parallelipipedus</i>	Lucanidae	Local	1994

Species	Family	Status	Year
<i>Dropephylla vilis</i>	Staphylinidae	Local	1994
<i>Eledona agricola</i>	Tenebrionidae	Nationally Scarce	1999
<i>Euophryum confine</i>	Curculionidae	Naturalised	1994
<i>Gabrius splendidulus</i>	Staphylinidae	Common	1994 & 1999
<i>Grammoptera ruficornis</i>	Cerambycidae	Common	1999
<i>Gyrophaena affinis</i>	Staphylinidae	Common	1994
<i>Ischnoglossa prolixa</i>	Staphylinidae	Unknown	1994
<i>Leiopus nebulosus</i>	Cerambycidae	Local	1999
<i>Leptusa fumida</i>	Staphylinidae	Common	1994
<i>Leptusa ruficollis</i>	Staphylinidae	Common	1994
<i>Malthinus seriepunctatus</i>	Cantharidae	Local	1999
<i>Malthodes marginatus</i>	Cantharidae	Common	1999
<i>Malthodes minimus</i>	Cantharidae	Common	1999
<i>Melanotus villosus</i>	Elateridae	Common	1994
<i>Mordellochroa abdominalis</i>	Mordellidae	Local	1999
<i>Orthocis alni</i>	Ciidae	Local	1994
<i>Paromalus flavicornis</i>	Histeridae	Local	1999
<i>Phloeonomus punctipennis</i>	Staphylinidae	Local	1994
<i>Phloeophagus lignarius</i>	Curculionidae	Local	1999
<i>Ptinella errabunda</i>	Ptiliidae	Unknown	1994
<i>Pyrochroa coccinea</i>	Pyrochroidae	Nationally Scarce	1994
<i>Rhagium mordax</i>	Cerambycidae	Common	1994
<i>Scaphidium quadrimaculatum</i>	Staphylinidae	Local	1994
<i>Scaphisoma agaricinum</i>	Staphylinidae	Local	1994
<i>Scolytus intricatus</i>	Curculionidae	Local	1999
<i>Sepedophilus bipunctatus</i>	Staphylinidae	Nationally Scarce	1994
<i>Sepedophilus testaceus</i>	Staphylinidae	Nationally Scarce	1994
<i>Symbiotes latus</i>	Endomychidae	Nationally Scarce	1994
<i>Tetrops praeustus</i>	Cerambycidae	Local	1999
<i>Trypodendron signatum</i>	Curculionidae	Nationally Rare	1994
<i>Xestobium rufovillosum</i>	Anobiidae	Common	1994

1.2. Site description and landscape context

Piercefield Park is situated north of Chepstow above a bend in the River Wye, with Chepstow racecourse immediately to the west. The Wye Gorge woodlands are adjacent to the east, and the surrounding countryside is mostly farmland. There is documentary evidence of the park since the medieval period, as a small estate of about 120 hectares owned by the Walter family (Cadw, 1994). The present park is largely the creation of Valentine Morris who, from about 1752, transformed and enlarged the estate. Although some of the present-day trees would have been planted then, there is evidence that the landscape incorporated pre-existing veterans, as in 1805 the area south of the house is described as “diversified with clumps and with groves, and a number of large trees straggle along the bottom” (Fosbroke, 1826). This may represent a remnant of an extensive wood-pasture that existed in south-east Monmouthshire during the Middle Ages (Peterken, 2008).



Figure 1. Ordnance Survey Six-inch map showing Piercefield Park in 1900 (Gloucestershire Sheets LIV.SW and LIV.NW). Reproduced with the permission of the National Library of Scotland.

The 1900 OS Six-inch map shows the park covering approximately 120 hectares, of which 66 hectares remain today. Many open-grown trees are mapped in the south-west of the park and must have been removed during the construction of Chepstow racecourse which opened in 1926. The entire site was designated as RAF Chepstow during the Second World War, from 1941 until it was derequisitioned in 1946. At present, the park is mostly open pasture grazed by sheep. Although the surrounding woodlands are largely dominated by Ash *Fraxinus excelsior*, Beech *Fagus sylvatica*, Yew *Taxus baccata* and Lime *Tilia* spp., the principal parkland trees are native oaks *Quercus* sp. of which there are approximately 35 mature or overmature specimens. The remaining large parkland trees include Field Maple *Acer campestre*, Horse Chestnut *Aesculus hippocastanum*, lime, Scots Pine *Pinus sylvestris* and cedar *Cedrus* sp. Hawthorn *Crataegus monogyna* is plentiful, especially near the woodland boundaries.

1.3. Objective

The brief for this survey was to:

- Undertake a saproxylic invertebrate survey at Piercefield Park in Monmouthshire in 2023, using a combination of visual searches and flight interception traps;
- Visit monthly between April and October;
- Following completion of the survey, calculate contemporary Saproxylic Quality Index (SQI) and Index of Ecological Continuity (IEC) values for the site, and place it in the context of the Wye Gorge;
- Assess the veteran tree and deadwood resources, and threats and other management issues which impact upon the saproxylic fauna.

2. Methods

2.1. Desk study

A previous survey report (Hammond & Hine, 1994) was consulted for existing saproxylic invertebrate records at Piercefield Park, to enable the calculation of the full Index of Ecological Continuity (IEC) value for the site. Additional records were made available from a visit by the Countryside Council for Wales in 1999 (Mike Howe, pers. comm.; Table 1).

2.2. Sampling methods

An overall 13 habitat features can potentially be investigated to sample saproxylic invertebrates, comprising:

1. Live tree trunks, particularly in well-lit, sunny areas;
2. Foliage;
3. Flowers, particularly Hawthorn, Elder *Sambucus nigra*, Holly *Ilex aquifolium*, Bramble *Rubus fruticosus*, Hogweed *Heracleum sphondylium*, Ragwort *Jacobaea vulgaris*, and Common Ivy *Hedera helix*;
4. Sap runs;
5. Epicormic litter;
6. Galleries of wood-boring beetles;
7. Decaying bark;
8. Branchwood decay;
9. Heartwood decay, including red-rotten and white-rotten wood;
10. Wet rot holes;
11. Wood mould;
12. Fungi;
13. Cobwebs, for captured invertebrates.

Where present, these features were sampled by a combination of active searches and flight interception traps.

2.2.1. Active searches

Saproxylic invertebrates were recorded using a combination of four active sampling methods, as listed in Table 2 (adapted from Drake *et al.*, 2007).

Table 2. Direct search methods for saproxylic invertebrate survey classified by saproxylic invertebrate resource requirements.

Saproxylic invertebrate resource	Direct searching	Beating	Sweeping	Sieving
Live tree trunks	✓	—	—	—
Tree foliage	✓	✓	✓	—
Flowers	✓	✓	✓	—
Sap runs	✓	—	✓	—
Epicormic litter	—	—	—	✓
Galleries of wood-boring beetles	✓	—	✓	—
Decaying bark	✓	—	—	—
Branch wood decay	✓	✓	—	—
Wet rot holes	✓	—	—	—
Heartwood decay	—	—	—	✓
Wood mould	—	—	—	✓
Fungi	✓	✓	✓	✓
Cobwebs	✓	—	—	—

2.2.2. Flight interception traps

Flight interception traps were also deployed to sample saproxylic invertebrates. Traps were placed by or within tree cavities or hollow trunks (see Photos in Appendix 1). A trap combining four 2-litre plastic bottles with windows cut in the sides and suspended under a plastic base was used for larger cavities (Alexander *et al.*, 2016; Carrel, 2002). A single 2-litre bottle was used in smaller cavities (Steininger *et al.*, 2015). The inverted bottle necks were filled with non-toxic preservative (50% propylene glycol and 50% distilled water) and a drop of detergent to break the surface tension. This was drained through a sieve into a muslin square each time the trap was serviced, with the sample preserved in 70% isopropyl alcohol.

Trap locations were chosen during a preliminary walkover of the site. Ten traps were established in April, although traps were placed in 15 locations during the survey, as one location was disturbed, and other traps had to be re-sited as a music festival was held on the site in August. The trap locations, tree species, trunk diameter at 1.3 m (dbh), and the primary type and stage of wood decay by the trap are outlined in Table 3. The location of each flight interception trap is shown in Figure 2, and photographs of the trees are provided in Appendix 1.

Table 3. The trees in Piercefield Park sampled for saproxylic invertebrates with flight interception traps in 2023.

Code	Grid reference	Tree species	Trunk dbh (cm)	Wood decay by trap
1	ST5263.9572	<i>Fraxinus excelsior</i>	146	White rot
2	ST5271.9563	<i>Fagus sylvatica</i>	108	White rot
3	ST5265.9558	<i>Platanus x hispanica</i>	187	White rot
4	ST5275.9557	<i>Quercus</i>	129	Red rot
5	ST5273.9528	<i>Quercus</i>	121	Red rot
6	ST5283.9527	<i>Quercus</i>	149	Red rot
7	ST5302.9542	<i>Quercus</i>	208	Red rot
8	ST5302.9542	<i>Quercus</i>	208	Red rot
9	ST5307.9542	<i>Quercus</i>	72	Red rot

Code	Grid reference	Tree species	Trunk dbh (cm)	Wood decay by trap
10	ST5314.9539	<i>Quercus</i>	189	White rot
11	ST5314.9539	<i>Quercus</i>	189	Red rot
12	ST5319.9538	<i>Aesculus hippocastanum</i>	104	Rotten wood
13	ST5317.9536	<i>Fraxinus excelsior</i>	46	White rot
14	ST5311.9530	<i>Fraxinus excelsior</i>	77	White rot
15	ST5272.9505	<i>Fraxinus excelsior</i>	135	White rot



- Piercefield Park boundary from Six-inch Ordnance Survey map in 1900
- Piercefield Park trap locations 2023

Figure 2. Flight interception trap locations at Piercefield Park in 2023. Imagery © 2024 Google, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies.

Further description of the trapping locations is provided below.

Trap 1 – An unshaded maiden ash in grassland along a derelict boundary wall of the stables. A white-rotten cavity has formed at 2 metres following the tear-out of a major limb, with wood mould at the base. An old bracket of *Perennipora fraxinea* was found at the base of the tree in April, and a new bracket was emerging from heartwood in the cavity in October. There was an active Hornet nest in the top of the cavity from September onwards.

Trap 2 – An unshaded Copper Beech *Fagus sylvatica* f. *purpurea* in grassland south of Piercefield House. This tree has suffered a catastrophic failure in the trunk at 3 metres, although it resprouted and is now self-pollarded. The trunk is hollow to the base and lined with dark, crumbly wood mould. *Lycoperdon pyriforme* was fruiting at the base of the tree in October.

Trap 3 – A London Plane *Platanus x hispanica* on the west side of a clump of mostly ornamental coniferous and deciduous trees. The trunk has been sawn off at 7 metres although it is still producing some twiggy growth. Although the tree is in grassland, it is largely shaded. The trunk is hollow to 2 metres, with a large cavity open to the ground that is lined with rotten wood. *Coprinellus disseminatus* was fruiting on the roots from September onwards.

Trap 4 – An unshaded maiden oak in grassland south of Piercefield House. A cavity has formed in the trunk after the loss of a major limb and is open between ground level and 2.3 metres. This is partly lined with hard lignum, although with some red-rot at the base. An old *Laetiporus sulphureus* bracket was evident although no fresh fruiting bodies were seen in the autumn. There was a *Ganoderma australe* bracket at the base of the trunk. There are also aerial dead branches beneath the canopy encrusted by *Peniophora* fungi. An active *Lasius fuliginosus* nest was present at the base of the tree throughout the survey.

Trap 5 – An oak in grassland on the north side of a clump of mixed deciduous trees, and partly shaded by these although with open conditions around the trunk. The tree has lost two major limbs at 3.2 metres, leading to the formation of a red-rotten trunk cavity to 1 metre, and it is possibly at least partly hollow to ground level.

Trap 6 – An unshaded oak in grassland, on the south side of an old pit that is now partly flooded and which has younger oaks crowded on the banks. The tree has lost a major limb at 3.6 metres, leading to the formation of an open cavity. This measured 30 cm wide x 60 cm high x 50 cm deep, including red-rotten wood and wood mould. *Fistulina hepatica* and *Hypholoma fasciculare* were fruiting at the base of the tree in October.

Traps 7 & 8 – The largest diameter oak in Piercefield Park, situated amongst dense bracken in an unshaded location near the base of a south-aspected slope. The trunk has split leaving exposed red-rot from ground level to 4.5 metres. It also has aerial dead branches, and in July there were sap runs on the west side of the trunk. An old *Laetiporus sulphureus* bracket was evident although no fresh fruiting bodies were seen in the autumn. *Hypholoma fasciculare* was fruiting in April and October at the base of the tree. In October *Fistulina hepatica* was also recorded on the living trunk, and *Mycena haematopus* on a section of fallen trunk.

Trap 9 – A shaded fallen bough from an oak on the northern edge of secondary ash woodland. The bough is partly hollow, with some red-rotten wood and wood mould remaining.

Traps 10 & 11 – A shaded standing dead oak in secondary ash woodland. The tree had suffered trunk failure in the past and was unfortunately overtopped by the surrounding ash. The trunk is hollow from ground level to 3 metres with areas of red- and white-rotten wood, and above this is a remnant stem. *Fistulina hepatica*, *Lycoperdon pyriforme* and *Mycena galericulata* were fruiting at the base of the tree in October.

Trap 12 – A shaded fallen Horse Chestnut in secondary ash woodland outside the grazing fence but within the bank marking the park boundary. The major branches have been mostly sawn off, leaving the trunk propped up. *Scutellinia scutellaris* was recorded in October on the decaying fallen branches. The root-plate shows butt-rot with soft decayed wood.

Trap 13 – A shaded younger ash in a woodland situation, with a split trunk at 3.4 metres exposing white-rot. *Stereum hirsutum* brackets were present on the trunk throughout, and *Pleurotus ostreatus* was fruiting in October.

Trap 14 – An ash on the southern edge of secondary woodland in a fringe of bracken. A trunk wound at 1.4 metres has developed into an open white-rotten cavity, 30 cm wide x 120 cm high x 20 cm deep.

Trap 15 – A three-stemmed ash on the south side of a group of ash trees in grassland. A trunk wound at 1 metre has developed into a white-rotten cavity with wood mould, 13 cm wide x 45 cm high x 20 cm deep.

The type, deployment height, orientation, and dates of operation for each trap are provided in Table 4.

Table 4. The trap type, height of trap placement, and dates of deployment for each flight interception trap in the saproxylic invertebrate survey at Piercefield Park in 2023.

Code	Trap type	Trap height (cm)	Trap orientation (degrees)	Date deployed (2023)	Date removed (2023)
1	4-bottle	190	205	25 April	29 November
2	1-bottle	170	160	25 April	24 October
3	4-bottle	180	250	25 April	24 October
4	4-bottle	50	150	25 April	22 June
5	4-bottle	320	90	25 April	24 October
6	4-bottle	360	125	22 June	24 October
7	4-bottle	130	260	25 April	24 October
8	4-bottle	220	260	25 April	24 October
9	4-bottle	70	175	12 May	24 October
10	4-bottle	50	270	25 April	24 October
11	4-bottle	60	180	25 April	24 October
12	4-bottle	70	15	22 June	29 November
13	1-bottle	140	255	22 June	24 October
14	1-bottle	135	250	5 September	24 October
15	1-bottle	100	130	25 April	22 June

Three trap deployments were lost due to traps being disturbed, either by people, animals, or during bad weather. The locations and sample periods affected were:

- Trap 8 – 19 July to 5 September;
- Trap 9 – 22 June to 19 July;
- Trap 15 – 12 May to 22 June.

2.3. Survey dates and weather conditions

The weather conditions during the saproxylic invertebrate survey visits at Piercefield Park in 2023 are summarised in Table 5.

Table 5. Weather conditions during saproxylic invertebrate survey visits at Piercefield Park in 2023.

Date (2023)	Start time	Finish time	Maximum temperature (°C)	Cloud cover (%)	Rainfall (mm)	Wind speed (mph)
25 April	0930	1630	11	5	0	7-9 E
12 May	0900	1645	16	15	0	14-17 NE
1 June	0900	1645	18	30	0	15-16 NE
22 June	0900	1645	23	0	0	7-9 SW
19 July	0900	1645	20	10	0	11-14 W
5 September	0900	1645	27	0	0	11-16 E
24 October	0830	1600	13	40	0	4-6 S
29 November	0900	1530	3	100	0	0

The visit on 25th April was mostly occupied with setting up flight interception traps. Two flight interception traps left out after 24th October were collected on 29th November, although no additional recording was attempted as the time was spent documenting the deadwood resources in Piercefield Park. GPS tracks for the survey are shown in Appendix 2.

2.4. Sample identification

Most specimens from the samples were identified by microscopy although some easily recognisable species were recorded in the field. Voucher specimens have been retained for some critical species.

2.5. Data interpretation

2.5.1. Classification of saproxylic species

Saproxylic invertebrates were classified from published lists (Alexander, 2002, 2004).

2.5.2. Saproxylic indices

Two measures of the value of a site for saproxylic beetles have been devised, comprising the Index of Ecological Continuity (Alexander, 2004), and the Saproxylic Quality Index (Fowles *et al.*, 1999).

Index of Ecological Continuity (IEC)

Alexander (2004) presents an Index of Ecological Continuity (IEC) for saproxylic beetles, based on lists of species associated with habitat continuity from Harding & Rose (1986). These are allocated to three groups, based on their strength of association with areas of pasture-woodland, ancient woodland, and continuity of deadwood habitats. The groups are defined as follows:

- **Group 1** – Species which are known to have occurred in recent times only in areas believed to be ancient woodland, mainly pasture woodland;
- **Group 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 areas that may not be ancient or for which the locality data are imprecise;
- **Group 3** – Species which occur widely in wooded land, but which are collectively characteristic of ancient woodland with dead-wood habitats.

Species categorised within the IEC are relatively poor colonists of newly available habitats, and a high-scoring assemblage suggests a site of high conservation value and low replaceability (Alexander, 2004). The index is calculated by summing the scores for all species recorded. Alexander (2004) suggests the following IEC thresholds to assess site importance:

- **15-24** – Regional importance;
- **25-79** – National importance;
- **80** – European importance.

This provides a strong assessment of site quality, as it based on species-richness of the old-growth fauna, although the value is cumulative and therefore heavily dependent on recording effort.

Saproxylic Quality Index (SQI)

Fowles *et al.* (1999) designed a Saproxylic Quality Index (SQI) based on the national conservation status of saproxylic beetles, rather than the extent of their association with sites of long ecological continuity. This is less dependent on cumulative recording effort than the IEC and provides a complementary assessment of site condition (Alexander, 2015). The SQI is calculated by summing the scores for all species, dividing this score by the number of scoring species, and multiplying by 100. Fowles *et al.* (1999) suggest a minimum of 40 scoring saproxylic species for a meaningful calculation. A threshold of 500 was initially given for national significance, although it has been suggested that this should be approximately 300 as few sites score over 500 (Alexander, 2015). A listing of British sites based on SQI values is available for comparison (Fowles *et al.*, 1999).

2.6. Species conservation status

Invertebrate species with a published conservation status, or a provisional conservation status assessment, are listed in Section 3. The conservation status of some invertebrate groups has not been assessed using current IUCN Red List criteria (IUCN, 2022), with the result that two classification systems are currently in operation. These are summarised in Appendix 3.

2.7. Constraints

Three flight interception trap samples were lost during this survey representing 116 days of trap deployment. This represents only 5.2% of the 2,230 trap sampling days and given that sufficient data were collected to interpret the site, it does not affect the conclusions in this report.

As no definitive site boundary was available before the survey, four veteran trees outside of the main grazed area of the park were only discovered in October. These were three oaks with red-rotten trunks, and a white-rotten beech. The survey coverage without these trees was sufficient to allow reliable interpretation of the site, although further survey could potentially reveal other scarce saproxylic species.

3. Results

221 saproxylic invertebrate species were recorded in the 2023 samples at Piercefield Park. These comprise 1 spider, 134 beetles, 63 flies, 1 true bug, 18 aculeate Hymenoptera, 1 moth, 2 pseudoscorpions, and 1 snake-fly. Of these species, 104 beetles, 63 flies, 1 true-bug, 18 bees and wasps, 1 moth, 2 pseudoscorpions, and 1 snake-fly are new records for the site. An additional 168 invertebrate species were noted as casual records during the field survey, or during identification of samples for saproxylic taxa.

Six species are new to Wales – the click-beetles *Ampedus rufipennis* and *Procræus tibialis*, the lined flat bark beetle *Notolaemus unifasciatus*, the timberworm beetle *Lymexylon navale*, the rove beetle *Scydmaenus rufus* and the fly *Leiomyza birkheadi*. The survey also provided second Welsh records of the beetles *Colydium elongatum*, *Corticaria alleni*, *Mycetophagus quadriguttatus* and *Taphrorychus bicolor*; the solitary wasp *Stigmus pendulus*; the Variegated Fruit-fly *Phortica variegata*, and the fungus gnat *Mycetophila caudata*.

3.1. Species status

53 invertebrate species with a published conservation status or a provisional conservation status were recorded at Piercefield Park in 2023. These species, conservation status, and categorisation as saproxylic are listed in Table 6. Following this, the ecology and distribution of the Threatened, Near Threatened, and Red Data Book species is discussed, in addition to species without categorisation recorded for the first or second time in Wales.

Table 6. Invertebrate species with conservation status recorded at Piercefield Park in 2023, classified by saproxylic life-history.

Order	Family	Taxon	Status	Saproxylic
Araneae	Dictynidae	<i>Nigma puella</i>	NS	No
Araneae	Linyphiidae	<i>Hybocoptus corrugis</i>	NS	No
Coleoptera	Aderidae	<i>Aderus populneus</i>	NS	Yes
Coleoptera	Aderidae	<i>Euglenes oculatus</i>	NS	Yes
Coleoptera	Anthribidae	<i>Platystomos albinus</i>	Nb	Yes
Coleoptera	Cleridae	<i>Tillus elongatus</i>	NS	Yes
Coleoptera	Cryptophagidae	<i>Cryptophagus micaceus</i>	RDB K	Yes

Order	Family	Taxon	Status	Saproxyllic
Coleoptera	Curculionidae	<i>Platypus cylindrus</i>	Nb	Yes
Coleoptera	Curculionidae	<i>Taphrorychus bicolor</i>	Na	Yes
Coleoptera	Curculionidae	<i>Trachodes hispidus</i>	Nb	Yes
Coleoptera	Elateridae	<i>Ampedus rufipennis</i>	RDB2	Yes
Coleoptera	Elateridae	<i>Prokraerus tibialis</i>	RDB3	Yes
Coleoptera	Laemophloeidae	<i>Notolaemus unifasciatus</i>	Na	Yes
Coleoptera	Latridiidae	<i>Corticaria alleni</i>	N	Yes
Coleoptera	Latridiidae	<i>Enicmus rugosus</i>	N	Yes
Coleoptera	Lymexylidae	<i>Lymexylon navale</i>	NS	Yes
Coleoptera	Melandryidae	<i>Abdera biflexuosa</i>	NS	Yes
Coleoptera	Melandryidae	<i>Anisoxya fuscula</i>	NS	Yes
Coleoptera	Melandryidae	<i>Hypulus quercinus</i>	NR	Yes
Coleoptera	Melandryidae	<i>Orchesia micans</i>	NS	Yes
Coleoptera	Mycetophagidae	<i>Mycetophagus quadriguttatus</i>	NS	Yes
Coleoptera	Nitidulidae	<i>Cryptarcha strigata</i>	Nb	Yes
Coleoptera	Orsodacnidae	<i>Orsodacne cerasi</i>	NS	No
Coleoptera	Orsodacnidae	<i>Orsodacne humeralis</i>	NS	No
Coleoptera	Phloiophilidae	<i>Phloiophilus edwardsii</i>	NS	Yes
Coleoptera	Ptinidae	<i>Dorcatoma flavicornis</i>	NS	Yes
Coleoptera	Ptinidae	<i>Ptinus subpilosus</i>	NS	Yes
Coleoptera	Scraptiidae	<i>Anaspis costai</i>	NS	Yes
Coleoptera	Scraptiidae	<i>Scraptia testacea</i>	NS	Yes
Coleoptera	Silvanidae	<i>Silvanus bidentatus</i>	Nb	Yes
Coleoptera	Silvanidae	<i>Uleiota planatus</i>	Na	Yes
Coleoptera	Sphindidae	<i>Sphindus dubius</i>	Nb	Yes
Coleoptera	Staphylinidae	<i>Dropephylla gracilicornis</i>	NS	Yes
Coleoptera	Staphylinidae	<i>Euplectus kirbii</i>	Notable	Yes
Coleoptera	Staphylinidae	<i>Gyrophaena hanseni</i>	Notable	No
Coleoptera	Staphylinidae	<i>Hypnogyra angularis</i>	NA	Yes
Coleoptera	Staphylinidae	<i>Quedius truncicola</i>	NS	Yes
Coleoptera	Staphylinidae	<i>Scydmaenus rufus</i>	RDB 2	Yes
Coleoptera	Staphylinidae	<i>Sepedophilus bipunctatus</i>	NS	Yes
Coleoptera	Tenebrionidae	<i>Pseudocistela ceramoides</i>	NS	Yes
Coleoptera	Zopheridae	<i>Colydium elongatum</i>	NS	Yes
Diptera	Chloropidae	<i>Lasiambia brevibucca</i>	pNS	Yes
Diptera	Clusiidae	<i>Clusia tigrina</i>	pNS	Yes
Diptera	Drosophilidae	<i>Phortica variegata</i>	pVU, pNS	Yes
Diptera	Limoniidae	<i>Rhipidia uniseriata</i>	RDB3	Yes
Diptera	Muscidae	<i>Helina abdominalis</i>	pNS	Yes
Diptera	Muscidae	<i>Phaonia laeta</i>	pNS	Yes
Diptera	Mycetophilidae	<i>Mycetophila caudata</i>	NS	No
Diptera	Mycetophilidae	<i>Sciophila interrupta</i>	NS	No
Diptera	Scenopinidae	<i>Scenopinus niger</i>	NT, NS	Yes
Diptera	Syrphidae	<i>Ferdinandea ruficornis</i>	NS	Yes
Hymenoptera	Crabronidae	<i>Stigmus pendulus</i>	RDBK	Yes

Order	Family	Taxon	Status	Saproxyllic
Hymenoptera	Formicidae	<i>Lasius brunneus</i>	NA	Yes

3.1.1. Beetles

Ampedus rufipennis [RDB2]

Red-horned Cardinal Click Beetle. One male was recorded in a flight interception trap on a damaged oak with extensive exposed red-rot, between 25th April and 12th May. *Ampedus rufipennis* is usually associated with white-rotten wood, and so this individual may have been dispersing from elsewhere in the park, or the local area. The Severn Basin in England is one of the centres of its distribution in Britain. **This is the 1st record for Wales.**

Colydium elongatum [NS]

A cylindrical bark beetle. One female was beaten from an aerial dead branch of a damaged oak with extensive exposed red-rot, and another female was found under bark on a fallen oak bough. It is a predator of *Platypus* and *Xyloterus* beetle larvae, and *Platypus cylindrus* adults were found in both locations. The distribution and range of this species have increased since the mid-1990s, presumably in response to expansion of the range of *Platypus cylindrus* (Alexander, 2002). The only other Welsh record is from Coed Gwaenydd Bach in Glamorganshire.

Corticaria alleni [N]

A minute brown scavenger beetle. One male was found on the trunk of a damaged oak with extensive exposed red-rot. The life-history is poorly known, with records under loose dry bark, from myxomycete fungi, and in dry crumbly heartwood. It is mostly associated with areas of old-growth oak and beech woodland in south and south-east England. The only other Welsh record is from Llanover Park in Monmouthshire.

Cryptophagus micaceus [RDBK]

One female was recorded from a flight interception trap in a small white-rotten cavity in the trunk of a low Ash pollard, between 25th April and 12th May. It is usually associated with tree-hole nests of social Hymenoptera, and it is possibly significant that eight Honeybees *Apis mellifera* were also captured in this trap, presumably nesting in the cavity. Unfortunately, the trap was disturbed in the second sampling period and trapping was stopped in this location, so no further data were collected from the tree. In Wales, this beetle is also known from Carn Gafallt, Chirk Castle Park and Dinefwr Estate.

Lymexylon navale [NS]

A timberworm beetle. One female was recorded in a flight interception trap on a damaged oak with exposed red-rot, between 22nd June and 19th July, and another female was found on the trunk of a damaged oak with extensive exposed red-rot. The larvae feed on cellulose within the trunk of live and dead standing oaks. The strongest population in Britain is in the Thames Basin, with scattered records elsewhere, some of which may be the result of movements of timber (Nash, 2001). **This is the 1st record for Wales.**

Mycetophagus quadriguttatus [NS]

A hairy fungus beetle. One female was recorded in a flight interception trap on a damaged oak with extensive exposed red-rot, between 12th May and 22nd June. It is associated with

old decaying broad-leaved timber with mildewy cavities and has a scattered distribution in southern and central England. The only other Welsh record is from Powis Park in Montgomeryshire.

Prokraerus tibialis [RDB3]

A click beetle. One male was recorded in a flight interception trap, from a white-rotten cavity with wood mould in a hollowing Ash trunk, between 12th May and 22nd June. Larvae develop in decaying heartwood of oak, Beech, Ash, and probably other trees. The Severn Basin in England is one of the centres of its distribution in Britain. **This is the 1st record for Wales.**

Scydmaenus rufus [RDB2]

A rove beetle. One male was sieved from wood mould in the white-rotten cavity of an Ash tree. Most records are from under bark and in moist crumbly wood or wood mould, of various broad-leaved trees. The distribution is widely scattered in southern Britain, as far north as Lancashire. **This is the 1st record for Wales.**

Notolaemus unifasciatus [Na]

A lined flat bark beetle. One male was found under sappy bark of a fallen oak trunk. It occurs in southern England, northwards to Herefordshire, Worcestershire, Leicestershire, and Derbyshire. **This is the 1st record for Wales.**

Taphrorychus bicolor [Na]

A bark beetle. Fourteen females were recorded in flight interception traps on three oaks between 12th June and 5th September. It is most often associated with beech in south-east England. The only other Welsh record is from Erddig Park in Denbighshire.

3.1.2. Flies

Mycetophila caudata [NS]

A fungus gnat. One female was recorded in a flight interception trap on the root-plate of a fallen Horse Chestnut between 5th September and 24th October. The life history of this species is unknown. It previously only occurred in Scotland but was first recorded in south-east England in 1997 and has since spread out from there. The only other Welsh record is from Dinefwr Estate in Carmarthenshire, also in 2023 (Alexander, 2024).

Leiomyza birkheadi

An asteiid fly. Described as new to science in 2007 (Gibbs & Papp, 2007). Larvae are likely to develop in wood debris or in fungi (Falk *et al.*, 2016). There are few UK records to date. A total of 16 males was recorded on *Coprinellus disseminatus* on London Plane *Platanus x hispanica* on 5th September 2023. **This is the 1st record for Wales.**

Phortica variegata [pVU]

Variegated Fruit-fly. Three males and 19 females were recorded from three oak trees and one Ash. One female was captured in a bottle trap though all others were found by active survey. The largest count was 15 females on a red-rotten oak with sap-runs on the trunk on 19th July. The first and only other record for Wales was from Lower Wyndcliff Wood in 2018, a site only a short distance to the north of Piercefield Park (Alexander, 2019b).

Rhipidia uniseriata [RDB3]

Simple Small Comb-tail Cranefly. One female was caught in a bottle trap on a red-rotten oak, and another in a bottle trap on the rotten root-plate of a fallen horse chestnut. Most records have been from white-rotten cavities and logs of Beech and the species has a widely scattered distribution in southern Britain. It is known from a further five sites in Wales - Coppice Mawr, Dingestow Court and Grondra Great Wood in the Wye Gorge/Lower Wye Valley, Dinefwr Estate and Llanover Park.

Scenopinus niger [NT, NS]

Forest Windowfly. Four females were recorded in bottle traps and another female was swept. These records were associated with three red-rotten oaks. Larvae are likely to be predators in dry rotting heartwood of broadleaved trees and records are widely scattered in southern Britain.

3.1.3. Hymenoptera

Stigmus pendulus [RDBK]

A solitary wasp. One female was beaten from an aerial dead Hawthorn branch, and five females were recorded around exposed deadwood in the trunk of a red-rotten oak. This species provisions nests in dead wood with aphids. It is widespread in south-east England, spreading northwards through the central midlands, with scattered records from Dorset to Shropshire, Lancashire, County Durham, Yorkshire, and East Anglia. The only other Welsh record is from Marford Quarry near Wrexham, also in 2023 (Formstone, 2023).

3.2. Indices for saproxylic beetles

3.2.1. Saproxylic Quality Index (SQI)

The Saproxylic Quality Index for the current survey is 539.1, based on 115 qualifying species. Full calculations are provided in Appendix 4. Nine additional species were recorded in 1994 – *Ampedus cinnabarinus*, *Anitys rubens*, *Cis bidentatus*, *Dexiogyia corticina*, *Dropephylla vilis*, *Ischnoglossa prolixa*, *Sepedophilus testaceus*, *Symbiotes latus* and *Trypodendron signatum*. Six additional species were recorded in 1999 – *Anaspis pulicaria*, *Bitoma crenata*, *Malthinus seriepunctatus*, *Malthodes marginatus*, *Mordellochroa abdominalis* and *Phloeophagus lignarius*.

3.2.2. Index of Ecological Continuity (IEC)

The Index of Ecological Continuity for the present survey is 67, based on 42 qualifying species. Four additional species were recorded in 1994 – *Ampedus cinnabarinus*, *Anitys rubens*, *Symbiotes latus* and *Trypodendron signatum*. One additional species was recorded in 1999 – *Bitoma crenata*. The IEC value including these is 76 and full calculations are provided in Appendix 4.

3.3. Tree species where saproxylic invertebrates were recorded at Piercefield Park

The number of saproxylic invertebrate species recorded at each tree species sampled at Piercefield Park in 2023 is summarised in Table 7. The trees were not subject to equal sampling intensity, and the data are based on adult specimens which may not have

developed in the tree where these were recorded. Nevertheless, it is likely that this broadly represents the importance of different tree species at the site, with oak supporting the greater number of both saproxylic species and species with a conservation status.

Table 7. The number of saproxylic invertebrates recorded from different tree species at Piercefield Park in 2023.

Plant scientific name	Plant vernacular name	Saproxylic species	Saproxylic species with conservation status
<i>Aesculus hippocastanum</i>	Horse Chestnut	47	5
<i>Crataegus monogyna</i>	Hawthorn	8	1
<i>Fagus sylvatica</i>	Beech	5	1
<i>Fraxinus excelsior</i>	Ash	52	12
<i>Platanus x hispanica</i>	London Plane	18	2
<i>Pinus species</i>	Pine species	2	0
<i>Pinus sylvestris</i>	Scots Pine	5	0
<i>Quercus</i>	Oak	157	36

Additional data recorded in association with saproxylic invertebrates during this survey are summarised in Appendix 5.

3.4. Fungus species where saproxylic invertebrates were recorded at Piercefield Park

The number of saproxylic invertebrate species recorded from each fungus species sampled at Piercefield Park in 2023 is summarised in Table 8. The fungi were not subject to equal sampling intensity, and the data are based on adult specimens which may not have developed in the fungus where these were recorded.

Table 8. The number of saproxylic invertebrates recorded from different fungus species at Piercefield Park in 2023.

Fungus scientific name	Fungus host	Saproxylic species	Saproxylic species with conservation status
<i>Fistulina hepatica</i>	<i>Quercus</i>	2	0
<i>Hypholoma fasciculare</i>	<i>Quercus</i>	2	0
<i>Laetiporus sulphureus</i>	<i>Quercus</i>	3	1
<i>Polyporus species</i>	<i>Aesculus hippocastanum</i>	2	0
<i>Stereum hirsutum</i>	<i>Fraxinus excelsior</i>	2	0
<i>Trametes versicolor</i>	<i>Quercus</i>	2	0

3.5. Habitat features for saproxylic invertebrates at Piercefield Park

Areas with habitat features for saproxylic invertebrates in the current survey are shown on Figure 3. Some sections of the historic park to the north and west were not surveyed, so there may be other locations of interest.



Piercefield Park saproxylic invertebrate habitat areas in 2023

Figure 3. Areas at Piercefield Park with habitat features for saproxylic invertebrates in 2023. Imagery © 2024 Google, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies.

3.5.1. Area A

The area north of Piercefield House was historically called the 'Upper Lawn'. There are two large open-grown oaks with exposed red-rot (dbhs 150 and 196 cm) in the field north of the house. The old park boundary here features a low oak pollard (dbh 142 cm) and a Beech with extensive exposed white-rot (dbh 160 cm). An unshaded overmature maiden Ash (dbh 146 cm) stands next to the ruined stable wall, with a white-rotten trunk cavity and accumulated wood mould. A flight interception trap here was the only location in this survey for the rove beetles *Euplectus kirbii* (N), *Scydmaenus rufus* (RDB2) and

Sepedophilus bipunctatus (NS), the false darkling beetle *Orchesia micans* (NS), the click beetle *Procræus tibialis* (RDB3) and the false flower beetle *Scaptia testacea* (NS). There was also lichen interest on the open-grown oak trunks. One tree had a remnant Base-rich bark (*Lobarion*) community with *Thelopsis corticola* new to Monmouthshire, *Aquacidia viridifarinos*, and *Rinodina roboris*. The other oak hosted *Lecanora sublivescens* (NT) (see Photo A1.27). This is a specialist lichen of parkland trees with mesic bark pH and was also new to Monmouthshire. Unfortunately, the *Lobarion* community was not found elsewhere in the park, with open-grown trees supporting an Enriched bark (*Xanthorion*) community due to the relatively high levels of background ammonia in the area.

3.5.2. Area B

This an area of primarily non-native broadleaved and coniferous planting. A flight interception trap was placed in the hollow trunk of a copper Beech *Fagus sylvatica* f. *purpurea* (dbh 108 cm) to the south of Piercefield House. Catches here were generally poor, though it was the only location in this survey for the darkling beetle *Prionychus ater*. There are four London Plane on the west side of the plantation, as well as one remaining as a cut stump (dbh 170 cm). A flight interception trap was operated in a large open cavity of one tree that has had the trunk sawn off at 7 metres. Interesting species recorded here included the ant-like leaf beetle *Aderus populneus* (NS) and the darkling beetle *Pseudocistela ceramboides* (NS).

3.5.3. Area C

This area is east of Piercefield House and continuous with the woodland to the north. There are at least 10 mature oaks (dbh estimated < 100 cm) as well as Ash. Half the oaks lack an open-grown form and are suppressed by other tree crowns. These probably regenerated naturally during a period of reduced grazing in the park.

3.5.4. Area D

This is a block of mature Hawthorn on the eastern side of the park. Although it was mostly in blossom between survey visits in 2023, it should be valuable for flower-visiting insects.

3.5.5. Area E

This a tree clump south-west of Piercefield House. There are two mature oak trees (dbhs 141 and 160 cm) on the north side, with six Scots Pine to the south. The trees have suppressed the growth of two other oaks (dbh 50 cm and 65 cm).

3.5.6. Area F

This area south of Piercefield House contains six unshaded open-grown maiden oaks. The trees appear to be of similar age and are within metal railing enclosures which are becoming ingrown within the trunks. One tree has recently died, and another has a trunk cavity formed after the loss of a major limb. This is open between ground level and 2.3 metres and was the site for a flight interception trap, where *Euglenes oculatus* (NS) was recorded. The aerial dead branches produced the only records of *Abdera biflexuosa* (NS) and *Phloiophilus edwardsii* (NS) in this survey.

3.5.7. Area G

This part of the historic park is now within woodland to the east. There are two large Horse Chestnut (dbhs 150 cm and 155 cm) on the boundary bank.

3.5.8. Area H

This area contains approximately 18 open-grown mature and overmature parkland trees, including 11 oaks (dbhs 66 – 157 cm), one Red Oak *Quercus ruber* (dbh 103 cm), 2 lime (dbhs 127 cm and 148 cm), 1 Horse Chestnut (dbh 100 cm), 2 Field Maple *Acer campestre* (dbh 64 and 76 cm) and 1 Ash (dbh 134 cm). There is also one sawn oak stump (dbh 137 cm). A flight interception trap placed on an oak with a red-rotten trunk cavity was productive for scarce saproxylic Diptera, including the chloropid *Lasiambia brevibucca* (pNS), the hoverfly *Ferdinandea ruficornis* (NS), the muscid *Helina abdominalis* (pNS) and the windowfly *Scenopinus niger* (NT, NS).

3.5.9. Area I

This area contains some of the best current saproxylic invertebrate habitats in Piercefield Park. Nine oaks (4 mature, 4 overmature and 1 recently dead) range in dbh from 90 – 151 cm. One overmature oak in grassland south of an old pit has lost a major limb at 3.6 metres, leading to the formation of an open cavity. A flight interception trap here recorded *Ferdinandea ruficornis*, *Scenopinus niger*, *Lymexylon navale* (NS; new to Wales) and 159 specimens of the wood-boring beetle *Dorcatoma flavicornis* (NS).

Another productive tree was a recently snapped oak trunk (dbh 112 cm). The standing trunk was a magnet for saproxylic invertebrates, including the muscid *Phaonia laeta* (pNS), the Variegated Fruit-fly *Phortica variegata* (pVU, pNS), the ambrosia beetle *Platypus cylindrus* (Nb) and Yellow-legged Clearwing *Synanthedon vespiformis* (see Photo A1.28). Species recorded under sappy bark on the fallen section of the trunk included the lined flat bark beetle *Notolaemus unifasciatus* (Na) new to Wales, the zopherid beetle *Colydium elongatum* (NS) (see photo A1.29), and the flat bark beetle *Uleiota planatus* (Na).

3.5.10. Area J

This is further east down the shallow valley in the centre of Piercefield Park, as a continuous extension of Area H. Five oaks are above 150 cm dbh, including the largest diameter tree in the park at present (208 cm dbh). This tree is set amongst bracken in full sun and was location for two flight interception traps. These produced the Red-horned Cardinal Click Beetle *Ampedus rufipennis* (RDB2) new to Wales and the rove beetle *Hypnogyra angularis* (NS). Species on the trunk included the minute brown scavenger beetle *Corticaria alleni* (N), *Lymexylon navale*, and 15 female *Phortica variegata* around a sap-run. The lichen *Cresponea premnea* on this tree was a remnant of the Ancient Dry Bark community (*Calicetum*) which normally develops on sheltered trees that are more than 350 years old.

The other veteran trees in Area I are now surrounded by secondary ash woodland. This must have established during a break in grazing, possibly in World War 2 when the area was used for live firing exercises by American troops. The only younger oaks in the park grew up at the same time and there are at least nine trees (dbh range 19 – 66 cm) that are suppressed amongst the faster-growing Ash. A large hollow oak was the location for two flight interception traps, the tree is unfortunately now standing dead having been

overtopped by Ash. This was the only site in the current survey for *Hypulus quercinus* (NR), with 16 males and 14 females recorded in a trap in front of red-rotten oak in the hollow trunk. *Xestobium rufovillosum* was also found crawling on damp lignum here, and there were five pinhead lichen species on the tree, including *Microcalicium ahlneri* (NS) and *Chaenothecopsis nigra* (NS) both new to Monmouthshire.

Another large oak (dbh 173 cm) is outside the grazing fence near old boundary bank and would benefit from halo-thinning to improve the light available to the tree. Some of the younger Ash are also developing dead wood, and the false darkling beetle *Anisoxya fuscula* (NS) was recorded in a trap on a split Ash trunk (dbh 46 cm). A flight interception trap placed on the root-plate of a fallen Horse Chestnut produced *Mycetophila caudata* (NS) and Simple Small Comb-tail Cranefly *Rhipidia uniseriata* (RDB3). The weevil *Platystomos albinus* (Nb) was found under bark on this tree (see Photo A1.30) and the Black-headed Cardinal Beetle *Pyrochroa coccinea* was recorded in the grass below it.

3.5.11. Area K

This area includes a clump of mature Ash near the southern entrance to Piercefield Park (dbhs 98 – 135 cm), and another group of veteran trees on the edge of Alcove Wood. These were a lapsed coppice Wych Elm *Ulmus glabra* (dbh 82 cm), a twin-stemmed Small-leaved Lime *Tilia cordata* (dbh 121 cm), and a very large oak (dbh 185 cm). The oak is part of the old park boundary and now fenced out of grazing. A particular concern here is a group of Leyland Cypress *Cupressus x leylandii* which are shading the broadleaved trees to the north. These conifers should be removed. Little sampling was done in the area, although a flight interception trap in a small trunk cavity on a three-stemmed ash produced the only record of *Cryptophagus micaceus* (RDBK) in the survey.

3.5.12. Area L

Park Grove is a small area of woodland at the south end of the park. Most of the wood is secondary growth of Ash and Sycamore *Acer pseudoplatanus*, although there are two large Beech trees on the park boundary, one a standing dead trunk (dbh 180 cm) completely covered with Ivy *Hedera helix*, the other still alive and intact (dbh 160 cm). Some of the younger trees are developing dead wood features, including a Beech with exposed heartwood decay (dbh 117 cm) and a fallen Ash with white-rot in the trunk (dbh 70 cm).

3.6. Tree age structure

The diameter at breast height (DBH) was measured or estimated for a large proportion of the mature and post-mature broadleaved trees at Piercefield Park on 29th November 2023. This included almost all the open-grown oaks and the results are summarised by DBH class in Table 9.

Table 9. Distribution by diameter at breast height (DBH) for selected broadleaved tree species in Piercefield Park in November 2023. *Younger Ash trees below 75 cm dbh were numerous on the east side of the park and no attempt was made to enumerate these.

Tree species	1-25 cm	26-50 cm	51-75 cm	76-100 cm	101-125 cm	126-150 cm	151-175 cm	176-200 cm	201-225 cm
Ash*	?	?	?	3	2	2	–	–	–
Beech	–	–	–	1	3	–	2	1	–
Field Maple	–	–	3	1	–	–	–	–	–
Horse Chestnut	1	–	–	1	–	1	1	–	–
Lime	1	–	–	–	1	2	–	–	–
London Plane	–	–	–	–	–	–	3	1	–
Oak	6	5	11	16	14	12	6	2	1
Red Oak	–	–	–	–	1	–	–	–	–
Sweet Chestnut	–	–	–	–	–	1	–	–	–
Turkey Oak	–	–	–	1	–	–	–	–	–
Wych Elm	–	–	–	1	–	–	–	–	–

4. Discussion

4.1. Saproxylic Quality Index (SQI)

The SQI for Piercefield Park during the current survey was 539.1 based on 115 qualifying species, which makes it the 46th highest scoring site in Britain (Fowles, 2024). It is the highest ranked site in Wales, with Dingestow Court scoring 525 (Alexander, 2020) and the Welsh part of the Wye Valley Woodlands SAC scoring 493.8 (Howe *et al.*, 2022). This is above the threshold of 500 which has been suggested for classifying sites as of national importance for saproxylic invertebrates (Fowles *et al.*, 1999). SQI values are becoming increasingly outdated as new species status reviews are published, although all sites in the national database are assessed on the same basis (Fowles, 2024). The species scores could be updated in future, and the thresholds for classifying site importance might also require adjustment.

4.2. Index of Ecological Continuity (IEC)

The Index of Ecological Continuity for Piercefield Park is now 76, which makes it the 27th highest scoring site in Britain (Fowles, 2024). It is the 3rd ranked site in Wales, with Chirk Castle Park in Denbighshire scoring 87 (Alexander, 2019a; Table 10) and the Welsh part of the Wye Valley Woodlands Special Area of Conservation (SAC) scoring 85 (Howe *et al.*, 2022). This is above the threshold of 25 which has been suggested for classifying sites as of national importance (Alexander, 2004). Sites scoring more than 80 are of European significance, and it is likely that this could be achieved at Piercefield Park with further survey. As with the SQI, the scores for some species require review – for example the original breeding areas of the longhorn beetle *Pyrrhidium sanguineum* are the Welsh and English border counties, but it has been widely moved around the country in timber for firewood (Alexander, 2019c). As a result, it is no longer considered a characteristic species

of old-growth wood pastures or historic parklands, but its IEC score has been retained in this report.

Table 10. Key Welsh saproxylic invertebrate sites with Saproxylic Quality Index (SQI) and Index of Ecological Continuity (IEC) values. SQI & IEC scores in () for Wye Valley Woodlands are for the Welsh part only. *Note that Alexander (2024) scores Dinefwr Estate SQI and IEC as 374 and 72 as he excludes *Pyrrhodium sanguineum* and *Uleiota planatus*.

Site	SQI	IEC	Source
Carn Gafallt	387.8	29	Boyce (2023a)
Chirk Castle Park	439	90	Alexander (2019a)
Dinefwr Estate*	411*	77*	Alexander (2024)
Dingestow Court	525	39	Alexander (2020); Howe <i>et al.</i> (2022)
Gilfach	314.5	5	Boyce (2023b)
Gregynog	409	53	Alexander (2023)
Piercefield Park	539.1	76	Current survey
Powis Castle Park	308	63	Judd (1999)
Wye Valley Woodlands SAC	504.7 (493.8)	90 (85)	Howe <i>et al.</i> (2022)

4.3. The Wye Gorge landscape

Saproxylic indices have been calculated for the Wye Gorge Woodlands and Dingestow Court as a single partially fragmented saproxylic landscape (Howe *et al.*, 2022). Piercefield Park is very much integral to this landscape, and the results of the current survey add 14 qualifying species to this list and raise the IEC to 126 which is the 10th highest score in Britain (Fowles, 2024).

4.4. Saproxylic invertebrate habitats at Piercefield Park

Piercefield Park is an important site for saproxylic invertebrates and although the number of veteran and ancient trees today is relatively small, as little as 100 years ago there were probably three or four times as many (as shown on Figure 1). Piercefield may also include a remnant of the extensive wood-pasture that existed in south-east Monmouthshire during the Middle Ages (Peterken, 2008). The park currently contains many good features for saproxylic invertebrates, which is reflected in the range of conservation significant species recorded. Dead wood including red-rotten heartwood, white-rotten heartwood and wood mould is available in open, semi-shaded, and shaded situations. This includes some standing and fallen dead trees, boughs, and branches.

The largest number of saproxylic species were associated with oak, and Ash was also important. Lesser numbers of species of conservation concern were recorded from Beech, Hawthorn, Horse Chestnut, and London Plane. Sampling wood decay fungi was generally unproductive, with saproxylic invertebrates collected in association with six species. The only significant species was recorded on Chicken of the Woods *Laetiporus sulphureus*. In sunny situations, galleries of wood-boring beetles in hard timber have been colonised by solitary bees and wasps. Two trees with sap-runs on the trunk were noted. Frequent open-grown Hawthorn and to a lesser extent Elder *Sambucus nigra* provide nectar sources for some saproxylic invertebrates.

4.5. Management for saproxylic invertebrates

4.5.1. Tree age structure

The lack of tree regeneration and planting in recent decades poses the biggest threat to saproxylic invertebrates at Piercefield Park. The most recent natural regeneration probably occurred about 80 years ago, during the Second World War. It is unclear when oaks were last planted but this is unlikely to have been in the 20th century as the park was partly converted to develop a racecourse in 1926. This gap in age structure, evident in the declining number of younger oaks below 75 cm dbh (as shown in Table 9), jeopardises the future availability of veteran and ancient trees. Importantly, almost all the younger oaks are suppressed trees in secondary woodland, and these will not develop large volumes of heartwood decay, or features such as rot-holes associated with damage to lateral branches. It should be noted that dead lateral branches, which are a feature of open-grown parkland trees, support a unique sheltered situation for specialist wood-decay fungi and an associated saproxylic fauna (for a full explanation, see Alexander, 2024).

A sustainable population of old trees should have greater numbers of trees in each younger age group, as not every young tree will survive to become veteran or ancient (Kirby, 2015). It is difficult to say how many younger trees are required as this depends on the target density of old trees, and rates of tree mortality. Modelling has been used to suggest that maintenance of two maiden oak trees that are more than 400 years old allows for the death of half the trees in a cohort before the transition to the next stage, if regeneration happens every 100 years (Kirby, 2015). Based on the data in Table 9, this would imply that oaks 100 years in age (arbitrarily those in the 76-100 cm dbh class) should be twice as numerous as trees approximately 200 years in age (dbh 126-150 cm), meaning that 8 trees are 'missing' in the younger age class.

There are also currently no young open-grown oaks at Piercefield and based on the same modelling there should be about 50 such trees. These are generalisations based on projected tree mortality and growth rates and should also be adjusted for target tree density, though the scale of the problem is clear. Younger Ash trees below 75 cm dbh are numerous on the eastern edge of the park, where these seeded into the grassland during a period without grazing. Ash cannot be considered as a replacement for oak, as it is usually decayed by white-rot and so supports a different saproxylic fauna to oak where red-rot is more common. Ash is also threatened nationally by Ash Dieback *Hymenoscyphus fraxineus* but it remains a very important tree species.

Livestock grazing is limiting natural regeneration at Piercefield and planting is the most practical solution to increase the number of trees. In general, planting is often very poorly planned, with trees frequently too close together and where these may begin to compete with existing ancient or veteran trees. Planting should follow the principles set out in Hodgetts (1989):

"Planting must be considered in relation to existing trees and should be done close enough to existing trees to maximise colonisation but not so close that new trees cast too much shade on the old ones. The new trees should be planted directly to the north of existing ones or shading will occur. It is best to plant 3 or 4 trees of the same species around an existing old tree in a semicircle avoiding the south side. If planted to the north of the existing tree they should be planted far enough away from it to ensure they are not shaded

by it. The distance between old and new should be flexible depending on the size and shape of the canopies.”

For open-grown oaks on level ground, this may require a minimum planting distance of 30 metres (see Photo A1.41). This could be reduced to 15 metres to create dappled shade and more humid conditions in some areas. Overall, the aim should be to achieve diversity in planting, with combinations of trees that are sufficiently closely spaced to provide shelter while not unduly affecting one another’s growth form (Buglife, 2023). Potentially suitable locations at Piercefield include the fields north of the racecourse (ST522.965 and ST524.961), the slope in the south of the park (ST529.951), and areas near existing tree clumps. Planting the number of trees required and replacing any which die on a one-to-one basis is recommended (Buglife, 2023). This approach also allows trees to establish an open-grown form at the earliest opportunity. Planting in stages (for example, every 10 years) will ensure a diverse age structure, and the planting of occasional replacements will improve this further.

The impact of Ash Dieback means that planting or encouraging natural regeneration of Ash may not be an option at present. Beech could be planted as an open-grown tree forming white-rot, and this species is already present on the park boundary and in Piercefield Woods. Horse Chestnut may develop rot sooner than beech, and traditional varieties of apple *Malus* spp. are even faster-growing (Alexander *et al.*, 2014). A wider range of species will also improve the resilience of the tree population against pests, pathogens, and climate change (Buglife, 2023). There has been some recent planting around ST5302.9546 as a project of the Green Gathering Festival. Unfortunately, few of the species offer to create continuity with the current veteran and ancient trees at Piercefield – the plantings include Alder *Alnus glutinosa*, Dogwood *Cornus sanguinea*, Holly *Ilex aquifolium*, apple, Medlar *Mespilus germanica*, Black Poplar *Populus nigra*, Wild Cherry *Prunus avium*, American Elder *Sambucus canadensis*, lime *Tilia* spp. and Guelder-rose *Viburnum opulus*. Some of these are unsuitable for the terrain or not even present in the immediate area.

4.5.2. Management of existing veteran trees

Competition is a threat to veteran oaks outside the grazed area of the park, with the risk of shading to the low trunk and lateral branches. If the crown of a mature tree retrenches below the height of the secondary woodland canopy, the tree is also likely to die (see Photo A1.16). Encroaching vegetation should be selectively removed where it is shading or engulfing veteran trees. A veteran tree management plan is required to identify specific management actions which will provide the best conditions for the trees that are available, although two trees are identified in Table 11 which need help immediately.

4.5.3. Management of dead wood

All forms of decaying wood can have value for invertebrates, fungi or lichens. Standing and fallen deadwood are different microhabitats, as are decaying heartwood, sapwood, branches, twigs, and bark. The simplest rule is that dead wood should be left undisturbed to undergo natural decay processes (Kirby, 1992). There also needs to be succession from freshly dead material through to old decaying wood, with all stages continuously available (Alexander, 2018). In general, the amount of standing and intact fallen dead wood in Piercefield Park was far less than expected. Much of the fallen deadwood within the open parkland is being cut up or removed (see Photo A1.31). Best practice is that deadwood is

left undisturbed where it has fallen, as seems to be occurring in the more densely wooded peripheries of the park.

It was particularly concerning that aerial deadwood is being cut from trees (see Photo A1.32), and that fires have been set at the base of live trees (see Photos A1.33 and A1.34), and in hollow trees (see Photo A1.35). Shaded dead attached branches are a specialist habitat, for example supporting the beetle *Phloiophilus edwardsii* on *Peniophora* fungi. Fire kills living organisms, damages the soil structure, and can physically damage a living tree if it is lit at the base. Although the park is only crossed by footpaths, it is largely treated as a continuous open space by members of the public and most damage was observed after the summer holidays. It is difficult to prevent damage from casual visitors, although organisers of events which take place in the park should be made aware about the importance of the site for dead wood, veteran and ancient trees, and the biodiversity associated with these.

4.5.4. The wider landscape

While acknowledging the value of wood pastures and parklands for concentrations of veteran and ancient trees, these sites are also part of a wider landscape (Howe *et al.*, 2022). Young or middle-aged trees in situations such as hedgerows and fields usually have no legal protection. When trees like these are removed, consideration may be given to the immediate impact but not the loss of potential future value, as some could eventually become veteran and ancient (Buglife, 2023). These also have the potential to link existing sites, increasing the resilience of associated species by linking habitats across the landscape.

Piercefield Park is an important part of a saproxylic landscape that includes Wyelands to the south, the Wye Valley Woodlands to the east and north, Dingestow Court to the north and Welsh Government Woodland Estate (WGWE) managed by Natural Resources Wales. All opportunities for supporting saproxylic invertebrates through retention or establishment of open-grown trees in this area should be considered, including parkland, broadleaved woodland, conifer plantations, and pasture without trees. It should be a consideration in any project including tree planting. The best landscapes have many veteran and ancient trees, as one or two will not maintain an entire assemblage of associated species (Buglife, 2023). A national policy would be required to promote a minimum desirable density of old trees throughout lowland areas, and this could offer the opportunity to develop a large population of veteran and ancient trees across the landscape in the future.

4.5.5. Management actions

A list of suggested management actions that will be immediately beneficial at Piercefield Park is provided in Table 11.

Table 11. Management actions recommended at Piercefield Park.

Grid reference	Tree species	Action	Timescale	Rationale
N/A	Oak Beech Horse Chestnut Field Maple Apple Sycamore	Create a tree planting plan which is implemented in stages over the next 50 years	< 2 years	To improve continuity in future stand structure

Grid reference	Tree species	Action	Timescale	Rationale
ST5323.9531	Oak	Remove woody species shading veteran oak fenced outside grazed area of park	< 1 year	To reduce shade cast on tree to north
ST5279.9502	N/A	Remove Leyland Cypress plantation	< 1 year	To reduce shade cast on veteran trees to north
ST527.955	Oak	Remove metal enclosures from oaks south of Piercefield House, where this can be done without causing damage to the trees	< 2 years	To allow for further expansion of the oak trunks in future

4.5.6. Monitoring

Habitat condition monitoring based on specialist survey tends to produce long intervals between management advice. It would be preferable to check more regularly (at least every 5 years) for potential negative factors affecting veteran trees, or trees identified as potential future veterans, including:

- Competing tree species around the tree canopy in a 180-degree arc encompassing east, south, and west;
- Shading woody species (e.g. Hawthorn, Blackthorn, Elder or Holly) growing by the tree trunk;
- Presence of *Rhododendron ponticum*, bamboo, Laurel *Laurus nobilis*, or other invasive species;
- Bark rubbing from grazing;
- Soil compaction and eutrophication around the tree;
- Bramble encroaching on the tree trunk or canopy;
- Bramble engulfing fallen dead wood;
- Ivy newly invading the tree trunk.

The impact of visitors and events such as the Green Gathering should also be monitored regularly, and any adverse impacts rectified.

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Appendix 1. Photographs



Photo A1.1. Flight interception trap location 1. A maiden Ash at ST5263.9572.



Photo A1.2. Flight interception trap location 1. The white-rotten interior of the Ash trunk at ST5263.9572 where a 4-bottle trap was operated.



Photo A1.3. Flight interception trap location 2. A Copper Beech at ST5271.9563. The top has snapped off this tree, which is now self-pollarded and the trunk is hollow to the base.



Photo A1.4. Flight interception trap location 2. The white-rotten interior of the Copper Beech trunk ST5271.9563 where a 1-bottle trap was operated.



Photo A1.5. Flight interception trap location 3. A London Plane at ST5265.9558. The trunk of this tree has been cut off at 5 metres, and it is hollow from the base to approximately 2 metres.



Photo A1.6. Flight interception trap location 3. The white-rotten interior of the London Plane trunk at ST5265.9558 where a 4-bottle trap was operated.



Photo A1.7. Flight interception trap location 4. A maiden oak at ST5275.9557. The trunk is damaged with an open hollow between the ground and approximately 2 metres.



Photo A1.8. Flight interception trap location 4. Rather dry red-rot of the oak trunk at ST5275.9557 where a 4-bottle trap was operated. There was a *Lasius fuliginosus* nest in the base of the trunk.



Photo A1.9. Flight interception trap location 5. A maiden oak at ST5273.9528. The trunk is broken at approximately three metres, leading to a red-rotten cavity.



Photo A1.9. Flight interception trap location 5. Red-rotten wood on the trunk of the oak at ST5273.9528 where a 4-bottle trap was operated, although the cavity entrance was too small to allow the trap to be placed inside.



Photo A1.9. Flight interception trap location 6. A maiden oak at ST5283.9527. The trunk is damaged at approximately three metres, with exposed red-rot.



Photo A1.10. Flight interception trap location 6. Red-rotten wood on the trunk of the oak at ST5283.9527 where a 4-bottle trap was operated.



Photo A1.11. Flight interception trap locations 7 and 8. An oak at ST5302.9542. The trunk has split at approximately four metres, exposing extensive red-rot.



Photo A1.12. Flight interception trap location 7. Red-rotten wood on the trunk of the oak at ST5283.9527 where a 4-bottle trap was operated.



Photo A1.13. Flight interception trap location 8. Red-rotten wood on the trunk of the oak at ST5283.9527 where a 4-bottle trap was operated.



Photo A1.14. Flight interception trap location 9. A fallen oak bough at ST5307.9542 with red-rot.



Photo A1.15. Flight interception trap location 9. Red-rotten wood in the fallen oak bough at ST5307.9542 where a 4-bottle trap was operated.



Photo A1.16. Flight interception trap locations 10 and 11. A standing dead oak at ST5314.9539. The trunk is hollow, and the lining contains red and white-rotten wood.



Photo A1.17. Flight interception trap location 10. White-rotten wood in the interior of the oak trunk at ST5314.9539 where a 4-bottle trap was operated.



Photo A1.18. Flight interception trap location 11. Red-rotten wood in the interior of the oak trunk at ST5314.9539 where a 4-bottle trap was operated.



Photo A1.19. Flight interception trap location 12. A fallen Horse Chestnut at ST5319.9538 with rot in the root-plate.



Photo A1.20. Flight interception trap location 12. Rotten wood in the root-plate of the fallen Horse Chestnut at ST5319.9538 where a 4-bottle trap was operated.



Photo A1.21. Flight interception trap location 13. A standing dead Ash at ST5317.9536 with a split trunk.



Photo A1.22. Flight interception trap location 13. White-rotten wood on the trunk of the Ash at ST5317.9536 where a 1-bottle trap was operated.



Photo A1.23. Flight interception trap location 14. An Ash at ST5311.9530 with a trunk wound which is hollowing between the ground and approximately 2 metres.



Photo A1.24. Flight interception trap location 14. White-rotten wood on the trunk of the Ash at ST5311.9530 where a 1-bottle trap was operated.



Photo A1.25. Flight interception trap location 15. A three-stemmed Ash at ST5272.9505 with a trunk cavity.



Photo A1.26. Flight interception trap location 15. White-rotten wood and wood mould in a trunk cavity of the Ash at ST5272.9505 where a 1-bottle trap was operated.

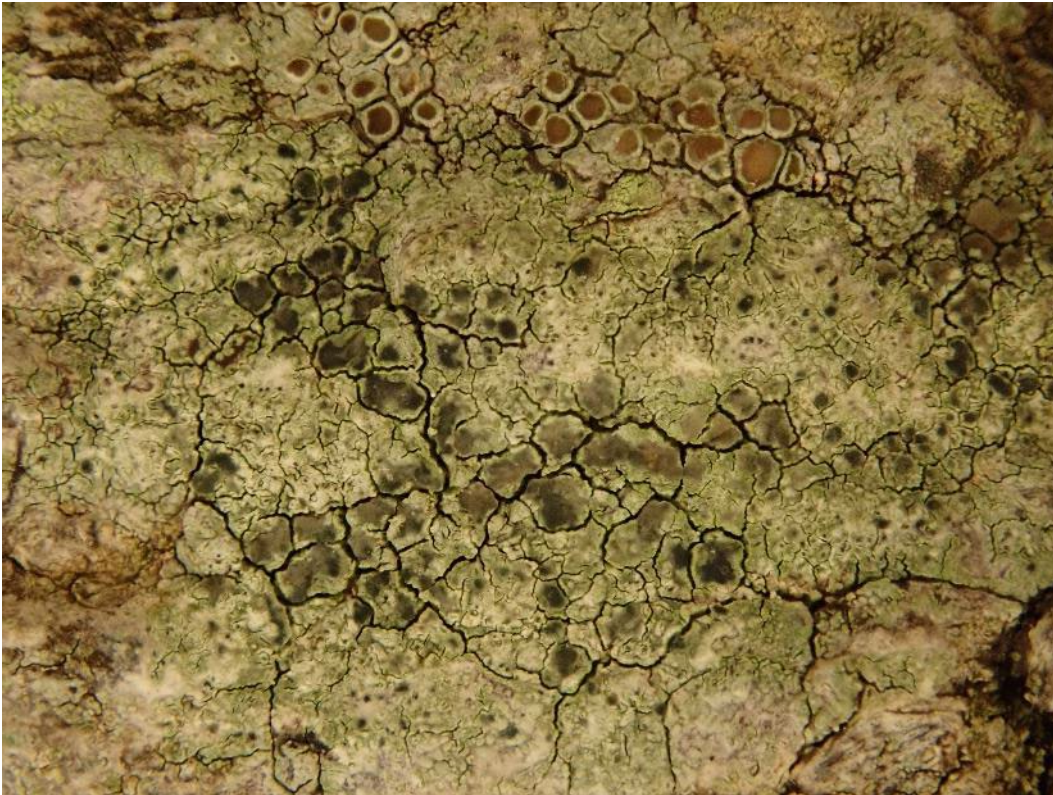


Photo A1.27. *Lecanora sublivescens* on an oak trunk at ST5251.9586, characterised by the cracked thallus with flattened blue-grey fruit. The pale brown discs above belong to *Lecanora hybocarpa*.



Photo A1.28. Yellow-legged Clearwing *Synanthedon vespiformis* found investigating a moribund oak trunk at ST5292.9526.



Photo A1.29. *Colydium elongatum*. Found under bark on a fallen oak bough at ST5294.9526, this species is a predator of *Platypus cylindrus* larvae.



Photo A1.30. *Platystomos albinus*. A fungus weevil found under bark on a fallen Horse Chestnut at ST5319.9538. The larvae develop in decaying branches of broadleaved trees, possibly feeding specifically on Ascomycete fungal mycelia.



Photo A1.31. Sawn oak stump at ST5265.9527. Dead wood from several large-diameter trees on the west side of the park has been almost entirely removed.



Photo A1.32. Sawn attached dead branch in the low canopy of an oak at ST5275.9566. This was probably cut for firewood.



Photo A1.33. Recent fire pit at the base of an oak tree at ST5275.9566.

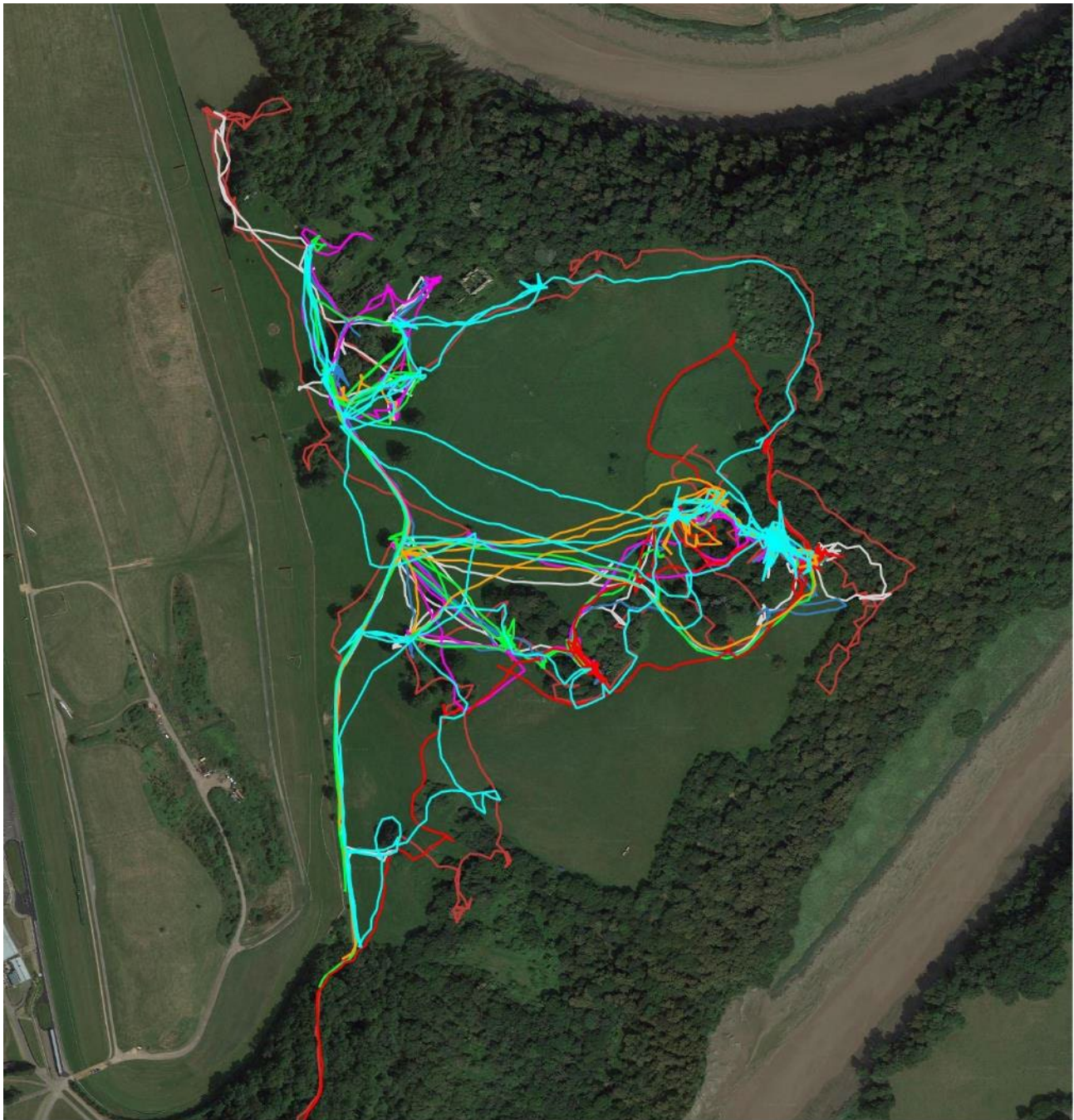


Photo A1.34. Recent fire pit at base of oak tree ST5273.9526.



Photo A1.35. Damage from previous fire set in hollowing oak trunk at ST5299.9533.

Appendix 2. Survey tracks



25th April	22nd June	24th October
12th May	19th July	29th November
1st June	5th September	

Figure A2.1. GPS tracks for the saproxylic invertebrate survey at Piercefield Park in 2023. Imagery © 2024 Google, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies.

Appendix 3. Species conservation status

Old Red Data Lists

Categories in the first Red Data Book for insects in Britain (Shirt, 1987) were based on criteria from the International Union for Conservation of Nature (IUCN). Some of the criteria were expanded in subsequent Red List publications (Hyman & Parsons, 1994) and the categorisation is outlined in Table A3.1.

Table A3.1. Red Data Book categories based on criteria in Shirt (1987) and Hyman & Parsons (1994).

Category	Definition	Criteria
Red Data Book Category 1 (RDB1)	Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating.	<ul style="list-style-type: none"> Species which are known or believed to occur as only a single population with one 10 km square of the National Grid. Species which occur only in habitats known to be especially vulnerable. Species which have shown a rapid or continuous decline over the last twenty years and are now estimated to exist in five or fewer 10 km squares. Species which are possibly extinct but have been recorded this century and if rediscovered would need protection.
Red Data Book Category 2 (RDB2)	Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating.	<ul style="list-style-type: none"> Species declining throughout their range. Species in vulnerable habitats.
Red Data Book Category 3 (RDB3)	Taxa with small populations that are not at present Endangered or Vulnerable but are at risk.	Species which are estimated to exist in only fifteen or fewer post 1970 10 km squares. This criterion may be relaxed where populations are likely to exist in over fifteen 10 km squares but occupy small areas of especially vulnerable habitat.
Red Data Book Category K (RDBK)	Species that are suspected but not definitely known to belong to another Red Data Book category, because of lack of information.	<ul style="list-style-type: none"> Taxa recently discovered or recognised in Britain which may prove to be more widespread in the future. Taxa with very few or perhaps only a single locality but which belong to poorly recorded or taxonomically difficult groups. Species with very few or perhaps only a single locality, inhabiting inaccessible or infrequently sampled but widespread habitats. Species with very few or perhaps only a single locality and of questionable native status, but not clearly falling into the category of recent colonist, vagrant or introduction.

Category	Definition	Criteria
Nationally Scarce Category A (Na)	Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain.	Species thought to occur within the range of 16 and 30 10 km squares of the National Grid.
Nationally Scarce Category B (Nb)	Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain.	Species thought to occur within the range of 31 and 100 10 km squares of the National Grid.
Nationally Notable (N)	Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain.	Species which are estimated to occur within the range of 16 to 100 10 km squares. The subdividing of this category into Notable A and Notable B has not been attempted for some species.

Current IUCN Red Lists

Species assessments following the IUCN Red List Guidelines (IUCN, 2022) are based on five criteria:

- **A.** Reduction in population size;
- **B.** Limited geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both;
- **C.** Small population size and declining;
- **D.** Very small population size; or D2. Very small area of occupancy;
- **E.** Probability of extinction.

Qualifying thresholds for the criteria are used to assign species to seven categories which are described fully in the IUCN Guidelines. Critically Endangered, Endangered and Vulnerable species are collectively classified as Threatened. More recent Red Lists for invertebrates in Britain use these categories, which are abbreviated as listed below. There is no equivalence between the old and new systems.

- **CE** – Critically Endangered.
- **EN** – Endangered.
- **VU** – Vulnerable.
- **NT** – Near Threatened.
- **DD** – Data Deficient.
- **LC** – Least Concern.

Finally, at the national level, countries are permitted under the IUCN guidelines to refine the definitions. Some reviews therefore additionally classify species as Nationally Rare (NR) or Nationally Scarce (NS), based on the number of 10 km squares the species is known from in a specified period, usually 30 years preceding the assessment. Nationally Rare species are recorded from 15 or fewer hectads of the Ordnance Survey national grid in Great Britain. Nationally Scarce species are recorded from 16 to 100 hectads of the Ordnance Survey national grid in Great Britain.

Appendix 4. Indices for saproxylic beetles

Table A4.1. Saproxylic beetles recorded at Piercefield Park with the year of last record and scores for the Saproxylic Quality Index (SQI) and the Index of Ecological Continuity (IEC). SQS = Saproxylic Quality Score.

Family	Taxon	Year	SQS score	IEC score
Aderidae	<i>Aderus populneus</i>	2023	8	–
Aderidae	<i>Euglenes oculatus</i>	2023	8	1
Anobiidae	<i>Anitya rubens</i>	1994	8	3
Anobiidae	<i>Anobium punctatum</i>	2023	1	–
Anobiidae	<i>Dorcatoma chrysomelina</i>	2023	4	1
Anobiidae	<i>Dorcatoma flavicornis</i>	2023	8	1
Anobiidae	<i>Ernobius mollis</i>	2023	2	–
Anobiidae	<i>Ptilinus pectinicornis</i>	2023	1	–
Anobiidae	<i>Ptinus subpilosus</i>	2023	8	2
Anobiidae	<i>Xestobium rufovillosum</i>	2023	4	1
Anthribidae	<i>Platyrhinus resinosus</i>	2023	4	1
Anthribidae	<i>Platystomos albinus</i>	2023	8	1
Biphyllidae	<i>Biphyllus lunatus</i>	2023	4	1
Buprestidae	<i>Agrilus biguttatus</i>	2023	8	–
Cantharidae	<i>Malthinus seriepunctatus</i>	1999	2	–
Cantharidae	<i>Malthodes marginatus</i>	1999	1	–
Cantharidae	<i>Malthodes minimus</i>	2023	1	–
Cerambycidae	<i>Grammoptera ruficornis</i>	2023	1	–
Cerambycidae	<i>Leiopus nebulosus</i>	2023	2	–
Cerambycidae	<i>Phymatodes testaceus</i>	2023	4	1
Cerambycidae	<i>Pogonocherus hispidus</i>	2023	2	–
Cerambycidae	<i>Pyrrhidium sanguineum</i>	2023	24	3
Cerambycidae	<i>Rhagium bifasciatum</i>	2023	1	–
Cerambycidae	<i>Rhagium mordax</i>	2023	1	–
Cerambycidae	<i>Rutpela maculata</i>	2023	1	–
Cerambycidae	<i>Stenocorus meridianus</i>	2023	2	–
Cerambycidae	<i>Tetrops praeustus</i>	2023	2	–
Cerylonidae	<i>Cerylon ferrugineum</i>	2023	2	–
Cerylonidae	<i>Cerylon histeroides</i>	2023	4	–
Ciidae	<i>Cis bidentatus</i>	1994	2	–
Ciidae	<i>Cis boleti</i>	2023	1	–
Ciidae	<i>Cis castaneus</i>	2023	2	–
Ciidae	<i>Cis fagi</i>	2023	2	–
Ciidae	<i>Cis pygmaeus</i>	2023	2	–
Ciidae	<i>Cis vestitus</i>	2023	2	–
Ciidae	<i>Ennearthron cornutum</i>	2023	2	–
Ciidae	<i>Octotemnus glabriculus</i>	2023	1	–
Ciidae	<i>Orthocis alni</i>	2023	2	–
Cleridae	<i>Thanasimus formicarius</i>	2023	4	1

Family	Taxon	Year	SQS score	IEC score
Cleridae	<i>Tillus elongatus</i>	2023	8	1
Cryptophagidae	<i>Cryptophagus micaceus</i>	2023	16	3
Cucujidae	<i>Pediacus dermestoides</i>	2023	4	1
Curculionidae	<i>Dryocoetes villosus</i>	2023	2	–
Curculionidae	<i>Hylesinus varius</i>	2023	1	–
Curculionidae	<i>Phloeophagus lignarius</i>	1999	2	–
Curculionidae	<i>Scolytus intricatus</i>	2023	2	–
Curculionidae	<i>Taphrorychus bicolor</i>	2023	8	–
Curculionidae	<i>Trachodes hispidus</i>	2023	8	1
Curculionidae	<i>Trypodendron signatum</i>	1994	8	1
Dasytidae	<i>Dasytes aeratus</i>	2023	2	–
Elateridae	<i>Ampedus cinnabarinus</i>	1994	16	3
Elateridae	<i>Ampedus rufipennis</i>	2023	24	3
Elateridae	<i>Melanotus villosus</i>	2023	1	–
Elateridae	<i>Procræus tibialis</i>	2023	16	3
Elateridae	<i>Stenagostus rhombeus</i>	2023	4	1
Endomychidae	<i>Symbiotes latus</i>	1994	8	1
Erotylidae	<i>Dacne rufifrons</i>	2023	2	–
Histeridae	<i>Abraeus perpusillus</i>	2023	4	–
Histeridae	<i>Paromalus flavicornis</i>	2023	2	–
Histeridae	<i>Plegaderus dissectus</i>	2023	8	2
Laemophloeidae	<i>Notolaemus unifasciatus</i>	2023	16	2
Latridiidae	<i>Corticaria alleni</i>	2023	8	3
Latridiidae	<i>Enicmus rugosus</i>	2023	8	2
Latridiidae	<i>Enicmus testaceus</i>	2023	2	–
Lucanidae	<i>Dorcus parallelipedus</i>	2023	2	–
Lucanidae	<i>Sinodendron cylindricum</i>	2023	2	–
Lymexylidae	<i>Lymexylon navale</i>	2023	32	2
Malachiidae	<i>Malachius bipustulatus</i>	2023	1	–
Melandryidae	<i>Abdera biflexuosa</i>	2023	8	1
Melandryidae	<i>Anisoxya fuscula</i>	2023	16	1
Melandryidae	<i>Hypulus quercinus</i>	2023	16	3
Melandryidae	<i>Orchesia micans</i>	2023	4	–
Monotomidae	<i>Rhizophagus bipustulatus</i>	2023	1	–
Monotomidae	<i>Rhizophagus ferrugineus</i>	2023	2	–
Monotomidae	<i>Rhizophagus parallellocollis</i>	2023	2	–
Mordellidae	<i>Mordellochroa abdominalis</i>	1999	4	–
Mycetophagidae	<i>Litargus connexus</i>	2023	2	–
Mycetophagidae	<i>Mycetophagus multipunctatus</i>	2023	2	–
Mycetophagidae	<i>Mycetophagus piceus</i>	2023	4	2
Mycetophagidae	<i>Mycetophagus quadriguttatus</i>	2023	16	2
Mycetophagidae	<i>Mycetophagus quadripustulatus</i>	2023	2	–
Nitidulidae	<i>Cryptarcha strigata</i>	2023	8	–
Nitidulidae	<i>Epuraea biguttata</i>	2023	2	–
Nitidulidae	<i>Soronia grisea</i>	2023	2	–

Family	Taxon	Year	SQS score	IEC score
Phloiophilidae	<i>Phloiophilus edwardsii</i>	2023	8	1
Platypodidae	<i>Platypus cylindrus</i>	2023	8	1
Pyrochroidae	<i>Pyrochroa coccinea</i>	2023	4	1
Pyrochroidae	<i>Pyrochroa serraticornis</i>	2023	1	–
Salpingidae	<i>Salpingus planirostris</i>	2023	1	–
Scirtidae	<i>Prionocyphon serricornis</i>	2023	8	1
Scraptiidae	<i>Anaspis costai</i>	2023	2	–
Scraptiidae	<i>Anaspis fasciata</i>	2023	2	–
Scraptiidae	<i>Anaspis frontalis</i>	2023	1	–
Scraptiidae	<i>Anaspis lurida</i>	2023	2	–
Scraptiidae	<i>Anaspis pulicaria</i>	1999	1	–
Scraptiidae	<i>Scraptia testacea</i>	2023	16	3
Scydmaenidae	<i>Scydmaenus rufus</i>	2023	24	1
Silvanidae	<i>Silvanus bidentatus</i>	2023	8	2
Silvanidae	<i>Silvanus unidentatus</i>	2023	4	1
Silvanidae	<i>Uleiota planatus</i>	2023	16	2
Sphindidae	<i>Aspidiphorus orbiculatus</i>	2023	2	–
Sphindidae	<i>Sphindus dubius</i>	2023	8	–
Staphylinidae	<i>Atrecus affinis</i>	2023	1	–
Staphylinidae	<i>Dexiogyia corticina</i>	1994	8	–
Staphylinidae	<i>Dropephylla vilis</i>	1994	1	–
Staphylinidae	<i>Euplectus karstenii</i>	2023	2	–
Staphylinidae	<i>Euplectus kirbii</i>	2023	8	–
Staphylinidae	<i>Euplectus piceus</i>	2023	2	–
Staphylinidae	<i>Gabrius splendidulus</i>	2023	1	–
Staphylinidae	<i>Gyrophaena affinis</i>	1994	0	–
Staphylinidae	<i>Gyrophaena minima</i>	2023	2	–
Staphylinidae	<i>Hapalaraea pygmaea</i>	2023	2	–
Staphylinidae	<i>Homalota plana</i>	2023	2	–
Staphylinidae	<i>Hypnogyra angularis</i>	2023	16	2
Staphylinidae	<i>Ischnoglossa prolixa</i>	1994	2	–
Staphylinidae	<i>Leptusa fumida</i>	2023	1	–
Staphylinidae	<i>Leptusa pulchella</i>	2023	2	–
Staphylinidae	<i>Leptusa ruficollis</i>	2023	1	–
Staphylinidae	<i>Phloeonomus punctipennis</i>	2023	2	–
Staphylinidae	<i>Phloeonomus pusillus</i>	2023	2	–
Staphylinidae	<i>Quedius truncicola</i>	2023	8	1
Staphylinidae	<i>Scaphidium quadrimaculatum</i>	2023	2	–
Staphylinidae	<i>Scaphisoma agaricinum</i>	2023	2	–
Staphylinidae	<i>Sepedophilus bipunctatus</i>	2023	8	–
Staphylinidae	<i>Sepedophilus testaceus</i>	1994	8	–
Staphylinidae	<i>Siagonium quadricorne</i>	2023	2	–
Tenebrionidae	<i>Eledona agricola</i>	2023	4	1
Tenebrionidae	<i>Prionychus ater</i>	2023	8	1
Tenebrionidae	<i>Pseudocistela ceramboides</i>	2023	8	2

Family	Taxon	Year	SQS score	IEC score
Zopheridae	<i>Bitoma crenata</i>	1999	4	1
Zopheridae	<i>Colydium elongatum</i>	2023	16	–

Appendix 5. Additional data for saproxylic invertebrate records

Table A5.1. Additional data for saproxylic invertebrate records in the Piercefield Park survey in 2023.

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
ARANEAE	–	–	–	–	–	–	–
Amaurobiidae	<i>Amaurobius fenestralis</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
COLEOPTERA	–	–	–	–	–	–	–
Aderidae	<i>Aderus populneus</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Aderidae	<i>Aderus populneus</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Aderidae	<i>Euglenes oculus</i>	1	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Aderidae	<i>Euglenes oculus</i>	3	<i>Quercus</i>	128.9	N/A	Hollowing trunk open to ground with dry red-rot	4-bottle trap
Aderidae	<i>Euglenes oculus</i>	12	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Aderidae	<i>Euglenes oculus</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Aderidae	<i>Euglenes oculus</i>	3	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Aderidae	<i>Euglenes oculus</i>	4	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Aderidae	<i>Euglenes oculus</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Aderidae	<i>Euglenes oculus</i>	2	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Anobiidae	<i>Anobium punctatum</i>	1	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating
Anobiidae	<i>Anobium punctatum</i>	9	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Anobiidae	<i>Anobium punctatum</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Anobiidae	<i>Anobium punctatum</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Anobiidae	<i>Anobium punctatum</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Anobiidae	<i>Dorcatoma chrysomelina</i>	2	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Anobiidae	<i>Dorcatoma chrysomelina</i>	115	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Anobiidae	<i>Dorcatoma chrysomelina</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Anobiidae	<i>Dorcatoma chrysomelina</i>	14	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Anobiidae	<i>Dorcatoma chrysomelina</i>	3	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Anobiidae	<i>Dorcatoma chrysomelina</i>	11	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Anobiidae	<i>Dorcatoma flavicornis</i>	159	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Anobiidae	<i>Ernobius mollis</i>	1	<i>Pinus sylvestris</i>	54.1	1	Aerial dead branches with attached needles	T6. Beating
Anobiidae	<i>Ptilinus pectinicornis</i>	2	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Anobiidae	<i>Ptilinus pectinicornis</i>	1	<i>Fraxinus excelsior</i>	46	N/A	Split trunk with exposed white-rot	1-bottle trap
Anobiidae	<i>Ptinus subpilosus</i>	7	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Anobiidae	<i>Xestobium rufovillosum</i>	1	<i>Quercus</i>	189	N/A	Damp lignum in hollowing trunk	Active searching
Anthribidae	<i>Platystomos albinus</i>	1	<i>Aesculus hippocastanum</i>	N/A	19	Under bark of cut log	Active searching
Biphyllidae	<i>Biphyllus lunatus</i>	11	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Biphyllidae	<i>Biphyllus lunatus</i>	2	<i>Fraxinus excelsior</i>	37.1	9.1	Aerial dead branch	T6. Beating
Biphyllidae	<i>Biphyllus lunatus</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Buprestidae	<i>Agilus biguttatus</i>	2	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Cantharidae	<i>Malthodes minimus</i>	1	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Cantharidae	<i>Malthodes minimus</i>	1	<i>Sambucus nigra</i>	N/A	N/A	Flowers	T6. Beating
Carabidae	<i>Calodromius spilotus</i>	1	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating
Carabidae	<i>Calodromius spilotus</i>	1	<i>Fraxinus excelsior</i>	37.1	9.1	Aerial dead branch	T6. Beating
Carabidae	<i>Calodromius spilotus</i>	3	<i>Pinus sylvestris</i>	54.1	1	Aerial dead branches with attached needles	T6. Beating
Carabidae	<i>Calodromius spilotus</i>	3	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Carabidae	<i>Dromius meridionalis</i>	1	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Carabidae	<i>Dromius quadrimaculatus</i>	1	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating
Carabidae	<i>Dromius quadrimaculatus</i>	1	<i>Quercus</i>	208	28	Aerial dead branch	T6. Beating
Carabidae	<i>Dromius quadrimaculatus</i>	1	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Cerambycidae	<i>Grammoptera ruficornis</i>	8	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Cerambycidae	<i>Grammoptera ruficornis</i>	5	<i>Quercus</i>	N/A	N/A	Foliage	T6. Beating
Cerambycidae	<i>Grammoptera ruficornis</i>	2	<i>Sambucus nigra</i>	N/A	N/A	Flowers	T6. Beating
Cerambycidae	<i>Leipus nebulosus</i>	2	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Cerambycidae	<i>Leipus nebulosus</i>	1	<i>Sambucus nigra</i>	N/A	N/A	Flowers	T6. Beating
Cerambycidae	<i>Phymatodes testaceus</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Cerambycidae	<i>Phymatodes testaceus</i>	1	<i>Quercus</i>	111.6	43.5	Under sappy bark	Active searching

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Cerambycidae	<i>Pogonocherus hispidus</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Cerambycidae	<i>Pyrrhidium sanguineum</i>	1	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Cerambycidae	<i>Pyrrhidium sanguineum</i>	1	<i>Quercus</i>	111.6	43.5	Under sappy bark	Active searching
Cerambycidae	<i>Pyrrhidium sanguineum</i>	3	<i>Quercus</i>	208	11	Aerial dead branch	T6. Beating
Cerambycidae	<i>Pyrrhidium sanguineum</i>	4	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Cerambycidae	<i>Pyrrhidium sanguineum</i>	3	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Cerambycidae	<i>Rhagium bifasciatum</i>	1	<i>Pinus</i>	N/A	28	Under damp bark on cut log	Active searching
Cerambycidae	<i>Rhagium bifasciatum</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Cerambycidae	<i>Rhagium mordax</i>	1	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Cerambycidae	<i>Rhagium mordax</i>	1	N/A	N/A	N/A	On grass near fallen <i>Aesculus hippocastanum</i>	Active searching
Cerambycidae	<i>Rutpela maculata</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Cerambycidae	<i>Stenocorus meridianus</i>	2	<i>Fraxinus excelsior</i>	56.3	N/A	Trunk	Active searching
Cerambycidae	<i>Stenocorus meridianus</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Cerambycidae	<i>Tetrops praeustus</i>	1	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Cerylonidae	<i>Cerylon ferrugineum</i>	5	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Cerylonidae	<i>Cerylon ferrugineum</i>	3	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Cerylonidae	<i>Cerylon ferrugineum</i>	1	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Cerylonidae	<i>Cerylon ferrugineum</i>	1	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Cerylonidae	<i>Cerylon histeroides</i>	1	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Cerylonidae	<i>Cerylon histeroides</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Cerylonidae	<i>Cerylon histeroides</i>	1	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Cerylonidae	<i>Cerylon histeroides</i>	1	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Ciidae	<i>Cis bilamellatus</i>	2	<i>Aesculus hippocastanum</i>	105	19.4	From unidentified bracket fungus on branch	T8. Sieve and sort
Ciidae	<i>Cis bilamellatus</i>	1	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Ciidae	<i>Cis bilamellatus</i>	1	<i>Fraxinus excelsior</i>	N/A	45.8	<i>Stereum hirsutum</i>	T8. Sieve and sort
Ciidae	<i>Cis bilamellatus</i>	8	<i>Quercus</i>	?	N/A	<i>Fistulina hepatica</i>	T8. Sieve and sort
Ciidae	<i>Cis bilamellatus</i>	3	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Ciidae	<i>Cis boleti</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Ciidae	<i>Cis boleti</i>	1	<i>Crataegus monogyna</i>	29	N/A	Dry, dusty dead wood	T8. Sieve and sort
Ciidae	<i>Cis boleti</i>	1	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Ciidae	<i>Cis boleti</i>	4	<i>Quercus</i>	N/A	6.3	Trametes versicolor on fallen dead branch	T6. Beating
Ciidae	<i>Cis boleti</i>	5	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Ciidae	<i>Cis castaneus</i>	10	<i>Quercus</i>	?	N/A	Fistulina hepatica	T8. Sieve and sort
Ciidae	<i>Cis fagi</i>	3	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Ciidae	<i>Cis pygmaeus</i>	1	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Ciidae	<i>Cis vestitus</i>	1	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating
Ciidae	<i>Cis vestitus</i>	3	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Ciidae	<i>Cis vestitus</i>	1	<i>Quercus</i>	N/A	6.3	Trametes versicolor on fallen dead branch	T6. Beating
Ciidae	<i>Ennearthron cornutum</i>	1	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Ciidae	<i>Octotemnus glabriculus</i>	13	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Ciidae	<i>Octotemnus glabriculus</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Ciidae	<i>Orthocis alni</i>	1	<i>Fraxinus excelsior</i>	45	13	From dead limb on fallen tree	T6. Beating
Cleridae	<i>Thanasimus formicarius</i>	1	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Cleridae	<i>Tillus elongatus</i>	2	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Cryptophagidae	<i>Cryptophagus micaceus</i>	1	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Cryptophagidae	<i>Cryptophagus scanicus</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Cucujidae	<i>Pediacus dermestoides</i>	1	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Cucujidae	<i>Pediacus dermestoides</i>	1	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Cucujidae	<i>Pediacus dermestoides</i>	1	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Cucujidae	<i>Pediacus dermestoides</i>	1	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Curculionidae	<i>Dryocoetes villosus</i>	4	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Curculionidae	<i>Dryocoetes villosus</i>	1	<i>Quercus</i>	N/A	44	Under bark of cut log	Active searching
Curculionidae	<i>Dryocoetes villosus</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Curculionidae	<i>Dryocoetes villosus</i>	91	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Curculionidae	<i>Euophryum confine</i>	1	<i>Aesculus hippocastanum</i>	105	19.4	From unidentified bracket fungus on branch	T8. Sieve and sort
Curculionidae	<i>Euophryum confine</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	4	<i>Crataegus monogyna</i>	29	N/A	Dry, dusty dead wood	T8. Sieve and sort
Curculionidae	<i>Euophryum confine</i>	2	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	Wood mould in white-rotten cavity	T8. Sieve and sort
Curculionidae	<i>Euophryum confine</i>	3	<i>Pinus</i>	N/A	28	Under damp bark on cut log	Active searching

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Curculionidae	<i>Euophryum confine</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	27	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	4	<i>Quercus</i>	128.9	N/A	Hollowing trunk open to ground with dry red-rot	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	4	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	12	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	3	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	11	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Curculionidae	<i>Euophryum confine</i>	2	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Curculionidae	<i>Hylesinus varius</i>	1	<i>Fraxinus excelsior</i>	N/A	2	Dead twigs	T5. Sweeping
Curculionidae	<i>Scolytus intricatus</i>	1	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Curculionidae	<i>Scolytus intricatus</i>	1	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Curculionidae	<i>Taphrorychus bicolor</i>	7	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Curculionidae	<i>Taphrorychus bicolor</i>	6	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Curculionidae	<i>Taphrorychus bicolor</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Curculionidae	<i>Trachodes hispidus</i>	3	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Dasytidae	<i>Dasytes aeratus</i>	1	<i>Quercus</i>	N/A	N/A	Foliage	T6. Beating
Elateridae	<i>Ampedus rufipennis</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Elateridae	<i>Melanotus castanipes</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Elateridae	<i>Melanotus villosus</i>	1	<i>Fagus sylvatica</i>	108.2	N/A	Trunk hollow to ground with white-rotten lining	1-bottle trap
Elateridae	<i>Procræus tibialis</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Elateridae	<i>Stenagostus rhombeus</i>	3	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Elateridae	<i>Stenagostus rhombeus</i>	1	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Elateridae	<i>Stenagostus rhombeus</i>	2	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Erotylidae	<i>Dacne rufifrons</i>	43	<i>Aesculus hippocastanum</i>	105	19.4	From unidentified bracket fungus on branch	T8. Sieve and sort
Erotylidae	<i>Dacne rufifrons</i>	5	<i>Aesculus hippocastanum</i>	105	N/A	Polyporus sp.	T8. Sieve and sort
Histeridae	<i>Abraeus perpusillus</i>	1	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Histeridae	<i>Abraeus perpusillus</i>	2	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Histeridae	<i>Abraeus perpusillus</i>	34	<i>Fraxinus excelsior</i>	146.1	N/A	Wood mould in white-rotten cavity	T8. Sieve and sort
Histeridae	<i>Abraeus perpusillus</i>	1	<i>Quercus</i>	208	208	Hypholoma fasciculare	T8. Sieve and sort
Histeridae	<i>Abraeus perpusillus</i>	1	<i>Quercus</i>	208	N/A	Dusty debris behind loose bark	T8. Sieve and sort

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Histeridae	<i>Dendrophilus punctatus</i>	1	<i>Quercus</i>	128.9	N/A	Hollowing trunk open to ground with dry red-rot	4-bottle trap
Histeridae	<i>Paromalus flavicornis</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Histeridae	<i>Paromalus flavicornis</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	Wood mould in white-rotten cavity	T8. Sieve and sort
Histeridae	<i>Paromalus flavicornis</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Histeridae	<i>Paromalus flavicornis</i>	1	<i>Quercus</i>	N/A	44	Under bark of cut log	Active searching
Histeridae	<i>Paromalus flavicornis</i>	5	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Histeridae	<i>Plegaderus dissectus</i>	1	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Laemophloeidae	<i>Notolaemus unifasciatus</i>	1	<i>Quercus</i>	N/A	(blank)	Under bark of fallen bough	Active searching
Latridiidae	<i>Corticaria alleni</i>	1	<i>Quercus</i>	208	N/A	Trunk	Active searching
Latridiidae	<i>Enicmus rugosus</i>	2	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Latridiidae	<i>Enicmus rugosus</i>	5	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Latridiidae	<i>Enicmus rugosus</i>	2	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Latridiidae	<i>Enicmus rugosus</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Latridiidae	<i>Enicmus rugosus</i>	2	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Latridiidae	<i>Enicmus rugosus</i>	6	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Latridiidae	<i>Enicmus testaceus</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Latridiidae	<i>Enicmus testaceus</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Latridiidae	<i>Enicmus testaceus</i>	2	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Leiodidae	<i>Anisotoma humeralis</i>	2	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Lucanidae	<i>Dorcus parallelipipedus</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Lucanidae	<i>Sinodendron cylindricum</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Lucanidae	<i>Sinodendron cylindricum</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Lymexylidae	<i>Lymexylon navale</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Lymexylidae	<i>Lymexylon navale</i>	1	<i>Quercus</i>	208	N/A	Trunk	Active searching
Malachiidae	<i>Axinotarsus marginalis</i>	1	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Malachiidae	<i>Axinotarsus marginalis</i>	2	<i>Quercus</i>	150.3	1	Aerial dead twigs on snapped branch	T6. Beating
Malachiidae	<i>Malachius bipustulatus</i>	2	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Melandryidae	<i>Abdera biflexuosa</i>	11	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Melandryidae	<i>Abdera biflexuosa</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Melandryidae	<i>Anisoxya fuscula</i>	1	<i>Fraxinus excelsior</i>	46	N/A	Split trunk with exposed white-rot	1-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Melandryidae	<i>Hypulus quercinus</i>	30	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Melandryidae	<i>Orchesia micans</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Monotomidae	<i>Rhizophagus bipustulatus</i>	2	<i>Quercus</i>	111.6	N/A	In damp fine sawdust accumulated at base of tree	Active searching
Monotomidae	<i>Rhizophagus bipustulatus</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Monotomidae	<i>Rhizophagus bipustulatus</i>	1	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Monotomidae	<i>Rhizophagus ferrugineus</i>	4	<i>Quercus</i>	111.6	N/A	In damp fine sawdust accumulated at base of tree	Active searching
Monotomidae	<i>Rhizophagus ferrugineus</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Monotomidae	<i>Rhizophagus ferrugineus</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Monotomidae	<i>Rhizophagus parallellocollis</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Mycetophagidae	<i>Litargus connexus</i>	2	<i>Fraxinus excelsior</i>	77	N/A	Exposed white-rot on trunk	1-bottle trap
Mycetophagidae	<i>Mycetophagus multipunctatus</i>	3	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Mycetophagidae	<i>Mycetophagus piceus</i>	3	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Mycetophagidae	<i>Mycetophagus quadriguttatus</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Mycetophagidae	<i>Mycetophagus quadripustulatus</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Mycetophagidae	<i>Mycetophagus quadripustulatus</i>	2	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Mycetophagidae	<i>Mycetophagus quadripustulatus</i>	1	<i>Quercus</i>	128.9	N/A	Hollowing trunk open to ground with dry red-rot	4-bottle trap
Nitidulidae	<i>Cryptarcha strigata</i>	1	<i>Quercus</i>	208	N/A	Trunk	Active searching
Nitidulidae	<i>Epuraea aestiva</i>	4	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Nitidulidae	<i>Epuraea biguttata</i>	5	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Nitidulidae	<i>Glischrochilus hortensis</i>	1	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Nitidulidae	<i>Soronia grisea</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Phloiophilidae	<i>Phloiophilus edwardsii</i>	2	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Platypodidae	<i>Platypus cylindrus</i>	8	<i>Quercus</i>	111.6	N/A	Boring in dead wood near base of trunk	Active searching
Platypodidae	<i>Platypus cylindrus</i>	6	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Platypodidae	<i>Platypus cylindrus</i>	1	<i>Quercus</i>	113.9	83.5	Under bark of fallen bough	Active searching
Platypodidae	<i>Platypus cylindrus</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Platypodidae	<i>Platypus cylindrus</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Platypodidae	<i>Platypus cylindrus</i>	20	<i>Quercus</i>	208	N/A	Trunk	Active searching
Platypodidae	<i>Platypus cylindrus</i>	2	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Platypodidae	<i>Platypus cylindrus</i>	4	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Ptiliidae	<i>Ptinella errabunda</i>	1	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Pyrochroidae	<i>Pyrochroa coccinea</i>	1	N/A	N/A	N/A	On grass near fallen Aesculus hippocastanum	Active searching
Pyrochroidae	<i>Pyrochroa serraticornis</i>	4	N/A	N/A	N/A	On grass near fallen Aesculus hippocastanum	Active searching
Salpingidae	<i>Salpingus planirostris</i>	6	<i>Pinus sylvestris</i>	54.1	1	Aerial dead branches with attached needles	T6. Beating
Salpingidae	<i>Salpingus planirostris</i>	2	<i>Quercus</i>	150.3	1	Aerial dead twigs on snapped branch	T6. Beating
Salpingidae	<i>Salpingus planirostris</i>	1	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Scirtidae	<i>Prionocyphon serricornis</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Scraptiidae	<i>Anaspis costai</i>	6	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Scraptiidae	<i>Anaspis costai</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Scraptiidae	<i>Anaspis costai</i>	3	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Scraptiidae	<i>Anaspis costai</i>	2	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Scraptiidae	<i>Anaspis fasciata</i>	7	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Scraptiidae	<i>Anaspis fasciata</i>	1	<i>Quercus</i>	N/A	N/A	Foliage	T5. Sweeping
Scraptiidae	<i>Anaspis frontalis</i>	37	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Scraptiidae	<i>Anaspis frontalis</i>	1	<i>Quercus</i>	160.1	N/A	Foliage	T6. Beating
Scraptiidae	<i>Anaspis frontalis</i>	1	<i>Quercus</i>	N/A	23.4	Under bark of red-rotten log	Active searching
Scraptiidae	<i>Anaspis frontalis</i>	2	<i>Quercus</i>	N/A	N/A	Foliage	T6. Beating
Scraptiidae	<i>Anaspis frontalis</i>	2	<i>Sambucus nigra</i>	N/A	N/A	Flowers	T6. Beating
Scraptiidae	<i>Anaspis garneysi</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Scraptiidae	<i>Anaspis garneysi</i>	7	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Scraptiidae	<i>Anaspis garneysi</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Scraptiidae	<i>Anaspis garneysi</i>	4	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Scraptiidae	<i>Anaspis garneysi</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Scraptiidae	<i>Anaspis garneysi</i>	2	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Scraptiidae	<i>Anaspis garneysi</i>	2	<i>Quercus</i>	128.9	N/A	Hollowing trunk open to ground with dry red-rot	4-bottle trap
Scraptiidae	<i>Anaspis garneysi</i>	8	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Scraptiidae	<i>Anaspis garneysi</i>	3	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Scraptiidae	<i>Anaspis garneysi</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Scraptiidae	<i>Anaspis garneysi</i>	1	<i>Quercus</i>	N/A	N/A	Foliage	T6. Beating
Scraptiidae	<i>Anaspis garneysi</i>	1	<i>Sambucus nigra</i>	N/A	N/A	Flowers	T6. Beating

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Scaptiidae	<i>Anaspis lurida</i>	1	<i>Fagus sylvatica</i>	108.2	N/A	Trunk hollow to ground with white-rotten lining	1-bottle trap
Scaptiidae	<i>Anaspis lurida</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Scaptiidae	<i>Anaspis lurida</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Scaptiidae	<i>Anaspis lurida</i>	2	<i>Sambucus nigra</i>	N/A	N/A	Flowers	T6. Beating
Scaptiidae	<i>Anaspis maculata</i>	60	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Scaptiidae	<i>Anaspis maculata</i>	1	<i>Quercus</i>	N/A	N/A	Foliage	T6. Beating
Scaptiidae	<i>Anaspis maculata</i>	6	<i>Sambucus nigra</i>	N/A	N/A	Flowers	T6. Beating
Scaptiidae	<i>Anaspis regimbarti</i>	3	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Scaptiidae	<i>Anaspis regimbarti</i>	1	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Scaptiidae	<i>Anaspis regimbarti</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Scaptiidae	<i>Anaspis regimbarti</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Scaptiidae	<i>Anaspis regimbarti</i>	2	<i>Quercus</i>	N/A	N/A	Foliage	T6. Beating
Scaptiidae	<i>Scaptia testacea</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Scaptiidae	<i>Scaptia testacea</i>	2	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Scydmaenidae	<i>Scydmaenus rufus</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	Wood mould in white-rotten cavity	T8. Sieve and sort
Silvanidae	<i>Silvanus bidentatus</i>	2	<i>Quercus</i>	111.6	43.5	Under sappy bark	Active searching
Silvanidae	<i>Silvanus unidentatus</i>	4	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Silvanidae	<i>Uleiota planatus</i>	1	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Silvanidae	<i>Uleiota planatus</i>	1	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Sphindidae	<i>Aspidiphorus orbiculatus</i>	18	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Sphindidae	<i>Aspidiphorus orbiculatus</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Sphindidae	<i>Aspidiphorus orbiculatus</i>	3	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Sphindidae	<i>Sphindus dubius</i>	5	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Staphylinidae	<i>Atrecus affinis</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Staphylinidae	<i>Atrecus affinis</i>	1	<i>Quercus</i>	N/A	23.4	Under bark of red-rotten log	Active searching
Staphylinidae	<i>Bolitochara bella</i>	1	<i>Quercus</i>	128.9	N/A	Laetiporus sulphureus	T8. Sieve and sort
Staphylinidae	<i>Dropephylla gracilicornis</i>	2	<i>Quercus</i>	89	19	Aerial dead branch	T6. Beating
Staphylinidae	<i>Dropephylla gracilicornis</i>	3	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Staphylinidae	<i>Dropephylla gracilicornis</i>	1	<i>Quercus</i>	128.9	N/A	Laetiporus sulphureus	T8. Sieve and sort
Staphylinidae	<i>Euplectus kirbii</i>	3	<i>Fraxinus excelsior</i>	146.1	N/A	Wood mould in white-rotten cavity	T8. Sieve and sort

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Staphylinidae	<i>Euplectus piceus</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Staphylinidae	<i>Gabrius splendidulus</i>	1	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Staphylinidae	<i>Gabrius splendidulus</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Staphylinidae	<i>Gabrius splendidulus</i>	3	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Staphylinidae	<i>Gyrophana affinis</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Staphylinidae	<i>Gyrophana minima</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Polyporus sp.	T8. Sieve and sort
Staphylinidae	<i>Gyrophana minima</i>	5	<i>Quercus</i>	208	N/A	Hypholoma fasciculare	T8. Sieve and sort
Staphylinidae	<i>Hapalareae pygmaea</i>	2	<i>Crataegus monogyna</i>	N/A	N/A	Flowers	T6. Beating
Staphylinidae	<i>Hapalareae pygmaea</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	Wood mould in white-rotten cavity	T8. Sieve and sort
Staphylinidae	<i>Hapalareae pygmaea</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Staphylinidae	<i>Hapalareae pygmaea</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Staphylinidae	<i>Hapalareae pygmaea</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Staphylinidae	<i>Hapalareae pygmaea</i>	1	<i>Sambucus nigra</i>	N/A	N/A	Flowers	T6. Beating
Staphylinidae	<i>Haploglossa gentilis</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Staphylinidae	<i>Haploglossa gentilis</i>	17	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Staphylinidae	<i>Homalota plana</i>	9	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Staphylinidae	<i>Homalota plana</i>	1	<i>Quercus</i>	N/A	44	Under bark of cut log	Active searching
Staphylinidae	<i>Homalota plana</i>	1	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Staphylinidae	<i>Hypnogyra angularis</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Staphylinidae	<i>Leptusa fumida</i>	1	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Staphylinidae	<i>Leptusa fumida</i>	2	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Staphylinidae	<i>Leptusa fumida</i>	3	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Staphylinidae	<i>Leptusa pulchella</i>	1	<i>Pinus sylvestris</i>	54.1	1	Aerial dead branches with attached needles	T6. Beating
Staphylinidae	<i>Leptusa pulchella</i>	1	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Staphylinidae	<i>Leptusa ruficollis</i>	4	<i>Quercus</i>	N/A	1	Dead leaves on aerial dead branch of snapped limb	T6. Beating
Staphylinidae	<i>Phloeonomus punctipennis</i>	6	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Staphylinidae	<i>Phloeonomus punctipennis</i>	1	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Staphylinidae	<i>Phloeonomus pusillus</i>	1	<i>Quercus</i>	111.6	43.5	Under sappy bark	Active searching
Staphylinidae	<i>Quedius truncicola</i>	1	<i>Fagus sylvatica</i>	108.2	N/A	Trunk hollow to ground with white-rotten lining	1-bottle trap
Staphylinidae	<i>Quedius truncicola</i>	1	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Staphylinidae	<i>Scaphidium quadrimaculatum</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Staphylinidae	<i>Scaphisoma agaricinum</i>	1	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Staphylinidae	<i>Scaphisoma agaricinum</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Staphylinidae	<i>Scaphisoma agaricinum</i>	4	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Staphylinidae	<i>Sepedophilus bipunctatus</i>	3	<i>Fraxinus excelsior</i>	146.1	N/A	Wood mould in white-rotten cavity	T8. Sieve and sort
Staphylinidae	<i>Siagonium quadricorne</i>	2	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Tenebrionidae	<i>Eledona agricola</i>	22	<i>Quercus</i>	128.9	N/A	Laetiporus sulphureus	T8. Sieve and sort
Tenebrionidae	<i>Eledona agricola</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Tenebrionidae	<i>Prionychus ater</i>	1	<i>Fagus sylvatica</i>	108.2	N/A	Trunk hollow to ground with white-rotten lining	1-bottle trap
Tenebrionidae	<i>Pseudocistela ceramboides</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Tenebrionidae	<i>Pseudocistela ceramboides</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Zopheridae	<i>Colydium elongatum</i>	1	<i>Quercus</i>	208	11	Aerial dead branch	T6. Beating
Zopheridae	<i>Colydium elongatum</i>	1	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Zopheridae	<i>Pycnomerus fuliginosus</i>	7	<i>Aesculus hippocastanum</i>	105	24	Under sappy bark on branches of fallen tree	Active searching
Zopheridae	<i>Pycnomerus fuliginosus</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Zopheridae	<i>Pycnomerus fuliginosus</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Zopheridae	<i>Pycnomerus fuliginosus</i>	8	<i>Quercus</i>	111.6	43.5	Under sappy bark	Active searching
Zopheridae	<i>Pycnomerus fuliginosus</i>	1	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Zopheridae	<i>Pycnomerus fuliginosus</i>	5	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Zopheridae	<i>Pycnomerus fuliginosus</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Zopheridae	<i>Pycnomerus fuliginosus</i>	11	<i>Quercus</i>	N/A	34.7	Under bark of fallen bough	Active searching
Zopheridae	<i>Pycnomerus fuliginosus</i>	12	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
Zopheridae	<i>Pycnomerus fuliginosus</i>	6	<i>Quercus</i>	N/A	44	Under bark of cut log	Active searching
Zopheridae	<i>Pycnomerus fuliginosus</i>	3	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Zopheridae	<i>Pycnomerus fuliginosus</i>	8	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
DIPTERA	–	–	–	–	–	–	–
Anisopodidae	<i>Sylvicola cinctus</i>	2	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Anisopodidae	<i>Sylvicola cinctus</i>	3	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Anisopodidae	<i>Sylvicola cinctus</i>	10	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Anisopodidae	<i>Sylvicola cinctus</i>	2	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Asteiidae	<i>Leiomyza birkheadi</i>	16	<i>Platanus x hispanica</i>			On <i>Coprinellus disseminatus</i>	Active searching
Asteiidae	<i>Leiomyza scatophagina</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Bolitophilidae	<i>Bolitophila saundersii</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Chloropidae	<i>Lasiambia brevibucca</i>	5	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Chloropidae	<i>Tricimba cincta</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Clusiidae	<i>Clusia tigrina</i>	5	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Clusiidae	<i>Clusiodes albimanus</i>	2	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Dolichopodidae	<i>Sciapus platypterus</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Dolichopodidae	<i>Sciapus platypterus</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Drosophilidae	<i>Drosophila helvetica</i>	6	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Drosophilidae	<i>Drosophila obscura</i>	1	<i>Fagus sylvatica</i>	108.2	N/A	Trunk hollow to ground with white-rotten lining	1-bottle trap
Drosophilidae	<i>Drosophila obscura</i>	4	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Drosophilidae	<i>Drosophila obscura</i>	2	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Drosophilidae	<i>Drosophila obscura</i>	1	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Drosophilidae	<i>Drosophila obscura</i>	7	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Drosophilidae	<i>Drosophila obscura</i>	2	<i>Quercus</i>	128.9	N/A	Hollowing trunk open to ground with dry red-rot	4-bottle trap
Drosophilidae	<i>Drosophila obscura</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Drosophilidae	<i>Drosophila phalerata</i>	1	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Drosophilidae	<i>Drosophila tristis</i>	3	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Drosophilidae	<i>Drosophila tristis</i>	21	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Drosophilidae	<i>Drosophila tristis</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Drosophilidae	<i>Drosophila tristis</i>	12	<i>Quercus</i>	208	N/A	Trunk	Active searching
Drosophilidae	<i>Phortica variegata</i>	1	<i>Fraxinus excelsior</i>	76.4	N/A	Around trunk	Active searching
Drosophilidae	<i>Phortica variegata</i>	5	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Drosophilidae	<i>Phortica variegata</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Drosophilidae	<i>Phortica variegata</i>	15	<i>Quercus</i>	208	N/A	Trunk	Active searching
Drosophilidae	<i>Scaptodrosophila deflexa</i>	9	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Fanniidae	<i>Fannia aequilineata</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Heleomyzidae	<i>Tephrochlamys flavipes</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Heleomyzidae	<i>Tephrochlamys flavipes</i>	3	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Heleomyzidae	<i>Tephrochlamys flavipes</i>	7	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Hybotidae	<i>Drapetis assimilis</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Hybotidae	<i>Tachypeza nubila</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Hybotidae	<i>Tachypeza nubila</i>	1	<i>Fraxinus excelsior</i>	77	N/A	Exposed white-rot on trunk	1-bottle trap
Hybotidae	<i>Tachypeza nubila</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Hybotidae	<i>Tachypeza nubila</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Hybotidae	<i>Tachypeza nubila</i>	2	<i>Quercus</i>	208	N/A	Trunk	Active searching
Keroplastidae	<i>Cerotelion striatum</i>	2	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Keroplastidae	<i>Cerotelion striatum</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Keroplastidae	<i>Cerotelion striatum</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Keroplastidae	<i>Cerotelion striatum</i>	5	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Keroplastidae	<i>Cerotelion striatum</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Keroplastidae	<i>Cerotelion striatum</i>	1	<i>Quercus</i>	N/A	80	Fallen dead bough	T5. Sweeping
Keroplastidae	<i>Macrocera vittata</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Keroplastidae	<i>Orfelia nemoralis</i>	2	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Limoniidae	<i>Achyrolimonia decemmaculata</i>	1	<i>Fraxinus excelsior</i>	46	N/A	Split trunk with exposed white-rot	1-bottle trap
Limoniidae	<i>Achyrolimonia decemmaculata</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Limoniidae	<i>Austrolimnophila ochracea</i>	1	<i>Platanus x hispanica</i>	170	N/A	Deliquescent fungi in hollow cut tree stump	T5. Sweeping
Limoniidae	<i>Austrolimnophila ochracea</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Limoniidae	<i>Epiphragma ocellare</i>	1	<i>Fraxinus excelsior</i>	N/A	45.8	Stereum hirsutum	T8. Sieve and sort
Limoniidae	<i>Neolimonia dumetorum</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Limoniidae	<i>Neolimonia dumetorum</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Limoniidae	<i>Rhipidia uniseriata</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Limoniidae	<i>Rhipidia uniseriata</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Lonchaeidae	<i>Lonchaea contigua</i>	1	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Lonchaeidae	<i>Lonchaea scutellaris</i>	34	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Lonchaeidae	<i>Lonchaea scutellaris</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Lonchaeidae	<i>Lonchaea scutellaris</i>	1	<i>Quercus</i>	208	N/A	Trunk	Active searching
Lonchaeidae	<i>Lonchaea serrata</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Milichiidae	<i>Phyllomyza longipalpis</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Milichiidae	<i>Phyllomyza longipalpis</i>	2	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Muscidae	<i>Helina abdominalis</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Muscidae	<i>Muscina levida</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Muscidae	<i>Phaonia laeta</i>	2	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Muscidae	<i>Phaonia pallida</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Muscidae	<i>Phaonia palpata</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Muscidae	<i>Phaonia rufiventris</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Muscidae	<i>Phaonia subventa</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Muscidae	<i>Phaonia subventa</i>	2	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Muscidae	<i>Phaonia subventa</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Mycetobiidae	<i>Mycetobia pallipes</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Mycetophilidae	<i>Acnemia nitidicollis</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Mycetophilidae	<i>Acnemia nitidicollis</i>	1	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Mycetophilidae	<i>Allodia ornatocollis</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Mycetophilidae	<i>Dynatosoma fuscicorne</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Mycetophilidae	<i>Ectrepesthoneura hirta</i>	1	<i>Fraxinus excelsior</i>	46	N/A	Split trunk with exposed white-rot	4-bottle trap
Mycetophilidae	<i>Exechia bicincta</i>	2	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Mycetophilidae	<i>Exechiopsis leptura</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with white-rotten lining	4-bottle trap
Mycetophilidae	<i>Mycetophila fungorum</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Mycetophilidae	<i>Mycetophila luctuosa</i>	1	<i>Platanus x hispanica</i>	170	N/A	Deliquescent fungi in hollow cut tree stump	T5. Sweeping
Mycetophilidae	<i>Mycetophila marginata</i>	5	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Mycetophilidae	<i>Mycetophila ocellus</i>	3	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Mycetophilidae	<i>Mycetophila trinotata</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Rhinophoridae	<i>Rhinophora lepida</i>	5	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Rhinophoridae	<i>Rhinophora lepida</i>	3	<i>Quercus</i>	208	N/A	Trunk	Active searching
Scatopsidae	<i>Coboldia fuscipes</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Scenopinidae	<i>Scenopinus niger</i>	3	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Scenopinidae	<i>Scenopinus niger</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Scenopinidae	<i>Scenopinus niger</i>	1	<i>Quercus</i>	208	N/A	Around dead wood of trunk	T5. Sweeping
Sphaeroceridae	<i>Crumomyia roserii</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Stratiomyidae	<i>Pachygaster atra</i>	1	<i>Pinus sylvestris</i>	54.1	1	Aerial dead branches with attached needles	T6. Beating
Syrphidae	<i>Brachypalpoides lentus</i>	1	<i>Quercus</i>	189	N/A	On trunk	Active searching
Syrphidae	<i>Brachypalpus laphriformis</i>	1	<i>Quercus</i>	208	N/A	Trunk	Active searching
Syrphidae	<i>Criorhina berberina</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Around trunk of fallen tree	Active searching
Syrphidae	<i>Ferdinandea cuprea</i>	1	<i>Fraxinus excelsior</i>	135.1	N/A	On trunk	Active searching
Syrphidae	<i>Ferdinandea cuprea</i>	11	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Syrphidae	<i>Ferdinandea ruficornis</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Syrphidae	<i>Ferdinandea ruficornis</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Syrphidae	<i>Myathropa florea</i>	1	<i>Fraxinus excelsior</i>	77	N/A	Trunk	Active searching
Syrphidae	<i>Myathropa florea</i>	1	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Syrphidae	<i>Myathropa florea</i>	1	<i>Quercus</i>	208	N/A	Trunk	Active searching
Syrphidae	<i>Volucella inflata</i>	2	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Syrphidae	<i>Volucella inflata</i>	1	<i>Quercus</i>	208	N/A	Trunk	Active searching
Therevidae	<i>Thereva nobilitata</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Tipulidae	<i>Tipula flavolineata</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
HEMIPTERA	-	-	-	-	-	-	-
Aradidae	<i>Aneurus avenius</i>	1	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Microphysidae	<i>Loricula elegantula</i>	2	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating
Microphysidae	<i>Loricula elegantula</i>	12	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Microphysidae	<i>Loricula pselaphiformis</i>	1	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating
HYMENOPTERA	-	-	-	-	-	-	-
Crabronidae	<i>Crossocerus annulipes</i>	3	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Crabronidae	<i>Crossocerus annulipes</i>	3	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Crabronidae	<i>Crossocerus annulipes</i>	5	<i>Quercus</i>	208	N/A	Trunk	Active searching
Crabronidae	<i>Crossocerus cetratus</i>	1	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Crabronidae	<i>Crossocerus podagricus</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Crabronidae	<i>Ectemnius cavifrons</i>	1	<i>Quercus</i>	208	N/A	Trunk	Active searching
Crabronidae	<i>Ectemnius cephalotes</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Crabronidae	<i>Ectemnius cephalotes</i>	4	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Crabronidae	<i>Ectemnius cephalotes</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Crabronidae	<i>Ectemnius cephalotes</i>	3	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Crabronidae	<i>Ectemnius cephalotes</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Crabronidae	<i>Ectemnius cephalotes</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Crabronidae	<i>Ectemnius continuus</i>	2	<i>Quercus</i>	208	N/A	Trunk	Active searching
Crabronidae	<i>Ectemnius continuus</i>	2	<i>Quercus</i>	N/A	80	Fallen dead bough	T5. Sweeping
Crabronidae	<i>Ectemnius lapidarius</i>	2	<i>Aesculus hippocastanum</i>	105	N/A	Around trunk of fallen tree	Active searching
Crabronidae	<i>Ectemnius lapidarius</i>	1	<i>Quercus</i>	208	N/A	Around dead wood of trunk	T5. Sweeping
Crabronidae	<i>Ectemnius lapidarius</i>	3	<i>Quercus</i>	208	N/A	Trunk	Active searching
Crabronidae	<i>Mimumesa dahlbomi</i>	2	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Crabronidae	<i>Mimumesa dahlbomi</i>	2	<i>Quercus</i>	208	N/A	Trunk	Active searching
Crabronidae	<i>Passaloecus corniger</i>	1	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Crabronidae	<i>Passaloecus corniger</i>	3	<i>Quercus</i>	208	N/A	Trunk	Active searching
Crabronidae	<i>Passaloecus gracilis</i>	2	<i>Quercus</i>	208	N/A	Around dead wood of trunk	T5. Sweeping
Crabronidae	<i>Passaloecus gracilis</i>	2	<i>Quercus</i>	208	N/A	Trunk	Active searching
Crabronidae	<i>Pemphredon lugubris</i>	1	<i>Platanus x hispanica</i>	186.7	N/A	Cavity open to ground with white-rotten lining	4-bottle trap
Crabronidae	<i>Rhopalum clavipes</i>	1	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Crabronidae	<i>Stigmus pendulus</i>	1	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating
Crabronidae	<i>Stigmus pendulus</i>	5	<i>Quercus</i>	208	N/A	Trunk	Active searching
Formicidae	<i>Lasius brunneus</i>	4	<i>Fraxinus excelsior</i>	135.1	N/A	Small white-rotten trunk cavity with wood mould	1-bottle trap
Formicidae	<i>Lasius brunneus</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Formicidae	<i>Lasius brunneus</i>	5	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Formicidae	<i>Lasius brunneus</i>	3	<i>Quercus</i>	128.9	4	Aerial dead branch	T6. Beating
Formicidae	<i>Lasius brunneus</i>	6	<i>Quercus</i>	148.9	N/A	Damaged trunk with exposed red-rot	4-bottle trap
Formicidae	<i>Lasius brunneus</i>	1	<i>Quercus</i>	208	28	Aerial dead branch	T6. Beating
Formicidae	<i>Lasius brunneus</i>	1	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Formicidae	<i>Lasius brunneus</i>	36	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Formicidae	<i>Lasius brunneus</i>	112	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Formicidae	<i>Lasius fuliginosus</i>	80	<i>Quercus</i>	128.9	N/A	Hollowing trunk open to ground with dry red-rot	4-bottle trap
Formicidae	<i>Lasius fuliginosus</i>	4	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Formicidae	<i>Lasius fuliginosus</i>	9	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap

Family	Taxon	Count	Tree species	Tree DBH	DBH if not on trunk	Description of capture location	Method
Formicidae	<i>Lasius fuliginosus</i>	173	<i>Quercus</i>	N/A	72	Fallen bough with red-rotten wood	4-bottle trap
Pompilidae	<i>Dipogon subintermedius</i>	3	<i>Quercus</i>	111.6	N/A	Trunk	Active searching
Pompilidae	<i>Dipogon subintermedius</i>	1	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Pompilidae	<i>Dipogon subintermedius</i>	5	<i>Quercus</i>	208	N/A	Exposed red-rot on trunk	4-bottle trap
Pompilidae	<i>Dipogon subintermedius</i>	2	<i>Quercus</i>	208	N/A	Trunk	Active searching
Vespidae	<i>Vespa crabro</i>	6	<i>Aesculus hippocastanum</i>	105	N/A	Rotten wood in root-plate of fallen tree	4-bottle trap
Vespidae	<i>Vespa crabro</i>	6	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Vespidae	<i>Vespa crabro</i>	2	<i>Quercus</i>	121.8	N/A	Outside trunk cavity with red-rotten wood	4-bottle trap
Vespidae	<i>Vespa crabro</i>	2	<i>Quercus</i>	189	N/A	Hollow trunk with red-rotten lining	4-bottle trap
Vespidae	<i>Vespa crabro</i>	11	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap
Xiphydriidae	<i>Xiphydria prolongata</i>	13	<i>Crataegus monogyna</i>	37	11.5	Aerial dead branch	T6. Beating
LEPIDOPTERA	–	–	–	–	–	–	–
Sesiidae	<i>Synanthedon vespiformis</i>	2	<i>Quercus</i>	113.9	N/A	Trunk	Active searching
Chernetidae	<i>Allochernes wideri</i>	1	<i>Fraxinus excelsior</i>	146.1	N/A	White-rotten cavity with wood mould	4-bottle trap
Chernetidae	<i>Chernes cimicoides</i>	1	<i>Aesculus hippocastanum</i>	105	N/A	Under sappy bark on trunk of fallen tree	Active searching
Chernetidae	<i>Chernes cimicoides</i>	2	<i>Fraxinus excelsior</i>	45	13	From dead limb on fallen tree	T6. Beating
Chernetidae	<i>Chernes cimicoides</i>	1	<i>Quercus</i>	208	N/A	Dusty debris behind loose bark	T8. Sieve and sort
Chernetidae	<i>Chernes cimicoides</i>	1	<i>Quercus</i>	N/A	19	Fallen dead limb	T6. Beating
Chernetidae	<i>Chernes cimicoides</i>	3	<i>Quercus</i>	N/A	43.5	Under bark of fallen bough	Active searching
RAPHIDOPTERA	–	–	–	–	–	–	–
Raphidiidae	<i>Xanthostigma xanthostigma</i>	1	<i>Quercus</i>	208	N/A	Red-rotten trunk	4-bottle trap

Data Archive Appendix

The data archive contains:

- [A] The final report in Microsoft Word and Adobe PDF formats.
- [B] ~~A full set of maps produced in JPEG format.~~
- [C] ~~A series of GIS layers on which the maps in the report are based with a series of word documents detailing the data processing and structure of the GIS layers.~~
- [D] ~~A set of raster files in ESRI and ASCII grid formats.~~
- [E] ~~A database named [name] in Microsoft Access 2000 format with metadata described in a Microsoft Word document [name.doc].~~
- [F] ~~A full set of images produced in [jpg/tiff] format.~~
- [G] Species records held in Welsh Invertebrate Database (WID).

Metadata for this project is publicly accessible through Natural Resources Wales' Library Catalogue <https://libcat.naturalresources.wales> (English Version) and <https://catllyfr.cyfoethnaturiol.cymru> (Welsh Version) by searching 'Dataset Titles'. The metadata is held as record no. XXXXXX.

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