

Moor Green Lakes Terrestrial Insect Survey, 2011

Report

Jon Cole & Ian Sims (7 December, 2012)



Part of survey site in early July showing extensive coverage of bird's-foot trefoil (*Lotus corniculatus* Linn.) (above) and yellow bedstraw *Galium verum* Linn. and other wild flowers (below).¹



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Summary

This report describes a survey of terrestrial insects conducted at Moor Green Lakes, Berkshire during 2011. The survey concentrated on an interesting area of approximately 2 ha (5 ac) of scrub/meadow along the northern boundary of Colebrook Lake North, centred on Ordnance Survey map ref. SU 807 625.

Eight site visits were conducted by Jon Cole and Ian Sims, on 9 April, 7 May, 4/5 June, 9/10 July, 20/21 August, 24 September, 30 October and 21 December. Methods used included beating, sweeping, pitfall trapping and general observation for all Orders, plus light trapping, dusking and sugaring, primarily for moths. There was no light trapping in April, during the May visit which was abandoned due to the onset of rain, or during the December visit. Colin Proudley joined the team with an additional light trap during the July visit.

A total of 503 species were recorded (see the table below for a breakdown of species numbers by Order).

Total numbers and relative proportions of species recorded per group

Insect Group (Order)	Number of species	% of Total	No. new to site (% of group)
Ephemeroptera (Mayflies)	1	0.2	1 (100)
Odonata (Damselflies & Dragonflies)	3	0.6	0
Plecoptera (Stoneflies)	1	0.2	1 (100)
Dictyoptera (Cockroaches)	1	0.2	1 (100)
Orthoptera (Grasshoppers & Crickets)	9	1.8	6 (67)
Dermaptera (Earwigs)	1	0.2	1 (100)
Hemiptera, Heteroptera (True bugs)	43	8.5	35 (81)
Hemiptera, Homoptera (Leaf hoppers & frog hoppers)	1	0.2	1 (100)
Megaloptera (Alderflies)	1	0.2	0
Coleoptera (Beetles)	91	18	71 (78)
Diptera (Flies)	15	2.8	6 (40)
Trichoptera (Caddisflies)	11	3.0	5 (45)
Lepidoptera (Butterflies)	19	3.8	1 (5)
Lepidoptera (Macro-moths)	130	26	41 (32)
Lepidoptera (Micro-moths)	155	31	131 (83)
Hymenoptera (Bees, wasps, ants & sawflies)	21	4.2	13 (62)
Total species	503	100	314 (62)

The majority (~60%) of species recorded were moths (Lepidoptera). This is not surprising as the method used for their recording, light trapping, is a very efficient surveying technique enabling many more species per hour to be recorded than the methods employed for recording other orders. It also has the advantage that some non-lepidopterous species, such as caddis flies (Trichoptera), come to light and so can also be recorded.

Around 60% of the species noted during this survey have apparently not been seen previously on the reserve, three of which were new records for Watsonian Vice-county 22 (Berkshire). A total of 4 nationally Notable-B species were recorded, along with 2 nationally rare species, 3 nationally scarce species, two species identified as UK Biodiversity Action Plan taxa, one of which is also a UK Red List species (for definitions of national status see footnotes to Appendix 2, and JNCC, 2011).

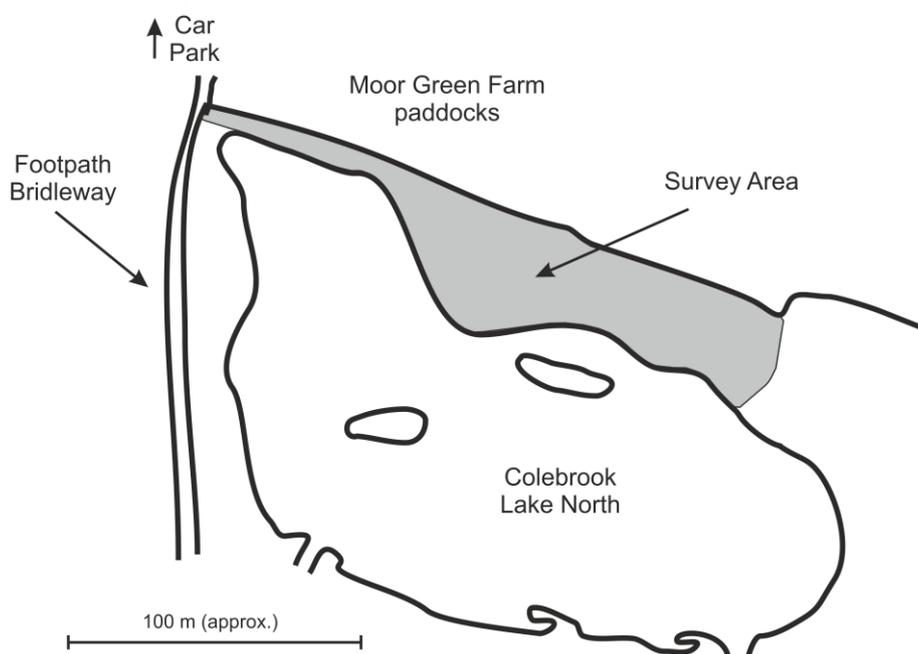
Of special interest are the necklace ground beetle *Carabus monilis*, a UK Biodiversity Action Plan (BAP) species & a Notable-B species. This is also a new record for VC 22. The cuckoo wasp *Chrysis viridula*, a cleptoparasite in the nests of mason wasps is also a new vice-county record, and the weevil *Sitona warehousei*, another new vice-county record is also a Notable-B species. Lepidoptera of note include the small elephant hawk-moth *Deilephila porcellus* (nationally scarce), the larvae of which feed on bedstraws, the lunar hornet moth *Sesia bembeciformis* whose larvae mine in the trunks of willow trees, the leopard moth *Zeuzera pyrina* which has larvae that mine in the branches of various trees and the lobster moth *Stauropus fagi*, larvae of which feed on beech foliage. The grayling butterfly *Hipparchia semele* is a biodiversity Action Plan priority species and is included on the 2010 UK Butterfly Red List.

Site Description and Survey Dates

The survey concentrated on an interesting area of approximately 2 ha (5 ac) of managed mixed scrub and meadow, bordered to the South by Colebrook Lake North and to the North by a fence line containing mature trees such as oak, ash and willow, separating the area from a horse paddock (see Figure 1). The survey area centred on Ordnance Survey map ref. SU 807 625.

The meadow is particularly notable for the large areas of bird's-foot trefoil (*Lotus corniculatus* Linn.) (above) and yellow bedstraw *Galium verum* Linn. and other wild flowers (see front page) – specific food plants of some of the rarer species recorded.

Figure 1: Map of site survey area



For a more detailed map of the lakes see Annex A of the 2012 (revised) management plan for the Moor Green Lakes Nature Reserve (MGLNR, 2012).

The site survey visits were conducted by Jon Cole and Ian Sims on the following dates:

9 April (daytime only), 7 May (day and night), 4-5 June (day and night), 9-10 July (day and night), 20-21 August (day and night), 24 September (day and night), 30 October (day and night) and 21 December (night only).

For survey times and weather conditions see **Appendix 1**.

Methods

In general, the recommendations contained in the Amateur Entomologist Societies' Leaflet 38, Guidelines for conducting invertebrate site surveys, (Vass 2002) were followed during the conduct of this survey.

Voucher specimens of critical species, collected according to the Code of Conduct for Collecting Insects (Invertebrate Link, 2002) were retained. Many of the voucher specimens of parasitic Hymenoptera are now in the National Collection housed in the National Museums of Scotland. The parasitic dipteran tachinid is in the collection of Dr. C Raper, while the cuckoo wasp *Chrysis viridula* was donated to the Hymenoptera collection of the British Entomological and Natural History Society. Other voucher specimens are housed in the collections of the authors.

Methods used for sampling and recording the invertebrates of Moor Green during 2011, most of which were demonstrated to visitors during the Open Day in August, included the following:

Beating (below left) – a 'Bignall' beating tray is held under braches of trees and bushes while the foliage is jarred with a stout stick. The resultant insects (mostly caterpillars, beetles, true bugs and flies) fall onto the tray and can be recorded directly or removed for subsequent identification.

Sweeping (below centre) – a net with a stout muslin bag is swept back and forth through grass and other low-growing herbage. The catch, mostly comprising the same orders as found when beating, is emptied into a tray for identification as for sweeping.

Insects from both beating and sweeping are generally collected using a pooter (below right), a suction device which draws the target insect into a collection vessel.



Pitfall trapping (below left) – consists of yoghurt pots buried in the ground such that their rims are flush with the soil surface. Marker sticks are a useful aid to re-location. Insects such as beetles and bugs, and isopods such as woodlice and millipedes, crawling on the soil surface fall into the pit and are unable to get out again. They can then be recorded directly or sampled for subsequent identification.

Light trapping (below right) – an effective method for sampling many orders of night-flying insects. It is especially useful for attracting moths and caddis flies, but different types of insects, including beetles, true bugs, mayflies, wasps and others, may visit the light.



Sugaring (right – copper underwing moth at sugar) – a technique developed by Henry Doubleday in the 1800s (Mays, 1978), primarily for recording nocturnal moths. A sticky solution of treacle and sugar, with drop of alcoholic beverage, in varied recipes, is applied to surfaces such as tree trunks and fence posts, and inspected periodically by torchlight. Moths and other invertebrates feeding on the solution can then be recorded.



General observation – by day or night, this technique is important for recording all orders. Nocturnally this method uses a net and torch and is referred to as dusking.

Rearing from pre-adult stages – this technique was chiefly used for Lepidoptera, and their associated parasites. For species with free-living larvae (mostly macrolepidoptera), larvae were collected by beating, sweeping or searching. Where identifications could not be confirmed in the field, or parasitism was suspected, individuals were retained, fed on their respective food plants and allowed to pupate. The resultant adults were identified and parasites sent for specialist identification. Leaf-mining microlepidoptera were found by searching, and mined leaves similarly treated. Overwintering, where required, was achieved by placing mined material or cocoons in a cool outhouse (shed) then bringing them indoors for spring/summer emergence.

Results

Overview

Five hundred and six species from 14 major taxonomic groups (orders) were identified from the survey. The full list of the taxa recorded is presented in Appendix 2 at the end of this report. Highlights from the survey are described below. Status descriptions, e.g. Notable B, UK BAP etc., are explained in JNCC (2011) Conservation Designations for UK Taxa (download spreadsheet; see References, and in the footnotes to Appendix 2).

Butterflies and moths (Lepidoptera)

This order of insects is artificially divided into (1) the larger moths and butterflies (macrolepidoptera), and (2) the smaller moths (microlepidoptera). The lepidopterous fauna of Moor Green is especially rich, with around 60% of the taxa recorded during this survey belonging to this Order. A total of 149 species of macros (130 moths and 19 butterflies), and 155 species of micros were recorded during the survey. Of these, 42 of the macros (28%) and 131 of the micros (83%) are new records for the site.

Two species of micro are classed as rare (*Stigmella aceris* and *Caloptilia falconipenella*) and three as scarce (*Stigmella luteella*, *Bucculatrix bechsteinella* and *Phyllonorycter froelichiella*). Three species were recorded as singletons.

The more unusual butterflies seen during this survey include the purple hairstreak (*Quercusia quercus*, Linn.). The hairstreaks are perhaps one of the most obscure families of our butterflies, their adults often flying high around the tops of trees, and their cryptically coloured larvae matching their surroundings. Both these features make them hard to detect and record. During the April visit two larvae of this taxon were beaten from the large oaks bordering the survey area and the horse paddock. These provide confirmation of a breeding colony on site.

Another interesting butterfly, the grayling (*Hipparchia semele*, Linn.), was recorded during the Open Day on 21 August. This is a species of heath and downland, its larvae feeding on grasses. It has declined nationally over the past decade; hence it's designation as a UK Red List and Biodiversity Action Plan (BAP) priority species. It has disappeared from many of its known haunts in Southern England such as Bramshill Plantation in Hampshire (just over the border from Berkshire) and its last known locality in Essex, Greys Chalk Pit, where it was last seen in the 1990s. It is still found on several heaths in south-east Berkshire and was recorded at Moor Green as singletons during 2000 and 2002. So the 9 or 10 examples noted during the Open Day in August represent a significant increase in the local population of this scarce butterfly.

The other butterflies recorded during the survey will all likely be breeding on site and are generally common throughout Berkshire & Hampshire. As such they will not be dealt with further here.

Of the macromoths, several species deserve special mention:



The ghost swift (*Hepialus humuli*, Linn.) (left) is a large conspicuous species – the white males can be seen in flight over rank vegetation during late evenings in June and July. It is so called because its dark underside, contrasting with the pale upper side, enables it to “disappear”, then re-appear hovering near-by. It is fairly common in Berkshire, but appears to have declined over

recent years. From the numbers seen during the survey a healthy population exists at Moor Green.

The leopard moth (*Zeuzera pyrina*, Linn.) (right) is widespread in Berkshire, but not a common moth. Its larva, which lasts for two years, is an internal feeder in the branches of several species of deciduous tree, including fruit trees. During the larval stage it produces little evidence of its presence. Consequently this species is most frequently recorded as an adult at light, as was the case during this survey for the first time at Moor Green.



The lunar hornet moth (*Sesia bembeciformis* (Hübner)) is a local species in Berkshire. It is a member of a family of moths known as clearwings and, as its vernacular name implies, it is a good mimic of the hornet (*Vespa crabro* Linn.). Its larvae feed internally on the wood of the lower trunk and root crowns of willows (*Salix* spp.). Consequently, like other larvae of this family which are all internal feeders, they are hard to detect. Old emergence holes (right) are usually the only indication that the moth inhabits an area, as the adults are rarely observed. As a result it is probably under-recorded, being perhaps more widespread than its present distribution suggests. It was the presence of emergence holes in the base of an old willow (right) that enabled its recording here for the first time during this survey.



The broken-barred carpet (*Electrophaes corylata*, Thunb.) was recorded as a singleton, in fresh condition, while dusking on 4 June. It is difficult to explain why it is apparently so scarce at this site, as its larva is polyphagous on various species of deciduous tree and historically the near-by Finchampstead Ridges are one of its strongholds (Baker 1994). Furthermore, it is widespread elsewhere in Berkshire.

The recording of such common and often pest species as the winter moth (*Operophtera brumata* Linn.), northern winter moth (*O. fagata*, Scharf.) (right – male and wingless female mating), pale brindled beauty (*Phigalia pilosaria*, D. & S.), mottled umber (*Erranis defoliaria* Cl.) and early moth (*Theria primaria*, Haw.) as new to the site is perhaps not surprising. All fly very late or early in the season, and as such are testament to the low ebb of recording during these cold and inclement months when little of interest is to be found. However, they have an interesting biology in that all these winter-emerging species have wingless females. This has perhaps evolved to prevent the egg-laying females being blown from their larval food plants during winter gales (many moths native to the Antarctic Islands show similar adaptations). Horticulturists use this feature of their biology to combat some of the more damaging of these species. In an attempt to prevent the newly emerged wingless females from ascending the trunks of orchard trees grease bands are applied to the trunks during early autumn. Unfortunately, many mating males fly the females past these barriers and up into the branches, where species like the mottled umber (*Erranis defoliaria*, Cl.) lay their eggs near the unopened buds.



From the numbers of small elephant hawk-moth (*Deilephila porcellus*, L.) (right) seen during our June visit, Moor Green appears to be an important locality in the south-east of Berkshire for this attractive species of sphingid. At least 25 individuals were noted at light on the 4 June. The larvae feed on bedstraws (*Galium* spp.), which grow in abundance at the location of the survey site (see front page). In order to ensure the long-term survival of this attractive and scarce moth in the vicinity, growth of yellow bedstraw (*G. verum*) should be encouraged and over-grazing avoided. The current management regime appears to be optimal for this taxon.



The lobster moth (*Stauropus fagi*, Linn.), another new species for the site, would appear to be a vagrant from woods growing on the near-by Finchampstead Ridges. Its outlandish larvae feed primarily on beech, which was not seen growing on the site but is present in profusion on the hillsides to the north of the Blackwater Valley. One singleton in fresh condition was recorded at light on 20 August.

The white point (*Mythimna albipuncta*, D. & S.) is a migrant species of wainscot. In his book on the Lepidoptera of Berkshire, published in 1994, Brian Baker records only one example seen at Fernham in 1990 by S. Nash. Since then it has been recorded in the county, and elsewhere in southern England, with increasing frequency and is now suspected to have established breeding colonies. At Moor Green a total of 5 individuals were recorded at light during June and July. Elsewhere in the county that year the authors recorded four individuals at Jealotts' Hill and five at Lower Earley, providing further circumstantial evidence of this moth breeding in the south and east of the county. The larvae feed nocturnally on grasses during the autumn and on mild winter nights, completing their growth in the spring. Their discovery would support the theory of local establishment.

Blair's shoulder-knot (*Lithophane leautieri* Bois.) is another migrant that was first recorded in the United Kingdom in 1951, on the Isle of Wight. Since then it has spread to the mainland and become established, its larvae feeding on junipers and various species of *Cupressus* planted in gardens and parks. It was first recorded in Berkshire in 1971 by P. A. Davey at Bucklebury (Baher, 1994), and since then has spread throughout the county and further north. One of its larval food plants is the dreaded leyland cypress (*C. leylandii*).

It will be seen from the opening paragraph to this order (above) that a high percentage of the microlepidoptera (83%) are recorded as new to the site. This is due to the difficulty in identification of many of these species. For this reason very few have vernacular names, only the more common "pest" species being accorded this honour. Many records were made from the characteristic leaf mines made by their larvae, as shown to visitors during the Open Day in August. In addition, several records were made by rearing from the early stages or from adults attracted to light at night, or netted by day.

Stigmella splendidissimella (H.-S.), one of the Nepticulidae, a family commonly referred to as pigmies and containing the smallest known moth in the world, was reared from larval leaf mines in bramble (*Rubus* sp.) collected during the Open Day in August. The adult is similar to several other closely related species in this family, some of which also feed on bramble, but is characterised by having black scales on the top of its head. The other related species have orange heads. *S. splendidissimella* is not particularly common in the county.

Syigmella aceris (Frey), which mines the leaves of field maple (*Acer campestre* Linn.) and Norway maple (*A. platanoides* L.), was until relatively recently a very rare species in the UK. Indeed, for many years it was unknown here. In recent years it has become established in south east England and is now spreading northwards. Consequently, it was not listed for Berkshire by Baker (1994), but is now widespread throughout the county. It is widespread at Moor Green, being present on all maples examined.

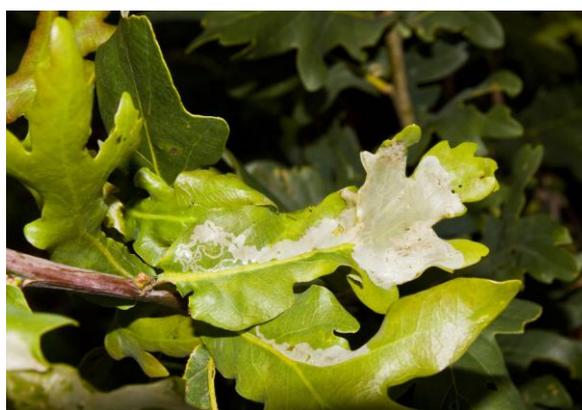
Adela cuprella (D. & S.) is a long-horn moth belonging to the family Incurvariidae. It is a small metallic coppery coloured moth with long antennae, hence the family name, which may be seen flying high over the tops of willow (*Salix* spp.) bushes on warm, calm and sunny afternoons at the end of March and during early April. It was first recorded for Berkshire in 1998 at Ashley Hill Forest near Reading (Sims, 1998), and since then has been seen at four other localities in the east of Berkshire (Watsonian vice-county 22 (Dandy, 1969)) i.e. Windsor Great Park, Dinton Pastures, Jealott's Hill and Bear Wood. The Moor Green record, on 9 April 2011, therefore represents the sixth known Berkshire locality for this species.

Psyche casta (Pallas) is a bagworm moth of the family Psychidae. This is a very primitive family of Lepidoptera, many species having wingless females some of which are no more than "sacks of eggs". The Psychidae are closely related to the caddis flies (Trichoptera), and like caddis larvae, *P. casta* larvae construct cases of silk covered with twigs (right). Several examples of these characteristic larval cases were seen attached to tree trunks and fencing. On 4 June a male was assembled to a virgin female that had just emerged from its pupa. This is an unusual phenomenon where-by the female emits a pheromone attractant which is detected by the male. He then flies up a concentration gradient of the pheromone to locate the female and mate with her.



Caloptilia falconipennella (Hübner) is classed as nationally rare, i.e. it is a candidate for future Red Data Book listing (Bradley 2000). It is a member of the family Gracillariidae, whose larvae construct characteristic rolls and folds on the foliage they feed on. The larvae of *C. falconipennella* feed on alder (*Alnus glutinosa*), constructing folds along the edge of the leaf. As they grow they vacate the fold and construct a new one. Three such folds are usually made, usually on separate leaves, each fold being larger than the previous one. Larvae of this nationally rare moth were found commonly, feeding on alder bushes growing along the bank of the lake bordering the survey area. Until recently it was not known from Berkshire, and is not listed for the vice-county in Baker (1994). It is still a localised and scarce species in VC22, but is now known from several different localities across the county.

Acrocercops brongniardella (Fab.) was, until the early 1990s, a rare and localised species in the UK. However, around that time it underwent a population explosion and for a year or two was one of the commonest leaf miners on oak, at least in the south east of England. Since then it has persisted in many localities, albeit at lower numbers than in its hey-day. The characteristic mines of this species (right) were found on oak during the July sampling visit. Apart from adults of this



moth, an unusual parasite was reared from them, and subsequently identified by Dr. Mark Shaw of the National Museums of Scotland (see Hymenoptera, Parasitica below).

Depressaria daucella (D. & S.), a member of the family Oecophoridae, is recorded from one Berkshire locality by Baker (1994), Tubney Wood in the extreme north of the county, in 1978. Nationally, it is not a scarce species but the adults are difficult to identify with certainty. However, its characteristic larvae feed on water dropworts (*Oenanthe* spp.), and it was these that this taxa was reared from at Moor Green. Larvae were found commonly on water dropwort growing at the edge of the lake. Indeed, they were so numerous that affected plants had been completely defoliated and were visibly obvious at a distance. From these larvae several unusual parasitic hymenoptera were reared, and subsequently identified by Dr. Mark Shaw (see Hymenoptera Parasitica, below).

Limnaecia phragmitella (Stainton) belongs to the family Cosmopterigidae. This is a small family, but contains some of the most attractively marked species of microlepidoptera. *L. phragmatella* is a common species nationally but had not been recorded at Moor Green before. Its larvae feed over winter in the seed heads of reed mace *Typha latifolia*, often erroneously referred to as bulrush. As such, it provides an important winter food source for birds. One seed head can contain hundreds of larvae, and this was the case with a seed head collected at the lake's edge on 9 April. A month or so later so many moths began to emerge that Collin Proudley was asked to return the plant material to the reserve.



The family Tortricidae contains many species of micro-lepidoptera that can be considered as pest species. One of the more obvious of these is the green oak tortrix (*Tortrix viridana* Linn.) (left). During the spring, larvae of this moth can be found feeding on rolled-up oak leaves. Some years they can occur in such numbers as to defoliate the oaks, with their droppings (frass) falling to the ground like rain. 2011 was not such a year at Moor Green, although the green oak tortrix was evident at light traps and by day.

Although a family of microlepidoptera, the Pyralidae contain some of our largest "micros". In fact some of these micros are substantially bigger than many of our "macros". *Phycitodes maritima* (Tengstrom) is a species which appears to be declining nationally, although it is hard to separate adults of this species from several other closely relatives. However, like *Depressaria daucella* its larvae are distinctive, and it was an aggregation of these found feeding on ragwort (*Senecio jacobaea* Linn.) during the 4 June visit that enabled the record of this taxon to be made. A bonus from these was the rearing of an unusual hymenopterous parasite, identified by Dr. Mark Shaw (see Hymenoptera, Parasitica, below).

Beetles (Coleoptera)

Coleoptera was the second largest order represented in the survey, with 91 species identified from 21 families amounting to 18% of the total number of insect types encountered. Beetles are the most abundant and species-rich order of insects on Earth containing nearly 40% of all described insects, although, as mentioned above, the sampling methods used are generally less efficient at collecting them than for moths. Of those found in this survey seven are perhaps worthy of special mention and are described below.



Curculio glandium Marsham (family Curculionidae; true weevils) (left) is a widespread and locally common weevil, but worthy of mention because of its striking looks. It's characterised by its very long and slender snout (the rostrum) that is actually slightly longer than its body, which is about 5 mm in length. It is also known as the acorn weevil and, as its name implies, is associated with oak. The long rostrum is used to burrow into acorns

prior to laying an egg. The larvae feed through the summer and fall to the ground with the acorn, feeding continues here and when fully grown they emerge and burrow into the soil to pupate. Adults emerge from the soil the following spring.

Carabus monilis Fab. (family Carabidae; ground beetles) (right), also known as the necklace ground beetle, is a large metallic, coppery green ground-living beetle about 24 mm (1 inch) in length. It is normally found in and around cultivated fields, grasslands and scrub and has become quite scarce in recent decades qualifying it for Notable-B and UK BAP status. Two specimens were collected in pitfall traps at each of the July and August surveys – all were released alive at the site after confirmation of identity. They only occurred in traps set in fairly dense vegetation near the water's edge, which would seem to be an unusual habitat for this species.



Sitona waterhousei Walton (family Curculionidae; true weevils) (left) is a small (4 mm) broad-nosed weevil (has only a short wide rostrum or snout). The life-history of this beetle is apparently unknown, but is normally associated with bird's foot trefoil (*Lotus corniculatus* Linnaeus) of which there is a plentiful abundance at the site. This is a rare weevil with Notable-B status, but seemingly quite common at the site during July and August, presumably due to the abundance of its favoured plant (see photo on front cover). This is a new record for the Watsonian Vice-county of Berkshire (VC22).

Tetratoma fungorum Fab. (family Tetratomidae; polypore fungus beetles) was observed on the fruiting body of a birch polypore bracket fungus (*Piptoporus betulinus* (Bull.: Fr.) Karst.) after dark during the December survey. This is a small (4 mm), but colourful beetle with orange legs and thorax and dark blue elytra (wing covers). It is only mentioned here because, although not thought to be rare, it is considered local in distribution, but this may only be because it is not often encountered due to its nocturnal habit and so possibly under-recorded. Its life cycle is completed within the fungus fruiting body.

Chilocorus bipustulatus (L.) (family Coccinellidae; ladybirds), also known as the heather ladybird, is a small (3.5 mm) mainly black ladybird. A single specimen was swept from general vegetation in July. As its name implies, this species is usually associated with heather, and although there is no heather at the survey site there are a number of nearby

heaths in the area. It is likely therefore that this was a chance encounter with a migrating individual.

Agrilus laticornis (Ill.) (family Buprestidae; Jewel beetles) is an attractive, metallic green beetle of about 5 mm in length. A single specimen was beaten from ash on 4 June. There are only six species of this genus in the UK and all are saproxylic, feeding mainly on dead wood and fungi, although *Agrilus* are unusual in that they are able to feed on fresh wood before fungi have begun the decay process. They are also considered to be phytophagous (see <http://markgtelfer.co.uk/beetles/buprestidae-jewel-beetles/>). Many buprestid beetles, including *A. laticornis* (which has Notable-B status), are in decline in the UK due to habitat loss (Alexander, 2001).

True bugs (Hemiptera)

Hemiptera was the third largest order represented in the survey, with 43 species identified from 22 families amounting to 8.5% of the total number of insect types encountered. Bugs are the fifth largest order of insects on Earth containing around 10% of all described insects, although, as mentioned above, the sampling methods used are generally less efficient at collecting them than for moths. Of those found in this survey two are perhaps worthy of special mention and are described below.

Berytinus hirticornis (Brullé, 1836) (family Berytinidae; stilt bugs) is a very slender, lanky, light brown bug with long legs. It feeds on grasses, but has been observed preying on aphids. A single specimen was beaten from silver birch on 9 April. *B. hirticornis* was at one time rare and known only from Devon, but in recent years it has become much more widespread and is common in parts of the south-east, associated with a range of plants in dry grasslands, although it still retains Notable-B status.

Deraeocoris flavilinea (Costa) (family Miridae; plant bugs) is a relatively large (length about 7.5 mm), oval bug, sexually dimorphic and quite variable, but usually a mixture of browns and orange. It is usually stated as being associated with sycamore and field maple but a single specimen was beaten from willow at the July survey. During an additional visit to the site, in July 2012, three further examples were noted, one more on willow and two on ash. It is of interest because it was first recorded in the UK in 1996 (Miller, 2001), although it is now widely established and locally common across southern and central Britain. It is probably predatory in habit.

Caddis flies (Trichoptera)

The Trichoptera are a primitive group of insects closely related to the Lepidoptera. The chief defining characteristic of the adults is that their wings are covered with hairs, rather than scales as is the case with the Lepidoptera.

The Trichoptera are divided into two groups on the basis of their larval biology. In the UK the “cased caddis”, i.e. those species whose larvae construct cases of grit, twigs or silk, are the larger group. Members of the smaller group are known as the “caseless caddis”, as their larvae do not construct cases. Many larvae of the caseless caddis are net spinners, feeding on aquatic detritus which gets snagged in their under-water nets. Consequently, most inhabit flowing water. All require clean water, though some species are more tolerant of organic pollution than others.

Many adult caddis come to light at night, and it was while using this method for recording moths that many records of caddis were made during the survey.

Of the cased caddis, the largest subfamily is the Limnephilinae, and the most abundant caddis recorded during the survey, *Limnephilus lunatus* Curtis, is a member of this subfamily. It is found commonly in ponds, lakes and marshes throughout the country. Large numbers of this caddis came to light, hence adults are likely to be an important food source for fish, birds and bats at Moor Green. Furthermore, its larvae are important components of aquatic food webs involving fish and other carnivorous invertebrates such as water beetles.

The most interesting trichopteran record made during the survey was *Agrypnia pagetana* Curtis. This species inhabits still waters (ponds, lakes and canals). It has a disparate distribution, being local in southern and central England & in southern Scotland but absent from the rest of the country.

The sole example of the caseless caddisflies found during the survey belonged to the largest genus of the group, *Hydropsyche*. *H. pellucidula* (Curtis), a net-spinner, is a widespread species in Britain, being found commonly in flowing waters (rivers). Along with several other members of the genus it forms a well-documented riverine sequence, with *H. pellucidula* occupying the zones downstream of *H. instabilis* Ulrich and upstream of *H. contubernalis* McLachlan.

Bees, wasps, ants and sawflies (Hymenoptera)

The hymenoptera is comprised of the ants, bees, wasps and sawflies. There are three broad sub-groupings: the Aculeata, i.e. bees, wasps and ants (not recorded during this survey), many possessing stings, the Parasitica, i.e. those which parasitize other insects and the Symphyta, the sawflies, which were not recorded during this survey.

Aculeata

By far the most interesting species of aculeate recorded during the survey was the ruby-tailed wasp *Chrysis viridula* Linn. (right). It is a new record for the Watsonian vice-county of Berkshire (VC22), and appears to be declining nationally (BWARS web site). It is a cleptoparasite of the ground-nesting eumenid mason wasps *Odynerus spinipes* (Linn.) and the nationally notable *O. melanocephalus* (Gmelin). The adult lays its eggs in the hosts nest and the resultant larva eat the hosts egg then consume the pray provisioned for its larva. One example of *C. viridula* was observed entering underground nests of mason wasps in an exposed earth bank, presumably to oviposit. Unfortunately its host was not identified during the survey. To obtain an identification of this difficult group of wasps, the adult was collected and compared with examples in the collections of the British Entomological & Natural History Society (BENHS) at Dinton Pastures, Hurst. This enabled the species to be confirmed as *C. viridula* and the resultant specimen is now in the BENHS's Hymenoptera reference collection. The hosts of *C. viridula* require areas of undisturbed exposed compact dry soil in order to successfully construct their subterranean nests. There were small areas of suitable exposed soil on a steep bank between the lake and some wooden fencing around a field containing horses, which formed the border of the reserve at this point. In order to retain these species it will be important to keep this area clear of encroaching vegetation. This habitat requirement was included in the original site management plan (MGLNR, 2002).





Members of the family Apidae were regularly seen at the site including honeybees (*Apis mellifera* L.) and the common wasp (*Vespa vulgaris* L.). Three species of bumblebee were recorded, but not in large numbers. *Bombus pascuorum* (Scop.) (common carder bee) was seen more frequently during the July, August and September surveys than either *B. lapidarius* (L.) (red-tailed bumblebee) or *B. terrestris/lucorum* (L.) (left), which were seen only in April and July. Note that queens and workers of *B. terrestris* (buff-tailed bumblebee) and *B. lucorum* (white-tailed bumblebee) cannot be reliably separated in the field. Several species of gall wasp (family Cynipidae) were recorded during the August and September surveys, identification being from the galls (abnormal outgrowths of

plant tissue) formed on tree foliage.

Parasitica

During fieldwork, several species of Lepidopterous larvae were collected for subsequent rearing to confirm their identity. During this process many examples of Hymenopterous parasitoids were hatched from these hosts. These were retained and sent to Dr. Mark Shaw for identification, this being a highly specialist process beyond the capability of those conducting this survey.

The most noteworthy parasitoid was a Braconid belonging to the genus *Dolichogenidae*. Several examples were reared from larvae of the micro-moth *Acrocercops brongniardella* mining oak leaves (see Section on Lepidoptera). This is an unusual host for this genus of parasitoid and two examples were retained by Mark for the National Collection of Parasitic Hymenoptera, (National Museums of Scotland).

Another unusual species of parasitoid recorded during the survey was *Agrothereutes abbreviatus*. One example, a female, was beaten from oak during the Open Day on 20th August. This particular example was brachipterous, i.e. it had shortened wings and consequently was incapable of flight. This too is now housed in the National Collection, under the care of Dr. Shaw.

True flies (Diptera)

The marmalade fly (*Episyrphus balteatus* (De Geer)) (right) is a common species of hoverfly, the numbers of which are boosted each year by migration from continental Europe. These mass invasions tend to move up the River Thames corridor, and out into the surrounding country side. This species is of interest as its larvae feed on aphids, and it is one of the standard test organisms for assessing effects of agrochemicals on the environment.





Another small and attractive, but variable, hoverfly seen during the survey was *Sphaerophoria scripta* (Linn.) (left). This is one of the commonest hoverflies associated with open grassland, who's numbers are again thought to be boosted by migration in some years.

Small orders (Ephemeroptera, Odonata, Plecoptera, Dictyoptera, Orthoptera, Dermaptera & Megaloptera)

Mayflies (Ephemeroptera)

Only one species was identified during the survey. This was *Caenis macrura* Stephens, which was attracted in very large numbers to the MV lights on the night of the 20th to 21st of August. Hundreds of them settled around and in the trap after dark, many stuck to the condensation on the collar of the trap (right). This is a river-inhabiting species, the adults probably having emerged from the Blackwater. The larval stages



(nymphs) are aquatic and generally feed on decaying vegetable material.

Damselflies & Dragonflies (Odonata)

2011 was a poor year for odonates generally. Only two species of damselfly were seen during the surveys, the common blue (*Enallagma cyathigerum* (Charpentier)) (right) and the banded demoiselle (*Calopteryx splendens* (Harris)) (below left), and one species of dragonfly, the black-tailed skimmer (*Orthetrum cancellatum* (Linn.)) (below right). These are all fairly common species and would be expected at the site. The larval stages (nymphs) are aquatic and predatory.





Stoneflies (Plecoptera)

One specimen of an adult *Nemoura cinerea* (Linn.) was recorded at the first survey in the spring. This is generally considered to inhabit flowing water so probably emerged from the nearby River Blackwater. The larval stages (nymphs) are aquatic feeding on vegetable detritus and algae.

Cockroaches (Dictyoptera)

Only one species of cockroach was found at the site. This was the dusky cockroach (*Ectobius lapponicus*), which is a locally common species and one of our few native cockroaches. A single specimen was swept from ground vegetation during the first survey in early April.

Grasshoppers and crickets (Orthoptera)

Three grasshopper (family Acrididae) and five bush-cricket (family Tettigoniidae) species were recorded from the site during the mid summer surveys (July and August). Roesel's bush-cricket (*Metrioptera roeseli* Hag.) (right) has expanded its range in England since the early 1900s. At one time it was confined to a narrow coastal belt either side of the Thames, thence north to the Humber. A steady westwards spread has been observed in the last 30 years or so, until now it is found as far west as Wales. It was recorded as relatively common during summer visits. Another species worthy of mention is the slender groundhopper (*Tetrix subulata* (Linn.), family Tetrigidae).



Alderflies (Megaloptera)

Sialis lutera (Linn.) is the commonest of the three British alderfly species. The larvae are aquatic, living amongst mud and detritus, generally preying on smaller insects. Adults fly in the early spring and were recorded at the April and May surveys only.

Earwigs (Dermaptera)

The common or European earwig (*Forficula auricularia* (Linn.)), the only member of the Dermaptera found during the survey, was recorded during every site visit. Although there are less than a dozen species of Dermaptera in the UK, *F. auricularia* is an extremely common species. It is mainly active at night, generally inhabiting small moist crevices during the day. It is of interest as the female broods its young, which is unusual behaviour amongst insects. It seems to be very partial to Ian Sims' 'sugar' recipe (right) being much more common at sugaring sites than were moths!



Conclusions

Probably the most important aspect of the Moor Green Reserve, as concerns terrestrial invertebrate conservation, is the floral diversity of the site. Efforts such as controlled grazing at suitable times of the year should be continued, and if possible, to enhance this. Clearly, some sort of monitoring programme would be beneficial to assure those responsible for site management that their efforts are being productive. This aspect of site management has been identified in the revised Moor Green Management Plan (Anon., 2012).

Clearly, one of the most important macrolepidoptera recorded during the survey was the small elephant hawk moth. Large numbers were noted at light during the June visit. As the larvae of this species feed on bedstraws, and many plants of the yellow bedstraw were found at the location of this survey, growth of yellow bedstraw should be encouraged. Controlled grazing can achieve this, but over-grazing should be avoided in order to ensure the moth's long-term survival. The management regime in operation at the time of this survey appears to be optimal for this moth.

Of the butterflies, the grayling would appear to be the most important seen during the survey. The adult requires open ground, woodland shade & nectar sources such as bramble flowers, while the larva feeds on grasses. The ecological requirements of this declining species are still somewhat uncertain, as it has disappeared from several suitable localities in the county recently. Nevertheless, the maintenance of areas of flowering brambles, some open grassland with bare ground such as paths together with some shady woodland areas, should help ensure the continued existence of this charismatic species on the site. As pointed out in the revised site management plan, brambles can become invasive and the extent of such "briar patches" must be monitored to ensure they do not take over otherwise ecologically important habitat types. If this becomes apparent, some suitable control measures may need to be implemented.

Where the microlepidoptera are concerned, the pyralid *Phycitodes maritima* is believed to be declining in Berkshire, Buckinghamshire & Oxfordshire. Although it's larval foodplant, ragwort, is not best liked by horse owners, the maintenance of this plant on the site will help this scarce moth, and a lot of other ragwort specialists such as the cinnabar moth, maintain their existence in the area.

The ruby-tailed wasp *Chrysis viridula* (new VC 22 record) is a cleptoparasite of mason wasps, and so its conservation is intimately linked with that of its host. Mason wasps (*Odynerus* spp.) require undisturbed short turf and/or open earth "cliff" faces, depending on species, for their successful nesting. As is noted in the revised management plan, these sort of habitats should be maintained on the site. Open earth banks and cliffs can be created with little effort, but require some fore-thought and planning as to when they should be created, maintained or weeded.

The large and colourful necklace ground beetle *Carabus monilis* (Notable-B and UK BAP) is an important member of the ground-dwelling coleopteran community. Although it is normally associated with cultivated land, the presence of grasslands and scrub at this locality is no doubt important for its continued survival here. The proximity of the trapped individuals to the water's edge is of interest as they are not normally associated with such habitat. Another important beetle for the site is *Sitona waterhousei* (notable-B, and new record for VC 22). As its life-history is unknown it is difficult to make recommendations for its conservation and management. However, its association with bird's foot trefoil is of note. The abundant growth

of this plant at this location should be encouraged. Fortunately, steps taken to promote the growth of bedstraws (see above) should also favour this plant.

In conclusion, it is clear that the populations of terrestrial (& aquatic) invertebrates on the Moor Green Reserve were healthy during the period of this survey. This is important, as they contribute to the biodiversity and overall ecological health of the reserve, and constitute a valuable resource as regards food for higher organisms such as birds and small mammals as well as other invertebrates such as parasites and predators. The current management plan, as outlined in the revised 2012 document, is seen as benefiting terrestrial invertebrate populations of both rare and common species on this site.

References, reports and taxonomic sources consulted

- Alexander K. 2001. Changing distributions of Cantharidae and Buprestidae within Great Britain (Coleoptera). *Proc. 13th Int. Coll. EIS*, September 2001: pp. 87-91
- Anonymous. 1981. *An identification guide to the British pugs Lepidoptera: Geometridae*. British Entomological & Natural History Society, Reading.
- Barnard P & Ross E. 2007. *A guide to the adult caddisflies or sedge flies (Trichoptera)*. FSC Aidgap (Test version).
- Barnard P & Ross E. 2012. *The adult Trichoptera (caddisflies) of Britain and Ireland*. Handbooks for the Identification of British Insects, **1** (17). Royal Entomological Society, London.
- Bradley JD. 2008. *Checklist of Lepidoptera recorded from the British Isles*. Revision of revised Second Ed. Pre-publication copy, from author, 9/4/2008.
- Bradley JD, Tremewan WG & Smith A. 1973. *British tortricoid moths, Cochyliidae & Tortricidae: Tortricinae*. Volume 1. Ray Society, London.
- Bradley JD, Tremewan WG & Smith A. 1979. *British tortricoid moths, Tortricidae: Olethreutinae*. Volume 2. Ray Society, London.
- Crick K, (ed.). 2001. Moor Green Lakes Nature Reserve, Annual report 9.
- Crick K, (ed.). 2002. Moor Green Lakes Nature Reserve, Annual report 10.
- Dandy JE. 1969. *Watsonian Vice-counties of Great Britain*. The Ray Society publication 146.
- Edington JM & Hildrew AG. 1995. *A revised key to the caseless caddis larvae of the British Isles*. Scientific Publication No. 53.
- Emmet AM (ed.). 1996. *The Moths and Butterflies of Great Britain and Ireland*, Volume 3. Yponomeutidae – Elachistidae. Harley Books, Colchester.
- Emmet AM & Heath J (eds.). 1989. *The Moths and Butterflies of Great Britain and Ireland*, Volume 7 (1). Hesperidae – Nymphalidae. Harley Books, Colchester.
- Emmet AM & Heath J (eds.). 1991. *The Moths and Butterflies of Great Britain and Ireland*, Volume 7 (2). Lasiocampidae – Thyatiridae. Harley Books, Colchester.
- Emmet AM & Langmaid JR (eds.). 2002. *The Moths and Butterflies of Great Britain and Ireland*, Volume 4(1). Oecophoridae – Scythrididae (excluding Gelechiidae). Harley Books, Colchester.
- Emmet AM & Langmaid JR (eds.). 2002. *The Moths and Butterflies of Great Britain and Ireland*, Volume 4(2). Gelechiidae. Harley Books, Colchester.
- Goater B, 1986. *British pyralid moths, a guide to their identification*. Harley Books, Colchester.
- Hart C. 2011. *British plume moths*. British Entomological & Natural History Society, Reading.
- Heath J (ed.). 1976. *The Moths and Butterflies of Great Britain and Ireland*, Volume 1. Micropterigidae – Heliozelidae. Blackwell, Oxford & Curwen, London.
- Heath J & Emmet AM (eds.). 1985. *The Moths and Butterflies of Great Britain and Ireland*, Volume 2. Cossidae – Heliodinidae. Harley Books, Colchester.
- Heath J & Emmet AM (eds.). 1979. *The Moths and Butterflies of Great Britain and Ireland*, Volume 9. Sphingidae – Noctuidae (Part 1). Curwen Books, London.

- Heath J & Emmet AM (eds.). 1983. *The Moths and Butterflies of Great Britain and Ireland*, Volume 10. Noctuidae (Part 2) & Agaristidae. Harley Books, Colchester.
- Hyman PS (Revised and updated by Parsons MS). 1992. *A review of the scarce and threatened beetles of Great Britain, Part 1*. UK nature conservation, No. 3. JNCC, 1992.
- Invertebrate Link (JCCBI). 2002. A code of conduct for collecting insects and other invertebrates. *Br. J. Ent. Nat. Hist.*, 15, 1 – 6.
- JNCC. 2011. *Conservation Designations for UK Taxa*. Joint Nature Conservation Committee. Download spreadsheet from <http://jncc.defra.gov.uk/page-3408>.
- Joy NH. 1932. *A Practical Handbook of British Beetles*. Vols. 1 and 2. EW Classey Ltd., Oxford.
- Kimmins DE. 1950. *Ephemeroptera*. Handbooks for the Identification of British Insects, 1 (9). Royal Entomological Society, London.
- Kirby P. 1992 (reprint 1976). *A review of the scarce and threatened Hemiptera of Great Britain*. UK nature conservation, No. 2. JNCC.
- Lott DA. 2009. *The Staphylinidae (Rove Beetles) of Britain and Ireland, Part 5 Scaphidiinae, Piestinae, Oxytelinae*. Handbooks for the Identification of British Insects, 12 (5). Royal Entomological Society, London.
- Luff ML. 2007. *The Carabidae (Ground Beetles) of Britain and Ireland (2nd Ed)*. Handbooks for the Identification of British Insects, 4 (2). Royal Entomological Society, London.
- Macan TT. 1973. *A key to the adults of the British Trichoptera*. Freshwater Biological Association, Scientific publication No. 28. FBA, Kendal.
- Marshall JA & Haes ECM. 1988. *Grasshoppers and allied insects of Great Britain and Ireland*. Harley Books, Colchester.
- Mays R. 1978. *Henry Doubleday; The Epping Naturalist*. Precision Press, Marlow.
- MGLNR. 2002. *Moor Green Lakes Nature Reserve Management Plan, Issue 1*. Moor Green Lakes Group, February 2002, Section 5.7.2
- MGLNR. 2012. *Moor Green Lakes Management Plan (revised edition)*. Moor Green Lakes Group, 2012.
- McAll, G. Undated. *Management Plan for Moor Green Lakes* (draft plan for BBONT, not adopted).
- Merritt R. 2001. Moor Green Lakes Reserve, Report of visits on 25th & 27th April 2001. First draft.
- Miller DJP. 2001. *Deraeocoris flavilinea* (A. Costa) (Hemiptera: Miridae), new to Britain. *Br. J. Ent. Nat. Hist.*, 14, 133-136.
- Morris MG. 1990. *Orthocerous Weevils. Coleoptera Curculionoidea (Nemonychidae, Anthribidae, Urodontidae, Attelabidae and Apionidae)*. Handbooks for the Identification of British Insects, 5 (16). Royal Entomological Society, London.
- Morris MG. 1997. *Broad-nosed Weevils. Coleoptera: Curculionidae (Entiminae)*. Handbooks for the Identification of British Insects, 5 (17a). Royal Entomological Society, London.
- Morris MG. 2002. *True Weevils (Part I). Coleoptera: Curculionidae (Subfamilies Raymondionyminae to Smicronychinae)*. Handbooks for the Identification of British Insects, 5 (17b). Royal Entomological Society, London.

- Morris MG. 2008. *True Weevils (Part II). (Coleoptera: Curculionidae, Ceutorhynchinae)*. Handbooks for the Identification of British Insects, **5** (17c). Royal Entomological Society, London.
- Mosely ME. 1939. *The British caddis flies (Trichoptera)*. G. Routledge & Sons, London.
- Oldcorn I (ed.). 2009. Moor Green Lakes Nature Reserve, Annual report 17.
- Oldcorn I (ed.). 2010. Moor Green Lakes Nature Reserve, Annual report 18.
- REDFERN M & Askew RR. 1992. *Paint galls*. Naturalists' Handbooks, 17. Richmond Publishing Co. Ltd., Slough.
- Riley AM & Prior G. 2003. *British and Irish pug moths, a guide to their identification and biology*. Harley Books, Colchester.
- Scott P (ed.). 2003. Moor Green Lakes Nature Reserve, Annual report 11.
- Scott P (ed.). 2004. Moor Green Lakes Nature Reserve, Annual report 12.
- Scott P (ed.). 2005. Moor Green Lakes Nature Reserve, Annual report 13.
- Scott P (ed.). 2006. Moor Green Lakes Nature Reserve, Annual report 14.
- Scott P (ed.). 2007. Moor Green Lakes Nature Reserve, Annual report 15.
- Scott P (ed.). 2008. Moor Green Lakes Nature Reserve, Annual report 16.
- Sims I. 1998. *Adella cuprella* ([D.& S.]) (Lep.: Incuvariidae) in Berkshire. *Ent. Rec. & J. of Var.*, **110**, 287.
- Skinner B. 2009. *Colour identification guide to moths of the British Isles*. Apollo Books, Denmark.
- Smith M, 2000. *BFBC Invertebrate Survey*.
- Southwood TRE & Leston D. 1959. *Land and water bugs of the British Isles*. Warne, London & New York.
- Standley P (ed.). 1993. Moor Green Lakes Nature Reserve, Annual report, 1.
- Standley P (ed.). 1994. Moor Green Lakes Nature Reserve, Annual report, 2.
- Standley P (ed.). 1995. Moor Green Lakes Nature Reserve, Annual report 3.
- Standley P (ed.). 1996. Moor Green Lakes Nature Reserve, Annual report 4.
- Standley P (ed.). 1997. Moor Green Lakes Nature Reserve, Annual report 5.
- Standley P (ed.). 1998. Moor Green Lakes Nature Reserve, Annual report 6.
- Standley P (ed.). 1999. Moor Green Lakes Nature Reserve, Annual report 7.
- Standley P (ed.). 2000. Moor Green Lakes Nature Reserve, Annual report 8.
- Stubbs A & Drake M. 2001. *British soldierflies and their allies*. British Entomological & Natural History Society, Reading.
- Stubbs AE & Falk SJ. 2002. *British hoverflies*. British Entomological & Natural History Society, Reading.
- Wallace ID, Wallace B & Philipson GN. 1990. *A key to case-bearing caddis larvae of Britain and Ireland*. FBA Scientific Publication No. 51.

Appendix 1 – Timings and Conditions of Surveys

The start and finish times for each survey plus weather conditions are presented in the following Table:

Timings and conditions of surveys

Date	Period	Time start	Temp (shade °C)	% cloud	Time finish	Temp (shade °C)	% cloud
09 Apr	Day	10:30	18.0	20	14:30	19.0	20
07 May	Day	16:00	20.0	90	18:00	19.0	95
	Night	19:30	16.0	90	21:00	16.0	100 (rain)
04-05 Jun	Day	19:00	17.0	80	21:00	16.0	80
	Night	21:00	16.0	80	02:00	7.0	80
09-10 Jul	Day	11:00	17.0	100	13:30	21.0	100
	Night	20:45	20.0	10	01:30	12.0	5
20-21 Aug	Day	13:30	22.0	70	15:30	24.0	60
	Night	20:00	18.0	15	01:00	16.0	20
24-Sep	Day	16:30	19.0	70	17:45	19.0	30
	Night	19:15	17.0	1	23:15	14.0	15
30-Oct	Day	10:30	16.0	90	12:00	17.0	90
	Night	17:15	16.0	20	19:00	14.0	100 (rain)
21-Dec	Night	17:45	9.0	100	19:30	8.0	100

Appendix 2 – Species List

The full List of species (includes lowest taxon level identified) is presented in the table following this page, with associated information on higher classification, dates seen, habitat and behaviour during observation, sampling methods and identifying experts.

Explanations of short codes used for sampling methods and experts and survey dates are given with additional information in a key below the end of the table.

Species (or taxa) identified during the survey

Species (or lowest taxon level identified)#	Common name	Family	Behaviour/habitat	Sampling method code	Survey date								Identified by	New site record (2000)	Status
					1	2	3	4	5	6	7	8			
EPHEMEROPTERA (mayflies)															
<i>Caenis macrura</i> Stephens, 1835	n/a	Caenidae	Flying	MVLT					x				JC	Y	
Total species (or taxa)	1				0	0	0	0	1	0	0	0			
ODONATA, ZYGOPTERA (damselflies)															
<i>Enallagma cyathigerum</i> (Charpentier, 1840)	Common blue damselfly	Coenagrionidae	Flying	GO				x	x				JC		
<i>Calopteryx splendens</i> (Harris, 1780)	Banded demoiselle	Calopterygidae	Flying	GO				x					JC		
Total species (or taxa)	2				0	0	0	2	1	0	0	0			
ODONATA, ANISOPTERA (dragonflies)															
<i>Orthetrum cancellatum</i> (Linnaeus, 1758)	Black-tailed skimmer	Libellulidae	Flying	GO				x					JC		
Total species (or taxa)	1				0	0	0	1	0	0	0	0			
PLECOPTERA (stoneflies)															
<i>Nemoura cinerea</i> (Linnaeus, 1758)	n/a	Nemouridae	Gorse	BV	x								JC	Y	
Total species (or taxa)	1				1	0									
DICTYOPTERA (cockroaches)															
<i>Ectobius lapponicus</i> (Linnaeus, 1758)	Dusky cockroach	Blattellidae (Wood cockroaches)	Grass, lakeside	SV	x								JC	Y	
Total species (or taxa)	1				1	0									
ORTHOPTERA (grasshoppers & crickets)															
<i>Chorthippus brunneus brunneus</i> (Thunberg, 1815)	Field grasshopper	Acrididae (grasshoppers)	Ground vegetation	SV				x	x				IS	Y	
<i>Chorthippus parallelus</i> (Zetterstedt, 1821)	Meadow grasshopper	Acrididae (grasshoppers)	Ground vegetation	SV				x	x				IS		
<i>Omocestus viridulus</i> (Linnaeus, 1758)	Common green grasshopper	Acrididae (grasshoppers)	Grasses	SV				x	x				IS	Y	
<i>Meconema thalassinum</i> (De Geer, 1773)	Oak Bush-cricket	Tettigoniidae (bush crickets)	Grasses	SV				x					IS	Y	
<i>Metrioptera roeseli</i> (Hagenbach, 1822)	Roesel's bush-cricket	Tettigoniidae (bush crickets)	Ground vegetation	SV				x	x				IS		
<i>Leptophyes punctatissima</i> (Bosc, 1792)	Speckled bush cricket	Tettigoniidae (bush crickets)	Hawthorn	SV				x					IS	Y	
<i>Conocephalus dorsalis</i> (Latreille, 1804)	Short-winged cone-head	Tettigoniidae (bush crickets)	Sallow	SV				x					JC/IS	Y	
<i>Conocephalus almia</i> s (Thunberg, 1815)	Long-winged cone-head	Tettigoniidae (bush crickets)	Ground vegetation	SV					x				IS		
<i>Tetrix subulata</i> (Linnaeus, 1758)	Slender groundhopper	Tetrigidae (groundhoppers)	Grasses, lakeside	SV	x								JC	Y	
Total species (or taxa)	9				1	0	0	7	5	0	0	0			
DERMAPTERA (earwigs)															
<i>Forficula auricularia</i> (Linnaeus, 1758)	Common earwig	Forficulidae	Ubiquitous	GO/BN	x	x	x	x	x	x	x	x	JC	Y	
Total species (or taxa)	1				1	1	1	1	1	1	1	1			
HEMIPTERA, HETEROPTERA (true bugs)															
<i>Elasmucha grisea</i> (Linnaeus, 1758)	Parent bug	Acanthosomatidae (parent bugs)	Alder	BV			x					x	JC	Y	
<i>Tritomegas bicolor</i> (Linnaeus, 1758)	Pied shieldbug	Cydniidae	Gorse	BV	x								JC/IS		

Species (or lowest taxon level identified)#	Common name	Family	Behaviour/habitat	Sampling method code	Survey date								Identified by	New site record (2000)	Status
					1	2	3	4	5	6	7	8			
<i>Pentatoma rufipes</i> (Linnaeus, 1758)	Forest bug	Pentatomidae (shield bugs)	All trees	BV				x					JC	Y	
<i>Picromerus bidens</i> (Linnaeus, 1758)	Gorse shieldbug	Pentatomidae (shield bugs)	Gorse	BV	x								IS	Y	
<i>Coreus marginatus</i> (Linnaeus, 1758)	n/a	Coreidae (squash bugs)	Nettle	BV				x					JC	Y	
<i>Rhopalus subrufus</i> (Gmelin, 1790)	n/a	Rhopalidae (scentless plant bugs)	General vegetation	SV					x				JC	Y	
<i>Kleidocerys resedae</i> (Panzer, 1797)	Birch catkin bug	Lygaeidae (ground bugs)	Silver birch	BV							x		JC	Y	
<i>Drymus sylvaticus</i> (Fabricius, 1775)	Common ground bug	Lygaeidae (ground bugs)	General vegetation	SV					x				JC*	Y?	
<i>Berytinus hirticornis</i> (Brullé, 1836)	n/a	Berytinidae (stilt bugs)	Silver birch	BV	x								JC	Y	Notable B
<i>Dictyonota strichnocera</i> Fieber, 1844	Gorse lacebug	Tingidae (lace bugs)	Gorse	BV				x					JC	Y	
<i>Physatocheila dumetorum</i> (Herrich-Schäffer, 1838)	n/a	Tingidae (lace bugs)	Hawthorn/General vegetation	BV/SV	x			x	x	x			JC	Y	
<i>Dictyla convergens</i> (Herrich-Schäffer 1835)	n/a	Tingidae (lace bugs)	General vegetation	SV					x				JC	Y	
<i>Nabis rugosus</i> (Linnaeus, 1758)	Common damsel bug	Nabidae (damsel bugs)	Nettle	BV	x								JC	Y	
<i>Himacerus mirmicoides</i> (Costa, 1834)	Ant damsel bug	Nabidae (damsel bugs)	Nettle	BV	x								JC	Y	
<i>Anthocoris cf. almia</i> s Reuter, 1884	n/a	Anthocoridae (flower bugs)	Sallow	BV				x					JC	Y	
<i>Anthocoris cf. nemoralis</i> (Fabricius, 1794)	n/a	Anthocoridae (flower bugs)	Hawthorn/blackthorn/ash	BV	x	x	x	x					JC	Y	
<i>Anthocoris nemorum</i> (Linnaeus, 1761)	n/a	Anthocoridae (flower bugs)	Sallow/Sloe	BV				x					JC	Y	
<i>Anthocoris</i> sp. Indet.	n/a	Anthocoridae (flower bugs)	Gorse	BV	x								JC	Y	
<i>Orius vicinus</i> (Ribaut, 1923)	n/a	Anthocoridae (flower bugs)	Ash/sallow	BV						x			JC	Y	
<i>Cardiastethus fasciventris</i> (Garbiglietti, 1869)	n/a	Anthocoridae (flower bugs)	Gorse/hawthorn	BV	x			x		x			JC*	Y	
<i>Deraeocoris lutescens</i> (Schilling), 1836	n/a	Miridae (plant bugs)	Sallow/oak	BV				x	x	x			JC/IS	Y	
<i>Deraeocoris ruber</i> (Linnaeus, 1758)	n/a	Miridae (plant bugs)	General vegetation	SV					x				JC	Y	
<i>Deraeocoris flavilinea</i> (Costa, 1862)	n/a	Miridae (plant bugs)	Sallow	BV					x				JC/RH*	Y	
<i>Phylus palliceps</i> Fieber, 1861	n/a	Miridae (plant bugs)	Oak	BV				x					JC	Y	
<i>Psallus perrisi</i> (Mulsant & Rey, 1852)	n/a	Miridae (plant bugs)	Oak/blackthorn	BV				x					JC*	Y	
<i>Psallus cf. flavellus</i> (Mulsant & Rey, 1852)	n/a	Miridae (plant bugs)	Ash	BV				x					JC	Y	
<i>Psallus Lepidus</i> Fieber, 1858	n/a	Miridae (plant bugs)	Oak/ash	BV				x					JC*	Y	
<i>Psallus almia</i> s (Kirschbaum, 1856)	n/a	Miridae (plant bugs)	Oak/nettle	BV				x	x				JC	Y	
<i>Psallus cf. masseei</i> Woodroffe, 1957	n/a	Miridae (plant bugs)	Oak	BV				x					JC	Y	
<i>Psallus varians</i> (Herrich-Schaeffer, 1841)	n/a	Miridae (plant bugs)	Oak/blackthorn	BV				x	x				JC*	Y	
<i>Plagiognathus arbustorum</i> (Fabricius, 1794)	n/a	Miridae (plant bugs)	Nettle	SV					x				JC	Y	
<i>Plagiognathus chrysanthemii</i> (Wolff, 1804)	n/a	Miridae (plant bugs)	Sallow/bedstraw/trefoil	BV/SV					x				JC	Y	
<i>Planicornis merioptera</i> (Scopoli, 1763)	n/a	Miridae (plant bugs)	Sloe	BV					x				JC	Y	
<i>Orthotylus tenellus</i> (Fallén, 1807)	n/a	Miridae (plant bugs)	Ash/Oak	BV				x					JC	Y	
<i>Orthotylus marginalis</i> Reuter, 1884	Dark green apple-capsid	Miridae (plant bugs)	Sallow	BV				x	x				JC	Y	
<i>Pithanus maerkelii</i> (Herrich-Schäffer, 1838)	n/a (an ant mimick)	Miridae (plant bugs)	Ground	PT				x					JC	Y	
<i>Orthops almia</i> (Fieber, 1858)	n/a	Miridae (plant bugs)	Sallow	BV				x			x		JC	Y	
<i>Orthops campestris</i> (Linnaeus 1758)	n/a	Miridae (plant bugs)	Blackthorn	BV				x					JC*	Y	
<i>Neolygus viridis</i> (Fallén 1807)	n/a	Miridae (plant bugs)	Hawthorn	BV				x	x				JC	Y	
<i>Charagochilus gyllenhalii</i> (Fallén, 1807)	n/a	Miridae (plant bugs)	Bedstraw	SV					x				JC	Y	
<i>Phytocoris tiliae</i> (Fabricius, 1777)	n/a	Miridae (plant bugs)	Oak	BV				x					JC	Y	
<i>Lygocoris</i> sp. Indet.	n/a	Miridae (plant bugs)	Blackthorn	BV				x					JC	Y	
<i>Sigara nigrilineata</i> (Fieber, 1848)	n/a	Corixidae (lesser water boatmen)		MVLT							x		JC	Y	

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					1	2	3	4	5	6	7	8				
Total species (or taxa)	43				9	4	17	17	5	5	2	0				
HEMIPTERA, HOMOPTERA (frog-hoppers & aphids)																
<i>Cicadella viridis</i> (Linnaeus, 1758)	Green cicada	Cicadellidae	Oak	BV					x					IS*	Y	
Total species (or taxa)	1				0	0	0	0	1	0	0	0				
MEGALOPTERA (alderflies)																
<i>Sialis lutura</i> (Linnaeus, 1758)	The common alderfly	Sialidae	Gorse	BV	x	x								JC	Y	
Total species (or taxa)	1				1	1	0	0	0	0	0	0				
COLEOPTERA (beetles)																
<i>Amara aenea</i> DeGeer, 1774	n/a	Carabidae (ground beetles)	Ground	PT				x						JC	Y	
<i>Amara communis</i> (Panzer, 1797)	n/a	Carabidae (ground beetles)	Ground	PT			x							JC	Y	
<i>Amara convexior</i> Stephens, 1828	n/a	Carabidae (ground beetles)	Ground	PT			x							JC*	Y	
<i>Calathus fuscipes</i> (Goeze, 1777)	n/a	Carabidae (ground beetles)	Ground	PT					x	x				JC	Y	
<i>Carabus monilis</i> Fabricius, 1792	Necklace ground beetle	Carabidae (ground beetles)	Ground	PT				x	x					JC	Y	UK BAP, Notable B ~
<i>Carabus violaceus</i> (Linnaeus, 1758)	n/a	Carabidae (ground beetles)	Ground	PT				x	x					JC	Y	
<i>Harpalus rubripes</i> (Duftschmid, 1812)	n/a	Carabidae (ground beetles)	Ground	PT			x							MT*	Y	
<i>Harpalus rufipes</i> (De Geer, 1774)	n/a	Carabidae (ground beetles)	Ground	PT			x							JC	Y	
<i>Nebria brevicollis</i> (Fabricius, 1792)	n/a	Carabidae (ground beetles)	Ground	PT			x			x				JC	Y	
<i>Poecilus cupreus</i> (Linnaeus, 1758)	n/a	Carabidae (ground beetles)	Ground	PT			x							JC	Y	
<i>Poecilus versicolor</i> (Sturm, 1824)	n/a	Carabidae (ground beetles)	Ground	PT			x			x				JC	Y	
<i>Pterostichus madidus</i> (Illiger, 1798)	Black clock or rain beetle	Carabidae (ground beetles)	Ground	PT			x	x	x	x				JC	Y	
<i>Pterostichus melanarius</i> (Illiger, 1798)	n/a	Carabidae (ground beetles)	Ground	PT			x		x					JC	Y	
<i>Pterostichus niger</i> (Schaller, 1783)	n/a	Carabidae (ground beetles)	Ground	PT			x	x						JC	Y	
<i>Lordithon cf. trinotatus</i> (Erichson, 1839)	n/a	Staphylinidae (rove beetles)	Ground	PT			x							JC	Y	
<i>Ocypus aeneocephalus</i> (De Geer, 1774)	n/a	Staphylinidae (rove beetles)	Ground	PT						x				JC	Y	
<i>Ocypus olens</i> (O. F. Müller, 1764)	Devil's coach-horse	Staphylinidae (rove beetles)	Ground	PT					x	x				JC	Y	
<i>Scaphidium quadrimaculatum</i> Olivier, 1790	A shining fungus beetle	Staphylinidae (rove beetles)	General vegetation	SV					x					JC	Y	
<i>Sunius cf. propinquus</i> (Brisout de Barneville, 1867)	n/a	Staphylinidae (rove beetles)	Ground	PT			x							JC	Y	
<i>Tachinus marginellus</i> (Fabricius, 1781)	n/a	Staphylinidae (rove beetles)	Ash	BV			x							JC	Y	
<i>Tachyporus hypnorum</i> (Fabricius, 1775)	n/a	Staphylinidae (rove beetles)	Gorse	BV	x									JC	Y	
<i>Tasgius globulifer</i> (Geoffroy, 1785)	n/a	Staphylinidae (rove beetles)	Ground	PT			x							JC*	Y	
<i>Aphodius cf. rufipes</i> (Linnaeus, 1758)	n/a	Scarabaeidae (dung beetles)	Flying	MVLT			x							JC	Y	
<i>Melolontha melolontha</i> (Linnaeus, 1758)	Common cockchafer	Scarabaeidae (scarab & dung beetles)	Flying	MVLT			x							JC	Y	
<i>Hydrocyphon deflexicollis</i> (P.W. & J. Müller, 1821)	n/a	Scirtidae (marsh beetles)	Sallow/hawthorn	BV		x		x						JC	Y	
<i>Agrilus laticornis</i> (Illiger, 1803)	n/a		Ash	BV			x							JC	Y	Notable B
<i>Byrrhus pilula</i> (Linnaeus 1767)	n/a	Byrrhidae (pill beetles)	Fence post	Sgr				x						JC	Y	
<i>Agriotes lineatus</i> (Linnaeus, 1767)	n/a	Elateridae (click beetles)	Flying at night	MVLT			x							JC*	Y	

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					1	2	3	4	5	6	7	8			
<i>Agriotes obscurus</i> (Linnaeus, 1758)	n/a	Elateridae (click beetles)	Flying/ground	MVLT/PT			x						JC*		
<i>Athous haemorrhoidalis</i> (Fabricius, 1801)	n/a	Elateridae (click beetles)	Ash	BV			x						JC	Y	
<i>Dalopius marginatus</i> (Linnaeus, 1758)	n/a	Elateridae (click beetles)	Nettle	SV	x								JC	Y	
<i>Kibunea minuta</i> (Linnaeus, 1758)	n/a	Elateridae (click beetles)	Gorse	BV	x								JC	Y	
<i>Cantharis nigricans</i> (O.F.Müller, 1776)	n/a	Cantharidae (soldier beetles)	Flying	MVLT			x						JC	Y	
<i>Malthinus seriepunctatus</i> Kiesenwetter, 1852	n/a	Cantharidae (soldier beetles)	Sallow	BV				x					JC	Y	
<i>Rhagonycha fulva</i> (Scopoli, 1763)	n/a	Cantharidae (soldier beetles)	Ragwort	GO				x					JC		
<i>Rhagonycha lignosa</i> (Muller, O.F., 1764)	n/a	Cantharidae (soldier beetles)	Flying	MVLT			x						JC	Y	
<i>Anobium fulvicorne</i> (Sturm, 1837)	n/a	Anobiidae (wood borers)	Oak	BV				x					JC	Y	
<i>Meligethes saeneus</i> (Fabricius, 1775)	n/a	Nitidulidae (sap and pollen beetles)	Gorse	BV	x								JC*	Y	
Nitidulidae sp. Indet.	n/a	Nitidulidae (sap and pollen beetles)	Gorse	BV	x								JC	Y	
<i>Micrambe ulicis</i> (Panzer, 1797)	n/a	Cryptophagidae	Gorse/hawthorn	BV	x			x					JC	Y	
<i>Adalia bipunctata</i> (Linnaeus, 1758)	2-spot ladybird	Coccinellidae (ladybirds)	Hawthorn/sallow	BV	x	x							JC		
<i>Adalia decempunctata</i> (Linnaeus, 1758)	10-spot ladybird	Coccinellidae (ladybirds)	Oak/blackthorn	BV	x								JC		
<i>Calvia quatuordecimguttata</i> (Linnaeus, 1758)	Cream-spot ladybird	Coccinellidae (ladybirds)	Hawthorn	BV	x								JC		
<i>Chilocorus bipustulatus</i> (Linnaeus, 1758)	Heather ladybird	Coccinellidae (ladybirds)	General vegetation	SV				x					JC	Y	
<i>Coccinella septempunctata</i> (Linnaeus, 1758)	7-spot ladybird	Coccinellidae (ladybirds)	General vegetation	GO					x				JC		
<i>Harmonia axyridis</i> (Pallas, 1773)	Harlequin ladybird	Coccinellidae (ladybirds)	Ubiquitous	GO				x					JC	Y	
<i>Propylaea quatuordecimpunctata</i> (Linnaeus, 1758)	14-spot ladybird	Coccinellidae (ladybirds)	Nettle/trefoil	SV	x			x					JC		
<i>Psyllobora vigintiduopunctata</i> (Linnaeus, 1758)	22-spot ladybird	Coccinellidae (ladybirds)	Nettle	SV	x								JC		
<i>Scymnus suturalis</i> Thunberg, 1795	n/a	Coccinellidae (ladybirds)	Hawthorn	BV	x								JC	Y	
<i>Subcoccinella vigintiquatuorpuntata</i> (Linnaeus, 1758)	24-spot ladybird	Coccinellidae (ladybirds)	General vegetation	SV							x		JC	Y	
<i>Corticaria cf. gibbosa</i> (Herbst, 1793)	n/a	Lathridiidae (minute brown scavenger beetles)	Trefoil/gorse	SV				x					JC	Y	
<i>Tetratoma fungorum</i> Fabricius, 1790	n/a	Tetratomidae (polypore fungus beetles)	On birch polypore fungus at night	TL								x	JC	Y	
<i>Nalassus laevioctostriatus</i> (Goeze, 1777)	n/a	Tenebrionidae (darkling beetles)	Flying and on ash bark at night	MVLT/TL				x		x		x	JC	Y	
<i>Oedemera lurida</i> (Marsham, 1802)	n/a	Oedemeridae (thick-legged flower beetles)	Hawkweed	GO				x					JC		
<i>Salpingus planirostris</i> (Fabricius, 1787)	n/a	Pythidae (dead log bark beetles)	Ash	BV				x					JC	Y	
<i>Pseudovadonia livida</i> (Fabricius, 1776)	Fairy-ring longhorn beetle	Cerambycidae (longhorn beetles)	Ragwort	GO				x					JC*	Y	
<i>Cryptocephalus pusillus</i> Fabricius, 1777	n/a	Chrysomelidae (leaf beetles)	Sallow	BV				x					JC	Y	
<i>Chrysolina hyperici</i> (Forster, 1771)	St. Johnswort Beetle	Chrysomelidae (leaf beetles)	Marsh St. Johnswort	SV			x	x					JC		
<i>Aphthona euphorbiae</i> (Schrank, 1781)	n/a	Chrysomelidae (flea beetles)	Field maple	BV							x		RH*	Y	
<i>Aphthona nonstriata</i> (Fourcroy, 1785)	n/a	Chrysomelidae (flea beetles)	Nettle	SV	x								JC*	Y	
<i>Longitarsus cf. melanocephalus</i> (De Geer, 1775)	n/a	Chrysomelidae (flea beetles)	General vegetation	SV					x		x		JC	Y	
<i>Longitarsus pratensis</i> (Panzer, 1794)	n/a	Chrysomelidae (flea beetles)	Hawthorne	BV/SV					x	x			JC	Y	
<i>Longitarsus jacobaeae</i> Waterhouse, 1858	n/a	Chrysomelidae (flea beetles)	General vegetation	SV					x				JC	Y	
<i>Altica plustris</i> Weise, 1888	n/a	Chrysomelidae (flea beetles)	General vegetation (waterside)	BV					x				JC*		
<i>Sphaeroderma rubidum</i> (Fabricius, 1775)	n/a	Chrysomelidae (flea beetles)	Ash/general vegetation	BV/SV					x		x		JC*	Y	

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					1	2	3	4	5	6	7	8			
<i>Neocoenorrhinus aequatus</i> (Linnaeus, 1767)	The apple fruit weevil	Rhynchitidae (Leaf rolling weevils)	Hawthorn	BV	x								JC		
Apionidae sp. Indet.	n/a	Apionidae (seed weevils)	General vegetation	SV					x				JC	Y	
<i>Ceratapion carduorum</i> (Kirby, 1808)	n/a	Apionidae (seed weevils)	Hawthorn	BV								x	JC*		
<i>Ceratapion onopordi</i> (Kirby, 1808)	n/a	Apionidae (seed weevils)	General vegetation	SV					x				JC*		
<i>Exapion ulicis</i> (Forster, 1771)	The gorse seed weevil	Apionidae (seed weevils)	Gorse	BV	x			x		x			JC*	Y	
<i>Ischnopterapion loti</i> Kirby, 1808	n/a	Apionidae (seed weevils)	Trefoil	SV				x	x	x			JC*	Y	
<i>Perapion cf. hydrolopathi</i> (Marshall, 1802)	n/a	Apionidae (seed weevils)	Trefoil/general vegetation	BV/SV				x	x				JC	Y	
<i>Protapion cf. fulvipes</i> (Geoffroy in Fourcroy, 1785)	n/a	Apionidae (seed weevils)	General vegetation	SV					x				JC	Y	
<i>Andrion regensteinensis</i> (Herbst, 1797)	n/a	Curculionidae (true weevils)	Gorse	BV				x	x	x	x		JC*	Y	
<i>Anthonomus pedicularius</i> (Linnaeus, 1758)	n/a	Curculionidae (true weevils)	Gorse/hawthorn	BV	x			x					JC*	Y	
<i>Archarius pyrrhoceras</i> (Marshall, 1802)	n/a	Curculionidae (true weevils)	Sallow/hawthorn	BV				x		x			JC*	Y	
<i>Archarius salicivorus</i> (Paykull, 1792)	n/a	Curculionidae (true weevils)	Sallow	BV				x					JC*		
<i>Curculio glandium</i> Marshall, 1802	The acorn weevil	Curculionidae (true weevils)	Oak	BV	x	x		x					JC*	Y	
<i>Dorytomus melanophthalmus</i> (Paykull, 1792)	n/a	Curculionidae (true weevils)	On Ash	BV				x					JC*	Y	
<i>Dorytomus rufatus</i> (Beddel, 1888)	n/a	Curculionidae (true weevils)	Sallow	BV				x		x			JC*	Y	
<i>Nedus quadrimaculatus</i> (Linnaeus, 1758)	The small nettle beetle	Curculionidae (true weevils)	Nettle	SV	x								JC	Y	
<i>Parethelcus cf. pollinarius</i> (Forster, 1771)	n/a	Curculionidae (true weevils)	Nettle	SV	x								JC	Y	
<i>Phyllobius cf. pyri</i> (Linnaeus, 1758)	Common leaf weevil	Curculionidae (true weevils)	Hawthorn	BV	x								JC	Y	
<i>Polydrusus cervinus</i> (Linnaeus, 1758)	n/a	Curculionidae (true weevils)	Oak	BV				x	x				JC	Y	
<i>Rhamphus pulicarius</i> (Herbst, 1795)	n/a	Curculionidae (true weevils)	Sallow	BV					x				JC*	Y	
<i>Sitona cf. hispidulus</i> (Fabricius, 1777)	n/a	Curculionidae (true weevils)	Gorse	BV	x								JC		
<i>Sitona cf. lineatus</i> (Linnaeus, 1758)	n/a	Curculionidae (true weevils)	General vegetation	SV					x				JC	Y?	
<i>Sitona striatellus</i> (Herbst, 1795)	n/a	Curculionidae (true weevils)	Gorse/nettle/general vegetation	SV	x				x				JC*	Y	
<i>Sitona suturalis</i> Stephens, 1831	n/a	Curculionidae (true weevils)	General vegetation	SV					x		x		JC*	Y	
<i>Sitona waterhousei</i> Walton, 1846	n/a	Curculionidae (true weevils)	General vegetation	SV					x	x			JC*	Y	Notable B -
<i>Trichosirocalus troglodytes</i> (Fabricius, 1787)	n/a	Curculionidae (true weevils)	Bedstraw/trefoil/general vegetation	SV					x		x		JC*	Y	
Total species (or taxa)	91				22	3	28	31	23	16	6	2			
DIPTERA (flies)															
<i>Tipula paludosa</i> Meigen, 1830	European marsh crane fly	Tipulidae	Flying	GO							x		IS	Y	
<i>Dynatosoma fuscicornis</i> (Meigen, 1818)	n/a	Mycetophilidae (fungus gnats)	Reared from birch polypore	RfL								x	PC*		
<i>Tabanus bromius</i> Linnaeus, 1758	Band-eyed brown horsefly	Tabanidae	Biting author! (Its last bite)	Sw!					x				IS	Y	
<i>Bombylius major</i> (Linnaeus, 1758)	Large bee-fly	Bombyliidae (bee-flies)	Flying	GO	x								JC	Y	
<i>Chrysotoxum bicinctum</i> (Linnaeus, 1758)	A hoverfly	Syrphidae (hover-flies)	Around knapweed flower	GO					x				IS		
<i>Episyrphus balteatus</i> (De Geer, 1776)	Marmalade hoverfly	Syrphidae (hover-flies)	Flying	GO					x				JC		
<i>Eristalis pertinax</i> (Scopoli, 1763)	A drone fly (aquatic larva)	Syrphidae (hover-flies)	Around bramble flower	GO					x				IS		
<i>Eristalis interruptus</i> (Poda, 1761)	A drone fly (aquatic larva)	Syrphidae (hover-flies)	Around bramble flower	GO					x	x			IS	Y	
<i>Eupeodes latifasciatus</i> (Macquart, 1829)	A drone fly (aquatic larva)	(Syrphidae (hover-flies)	On hogweed flower	GO						x			IS		
<i>Eupeodes luniger</i> (Meigen, 1822)	n/a	Syrphidae (hover-flies)	Flying	GO					x				JC	Y	
<i>Helophilus pendulus</i> (Linnaeus, 1758)	A hoverfly (aquatic larvae)	Syrphidae (hover-flies)	Around bramble flower	GO					x				IS		
<i>Myathropa florea</i> (Linnaeus, 1758)	A hoverfly (semi-aquatic larva)	Syrphidae (hover-flies)	Around bramble flower	GO						x			IS		

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					1	2	3	4	5	6	7	8			
<i>Sphaerophoria scripta</i> (Linnaeus, 1758)	n/a	Syrphidae (hover-flies)	Flying	GO				x					JC		
<i>Volucella pellucens</i> (Linnaeus, 1758)	A hoverfly (larvae in common wasp nests)	Syrphidae (hover-flies)	Around bramble flower	GO					x				IS	Y	
<i>Elodia morio</i> (Fallen, 1820)	n/a	Tachinidae (parasitic flies)	Reared from host moth larva (<i>Anacamptis populella</i>) on willow	RfL		x							CR*		
Total species (or taxa)	15				1	1	0	6	4	3	1	0			
TRICHOPTERA (caddisflies)															
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	n/a	Hydropsychidae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Mystacides longicornis</i> (Linnaeus, 1758)	n/a	Leptoceridae	Flying - attracted to light	MVLT			x	x		x			IS	Y	
<i>Oecetis ochracea</i> (Curtis, 1825)	n/a	Leptoceridae	Flying - attracted to light	MVLT						x			IS		
<i>Glyptotaelius pellucidus</i> (Retzius, 1783)	n/a	Limnephilidae	Flying - attracted to light	MVLT						x			IS		
<i>Limnephilus affinis</i> Curtis, 1834	n/a	Limnephilidae	Flying - attracted to light	MVLT						x			IS		
<i>Limnephilus lunatus</i> Curtis, 1834	n/a	Limnephilidae	Flying - attracted to light	MVLT				x		x			IS		
<i>Limnephilus marmoratus</i> Curtis, 1834	n/a	Limnephilidae	Flying - attracted to light	MVLT					x	x			IS	Y	
<i>Lymnephilus rhombicus</i> (Linnaeus 1758)	n/a	Limnephilidae	Flying - attracted to light	MVLT						x			IS		
<i>Agrypnia pagetana</i> Curtis, 1835	n/a	Phryganeidae	Flying - attracted to light	MVLT					x				IS	Y	
<i>Agrypnia varia</i> (Fabricius, 1793)	n/a	Phryganeidae	Flying - attracted to light	MVLT					x				IS	Y	
<i>Phryganea grandis</i> Linnaeus, 1758	n/a	Phryganeidae	Flying - attracted to light	MVLT			x	x					IS	Y	
Total species (or taxa)	11				0	0	3	3	4	7	0	0			
LEPIDOPTERA (micro moths)															
<i>Eriocrania subpurpurella</i> (Haworth, 1828)	n/a	Eriocraniidae	Oak	BV	x								IS		
<i>Eriocrania cicatricella</i> (Zetterstedt, 1839)	n/a	Eriocraniidae	Flying around birch	Net	x								IS	Y	
<i>Ectoedemia louisella</i> (Sircom, 1849)	n/a	Nepticulidae	Occupied & vacated mines in field maple	LMC					x	x			IS	Y	
<i>Ectoedemia intimella</i> (Zeller, 1848)	n/a	Nepticulidae	Crack willow	LMC							x		IS	Y	
<i>Ectoedemia occultella</i> (Linnaeus, 1767)	n/a	Nepticulidae	Mines in birch	LMC							x		IS	Y	
<i>Ectoedemia quinquella</i> (Bedell, 1848)	n/a	Nepticulidae	Mines in oak	LMC						x	x		IS	Y	
<i>Ectoedemia albifasciella</i> (Heinemann, 1871)	n/a	Nepticulidae	Vacated mines in oak	LMC							x		IS	Y	
<i>Ectoedemia subbimaculella</i> (Haworth, 1828)	n/a	Nepticulidae	Adult at light, and larval mines	MVLT/LC			x				x		IS	Y	
<i>Fomoria septembrella</i> (Stainton, 1849)	n/a	Nepticulidae	Larval mines in St Johns Wort	LMC						x			IS	Y	
<i>Stigmella aurella</i> (Fabricius, 1775)	n/a	Nepticulidae	Occupied & vacated mines in bramble	LMC					x	x			IS	Y	
<i>Stigmella splendidissima</i> (Herrich-Schäffer, 1855)	n/a	Nepticulidae	Mines in bramble	LMC						x			IS	Y	
<i>Stigmella aeneofasciella</i> (Herrich-Schäffer, 1855)	n/a	Nepticulidae	Vacated mines in agrimony	LMC						x			IS	Y	
<i>Stigmella lemniscella</i> (Zeller, 1839)	n/a	Nepticulidae	Vacated mines in elm	LMC						x			IS	Y	
<i>Stigmella plagiolella</i> (Stainton, 1854)	n/a	Nepticulidae	Mines in blackthorn	LMC				x	x				IS	Y	
<i>Stigmella salicis</i> (Stainton, 1854)	n/a	Nepticulidae	Mines in willow	LMC						x	x		IS	Y	
<i>Stigmella floslactella</i> (Haworth, 1828)	n/a	Nepticulidae	Mines in hazel	LMC						x			IS	Y	
<i>Stigmella perpygmaeella</i> (Doubleday, 1859)	n/a	Nepticulidae	Vacated mines in hawthorn	LMC						x			IS	Y	

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					1	2	3	4	5	6	7	8			
<i>Stigmella ulmivora</i> (Fologne, 1860)	n/a	Nepticulidae	Vacated mines in elm	LMC						x			IS	Y	
<i>Stigmella atricapitella</i> (Haworth, 1828)	n/a	Nepticulidae	Mines in oak	LMC						x			IS	Y	
<i>Stigmella svenssoni</i> (Johansson, 1971)	n/a	Nepticulidae	Mine in ak	LMC							x		IS	Y	
<i>Stigmella basiguttella</i> (Heinemann, 1862)	n/a	Nepticulidae	Vacated mines in oak	LMC						x			IS	Y	
<i>Stigmella vicerella</i> (Staintonj, 1853)	n/a	Nepticulidae	Vacated mines in elm	LMC						x			IS	Y	
<i>Stigmella catharticella</i> (Stainton, 1853)	n/a	Nepticulidae	Vacated mines in buckthorn	LMC							x		IS	Y	
<i>Stigmella hybnerella</i> (Hubner, 1796)	n/a	Nepticulidae	Mines in hawthorn	LMC						x			IS	Y	
<i>Stigmella oxyacanthella</i> (Stainton, 1845)	n/a	Nepticulidae	Mines in hawthorn	LMC						x			IS	Y	
<i>Stigmella aceris</i> (Frey, 1875)	n/a	Nepticulidae	Vacated mines in field maple	LMC						x	x		IS	Y	Rare
<i>Stigmella regiella</i> (Herrich-Schaffer, 1855)	n/a	Nepticulidae	Mines in hawthorn	LMC						x			IS	Y	
<i>Stigmella crataegella</i> (Klimesch, 1936)	n/a	Nepticulidae	Mines in hawthorn	LMC						x			IS	Y	
<i>Stigmella betulicola</i> (Stainton, 1856)	n/a	Nepticulidae	Vacated mines in birch	LMC						x			IS	Y	
<i>Stigmella microtheriella</i> (Stainton, 1854)	n/a	Nepticulidae	Occupied and vacated mines in hazel	LMC					x	x			IS	Y	
<i>Stigmella luteella</i> (Stainton, 1857)	n/a	Nepticulidae	Mines in birch	LMC							x		IS	Y	Scarce
<i>Tischeria ekebladella</i> (Bjerkander, 1795)	n/a	Tischeriidae	Mines in oak	LMC						x	x		IS	Y	
<i>Tischeria dodonaea</i> Stainton, 1858	n/a	Tischeriidae	Mine in oak	LMC						x			IS	Y	
<i>Emmetia marginea</i> (Haworth, 1828)	n/a	Tischeriidae	Mines in bramble	LMC					x	x			IS	Y	
<i>Incurvaria oehlmanniella</i> (Hubner, 1796)	n/a	Incurvariidae	Flying - attracted to light	MVLT		x							IS	Y	
<i>Adela cuprella</i> (Denis & Schiffermüller, 1775)	n/a	Incurvariidae	Flying over willow	GO	x								IS	Y	
<i>Adela reaumurella</i> (Linnaeus, 1758)	Green longhorn moth	Incurvariidae	Flying	GO	x								IS	Y	
<i>Adela croesella</i> (Scopoli, 1763)	n/a	Incurvariidae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Luffia ferchaultella</i> (Stephens, 1850)	n/a	Psychidae	Larva on oak	BV						x			IS	Y	
<i>Psyche casta</i> (Pallas, 1767)	n/a	Psychidae	Flying & old larval case on oak trunk	Assd/OLC			x			x			IS	Y	
<i>Lyonetia clerkella</i> (Linnaeus, 1758)	Apple leaf miner	Lyonetiidae	Larval mines on hawthorn	LMC				x	x	x			IS	Y	
<i>Bucculatrix albedentella</i> Zeller, 1839	n/a	Bucculatricidae	Vacated mines and larva feeding on elm	LMC						x			IS	Y	
<i>Bucculatrix cidarella</i> Zeller, 1839	n/a	Bucculatricidae	Vacated mines and larva feeding on elm	LMC							x		IS	Y	
<i>Bucculatrix ulmella</i> Zeller, 1848	n/a	Bucculatricidae	Vacated mines and larva feeding on elm	BV				x	x	x	x		IS	Y	
<i>Bucculatrix bechsteinella</i> (Bechstein & Scharfenberg, 1805)	n/a	Bucculatricidae	Vacated mines and larva feeding on elm	BV				x		x			IS	Y	Scarce
<i>Caloptilia elongella</i> (Linnaeus, 1761)	n/a	Gracillariidae	Larval leaf rolls on alder	LMC						x	x		IS	Y	
<i>Caloptilia stigmatella</i> (Fabricius, 1781)	n/a	Gracillariidae	Larval leaf rolls on willow	GO				x		x			IS	Y	
<i>Caloptilia falconipennella</i> (Hubner, 1813)	n/a	Gracillariidae	Larval leaf rolls on alder	LMC						x	x		IS	Y	Rare
<i>Caloptilia semifascia</i> (Haworth, 1828)	n/a	Gracillariidae	Larval leaf rolls on field maple	GO				x	x	x	x		IS	Y	
<i>Caloptilia syringella</i> (Fabricius, 1794)	n/a	Gracillariidae	Larval leaf rolls on ash	LMC						x	x		IS	Y	
<i>Eucalybites auroguttella</i> (Stephens, 1835)	n/a	Gracillariidae	Larval leaf rolls on St John's-wort	LMC						x			IS	Y	
<i>Parornix betulae</i> (Stainton, 1854)	n/a	Gracillariidae	Larval leaf folds on birch	LMC						x	x		IS	Y	

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<i>Parornix anglicella</i> (Stainton, 1850)	n/a	Gracillariidae	Larval leaf rolls on hawthorn	LMC				x	x	x	x		IS	Y	
<i>Parornix devoniella</i> (Stainton, 1850)	n/a	Gracillariidae	Larval leaf folds on hazel	LMC						x			IS	Y	
<i>Parornix finitimella</i> (Zeller, 1850)	n/a	Gracillariidae	Larval leaf folds on blackthorn	LMC						x	x		IS	Y	
<i>Deltaornix torquillella</i> (Zeller, 1850)	n/a	Gracillariidae	Larval leaf folds on blackthorn	LMC						x	x		IS	Y	
<i>Callisto denticulella</i> (Thunberg, 1749)	n/a	Gracillariidae	Larval mines in crab apple	LMC							x		IS	Y	
<i>Acrocercops brongiardiella</i> (Fabricius, 1798)	n/a	Gracillariidae	Larvae mining oak	GO				x					IS	Y	
<i>Phyllonorycter harrisella</i> (Linnaeus, 1761)	n/a	Gracillariidae	Reared from larva in oak	RfL						x	x		IS	Y	
<i>Phyllonorycter heegeriella</i> (Zeller, 1846)	n/a	Gracillariidae	Reared from larva in oak	RfL						x	x		IS	Y	
<i>Phyllonorycter quercifoliella</i> (Zeller, 1839)	n/a	Gracillariidae	Reared from larva in oak	RfL					x	x	x		IS	Y	
<i>Phyllonorycter messaniella</i> (Zeller, 1846)	n/a	Gracillariidae	Reared from larva in oak	RfL						x			IS	Y	
<i>Phyllonorycter oxyacanthae</i> (Frey, 1856)	n/a	Gracillariidae	Larval mines in hawthorn	LMC				x	x	x	x		IS	Y	
<i>Phyllonorycter blancardella</i> Fabricius, 1781	n/a	Gracillariidae	Larval mines in crab apple	LMC							x		IS	Y	
<i>Phyllonorycter cydoniella</i> (Dennis & Schiffermüller, 1775)	n/a	Gracillariidae	Larval mines in crab apple	LMC							x		IS	Y	
<i>Phyllonorycter spinicolella</i> (Zeller, 1846)	n/a	Gracillariidae	Larval mines in blackthorn	LMC						x	x		IS	Y	
<i>Phyllonorycter corylifoliella</i> (Hubner, 1796)	n/a	Gracillariidae	Larval mines in hawthorn	LMC					x	x	x		IS	Y	
<i>Phyllonorycter salictella</i> (Zeller, 1846)	n/a	Gracillariidae	Larval mines in willow	LMC					x	x			IS	Y	
<i>Phyllonorycter coryli</i> (Nicelli, 1851)	Nut leaf blister moth	Gracillariidae	Larval mines in hazel	LMC					x	x	x		IS	Y	
<i>Phyllonorycter rajella</i> (Linnaeus, 1758)	n/a	Gracillariidae	Larval mines in alder	LMC						x	x		IS	Y	
<i>Phyllonorycter lautella</i> (Zeller, 1846)	n/a	Gracillariidae	Reared from larva in oak	RfL						x	x		IS	Y	
<i>Phyllonorycter schreberella</i> (Fabricius, 1781)	n/a	Gracillariidae	Larval mines in elm	LMC						x	x		IS	Y	
<i>Phyllonorycter ulmifoliella</i> (Hubner, 1817)	n/a	Gracillariidae	Larval mines in birch	LMC						x	x		IS	Y	
<i>Phyllonorycter tristigella</i> (Haworth, 1828)	n/a	Gracillariidae	Larval mines in elm	LMC						x	x		IS	Y	
<i>Phyllonorycter stettinensis</i> (Nicelli, 1852)	n/a	Gracillariidae	Larval mines in alder	LMC					x	x	x		IS	Y	
<i>Phyllonorycter froelichiella</i> (Zeller, 1839)	n/a	Gracillariidae	Larval mines in alder	LMC							x		IS	Y	
<i>Phyllonorycter nicellii</i> (Stainton, 1851)	n/a	Gracillariidae	Larval mines in hazel	LMC							x		IS	Y	
<i>Phyllonorycter acerifoliella</i> (Zeller, 1839)	n/a	Gracillariidae	Larval mines in field maple	LMC					x	x	x		IS	Y	
<i>Phyllocnistis saligna</i> (Zeller, 1839)	n/a	Gracillariidae	Larval mines in crack willow	LMC							x		IS	Y	
<i>Aggyresthia pruniella</i> (Clerck, 1759)	n/a	Yponomeutidae	Flying	GO				x					IS	Y	
<i>Argyresthia bonnetella</i> (Linnaeus, 1758)	n/a	Yponomeutidae	Disturbed from hawthorn	TL				x					IS	Y	
<i>Paraswammerdamia albicapitella</i> (Scharfenberg, 1805)	n/a	Argyreshidae	Disturbed from blackthorn	TL		x							IS	Y	
<i>Paraswammerdamia lutarea</i> (Haworth, 1828)	n/a	Yponomeutidae	Disturbed from hawthorn	TL				x					IS	Y	
<i>Prays fraxinella</i> (Bjerkander, 1784)	Ash bud moth	Incurvariidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Coleophora violacea</i> (Strom, 1783)	n/a	Coleophoridae	Larva on blackthorn	GO						x			IS	Y	
<i>Elachista argentella</i> (Clerck, 1759)	n/a	Elachistidae	Flying over grass	TL		x							IS	Y	
<i>Endrosia sarcitrella</i> (Linnaeus, 1758)	White-shouldered house-moth	Oecophoridae	Resting on fence post	TL						x			JC	Y	
<i>Diurnea lagella</i> (Denis & Schiffermüller, 1775)	n/a	Oecophoridae	Larva on oak	BV				x	x				IS	Y	
<i>Depressaria daucella</i> (Denis & Schiffermüller, 1775)	n/a	Oecophoridae	Reared from larvae & at sugar	RfL		x		x	x				IS	Y	

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					1	2	3	4	5	6	7	8			
<i>Agonopterix purpurea</i> (Haworth, 1811)	n/a	Oecophoridae	Larvae on rough chervil	Sgr/RfL				x					IS	Y	
<i>Agonopterix ocellana</i> (Fabricius, 1775)	n/a	Oecophoridae	Larva on sallow	BV				x					IS		
<i>Monochroa tenebrella</i> (Hubner, 1817)	n/a	Gelechiidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Altenia scriptella</i> (Hubner, 1796)	n/a	Gelechiidae	Larva in fold on field maple	RfL					x				IS	Y	
<i>Bryotropha terrella</i> (Denis & Schiffermüller, 1775)	n/a	Gelechiidae	Flying – attracted to light	MVLT				x					IS	Y	
<i>Syncopacma larseniella</i> (Gozmany, 1957)	n/a	Gelechiidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Anacamptis populella</i> (Clerck, 1759)	n/a	Gelechiidae	Larva on sallow	BV		x							IS	Y	
<i>Blastobasis adustella</i> Walsingham, 1894	n/a	Blastobasidae	Flying – attracted to light	MVLT	x				x				IS		
<i>Blastobasis lacticolella</i> Rebel, 1940	n/a	Blastobasidae	Flying – attracted to light	MVLT			x	x	x				IS	Y	
<i>Mompha epilobiella</i> (Denis & Schiffermüller, 1775)	n/a	Momphidae	Larvae on great willowherb	RfL				x					IS	Y	
<i>Limnaecia phragmitella</i> Stainton, 1851	n/a	Cosmopterigidae	Larvae in reedmace flowers	RfL	x								IS	Y	
<i>Agapeta hamana</i> (Linnaeus, 1758)	n/a	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Agapeta zoegana</i> (Linnaeus, 1767)	n/a	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Aethes smeathmanniana</i> (Fabricius, 1781)	n/a	Tortricidae	Flying over grass	MVLT/TL		x	x						IS	Y	
<i>Pandemis corylana</i> (Fabricius, 1794)	Chequered fruit-tree tortrix	Tortricidae	Flying – attracted to light	MVLT			x						IS		
<i>Pandemis cerasana</i> (Hubner, 1786)	Barred fruit-tree tortrix	Tortricidae	Flying – attracted to light	MVLT			x						IS		
<i>Pandemis heparana</i> (Denis & Schiffermüller, 1775)	Dark fruit-tree tortrix	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Archips podana</i> (Scopoli, 1763)	Large fruit-tree tortrix	Tortricidae	Flying – attracted to light	MVLT			x		x				IS		
<i>Archips xylosteana</i> (Linnaeus, 1758)	Variegated golden tortrix	Tortricidae	Larva on birch & adult attracted to light	MVLT	x	x	x						IS	Y	
<i>Ptycholoma lecheana</i> (Linnaeus, 1758)	n/a	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Lozotaena forstrana</i> (Fabricius, 1781)	n/a	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Epagoge grotiana</i> (Fabricius, 1781)	n/a	Tortricidae	Flying – attracted to light	MVLT				x					IS	Y	
<i>Pseudargyrotoza conwagana</i> (Fabricius, 1775)	n/a	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Eulia ministrana</i> (Linnaeus, 1758)	n/a	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Cnephasia stephensiana</i> (Doubleday, 1849)	Grey tortrix	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Cnephasia asseclana</i> (Denis & Schiffermüller, 1775)	Flax tortrix	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Aleimma loeflingiana</i> (Linnaeus, 1758)	n/a	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Tortrix viridana</i> (Linnaeus, 1758)	Green oak tortrix	Tortricidae	Larva on oak	MVLT	x	x	x						IS		
<i>Acleris forsskaeana</i> (Linnaeus, 1758)	n/a	Tortricidae	Flying – attracted to light	MVLT			x						IS	Y	
<i>Acleris emargana</i> (Fabricius, 1775)	n/a	Tortricidae	Flying – attracted to light	MVLT							x		IS	Y	
<i>Celypha striana</i> (Denis & Schiffermüller, 1775)	n/a	Tortricidae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Olethreutes lacunana</i> (Freeman, 1941)	n/a	Tortricidae	Put up from blackthorn	MVLT/TL		x	x						IS		
<i>Hedya pruniana</i> (Hubner, 1799)	Plum tortrix	Tortricidae	Flying - attracted to light	MVLT			x						IS		
<i>Hedya nubiferana</i> (Haworth, 1811)	Marbled orchard tortrix	Tortricidae	Larva on hawthorn	MVLT	x		x						IS		
<i>Hedya salicella</i> (Linnaeus, 1758)	n/a	Tortricidae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Apotomis capreana</i> (Hubner, 1817)	n/a	Tortricidae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Eudemis profundana</i> (Denis & Schiffermüller, 1775)	n/a	Tortricidae	Flying - attracted to light	MVLT				x	x				IS		
<i>Epinotia pygmaeana</i> (Hubner, 1799)	n/a	Tortricidae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Epinotia abbreviana</i> (Fabricius, 1794)	n/a	Tortricidae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Gypsonoma dealbana</i> (Frolich, 1828)	n/a	Tortricidae	Flying - attracted to light	MVLT				x					IS	Y	
<i>Epiblema uddmanniana</i> (Linnaeus, 1758)	Bramble shoot moth	Tortricidae	Flying - attracted to light	MVLT			x						IS	Y	

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<i>Eucosma hohenwartiana</i> (Denis & Schiffermüller, 1775)	n/a	Tortricidae	Put up from grass	TL			x						IS	Y	
<i>Lathronympha strigana</i> (Fabricius, 1775)	n/a	Tortricidae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Cydia ulicetana</i> (Haworth, 1811)	n/a	Tortricidae	Larva on gorse	BV	x								IS	Y	
<i>Cydia splendana</i> (Hubner, 1799)	n/a	Tortricidae	Flying - attracted to light	MVLT					x				IS		
<i>Chrysoteuchia culmella</i> (Linnaeus, 1758)	n/a	Crambidae	Flying - attracted to light	MVLT			x		x				IS		
<i>Crambus pascuella</i> (Linnaeus, 1758)	n/a	Pyralidae	Flying - attracted to light	MVLT				x					IS		
<i>Crambus lathoniellus</i> (Zincken, 1871)	Hook-streak grass-veneer	Crambidae	Put up from grass	TL			x						IS	Y	
<i>Agriphila straminella</i> (Denis & Schiffermüller, 1775)	Straw grass-veneer	Crambidae	Flying - attracted to light	MVLT/TL					x				IS		
<i>Agriphila tristella</i> (Denis & Schiffermüller, 1775)	Common grass-veneer	Crambidae	Flying - attracted to light	MVLT					x				IS		
<i>Agriphila inquinatella</i> (Denis & Schiffermüller, 1775)	Barred grass-veneer	Crambidae	Flying - attracted to light	MVLT/TL					x				IS	Y	
<i>Agriphila geniculea</i> (Haworth, 1811)	Elbow-striped grass-veneer	Crambidae	Flying - attracted to light	MVLT					x				IS		
<i>Acentria ephemerella</i> (Denis & Schiffermüller, 1775)	Water veneer	Pyralidae	Flying - attracted to light	MVLT				x	x				JC/IS	Y	
<i>Scoparia pyralella</i> (Denis & Schiffermüller, 1775)	n/a	Pyralidae	Flying - attracted to light	MVLT			x						IS		
<i>Scoparia ambigua</i> (Treitschke, 1829)	n/a	Pyralidae	Flying - attracted to light	MVLT				x					IS		
<i>Evergestis forficalis</i> (Linnaeus, 1758)	Garden pebble	Pyralidae	Flying - attracted to light	MVLT					x				IS		
<i>Pyrausta despicata</i> (Scopoli, 1763)	n/a	Pyralidae	Flying - attracted to light	GO				x					IS	Y	
<i>Eurrhpara hortulata</i> (Linnaeus, 1758)	Small magpie	Pyralidae	Flying - attracted to light	MVLT				x					IS		
<i>Pleuroptya ruralis</i> (Scopoli, 1763)	Mother of pearl	Pyralidae	Flying - attracted to light	MVLT				x	x				IS		
<i>Endotricha flammealis</i> (Denis & Schiffermüller, 1775)	n/a	Pyralidae	Flying - attracted to light	MVLT				x	x				IS		
<i>Aphomia sociella</i> (Linnaeus, 1758)	Bee moth	Pyralidae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Conobathra repandana</i> (Fabricius, 1798)	n/a	Pyralidae	Flying - attracted to light	MVLT					x				IS	Y	
<i>Phycita roborella</i> (Denis & Schiffermüller, 1775)	n/a	Pyralidae	Flying - attracted to light	MVLT			x		x				IS		
<i>Euzophera pinguis</i> (Haworth, 1811)	n/a	Pyralidae	Flying - attracted to light	MVLT					x				IS	Y	
<i>Phycitodes maritima</i> (Tengstrom, 1848)	n/a	Pyralidae	Larvae in ragwort stem	RIL				x					IS	Y	
<i>Emmelina monodactyla</i> (Linnaeus, 1758)	n/a	Pyralidae	Flying - attracted to light	MVLT				x					IS	Y	
Total species (or taxa)	155				10	9	41	30	37	60	43	0			
LEPIDOPTERA (butterflies)															
<i>Thymelicus sylvestris</i> (Poda, 1761)	Small skipper	Hesperiidae, Hesperinae (skippers)	Flying	GO				x					JC/IS		
<i>Thymelicus lineola</i> (Ochsenheimer, 1808)	Essex skipper	Hesperiidae, Hesperinae (skippers)	Flying	GO				x					JC/IS		
<i>Ochlodes faunus</i> (Turati, 1905)	Large skipper	Hesperiidae, Hesperinae (skippers)	Flying	GO				x					JC/IS		
<i>Gonepteryx rhamni</i> (Linnaeus, 1758)	Brimstone	Pieridae, Coliadinae	Flying	GO	x								JC/IS		
<i>Pieris rapae</i> (Linnaeus, 1758)	Small white	Pieridae, Pierinae (whites)	Flying	GO	x			x	x				JC/IS		
<i>Anthocharis cardamines</i> (Linnaeus, 1758)	Orange tip	Pieridae, Pierinae (whites)	Flying	GO	x								JC/IS		
<i>Neozephyrus quercus</i> (Linnaeus, 1758)	Purple hairstreak	Lycaenidae, Theclinae (hairsteaks)	Larva on oak	BV	x								IS		
<i>Lycaena phlaeas</i> (Linnaeus, 1761)	Small copper	Lycaenidae, Theclinae (hairsteaks)	Flying	GO				x		x			JC/IS		
<i>Polyommatus icarus</i> (Rottemburg, 1775)	Common blue	Lycaenidae, Lycaeninae (blues)	Flying	GO				x	x				JC/IS		

Species (or lowest taxon level identified)#	Common name	Family	Behaviour/habitat	Sampling method code	Survey date								Identified by	New site record (2000)	Status
					1	2	3	4	5	6	7	8			
<i>Celastrina argiolus</i> (Linnaeus, 1758)	Holly blue	Lycaenidae, Lycaeninae (blues)	Flying	GO				x					JC/IS		
<i>Vanessa atalanta</i> (Linnaeus, 1758)	Red admiral	Nymphalidae, Nymphalinae	Flying	GO	x								JC/IS		
<i>Aglais urticae</i> (Linnaeus, 1758)	Small tortoiseshell	Nymphalidae, Nymphalinae	Flying	GO	x		x						JC/IS		
<i>Inachis io</i> (Linnaeus, 1758)	Peacock	Nymphalidae, Nymphalinae	Flying	GO	x								JC/IS		
<i>Polygonia c-album</i> (Linnaeus, 1758)	Comma	Nymphalidae, Nymphalinae	Flying	GO	x								JC/IS		
<i>Pararge aegeria</i> (Linnaeus, 1758)	Speckled wood	Nymphalidae, Satyrinae (browns)	Flying	GO	x			x		x			JC/IS		
<i>Hipparchia semele</i> (Linnaeus, 1758)	Grayling	Nymphalidae, Satyrinae (browns)	Flying	GO					x				JC/IS	Y?	BAP, Red list
<i>Pyronia tithonus</i> (Linnaeus, 1767)	Gatekeeper	Nymphalidae, Satyrinae (browns)	Flying	GO				x	x				JC/IS		
<i>Maniola jurtina</i> (Linnaeus, 1758)	Meadow brown	Nymphalidae, Satyrinae (browns)	Flying	GO				x	x	x			JC/IS		
<i>Aphantopus hyperantus</i> (Linnaeus, 1758)	Ringlet	Nymphalidae, Satyrinae (browns)	Flying	GO				x					JC/IS		
Total species (or taxa)	19				9	0	1	12	5	3	0	0			
LEPIDOPTERA (macro moths)															
<i>Hepialus humuli</i> (Linnaeus, 1758)	Ghost swift (Ghost moth)	Hepialidae	Flying - attracted to light	MVLT				x	x				JC/IS		
<i>Hepialus sylvina</i> (Linnaeus, 1761)	Orange swift	Hepialidae	Flying - attracted to light	MVLT						x			JC/IS		
<i>Hepialus lupulinus</i> (Linnaeus, 1758)	Common swift	Hepialidae	Flying - attracted to light	MVLT				x					JC/IS		
<i>Zeuzera pyrina</i> (Linnaeus, 1758)	Leopard moth	Cossidae, Zeuzerinae	Flying - attracted to light	MVLT				x					JC/IS	Y	
<i>Zygaena filipendulae</i> (Linnaeus, 1758)	Six-spot burnet	Zygaenidae	On birds-foot trefoil	GO					x				JC/IS	Y	
<i>Sesia bembeciformis</i> (Hübner, 1806)	Lunar hornet moth	Sesiidae	Mine in willow	GO	x								IS	Y	
<i>Cilix glaucata</i> (Scopoli, 1763)	Chinese character	Drepanidae, Drepaninae	Larvae on hawthorn	BV					x				IS	Y	
<i>Habrosyne pyritoides</i> (Hufnagel, 1766)	Buff arches	Thyatridae, Thyatirinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Tethea ocellaris</i> (Hübner, 1786)	Figure of eighty	Thyatridae, Thyatirinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Comibaena bajularia</i> (Denis & Schiffermüller, 1775)	Blotched emerald	Geometridae, Geometrinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Hemithea aestivaria</i> (Hubner, 1799)	Common emerald	Geometridae, Geometrinae	Larva on hawthorn & adult at MV light	MVLT/BV		x			x				JC/IS	Y	
<i>Timandra comae</i> (Schmidt, 1931)	Blood-vein	Geometridae, Sterrhinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Idaea trigeminata</i> (Haworth, 1809)	Treble brown spot	Geometridae, Sterrhinae	Flying - attracted to light	MVLT					x				IS		
<i>Idaea emarginata</i> (Linnaeus, 1758)	Small scallop	Geometridae, Sterrhinae	Feeding	Sgr					x				JC/IS	Y	
<i>Idaea aversata</i> (Linnaeus, 1758)	Riband wave	Geometridae, Sterrhinae	Flying - attracted to light	MVLT					x	x			JC/IS		
<i>Epirrhoe alternata</i> (Müller, 1764)	Common carpet	Geometridae, Larentiinae	Flying under oaks & MV	TL		x	x	x	x				JC/IS		
<i>Campogramma bilineata</i> (Linnaeus, 1758)	Yellow shell	Geometridae, Larentiinae	Flying - attracted to light	MVLT				x		x			JC/IS		
<i>Cosmorhoe ocellata</i> (Linnaeus, 1758)	Purple bar	Geometridae, Larentiinae	Flying - attracted to light	MVLT						x			IS	Y	
<i>Chloroclysta siterata</i> (Hufnagel, 1767)	Red-green carpet	Geometridae, Larentiinae	Flying - attracted to light	MVLT						x		x	IS		
<i>Electrophaes corylata</i> (Thunberg, 1792)	Broken-barred carpet	Geometridae, Larentiinae	Flying under oaks	TL					x				IS		
<i>Chloroclysta siterata</i> (Hufnagel, 1767)	Green carpet	Geometridae, Larentiinae	Flying - attracted to light	MVLT					x		x		JC/IS		
<i>Euphyia unangulata</i> (Haworth, 1809)	Sharp-angled carpet	Geometridae, Larentiinae	Flying under oaks & MV	TL		x	x	x	x				IS		
<i>Epirrita dilutata</i> (Denis & Schiffermüller, 1775)	November moth	Geometridae, Larentiinae	Flying - attracted to light	MVLT								x	IS	Y	
<i>Operophtera brumata</i> (Linnaeus, 1758)	Winter moth	Geometridae, Larentiinae	Larva on blackthorn & adults in cop.	BV/TL		x						x	JC/IS	Y	
<i>Operophtera fagata</i> (Scharfenberg, 1805)	Northern winter moth	Geometridae, Larentiinae	Adults in cop.	TL								x	JC/IS	Y	
<i>Eupithecia subfuscata</i> (Haworth, 1809)	Grey pug	Geometridae, Larentiinae	Flying - attracted to light	MVLT					x				IS	Y	
<i>Gymnoscelis rufifasciata</i> (Haworth, 1809)	Double-striped pug	Geometridae, Larentiinae	Flying - attracted to light	MVLT					x		x		JC/IS		
<i>Aplocera efformata</i> (Guenée, 1857)	Lesser treble-bar	Geometridae, Larentiinae	Flying - attracted to light	MVLT						x			IS		

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					1	2	3	4	5	6	7	8			
<i>Hydrelia flammeolaria</i> (Hufnagel, 1767)	Small yellow wave	Geometridae, Larentiinae	Flying - attracted to light	MVLT			x						JC/IS	Y	Scarce
<i>Pterapherapteryx sexalata</i> (Retzius, 1783)	Small seraphim	Geometridae, Larentiinae	Flying - attracted to light	MVLT			x						IS		
<i>Petrophora chlorosata</i> (Scopoli, 1763)	Brown silver-line	Geometridae, Ennominae	Flying - attracted to light	MVLT			x						IS		
<i>Plagodis dolabraria</i> (Linnaeus, 1767)	Scorched wing	Geometridae, Ennominae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Opisthograptis luteolata</i> (Linnaeus, 1758)	Brimstone moth	Geometridae, Ennominae	Flying - attracted to light	MVLT				x					JC/IS		
<i>Epione repandaria</i> (Hufnagel, 1767)	Bordered beauty	Geometridae, Ennominae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Ennomos alniaria</i> (Linnaeus, 1758)	Canary-shouldered Thorn	Geometridae, Ennominae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Ennomos erosaria</i> (Denis & Schiffmüller, 1775)	September thorn	Geometridae, Ennominae	Flying - attracted to light	MVLT			x						IS		
<i>Selenia dentaria</i> (Fabricius, 1775)	Early thorn	Geometridae, Ennominae	Flying - attracted to light	MVLT			x						IS		
<i>Colotois pennaria</i> (Linnaeus, 1761)	Feathered thorn	Geometridae, Ennominae	Flying - attracted to light	MVLT			x			x			IS	Y	
<i>Phigalia pilosaria</i> (Denis & Schiffmüller, 1775)	Pale brindled beauty	Geometridae, Ennominae	Larva on blackthorn	BV		x							JC/IS	Y	
<i>Biston betularia</i> (Linnaeus, 1758)	Peppered moth (typical)	Geometridae, Ennominae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Erannis defoliaria</i> (Clerck, 1759)	Mottled umber	Geometridae, Ennominae	Larva on blackthorn	BV		x							JC/IS	Y	
<i>Peribatodes rhomboidaria</i> (Denis & Schiffmüller, 1775)	Willow beauty	Geometridae, Ennominae	Flying - attracted to light	MVLT			x		x				IS		
<i>Alcis repandata</i> (Linnaeus, 1758)	Mottled beauty	Geometridae, Ennominae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Hypomecis punctinalis</i> (Scopoli, 1763)	Pale oak beauty	Geometridae, Ennominae	Flying - attracted to light	MVLT			x						JC/IS	Y	
<i>Parectropis similaria</i> (Hufnagel, 1767)	Brindled white-spot	Geometridae, Ennominae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Cabera pusaria</i> (Linnaeus, 1758)	Common white wave	Geometridae, Ennominae	Flying - attracted to light	MVLT				x					JC/IS		
<i>Theria primaria</i> (Haworth, 1809)	Early moth	Geometridae, Ennominae	Larva on blackthorn	BV		x							JC/IS	Y	
<i>Campaea margaritata</i> (Linnaeus, 1767)	Light emerald	Geometridae, Ennominae	Larva on hawthorn (09-Jul)	MVLT/BV			x	x		x			JC/IS		
<i>Laothoe populi</i> (Linnaeus, 1758)	Poplar hawk-moth	Sphingidae, Smerinthinae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Deilephila elpenor</i> (Linnaeus, 1758)	Elephant hawk-moth	Sphingidae, Macroglossinae	Flying - attracted to light	MVLT			x	x					JC/IS		
<i>Deilephila porcellus</i> (Linnaeus, 1758)	Small elephant hawk-moth	Sphingidae, Macroglossinae	Flying - attracted to light	MVLT			x	x					JC/IS		Scarce
<i>Stauropus fagi</i> (Linnaeus, 1758)	Lobster moth	Notodontidae, Heterocampinae	Flying - attracted to light	MVLT			x						JC/IS	Y	
<i>Notodonta dromedarius</i> (Linnaeus, 1767)	Iron Prominent	Notodontidae, Notodontinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Pheosia gnoma</i> (Fabricius, 1777)	Lesser swallow prominent	Notodontidae, Notodontinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Pheosia tremula</i> (Clerck, 1759)	Swallow prominent	Notodontidae, Notodontinae	Flying - attracted to light	MVLT			x						JC/IS	Y	
<i>Pterostoma palpina</i> (Clerck, 1759)	Pale prominent	Notodontidae, Notodontinae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Drymonia dodonaea</i> (Denis & Schiffmüller, 1775)	Marbled brown	Notodontidae, Notodontinae	Flying - attracted to light	MVLT			x						IS		
<i>Calliteara pudibunda</i> (Linnaeus, 1758)	Pale tussock	Lymantriidae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Eilema griseola</i> (Hübner, 1803)	Dingy footman	Arctiidae, Lithosiinae	Flying - attracted to light	MVLT				x	x				JC/IS	Y	
<i>Eilema complana</i> (Linnaeus, 1758)	Scarce footman	Arctiidae, Lithosiinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Eilema depressa</i> (Esper, 1787)	Buff footman	Arctiidae, Lithosiinae	Flying - attracted to light	MVLT				x					JC/IS	Y	
<i>Spilosoma lubricipeda</i> (Linnaeus, 1758)	White ermine	Arctiidae, Arctiinae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Tyria jacobaeae</i> (Linnaeus, 1758)	The Cinnabar	Arctiidae, Arctiinae	Larvae on ragwort	GO				x					JC/IS	Y	
<i>Euxoa nigricans</i> (Linnaeus, 1758)	Garden dart	Noctuidae, Noctuinae	Flying - attracted to light	MVLT			x						IS	Y	
<i>Agrotis segetum</i> (Denis & Schiffmüller, 1775)	Turnip moth (Turnip dart)	Noctuidae, Noctuinae	Flying - attracted to light	MVLT			x	x					JC/IS		
<i>Agrotis clavis</i> (Hufnagel, 1766)	Heart and club	Noctuidae, Noctuinae	Feeding & flying attracted to light	MVLT/Sgr			x	x					JC/IS		
<i>Agrotis exclamatoris</i> (Linnaeus, 1758)	Heart and dart	Noctuidae, Noctuinae	Feeding & flying attracted to light	MVLT/Sgr			x	x					JC/IS		
<i>Agrotis puta</i> (Hübner, 1803)	Shuttle-shaped dart	Noctuidae, Noctuinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Axylia putris</i> (Linnaeus, 1761)	The flame	Noctuidae, Noctuinae	Flying - attracted to light	MVLT			x	x					JC/IS		

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					1	2	3	4	5	6	7	8			
<i>Ochropleura plecta</i> Linnaeus 1761	Flame shoulder	Noctuidae, Noctuinae	Flying - attracted to light	MVLT			x		x				JC/IS		
<i>Noctua pronuba</i> Linnaeus, 1758	Large yellow underwing	Noctuidae, Noctuinae	Flying - attracted to light	MVLT			x	x	x	x			JC/IS		
<i>Noctua comes</i> Hübner, 1813	Lesser yellow underwing	Noctuidae, Noctuinae	Flying - attracted to light	MVLT				x	x	x			JC/IS		
<i>Noctua fimbriata</i> (Schreber, 1759)	Broad-bordered yellow underwing	Noctuidae, Noctuinae	Flying - attracted to light	MVLT						x			JC/IS		
<i>Noctua janthe</i> (Borkhausen, 1792)	Lesser broad-bordered yellow underwing	Noctuidae, Noctuinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Xestia c-nigrum</i> (Linnaeus, 1758)	Setaceous hebrew character	Noctuidae, Noctuinae	Flying - attracted to light	MVLT			x		x	x			JC/IS		
<i>Xestia triangulum</i> (Hufnagel, 1766)	Double square-spot	Noctuidae, Noctuinae	Flying - attracted to light	MVLT				x					JC/IS		
<i>Xestia sexstrigata</i> (Haworth, 1809)	Six-striped rustic	Noctuidae, Noctuinae	Flying - attracted to light	MVLT					x				JC/IS		
<i>Xestia xanthographa</i> (Denis & Schiffermüller, 1775)	Square-spot Rustic	Noctuidae, Noctuinae	Flying - attracted to light	MVLT					x	x			IS		
<i>Polia nebulosa</i> (Hufnagel, 1766)	Grey arches	Noctuidae, Hadeninae	Flying - attracted to light	MVLT			x						JC/IS	Y	
<i>Lacanobia oleracea</i> (Linnaeus, 1758)	Bright-line brown-eye	Noctuidae, Hadeninae	Flying - attracted to light	MVLT			x						JC/IS	Y	
<i>Mythimna ferrago</i> (Fabricius, 1787)	The Clay	Noctuidae, Hadeninae	Feeding & flying attracted to light	MVLT/Sgr				x					JC/IS		
<i>Mythimna albipuncta</i> (Denis & Schiffermüller, 1775)	White point	Noctuidae, Hadeninae	Flying - attracted to light	MVLT			x						IS		
<i>Mythimna impura</i> (Hübner, 1808)	Smoky wainscot	Noctuidae, Hadeninae	Flying - attracted to light	MVLT			x	x					JC/IS		
<i>Mythimna pallens</i> (Linnaeus, 1758)	Common wainscot	Noctuidae, Hadeninae	Flying - attracted to light	MVLT				x					JC/IS		
<i>Mythimna comma</i> (Linnaeus, 1761)	Shoulder-striped wainscot	Noctuidae, Hadeninae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Aporophyla lutulenta</i> (Denis & Schiffermüller, 1775)	Deep-brown dart	Noctuidae, Hadeninae	Flying - attracted to light	MVLT						x			IS	Y	
<i>Lithophane leautieri</i> Boursin, 1957	Blair's shoulder-knot	Noctuidae, Cuculiinae	Flying - attracted to light	MVLT						x			JC/IS		
<i>Allophyes oxyacanthae</i> (Linnaeus, 1758)	Green-brindled crescent	Noctuidae, Cuculiinae	Larva on hawthorn	BV		x							IS	Y	
<i>Dryobotodes eremita</i> (Fabricius, 1775)	Brindled Green	Noctuidae, Cuculiinae	Flying - attracted to light	MVLT/TL						x			JC/IS		
<i>Conistra vaccinii</i> (Linnaeus, 1761)	The chestnut	Noctuidae, Acronictinae	Flying - attracted to light	MVLT						x	x	x	JC/IS		
<i>Agrochola macilenta</i> (Hübner, 1809)	Yellow-line quaker	Noctuidae, Acronictinae	Flying - attracted to light	MVLT						x			IS		
<i>Agrochola helvola</i> (Linnaeus, 1758)	Flounced chestnut	Noctuidae, Acronictinae	Flying - attracted to light	MVLT						x			JC/IS		
<i>Agrochola litura</i> (Linnaeus, 1761)	Brown-spot pinnion	Noctuidae, Acronictinae	Flying - attracted to light	MVLT						x			IS	Y	
<i>Parastichtis suspecta</i> (Hübner, 1817)	The Suspected	Noctuidae, Amphipyriinae	Flying - attracted to light	MVLT				x					JC/IS	Y	
<i>Omphaloscelis lunosa</i> (Haworth, 1809)	Lunar Underwing	Noctuidae, Acronictinae	Flying - attracted to light	MVLT						x			IS		
<i>Xanthia togata</i> (Esper, 1788)	Pink-barred swallow	Noctuidae, Acronictinae	Flying - attracted to light	MVLT						x			JC/IS	Y	
<i>Xanthia icteritia</i> (Hufnagel, 1766)	The swallow	Noctuidae, Acronictinae	Flying - attracted to light	MVLT						x			IS		
<i>Acronicta megacephala</i> (Denis & Schiffermüller, 1775)	Poplar grey	Noctuidae, Acronictinae	Flying - attracted to light	MVLT				x					JC/IS	Y	
<i>Acronicta aceris</i> (Linnaeus, 1758)	The Sycamore	Noctuidae, Acronictinae	Feeding	Sgr				x					JC/IS		
<i>Acronicta leporina</i> (Linnaeus, 1758)	Miller	Noctuidae, Acronictinae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Acronicta rumicis</i> (Linnaeus, 1758)	Knot grass	Noctuidae, Acronictinae	Larva on swallow	RfL						x			IS		
<i>Amphipyra pyramidea</i> (Linnaeus, 1758)	Copper underwing	Noctuidae, Amphipyriinae	Flying - attracted to light	MVLT					x				IS		
<i>Amphipyra berbera</i> Fletcher, 1968	Svensson's copper underwing	Noctuidae, Amphipyriinae	Feeding & flying attracted to light	MVLT/Sgr				x	x	x			IS		
<i>Phlogophora meticulosa</i> (Linnaeus, 1758)	Angle shades	Noctuidae, Amphipyriinae	Flying - attracted to light	MVLT						x			JC/IS		
<i>Parastichtis ypsillon</i> (Denis & Schiffermüller, 1775)	Dingy shears	Noctuidae, Amphipyriinae	Flying - attracted to light	MVLT			x						JC/IS	Y	
<i>Cosmia trapezina</i> (Linnaeus, 1758)	Dun-bar	Noctuidae, Amphipyriinae	Feeding & flying attracted to light	MVLT/Sgr			x	x	x				JC/IS		

Species (or lowest taxon level identified)#	Common name	Family	Behaviour/habitat	Sampling method code	Survey date								Identified by	New site record (2000)	Status
					1	2	3	4	5	6	7	8			
<i>Apamea monoglypha</i> (Hufnagel, 1766)	Dark arches	Noctuidae, Amphipyridae	Feeding & flying attracted to light	MVLT/Sgr			x	x					JC/IS		
<i>Apamea lithoxyloa</i> (Denis & Schiffermüller, 1775)	Light arches	Noctuidae, Amphipyridae	Feeding	Sgr				x					JC/IS		
<i>Oligia strigilis</i> (Linnaeus, 1758)	Marbled minor	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Oligia latruncula</i> (Denis & Schiffermüller, 1775)	Tawny marbled minor	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT			x						JC		
<i>Oligia fasciuncula</i> (Haworth, 1809)	Middle-barred minor	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT			x						IS		
<i>Mesoligia furuncula</i> (Denis & Schiffermüller, 1775)	Cloaked minor	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT				x	x				JC/IS	Y	
<i>Mesapamea secalis</i> aggregate (Linnaeus, 1758)	Common rustic (a species complex)	Noctuidae, Amphipyridae	Feeding	Sgr				x	x				JC/IS		
<i>Photedes minima</i> (Haworth, 1809)	Small dotted buff	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT				x					JC/IS	Y	
<i>Rhizedra lutosa</i> (Hübner, 1803)	Large wainscot	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT						x			IS		
<i>Charanyca trigrammica</i> (Hufnagel, 1766)	Treble lines	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Hoplodrina alsines</i> (Brahm, 1791)	Uncertain	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT			x						IS		
<i>Hoplodrina planda</i> (Denis & Schiffermüller, 1775)	The Rustic	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT				x	x				IS	Y	
<i>Hoplodrina ambigua</i> (Denis & Schiffermüller, 1775)	Vine's rustic	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT			x	x	x				JC/IS		
<i>Caradrina morpheus</i> (Hufnagel, 1766)	Mottled rustic	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT				x					IS	Y	
<i>Paradrina clavipalpis</i> (Scopoli, 1763)	Pale mottled willow	Noctuidae, Amphipyridae	Flying - attracted to light	MVLT			x						JC/IS	Y	
<i>Panemeria tenebrata</i> (Scopoli, 1763)	Small yellow underwing	Noctuidae, Stiriinae	Flying over grass	GO		x							IS	Y	
<i>Nycteola revayana</i> (Scopoli, 1772)	Oak nycteoline	Noctuidae, Chloephorinae	Flying - attracted to light	MVLT			x	x					IS		
<i>Colocasia coryli</i> (Linnaeus, 1758)	Nut-tree tussock	Noctuidae, Pantheinae	Flying - attracted to light	MVLT			x						JC/IS		
<i>Diachrysis chrysitis</i> (Linnaeus, 1758)	Burnished brass	Noctuidae, Plusiinae	Flying - attracted to light	MVLT			x			x			JC/IS		
<i>Autographa gamma</i> (Linnaeus, 1758)	Silver Y	Noctuidae, Plusiinae	Day flying & light trap	MVLT/GO				x					JC/IS		
<i>Abrostola tripartita</i> (Hufnagel, 1766)	The Spectacle	Noctuidae, Plusiinae	Flying - attracted to light	MVLT				x	x				JC/IS	Y	
<i>Scoliopteryx libatrix</i> (Linnaeus, 1758)	The Herald	Noctuidae, Ophiderinae	Feeding	Sgr				x					JC/IS	Y	
<i>Rivula sericealis</i> Scopoli, 1763)	Straw dot	Noctuidae, Rivulinae	Flying - attracted to light	MVLT			x		x	x			JC/IS		
<i>Hypena proboscidalis</i> (Linnaeus, 1758)	The snout	Noctuidae, Hypeninae	Flying - attracted to light	MVLT			x	x	x	x			JC/IS		
Total species (or taxa)	130				1	9	60	49	34	25	4	3			
HYMENOPTERA, ACULEATA (bees, true wasps & ants)															
<i>Bombus pascuorum</i> (Scopoli, 1763)	Common or brown banded carder bee	Apidae	On hawk's beard flower	Net				x	x	x			IS*		
<i>Bombus terrestris/lucorum</i> (Linnaeus, 1758)	Buff/white-tailed bumblebee	Apidae	Nest searching/foraging	GO	x			x					JC		
<i>Bombus lapidarius</i> (Linnaeus, 1758)	Red-tailed bumblebee	Apidae	Nest searching/foraging	GO	x			x					JC/IS		
<i>Apis mellifera</i> (Linnaeus, 1758)	Honey bee	Apidae	Foraging	GO	x		x	x					JC		
<i>Chrysis viridula</i> Linnaeus, 1761	Ruby-tailed wasp	Chrysididae (Ruby-tailed, jewel & cuckoo wasps)	Outside solitary bee nests	GO				x					JC/IS*		~
<i>Ancistrocerus gazella</i> (Panzer, 1798)	A potter wasp	Eumeriidae (or Vespidae?)	On hawk's beard flower	Net					x				IS		
<i>Andricus anthracina</i> (Curtis, 1838)	Oyster gall	Cynipidae	On oak	GO						x			IS		
<i>Andricus quercuscalicis</i> (Burgsdorf, 1783)	Knopper gall	Cynipidae	On acorn	GO					x				IS		
<i>Neuroterus albipes</i> Schenck, 1863	Oak spangle gall	Cynipidae	On oak	GO						x			IS		
<i>Neuroterus numismalis</i> Geoffroy in Fourcroy, 1785	Silk button gall	Cynipidae	On underside oak leaf	GO					x	x			IS		
<i>Neuroterus quercusbaccarum</i> (Linnaeus, 1758)	Common spangle gall	Cynipidae	On oak	GO						x			IS		
<i>Anthophora bimaculata</i> (Panzer, 1798)	Two-spotted saropoda	Megachilidae (leaf-cutter bees)	On hawk's beard flower	Net					x				IS*		
<i>Vespa vulgaris</i> (Linnaeus, 1758)	Common wasp	Vespidae	Nest searching/foraging	GO	x			x	x	x			JC/IS		

Species (or lowest taxon level identified)#	Common name	Family	Behaviour/habitat	Sampling method code	Survey date								Identified by	New site record (2000)	Status
					1	2	3	4	5	6	7	8			
Total species (or taxa)	13				4	0	1	6	6	6	0	0			
HYMENOPTERA, PARASITICA (parasitic wasps)															
<i>Agrothereutes abbreviatus</i> form <i>hopei</i> (Fabricius, 1794) & (Gravenhorst, 1829)	Micropterous female	Ichneumonidae, Cryptinae	On oak (Micropterous female)	BV					x					MS*	
<i>Campoplex faunus</i> Gravenhorst, 1829	n/a	Ichneumonidae, Campopleginae	On ragwort (larva)	EmP-1				x						MS*	
<i>Dolichogenidea</i> sp.	n/a	Braconidae, Microgastrinae	On oak (larva)	EmP-2				x						MS*	
<i>Macrocentrus bicolor</i> Curtis, 1833	n/a	Braconidae, Macrocentrinae	On oak (larva)	EmP-3					x					MS*	
<i>Aleiodes gastritor</i> aggregate (Thunberg, 1824)	n/a (a species complex)	Braconidae, Rogadinae	On willow (larva)	EmP-4				x						MS*	
<i>Diadegma crassum</i> (Bridgman, 1889)	n/a	Ichneumonidae, Campopleginae	On elm (larva)	EmP-5				x						MS*	
<i>Agrypon gracilipes</i> (Curtis, 1839)	n/a	Ichneumonidae, Anomaloniinae	On water dropwort (larva)	EmP-6		x	x							MS*	
<i>Chorinaeus</i> cf. <i>crustator</i> / <i>longicornis</i>	n/a	Ichneumonidae, Metopiinae	On water dropwort (larva)	EmP-6			x							MS*	
Total species (or taxa)	8				0	1	2	4	2	0	0	0			
Grand total species (or taxa)	503				62	29	155	170	129	126	55	7			

Species or Taxa identified

Specimens identified to species where possible – names include the taxonomic authority, i.e. the name of the person or people who published the original description for a particular scientific name, followed by the year of publication. If the name is in parentheses, this indicates that the Genus name now used is different from the one used in the original description.

The terms cf. (similar to) or sp. indet. (species indeterminate) are given where reliable identification cannot be made, either because of taxonomic uncertainty or specimen damaged and missing diagnostic characters.

* identification verified by external experts or by comparison to specimens in the collections of the British Entomological & Natural History Society (BENHS), The Pelham-Clinton Building, Dinton Pastures Country Park, Davis Street, Hurst, Reading, Berkshire, RG10 0TH.

n/a = no common name attributable.

~ = New record for watsonian Vice County 22 (Berkshire)

Identifiers

JC = Jon Cole (General entomologist and Coleoptera specialist)

IS = Ian Sims (General entomologist and Lepidoptera specialist)

MS = Mark Shaw (General entomologist and Hymenoptera specialist)

MT = Mark Telfer (General entomologist and Carabid beetle specialist)
CR = Chris Raper (General entomologist and Tachinidae fly specialist)
PC = Peter Chandler (General entomologist and Diptera specialist)
RH = Roger Hawkins (General entomologist and Hemiptera, Heteroptera specialist)

Systematics & nomenclature

Coleoptera: Duff, A. G. (2008). *Checklist of Beetles of the British Isles* (online version).

Diptera - Chandler P. J. (2010). *A Dipterist's Handbook (2nd Ed.)*. The Amateur Entomologist, 15. The Amateur Entomologists' Society (ISBN 978 0 900054 778).

Hemiptera: Nau, B. S. (2006). *Current names of Southwood & Leston (1959) Heteroptera species* (online version)

Lepidoptera: Bradley, J. D. & Fletcher, D. S. (1979). *A Recorder's Log Book or Label List of British Butterflies and Moths*. Harley Books (out of print – 2011, unpublished update used - pers. comm. Ian Sims) and UKmoths website <http://ukmoths.org.uk/>.

Trichoptera: Barnard P & Ross E (2012). *The adult Trichoptera (caddisflies) of Britain and Ireland*. Royal Entomological Society Handbooks for the Identification of British Insects, Vol. 1 Part 17.

Other orders: According to identification guides used (see References)

Key to definitions of status types

Notable-B - Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid or, for less-well recorded groups between eight and twenty vice counties. Now designated "Nationally Scarce" (JNCC, 2011).

UK BAP, Priority Species - Included on the UK List of Priority Species and Habitats. Listed as a priority for conservation action under the UK Biodiversity Action Plan (BAP) (JNCC, 2011).

UK Red list, Vulnerable - Not Critically Endangered or Endangered, but is facing a high risk of extinction in the wild in the medium term future (JNCC, 2011).

Rare – Taxon not in Red data Book, but a possible future candidate for inclusion (Bradley, 2000).

Scarce – Taxon not in Red data Book, but is generally uncommon or local and of *nationally notable* importance (Bradley, 2000).

Key to sampling method codes

Assd = Female assembled to male
BV = Beating vegetation
EmP-1 = Emerged from larva of *Phycitodes maritima* (Lepidoptera)
EmP-2 = Emerged from larva of *Acrocercops brongiardella* (Lepidoptera)
EmP-3 = Emerged from larva of *Diurnea fagella* (Lepidoptera)
EmP-4 = Emerged from larva (unknown host)
EmP-5 = Emerged from larva of *Bucculatrix ulmella* (Lepidoptera)
EmP-6 = Emerged from larva of *Depressaria daucella* (Lepidoptera)
GO = General observation
LMC = Identified in situ from leaf mine characteristics
MVLT = Mercury vapour light trap
Net = Netted in flight
OLC = Old larval case
PT = Pitfall trap
RfL = Reared from larva
Sgr = Sugar
SV = Sweeping vegetation
Swt! = Swatted – bit the entomologist!
TL = Torchlight (dusking)

Key to survey dates (2011)

1 = 9 April
2 = 7 May
3 = 4-5 June
4 = 9-10 July
5 = 20-21 August
6 = 24 September
7 = 30 October
8 = 21 December