

DEEPPDALE FARM
TERRESTRIAL INVERTEBRATE SURVEY 2022

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EXECUTIVE SUMMARY

Deepdale Farm in north-west Norfolk was surveyed for invertebrates during six one-day visits, carried out monthly between April and September 2022, using a consistent timed active sampling approach in eight separate compartments. A total of 668 species were recorded across a wide taxonomic spectrum, including 36 species with a measure of conservation status. The report describes the methods used and discusses in detail the key species identified and the key features of the surveyed compartments. A full annotated species list is also provided as an appendix.

INTRODUCTION

Deepdale Farm is a 300 ha farm situated within the Norfolk Coast Area of Outstanding Natural Beauty. The farm extends southwards from the edge of the saltmarshes of the North Norfolk coast rising to about 60 m above sea level. The majority of the land is arable in nature but there is an extensive block of woodland around the steeper slopes of 'The Downs' and 'Little Wood', along with some smaller areas of trees elsewhere. There is very little standing fresh water on the farm. The soils are mostly shallow and overlay chalk. The outline of the farm is shown in Figure 1.

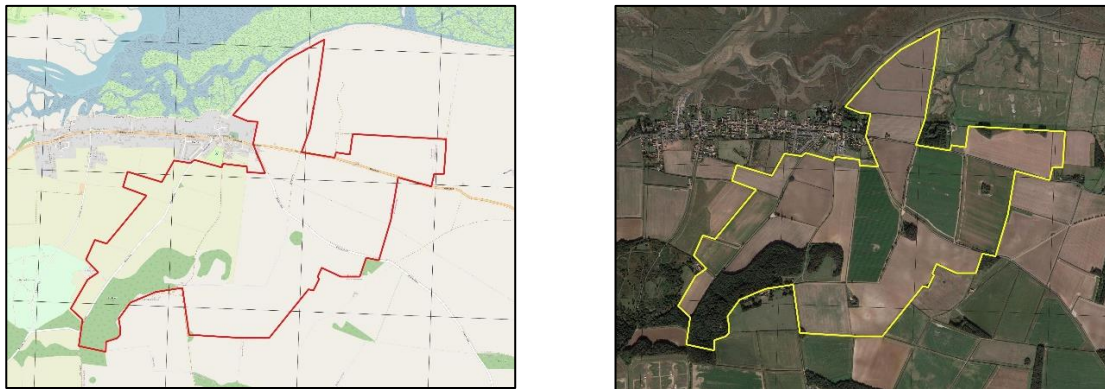


Figure 1: outline of Deepdale Farm

With support from a five-year mid-tier Countryside Stewardship agreement, after many decades being farmed in an intensive manner, since 2020 the farm has been in the process of organic conversion, with the aim of harvesting its first fully organic crops in 2023. The owners of the farm chose to start farming organically as a framework to focus their efforts on finding natural ways to improve soil health, manage pests, support biodiversity and make the farm a more beautiful and healthy place to work, stay and live. The farm also has diversified businesses including a tourism business, and runs a programme of events and courses to enhance engagement with the farmed environment. More details concerning the approach to farming at Deepdale can be found at

<https://www.deepdalefarm.co.uk/how-we-farm-at-deepdale/>

As part of the development of a new approach, Deepdale Farm commissioned a series of biodiversity surveys. The underlying drivers for this were:

- to create a baseline to contribute to the development of a programme of natural capital accounting for the farm;
- to understand how current management approaches are working and to feed into future management plans; and
- to be able to demonstrate biodiversity outcomes to a wide range of stakeholders, including for engagement purposes alongside a developing eco-tourism business

The interest in enhancing biodiversity and conservation at Deepdale sits well alongside many other initiatives undertaken in north-west Norfolk by both private landowners and conservation organisations (most of whom are loosely associated under the umbrella North Norfolk Coastal Group <https://nncg.org.uk/>). The area has also been successful in applying to become one of the first Landscape Recovery schemes under the new Environmental Land Management Scheme, under the ‘North Norfolk: Wilder, Wetter, Better for Nature’ banner.

The current report describes work commissioned to undertake structured surveys of terrestrial invertebrates present on a defined subset of habitats at Deepdale Farm. The work was supported by a grant from Farming in Protected Landscapes (FIPL), a programme funded by Defra and delivered locally by the Norfolk Coast Partnership and Broads Authority to support farmers and land managers in carrying out projects that support the natural environment, mitigate the impacts of climate change, provide public access opportunities or support nature-friendly, sustainable farm businesses.

It should be noted that the broader application to FIPL also discussed how biodiversity at Deepdale Farm was to be investigated more broadly by volunteer naturalists associated with the Norfolk & Norwich Naturalists’ Society (NNNS). The current report does not discuss these broader investigations, but focuses on the contracted, structured surveys funded under FIPL. The wider aim is for the NNNS work to be described alongside the findings from the current report as a paper in the Transactions of the Norfolk & Norwich Naturalists’ Society in due course, when all specimens collected by volunteers have been processed and identified.

The application to FIPL specified that ‘results, methodology and any other learning will be shared with peers, NNNS, other interested parties and the press’. The current report aims to meet this outcome. Additionally, a short video piece was also created that discusses some of the work, and can be viewed at:

https://www.youtube.com/watch?v=3v_THrHvAig&t=9s

Finally, the application to FIPL stated that there was an aim “to repeat surveys in 2025 to allow for a comparison, in the final year of our five-year mid-tier Countryside Stewardship agreement”. It is hoped therefore that the current report will enable such a comparison to be made.

METHODS

AIMS

Monitoring invertebrates is a specialised activity. There is no single method that is suitable for detecting all of the species present and a variety of approaches need to be employed, depending on the particular requirements of a project. For the current project, the following were key considerations:

- The project was described as a 'baseline'. Therefore, it was considered important that any methods should be both repeatable and also provide a fairly broad taxonomic coverage (as opposed to a more in-depth study of a more limited functional groups).
- There was an aspiration for the survey to feed into Natural Capital Accounting. The precise details of which metrics would be required for this were not yet established, but a structured, repeatable approach featuring on a wide range of functional groups (e.g. not just pollinators, say) was deemed most likely to be useful in this regard.
- There was a desire to understand how current management approaches are working. This suggested that survey compartments should be selected with management approaches in mind, rather than simply looking for locations to maximise the range of biodiversity detected across the farm. Ideally, one would also pick multiple compartments with the same management treatment.
- There was a desire to be able to demonstrate biodiversity outcomes to a range of stakeholders. This means that any data generated from the project should be analyseable and able to generate useful metrics.

Additionally, for all of the above reasons, it was deemed important to deploy a survey approach that enabled comparison of Deepdale Farm with other farms that had been (or would in future be) surveyed for their invertebrate biodiversity.

In consideration of the above, and in discussion with other professionals in this field, it was decided to follow a similar approach to that developed by the ecologist Graeme Lyons, which is expanded upon below. Graeme has undertaken invertebrate surveys at many sites in the farmed environment, including some with an interest in developing along a 'rewilding' pathway. Of local relevance to Deepdale Farm, Graeme carried out baseline invertebrate surveys at Ken Hill, so enabling a degree of local comparability.

FIELD METHODS

The project funding allowed for six days of fieldwork, one per month between April and September 2022. Each day was divided into eight blocks, focusing on pre-defined compartments of the farm, using the same compartments each month although varying the order in which they were covered between months. The survey compartments are described in the following section.

For each survey compartment, on each visit, a stopwatch was used to define a 30-minute intensive survey period, during which the following four survey approaches were used in roughly equal measure, although this varied slightly depending on habitat and weather conditions:

- Suction-sampling: use of a modified garden leaf-blower to suck small ground-dwelling invertebrates into a net bag. The bag is periodically emptied into a plastic tray, from which invertebrates of interest are transferred to a tube containing 70% ethanol.
- Sweep netting: use of a heavy-duty net to dislodge invertebrates from medium height vegetation and low-hanging branches of trees and shrubs. Invertebrates are periodically transferred either to a tube containing 70% ethanol, or to a pooter.
- Aerial netting: use of a light-weight net to capture flying insects, generally swept through the air over vegetation. Invertebrates are periodically transferred to a pooter or to individual larger tubes.
- Beating: use of a large white canvas rectangle held under trees or hedges, the latter then beaten with a stick. Any invertebrates dislodged onto the canvas identified directly or transferred to pooter or directly to a tube containing 70% ethanol. In some areas, beating and sweep netting were used interchangeably with other.

Additionally, any larger and more readily identified species (such as butterflies, dragonflies and grasshoppers) were simply noted in the field and recorded using a dictaphone.

For the most part, measures of abundance of different species were not recorded, for reasons of time and practicality.

At the end of each 30 minute section, any invertebrates held in a pooter were incapacitated by the introduction of a small twist of tissue soaked in ethyl acetate; thereafter they were transferred to the tube containing 70% ethanol.

Although the focus of the survey was on invertebrates, any other noteworthy species (birds, mammals, plants, etc.) that were observed incidentally were also recorded.

During the funded visits, no static invertebrate trapping techniques were used. These can generate very useful data, and are arguably an even more repeatable approach. However, trapping is a little less responsive to varying conditions on the day, introduces certain biases (depending on the trap type) and can sometimes generate extremely high volumes of specimens (again, depending on the trap type), which also has an impact on project budgets. For the funding available, the active approach deployed was felt a better compromise. Moreover, as mentioned previously, a parallel programme of recording activities was undertaken by several volunteers in association with the Norfolk & Norwich Naturalists' Society, and here several types of traps were used. At time of writing the results of these trapping activities are not yet fully available, and they will be reported upon elsewhere in due course.

SELECTION OF SURVEY PLOTS

Following consideration of the points above, and on discussion with the farm manager at Deepdale, the following eight compartments (as shown in Figure 2) were selected for survey in 2022. Information on the cropping of the compartments was kindly provided by the farm manager.



Figure 2: Invertebrate survey compartments at Deepdale Farm in 2022.

Compartment A: The southern edge of the field known as 'Valley Farm'. In stewardship as a cultivated margin and last cultivated in October 2021 by discing. Suction was used along the margin and into the field when conditions were not too dry. Taller in-field vegetation was swept and the trees at the periphery of the field were beaten.



Compartment A: April 2022



Compartment A: July 2022

Compartment B: The boundary area spanning the north end of the field known as ‘North Valley’ and the south edge of ‘Starve Acre’. These fields had been ploughed and power-harrowed in April 2022, then seeded with a basic grass and wildflower mix which was broadcast at 12kg/ha. In the event, a lot of Mugwort *Artemisia vulgaris*, Fat Hen *Chenopodium album* and volunteer potatoes resulted (and it was felt that continued topping may be needed in future to prevent these from dominating). Surveys were varied between the north and south side of the hedge, depending on which side was more sheltered from the wind on a given visit. The hedge was beaten/swept whilst the taller in-field vegetation was swept. Suction was used near the hedge, although was difficult some months into the field as the soil could be exceptionally dry.



Compartment B: April 2022



Compartment B: September 2022

Compartment C: The western end of the north edge of the field known as 'Big Breck'. This field had been in clover ley since June 2021. The northern hedge was beaten/swept, whilst suction and sweeping were both used along the margin and out into the clover ley.



Compartment C: April 2022



Compartment C: July 2022

Compartment D: The southern end of the western boundary of the field known as 'Parsons Bush'. This area had not been ploughed following a cover crop being previously grown, and hence had lots of cover crop volunteers. Sheep had been grazed on this field the previous winter. Apparently somewhat susceptible to wetness (although this little in evidence in the drought conditions of summer 2022). The hedge line along the west and south here were beaten, and the margin and field were swept and suctioned.



Compartment D: May 2022



Compartment D: July 2022

Compartment E: The south-east corner of the field known as 'Burnham Brisk', with a wide margin sown with a grass and wildflower mix before a crop of barley in the field proper (which was harvested 21 July 2022). The mature hedge line and associated trees were beaten/swept, and the margin was also swept and suctioned; virtually no sampling took place in the barley itself.



Compartment E: April 2022



Compartment E: July 2022

Compartment F: A beetle bank running east-west across the field known as 'TSB', the bank having a strip of grass and wildflower running alongside, and with hedge and trees at the eastern end. Adjoining wheat which was drilled mid-March and was noted as affected by the fly *Chlorops pumilionis* (by the farm) and this crop required irrigation by late May. The bank and adjacent field areas were swept and suctioned, with the far hedge and trees beaten/swept.



Compartment F: July 2022



Compartment F: August 2022

Compartment G: A beetle bank running east-west across the field known as 'Saffron Field', seeded in February 2021 and with adjacent clover leys sown in September 2021 (which suffered from drought stress). The hedge at the eastern edge of the field was beaten/swept, then the beetle bank and adjacent field was surveyed by sweeping and suction.



Compartment G: April 2022



Compartment G: July 2022

Compartment H: The west and north-west edges of the field known as ‘Marsh Breck’, importantly including the scrubby edge of a small poplar plantation. The field had cultivated margins and a crop of barley, with wild bird seed mix nearby. The field and margins were surveyed by suction and sweeping, and the scrub and plantation edge by beating and sweeping.



Compartment H: April 2022



Compartment H: August 2022

Other parts of Deepdale Farm were not covered by the systematic, timed surveys. Some invertebrates were noted incidentally whilst travelling between survey compartments, but for clarity, those are largely omitted from this report and will be included in the wider paper covering the activities of the Norfolk & Norwich Naturalists' Society volunteers. However, it feels appropriate to draw attention to the old Beech trees adjacent to compartment A, which did prove attractive to a number of significant species.



Beech trees by compartment A

IDENTIFICATION PROCESS

Following the fieldwork season, invertebrate specimens were identified using a microscope and a range of resources (both books and online resources). Most specimens were then discarded, but more difficult or unusual species were retained as voucher specimens.

It is never cost-effective to attempt to identify all invertebrate specimens to species level. Some groups of invertebrates are relatively little known, and for these, identification can not only be extremely time consuming, but even when a conclusion is reached there is little contextual information available with which to compare the record (e.g. one may discover that a particular parasitic wasp occurs on the site, but not be able to say anything about the significance of this occurrence, as the national status is unknown). As a result, a compromise was sought between identifying the majority of the taxa present whilst not spending unnecessary time in identifying taxa that would reveal little about the nature of the site. The main groups of invertebrates encountered but not identified to species level were the ichneumonid wasps and other parasitic Hymenoptera, as well as some of the smaller flies (especially many Nematocera) and beetles (especially Aleocharinae).

ANALYTICAL APPROACH

The records generated by the surveys were stored in an Excel-based database, from which most of the following outputs were produced.

Data were also analysed through the use of the Pantheon web application (www.brc.ac.uk/pantheon/; Webb *et al.* 2017). This is an analytical tool developed by Natural England and the Centre for Ecology & Hydrology that aims to provide more standardised assessments of the invertebrate assemblages found on a site. Assemblages of ecologically-restricted invertebrate species inevitably co-occur in particular habitats and describing these assemblages can be a useful contribution to the description of the biodiversity of a site. However, the interpretation of the resulting metrics can be somewhat difficult. In particular, the application will rate the 'reported condition' of an assemblage at a location as either favourable or unfavourable, depending upon whether a certain threshold number of species has been exceeded (see <https://pantheon.brc.ac.uk/lexicon/reported-condition> for more details). However, this threshold is not clearly defined in terms of the amount of effort that should be expended in searching for such species. As a result, the favourable/unfavourable rating is not very helpful as a stand-alone measure, but the assemblage scores are still useful for comparing between different compartments that have been surveyed in a comparable manner (as in this study).

Pantheon also generates a statistic called the Species Quality Index (SQI). The precise means of generating the SQI are covered at <https://pantheon.brc.ac.uk/content/scoring-systems> but suffice to say, they are averaged measure of species rarity at a location, where a site with entirely non-rare species would score 100, and any rarer species would increase this score. Again, the score itself in isolation is not especially informative, but comparing SQI between compartments can be of interest.

Measures of conservation status were obtained from the JNCC website (<https://jncc.gov.uk/our-work/conservation-designations-for-uk-taxa/>) as well as downloaded from the Pantheon web application. Unfortunately, there are discrepancies between these two information sources, which have been assessed on a case-by-case basis, often involving going back to original source material. In some cases, informal status values have been used where provided by experts on those groups, where the 'official' status values are old and clearly misleading. Such issues are discussed further as required. For the record, the following species recorded during this survey had a measure of conservation status in Pantheon or the JNCC spreadsheet that was not considered valid: *Dioxya bidentata*, *Hippodamia variegata*, *Hypera meles*, *Lasioglossum pauxillum*, *Limonia nigropunctata*, *Lygus pratensis*, *Sciapus wiedemanni*, *Thereva bipunctata*, *Solva marginata* and *Trypeta zoe*. Additionally, the moths *Acronicta psi*, *Timandra comae* and *Tyria jacobaeae* are sometimes listed as having conservation status, but in reality, this relates to a requirement for research into national-level factors and is not appropriate for site-level considerations.

RESULTS

CONDITIONS DURING FIELD VISITS

Deepdale Farm was surveyed on the following dates in 2022, with the compartments visited in these sequences:

23rd April (A,B,C,D,E,F,G,H). A cold day, not rising much past about 13°C all day. A strong northerly wind meant that flying insects were few, and the beating tray was hard to use. Sweep net more successful, particularly in the lee of trees and hedges.

18th May (H,G,F,E,D,C,B,A). A much warmer day, reaching about 21°C, with a light south-westerly breeze. Conditions had been sufficiently dry during the spring that irrigation was already being used on some crops. Some soils very friable making suction sampling problematic.

4th June (F,E,D,C,B,A,G,H). Cool and overcast, with a strong north-east wind for most of day until warming a little near end.

4th July (C,D,E,F,B,A,G,H). Warm and sunny all day, still no rain and ground very dry. Wind picked up from mid-morning making the aerial net harder to use then.

8th August (B,A,H,G,C,D,E,F). Hot and sunny, not much breeze today. Ground exceptionally dry and suction sampling difficult in places (and seemingly often unproductive).

13th September (G,H,B,A,F,E,D,C). Warm and sunny with a light northerly breeze and no rain, although there had been a little rain since the previous visit and some areas were noticeably greener now.

For the season as a whole, the Deepdale Farm manager noted that the drought affected crops significantly, particularly the wheat which needed to be irrigated. In the clover leys, only the lucerne persisted through the hottest weather. Harvest was around two weeks earlier than average this year for both wheat and barley.

INVERTEBRATES RECORDED

DEEPDALE FARM COMBINED

A total of 668 species were recorded during the 48 timed surveys (eight compartments, six months). During the timed surveys, a total of 36 species (5.4%) were recorded that have a measure of conservation status. These species are discussed in more detail below, whilst a full annotated list of all 668 species is provided as Appendix 1.

A small number of additional species were recorded outside these timed surveys, but these will be discussed alongside the survey results from the Norfolk & Naturalists' Society (except for a few key highlights mentioned in the Discussion below).

The table below shows the monthly and taxonomic breakdown of the identified species. Species diversity typically rises to mid-summer and then falls again, so the final rise in species in September was noteworthy,

and almost certainly related to the effect of the drought in suppressing invertebrates in summer, followed by a quick response when rain fell in September.

Taxonomic group	Combined total	Conservation Status	Apr	May	Jun	Jul	Aug	Sep
Arachnida (Spiders and allies)	50	1	17	23	22	15	8	15
Isopoda (Woodlice)	3		2	1	3	2		3
Myriapods (Centipedes, Millipedes)	2			1	1			1
Odonata (Dragonflies)	10			2	2	2	4	3
Orthopteroids (Grasshoppers and allies)	10		1	3	3	7	6	4
Hemipteroids (Bugs and allies)	105	5	17	25	42	31	41	42
Coleoptera (Beetles)	175	8	54	88	76	51	46	62
Diptera (Flies)	162	6	31	49	65	55	26	43
Hymenoptera (Wasps and allies)	93	11	18	26	24	35	35	21
Lepidoptera (Moths and butterflies)	47	5	4	20	7	18	12	12
Miscellaneous insects	6		2	1	1	3	1	1
Molluscs (Snails and slugs)	5			2		1		2
Total species	668	36	146	241	246	220	179	209

INVERTEBRATES BY COMPARTMENT

The table below shows the numbers of species recorded on each of the eight compartments over the six timed surveys in 2022. In addition, the number (and %) of species with a measure of conservation status is shown, as well as the number of unique species to each section (i.e. not recorded elsewhere). Finally, the Species Quality Index (SQI) is shown, as calculated using Pantheon; this is effectively a measure of the proportion of rarer species at a location (where 100 would represent no rarer species).

	A	B	C	D	E	F	G	H	Combined
Number of species	237	193	192	207	192	171	180	219	668
Conservation status	4	8	4	16	8	8	6	8	36
% Conservation status	1.7	4.1	2.1	7.7	4.2	4.7	3.3	3.7	5.4
Unique species per section	75	36	34	38	35	24	33	65	
Species Quality Index	109	123	106	134	115	117	115	121	125

The Pantheon application was also used to investigate the 'Specific Assemblage Types' for each compartment individually, and for the eight Deepdale compartments combined. The following results were obtained, the table showing the number of species per compartment pertaining to different named assemblages. The shaded cells show those values that exceed the guidance threshold levels in Pantheon for 'favourable condition', although as discussed previously in the Methods, this is somewhat difficult to interpret and the scores are probably better just used to compare one compartment with another.

Specific Assemblage Type (Pantheon)	A	B	C	D	E	F	G	H	Combined
A211 (heartwood decay)	2				1				3
A212 (bark & sapwood decay)	6	2	2	1	2	1	1	4	14
A215 (epiphyte fauna)						1	1	1	1
F001 (scrub edge)	2	2	2	2	3	1		1	9
F002 (rich flower resource)	13	17	11	14	15	13	10	19	40
F003 (scrub-heath & moorland)	3	4	1	3	2	5	2		7
F111 (bare sand & chalk)	6	7	2	6	5	2	7	6	17
F112 (open short sward)	4	3	4	5	4	3	3	4	16
M311 (saltmarsh & transitional brackish marsh)		1					1		1

SPECIES FREQUENCY PATTERNS

Every month had numerous species that were only recorded in that month, whilst 57% of the species were recorded in only in a single month.

Month	Apr	May	Jun	Jul	Aug	Sep
Species unique to month	38	84	71	70	50	66

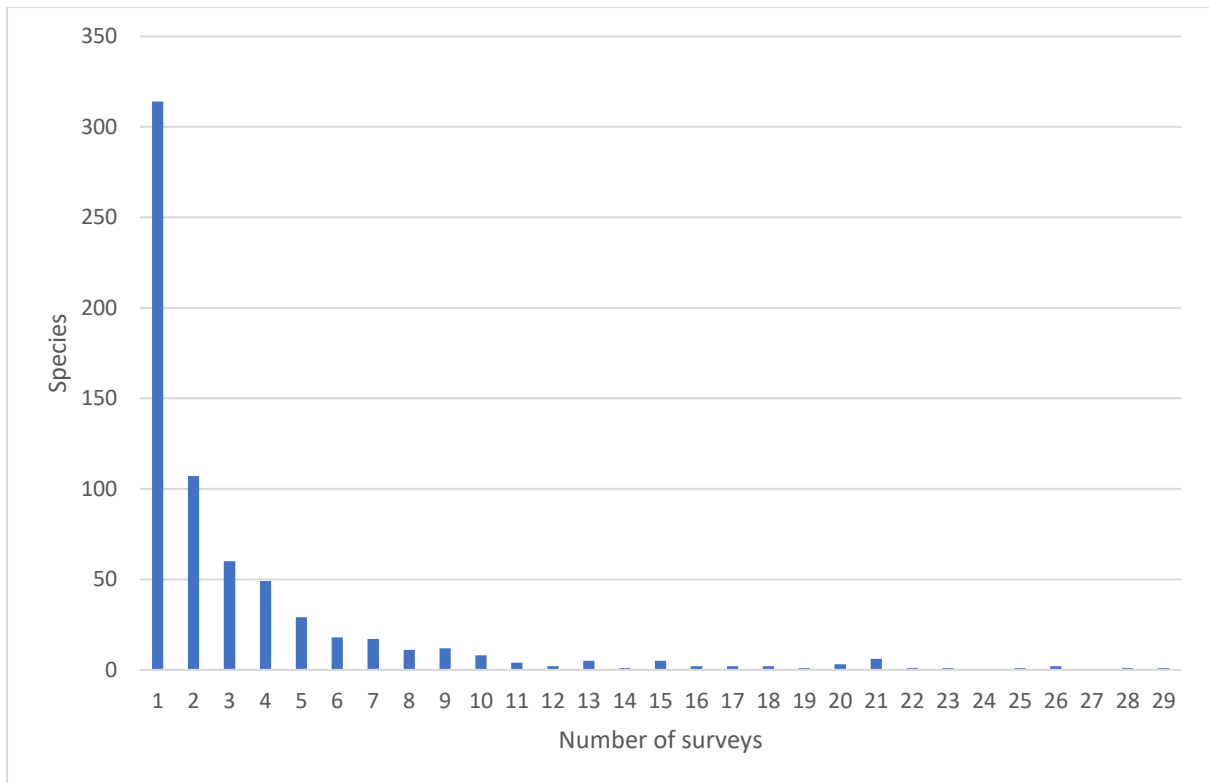
Number of months	1	2	3	4	5	6
Number of species	381	138	67	44	21	17

Similarly, every compartment had numerous species that were only found there and nowhere else, whilst 51% of species were only recorded from a single compartment. Only 24 species were found in every compartment.

Compartment	A	B	C	D	E	F	G	H
Species unique to compartment	75	36	34	38	35	24	33	65

Number of compartments	1	2	3	4	5	6	7	8
Number of species	340	117	62	49	35	26	15	24

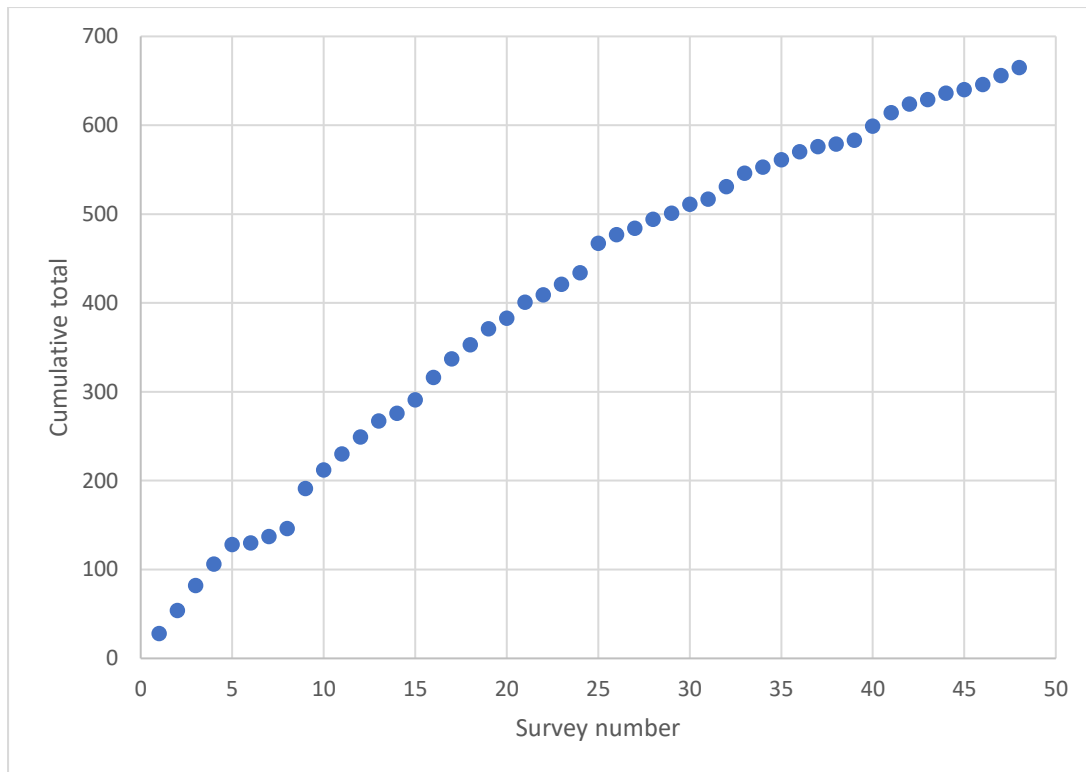
Looking at the individual level, 47% of species were only recorded on a single one of the 48 timed surveys, as shown in the graph below.



The 16 species recorded on 20 or more of the 48 timed surveys are listed below. The majority of these frequently recorded species were found on the ground (generally through use of the suction sampler).

Species	No. of surveys
<i>Lasius niger</i> (ant)	29
<i>Lygus rugulipennis</i> (plant bug)	28
<i>Nysius huttoni</i> (ground bug)	26
<i>Tenuiphantes tenuis</i> (spider)	26
<i>Nysius senecionis</i> (ground bug)	25
<i>Syntomus foveatus</i> (ground beetle)	23
<i>Protapion trifolii</i> (weevil)	22
<i>Anthocoris nemorum</i> (flower bug)	21
<i>Ceutorhynchus obstrictus</i> (weevil)	21
<i>Coccinella septempunctata</i> (ladybird)	21
<i>Lasioglossum pauxillum</i> (bee)	21
<i>Meligethes aeneus</i> (pollen beetle)	21
<i>Olibrus affinis</i> (flower beetle)	21
<i>Bembidion lampros</i> (ground beetle)	20
<i>Forficula auricularia</i> (earwig)	20
<i>Sitona lineatus</i> (weevil)	20

The graph below shows the cumulative species total as it increased through the 48 surveys. It is clear that the total continued to rise steadily throughout, and was still increasing significantly at the end of the season. This demonstrates the value of surveying for as many months as possible.



OTHER WILDLIFE RECORDED

Whilst invertebrates were the focus of the survey, other taxa recorded at Deepdale Farm during the fieldwork in 2022 included:

Mammals

- Chinese Water Deer *Hydropotes inermis*
- Muntjac *Muntiacus reevesi*
- Roe Deer *Capreolus capreolus*
- Brown Hare *Lepus europaeus*
- Grey Squirrel *Sciurus carolinensis*

Birds

- Red Kite *Milvus milvus* – regularly overhead
- Marsh Harrier *Circus aeruginosus* – regularly over the fields
- Curlew *Numenius arquata* – small flock on 'TSB' field in September.
- Mediterranean Gull *Ichthyaeetus melanocephalus* – in April, May, July and August, noted flying overhead regularly and sometimes apparently fly-catching; presumably coming over from Scolt Head island
- Turtle Dove *Streptopelia turtur* – one was heard calling from the vicinity of Valley Farm in July.
- Cetti's Warbler – calling from scrub alongside compartment H in April
- Wheatear *Oenanthe oenanthe* – a single migrant bird in April in compartment B

Also a wide selection of commoner farmland and woodland birds, and waterbirds on the adjacent coastal marshes (including Spoonbill *Platalea leucorodia* and Great White Egret *Ardea alba*).

DISCUSSION

SPECIES

INVERTEBRATE SPECIES WITH MEASURES OF CONSERVATION STATUS

The following 36 species were recorded during the timed surveys that have at least one measure of conservation status (as defined in the Methods earlier).

Argenna patula

A very localised spider, found on estuaries and saltmarshes where it can be frequent. One male was discovered in compartment H in May, only a short distance from the expected habitat (so it clearly will wander at least a little way). Mostly found in East Anglia and around the Thames Estuary, with scattered localities along the south and west coasts of Britain. Its status was determined as Nationally Scarce by Harvey et al. (2017), meaning it is thought to occur in between 16 and 100 10-km squares in Britain.

Megalonotus praetextatus

A dark ground bug, rather local on warm, well-drained soils in southern Britain, especially in coastal areas and in the Brecks. The discovery of one individual along the field margin in compartment E in June fits with this distribution therefore. Its status was determined as Notable (B) by Kirby (1992), meaning it was thought to occur in between 31 and 100 10-km squares in Britain.

***Eurydema ornata* (Ornate Shieldbug)**

A strikingly-patterned shieldbug and a recent colonist from the continent, with scattered records across much of south-east England. An immature individual was one of the surprise finds of the survey, swept along the edge of compartment D in August. This was only the second time this species had been recorded in Norfolk (although it is expected to spread in coming years). Its status was assessed as Nationally Rare by Bantock (2016), meaning it was thought to occur in 15 or fewer 10-km squares in Britain.



Brachycarenum tigrinus

A reasonably large bug, a recent colonist from the continent, first recorded in Britain in 2003 and since found locally as far north as Lincolnshire. Occurs in warm and sparsely-vegetated habitats. Not many Norfolk records to date, so another good find. This species was discovered in compartments D and H, both in September (when the bug is mature and more visible). Its status was assessed as Nationally Scarce by Bantock (2016), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.



Liorhyssus hyalinus

Another sizeable bug, historically regarded as a rare vagrant to Britain, but has appeared much more frequently since the 1990s and now recorded locally throughout southern England and Wales. Hence not entirely unexpected, but good to find at Deepdale, being noted in compartments A, B and F, all in September. Its status was assessed as Nationally Scarce by Bantock (2016), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.



***Thyreocoris scarabaeoides* (Scarab Shieldbug)**

A small, ground-dwelling shieldbug, associated with Field Pansy *Viola arvensis* and other species of *Viola*, characteristic of dry, open habitats, and at Deepdale was discovered in compartments E (in June) and F (in May). This bug is found locally south of a line between the Humber and South Wales with only a few locations

further north, and its status was assessed as Nationally Scarce by Bantock (2016), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

***Asaphidion flavipes* (Yellow-legged Velvetback)**

A small ground beetle, favouring damper soils, although at Deepdale, one was located via suction-sampling in the field margin of compartment E in June, where it was not especially damp. Locally distributed across Britain, mostly south of central Scotland. Its status was assessed as Nationally Scarce by Telfer (2016), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

Syntomus truncatellus

A small, black ground beetle, found in dry grassland, local and uncommon in the south-east of England and very local elsewhere in Britain. One was discovered in compartment E in April (alongside numerous examples here and elsewhere of its close relative *S. foveatus*). Its status was assessed as Nationally Scarce by Telfer (2016), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

Longitarsus ballotae

A small flea beetle, local in south-east England and found on Black Horehound *Ballota nigra*. There are many very similar species; this one differs on the shape of its claws. It was discovered along the hedgerow in compartment B in April, and again there in both August and September, so seemingly is well-established there at least. Its status was assessed as Nationally Scarce by Hubble (2014), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

***Podagrica fuscipes* (Mallow Flea Beetle)**

A small flea beetle, rather attractively coloured orange and green. It feeds on the leaves of mallows *Malva* and related plants, and indeed was swept from mallows in compartment C in every month except July; it was also found in compartment D in April. This beetle was previously very restricted in range in East Anglia but does appear to be expanding its range. Its status was assessed as Nationally Scarce by Hubble (2014), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

Enicmus rugosus

A very small beetle which appears to be very locally distributed, mostly in the south-east and favouring woods and fens where it is associated with fungi and slime-moulds. It was something of a surprise to discover it along the hedge line of compartment B in April therefore. This is not an especially well-known beetle, but its status was assessed as Notable by Hyman & Parsons (1994), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

Olibrus pygmaeus

A very small shining flower beetle, found mostly on sandy soils in East Anglia where it can be found on flowers of various Asteraceae. It was found at Deepdale in compartments F (in August), G and H (both in September), although some more may have gone overlooked amongst several very common and similar related species that were also present. Its status was assessed as Nationally Scarce by Lane (2021), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

Stenus pusillus

A small rove beetle, found in a range of wet habitats as well as occurring in arable settings and along roadsides, quite widespread in England and Wales. One was found by suction in compartment D in April. Its

status was assessed as Notable B by Hyman & Parsons (1994), meaning it was then thought to occur in between 31 and 100 10-km squares in Britain, although this does feel like it under-represents its distribution somewhat now.

Gonodera luperus

A large beetle found on vegetation and flowers in wooded areas, found locally in parts of England and Wales. One was discovered at Deepdale in May in compartment A, and the presence of the species is clearly more associated with the adjoining woodland here than the fields. Its status was assessed as Nationally Scarce by Alexander et al. (2015), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

Chlorops laetus

A small yellow and black fly, not well recorded but the few confirmed records to date have been from England south-east of the Wash-Severn line from good-quality calcareous grasslands. Another rare species found in compartment D at Deepdale – certainly a good corner of the farm for invertebrates. Its status was assessed as Nationally Scarce (provisionally, given the relatively low quantity of data) by Falk et al. (2016), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.



Dolichopus agilis

One of the shiny green dolichopodid flies, very locally recorded from scattered sites in England and Wales, although from a wide range of habitats. A male swept from compartment F in July was a good find. Its status has been assessed by Drake (2018) as Vulnerable to extinction in Britain, and Nationally Rare, meaning it is thought to occur in 15 or fewer 10-km squares in Britain.



Gnophomyia viridipennis

A small, dark crane fly, found very locally across much of England where it is reliant on fallen poplar *Populus* trunks. This was indeed exactly the habitat at Deepdale, where it was discovered on the edge of the plantation at compartment H in both May and June (multiple individuals). This is a good example of why dead wood should be left wherever possible and appreciated as an important wildlife resource. The status of the crane fly was assessed as Notable by Falk (1991), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

Geomyza apicalis

A small fly, seemingly very local in open habitats, with scattered records north to Fife. Larvae are thought likely to develop in grasses, but the requirements of this species are seemingly not well known. One was discovered in compartment B in June. Its status was assessed as Nationally Scarce (provisionally, given the relatively low quantity of data) by Falk et al. (2016), meaning it was thought to occur in between 16 and 100 10-km squares in Britain.

Cistogaster globosa

A small but fairly distinctive parasitic fly, known to target the Bishop's Mitre shieldbug *Aelia acuminata*, which itself occurs widely at Deepdale. The fly was discovered along the beetle bank in compartment G in both August and September, doubtless hunting out the shieldbugs. This fly was previously rather rare in the south-east but seemingly expanding its range north and west in open flowery habitats. The status of this group of flies has not been reassessed for some time; it was assessed as Endangered by Falk (1991) but that seems far too severe now, given its spread, and Nationally Scarce feels more likely to be appropriate.

Goniglossum wiedemanni

A distinctive picture-winged fly, whose larvae are notable for feeding on White Bryony *Bryonia dioica*, a common climbing plant in hedgerows. The fly is locally distributed in south-east and central England. At Deepdale, one was swept along the hedgerow in compartment E in June. Its status was assessed as Notable by

Falk (1991), meaning it was thought to occur in between 16 and 100 10-km squares in Britain; more recent recording of flies has not demonstrated this to be an unreasonable estimate.



***Andrena hattorfiana* (Large Scabious Mining Bee)**

A large mining bee, scarce and localised north to a line between Norfolk and south Wales, with the main concentrations being in the Brecks and on Salisbury Plain. The main habitat is calcareous grassland that is rich in Field Scabious *Knautia arvensis* or Small Scabious *Scabiosa columbaria*. It was very pleasing therefore to discover this bee at Deepdale, with two individuals found in July, one swept in compartment B and the other on a Field Scabious flower-head along the track by compartment E. The conservation status values for bees are currently being updated; the last official assessment by Falk (1991) assessed this bee as Rare, but that feels unreasonably pessimistic now and Nationally Scarce seems a better fit, implying it occurs in between 16 and 100 10-km squares in Britain.

***Bombus ruderatus* (Large Garden Bumblebee)**

A large bumblebee, scarce in southern England and known to have declined strongly but showing some recent recovery in parts of central and eastern England where it seems to be benefitting from agri-environment schemes, especially those that promote the creation of clover-rich habitats. This fits really well with Deepdale, and accordingly this bee was found in both compartment F in July and again in compartment D in August, showing that the farm is contributing to its recovery. Its status was assessed as Notable-B by Falk (1991) implying it occurs in between 31 and 100 10-km squares in Britain. Additionally, in England this bee is listed as a Special of Principal Importance in Section 41 of the Natural Environment and Rural Communities Act 2006 (and the equivalent legislation in Wales).

Hedychrum niemelai

A small, metallic green and red cuckoo wasp, seemingly local in sandy habitats south of the Wash-Severn line, where it is a parasitoid of the larger *Cerceris* wasps (which themselves are mostly weevil predators). Several species of *Cerceris* proved common around Deepdale, and the presence of their cuckoo wasp in compartments D and H therefore fits, and is illustrative of a healthy and functioning food-web. *Hedychrum niemelai* was assessed as Rare by Falk (1991), but subsequent years have shown it to be somewhat more widespread and Nationally Scarce would seem a much more appropriate status category (a new review is due shortly).



***Colletes halophilus* (Sea Aster Bee)**

A medium-sized bee, found almost exclusively on saltmarshes and dunes between Dorset and the Humber where it is strongly associated with Sea Aster *Tripolium pannonicum* and can be locally abundant. However, it clearly wanders inland a little, as it was detected at Deepdale in August and September, at compartments B, D and H. The bee needs careful separation from the very similar (and now much more numerous) Ivy Bee *C. hederæ*. Its status was assessed as Notable-A by Falk (1991) implying it occurs in between 16 and 30 10-km squares in Britain. Additionally, in England this bee is listed as a Special of Principal Importance in Section 41 of the Natural Environment and Rural Communities Act 2006.

***Cerceris quinquefasciata* (Five-banded Weevil-wasp)**

A hunting wasp, found mostly between London and Norfolk although can be common where it occurs. Favours sandy soils and hunts weevils. Deepdale would seem to be a real hot spot for this scarce wasp, as it was found in six of the eight compartments (excluding just B and E). Its status was assessed as Rare by Falk (1991), but subsequent years have shown it to be somewhat more widespread and Nationally Scarce would seem a much more appropriate status category (a new review is due shortly). Additionally, in England it is listed as a Special of Principal Importance in Section 41 of the Natural Environment and Rural Communities Act 2006.

***Cerceris ruficornis* (Flange-faced Weevil-wasp)**

A hunting wasp, locally common on sandy heathland from Cornwall to Norfolk, preying mostly on weevils. At Deepdale, single wasps were found in compartments G in July and D in August. This wasp does not yet have an official conservation status, but a consistent approach with related species would imply that Nationally Scarce would be an appropriate status (a new review is due to report shortly).

Psenulus schencki

A small, dark wasp, very local in south-east England, constructing its nests in hollow stems and provisioning them with psyllids. At Deepdale, a single male was swept in compartment D in June. Its status was assessed as Notable-A by Falk (1991) implying it occurs in between 16 and 30 10-km squares in Britain, although it can very easily be overlooked.

***Lasioglossum quadrinotatum* (Four-spotted Furrow Bee)**

A small bee, rather scarce in southern England with scattered records north to Yorkshire, occurring mostly in heathland habitats. At Deepdale, female bees were swept in compartments D and F in May (alongside many other closely related small bees). Its status was assessed as Notable-A by Falk (1991) implying it occurs in between 16 and 30 10-km squares in Britain.

***Sphecodes longulus* (Little Sickle-jawed Blood Bee)**

A small black and red 'blood bee', rather restricted in occurrence in south-east England favouring sandy habitats. It does not build its own nest but instead acts as a cuckoo of the bee *Lasioglossum morio* and related species. A single male was swept from compartment D at Deepdale in August (where *L. morio* was also present). Its status was assessed as Notable-A by Falk (1991) implying it occurs in between 16 and 30 10-km squares in Britain.

***Sphecodes reticulatus* (Reticulate Blood Bee)**

A larger blood bee, also a nest-cuckoo (cleptoparasitic) and particularly targeting the bee *Andrena barbilabris*. Widespread but localised in southern heathland districts, with some recent expansion in the Midlands. A single male was swept from compartment D at Deepdale in August. Its status was assessed as Notable-A by Falk (1991) implying it occurs in between 16 and 30 10-km squares in Britain.

***Dasygaster hirtipes* (Pantaloonee Bee)**

A large bee, the females distinctive for their extremely hairy hind legs. Locally common on sandy sites in the south-east, extending to Norfolk and north Wales. A single bee was found nectaring on flowers in compartment B in August. Its status was assessed as Notable-B by Falk (1991) implying it occurs in between 31 and 100 10-km squares in Britain.



***Chiasmia clathrata* (Latticed Heath)**

A distinctive brown and yellow chequered moth, flying by day and night and found across most of Britain in a range of open habitats. Caterpillars feed on clovers *Trifolium* and Lucerne *Medicago sativa*, which will explain why this moth was found at Deepdale in compartments C and G, being recorded at one or the other every

month. This moth has been given a provisional status of Near Threatened on the basis of declines in distribution and abundance in many areas.

***Erannis defoliaria* (Mottled Umber)**

A brownish (though variable) moth, flying late in the autumn, widespread in woodland and scrub across most of Britain. The caterpillars feed on a variety of trees and shrubs, and one was beaten from the hedge along the edge of compartment E in May. Still a common species in many area but given a provisional status of Vulnerable on the basis of significant declines in abundance in many areas.

***Satyrium w-album* (White-letter Hairstreak)**

A small dark butterfly with distinctive white and orange markings on the underwings, widespread but local in England and Wales in scrubby habitats. The caterpillars feed on elms *Ulmus*, and hence the species was severely affected by Dutch Elm Disease in the 1970s. A surprise sighting at Deepdale was of one alighting on the hedge at compartment D in July, although it rapidly departed. One would assume the butterfly is breeding on elms somewhere in the nearby woodland. Nationally, the status has been assessed as Vulnerable by Fox et al. (2022). Additionally, in England this butterfly is listed as a Special of Principal Importance in Section 41 of the Natural Environment and Rural Communities Act 2006 (and the equivalent legislation in Wales).

***Coenonympha pamphilus* (Small Heath)**

A small brown butterfly, favouring grassy habitats with a short sward. Distributed across almost all of Britain, but with a significant decline noted in many areas in recent years. Single butterflies were noted in compartments E in July and H in August. Its status has been assessed as Vulnerable by Fox et al. (2022). Additionally, in England this butterfly is listed as a Special of Principal Importance in Section 41 of the Natural Environment and Rural Communities Act 2006 (and the equivalent legislation in Wales, Scotland and Northern Ireland).

***Lasiommata megera* (Wall)**

An orange-brown butterfly, widespread in England and Wales (and coastal in southern Scotland), but having experienced a major population decline in recent years. Now quite rare in most inland areas but still more regular along the coast, and indeed it was well represented at Deepdale, being noted in six of the eight compartments (except E or H) in May, August and September. The caterpillars feed on a range of grasses. Its status has been assessed as Endangered by Fox et al. (2022). Additionally, in England this butterfly is listed as a Special of Principal Importance in Section 41 of the Natural Environment and Rural Communities Act 2006 (and the equivalent legislation in Wales, Scotland and Northern Ireland).

OTHER NOTABLE INVERTEBRATE SPECIES

The following are a selection of other species which do not have a measure of conservation status, but were notable in one way or another:

Erigone promiscua

A small money spider, widespread in the north and west but scarce and localised in the south-east. The website of the Spider and Harvestman Recording Scheme does, however, show quite a cluster of records in

north-west Norfolk, aligning with the findings of this survey where the spider was found by suction-sampling in compartments D, F and G.

Neides tipularius

A large stilt bug, occurring locally around the coasts of England and Wales, and inland in sandy areas such as the Brecks. Found on dunes and heaths, as well as weedy arable fields, and at Deepdale it was discovered in April on compartments E. Not currently recognised as having conservation status but feels like a review of this group might find otherwise.

***Syromastus rhombeus* (Rhombic Leatherbug)**

A distinctively-shaped coreid bug, found locally south of a line between the Wash and south Wales, historically coastal in distribution but has shown a recent expansion inland. Found in dry open habitats in association with a range of plants in the Caryophyllaceae. It was found in compartments C, D and H at Deepdale, and the records here and elsewhere along the Norfolk coast are the most northerly in Britain to date.

Metopoplax ditomoides

A small ground bug, historically a rare vagrant but has recently become established and now spreading northwards in southern England. Favours warm, sparsely-vegetated habitats, and located at Deepdale in compartment D. Was not previously assessed for conservation status, but if it were reviewed, would almost certainly now qualify.



Stenodema trispinosa

An elongate grass bug, very locally distributed in East Anglia and the south-east, generally in wetland habitats, including brackish situations, feeding on sedges *Carex*. However, at Deepdale it was swept in some numbers along the beetle bank in compartment G in April and again in June.

***Pogonocherus hispidulus* (Greater Thorn-tipped Longhorn Beetle)**

A longhorn beetle, found widely but sparsely in woods throughout much of Britain. Two individuals were beaten from an oak tree at the eastern end of compartment F in September.



Bibio nigriventris

A small fly, widespread and locally common in the north and west but more local in the south-east. One netted in compartment E at Deepdale was potentially the first record for Norfolk.



***Nemotelus notatus* (Flecked Snout)**

A small soldierfly, widespread and locally common in coastal districts, especially in upper saltmarsh and grazing marshes. However, it clearly does come inland slightly as at Deepdale it was found in compartments D and F in July.

***Solva marginata* (Drab Wood-soldierfly)**

A medium-sized fly, widespread but local in southern Britain north to Yorkshire. Adults are usually found around tree trunks and logs, with larvae developing within wood that has been dead for less than two years. As with the crane fly *Gnophomyia viridipennis* discussed above, this species was found around dead poplar logs in compartment H in May, emphasising the importance of retaining such dead wood as a habitat for invertebrate biodiversity.

Callaspidia defonscolombei

A small wasp, striking in appearance but little known, a parasitoid of hoverflies. This was found at Deepdale in compartments D and H. Probably not especially rare, but a good example of the wide range of insects that exist that are still little known, even by many entomologists.



Tenthredo baetica

A large black, red and yellow sawfly, previously considered extinct but recently reappearing across East Anglia in a range of open habitats including arable farmland. It was noteworthy therefore to find this species at Deepdale in June, in compartments G and H. A review of the status of this (and related) species is currently underway and it is very likely that this species will be given a measure of conservation status.

NOTEWORTHY SPECIES RECORDED OUTWITH THE TIMED SURVEYS

As mentioned, a number of other invertebrate species were recorded at Deepdale outside the 48 timed, structured surveys that form the bulk of this report. Given that a group of other entomologists associated with the Norfolk & Norwich Naturalists' Society carried out a range of activities, mostly using static traps, and that these findings will be reported on elsewhere in due course, it seems appropriate to feed these incidental records into that report. However, for the record (and in case of any delays), note is made here of the following key additional species noted at Deepdale:

Anoscopus albifrons

A small leafhopper, found in yellow bowl traps on 16th July both by the Little Wood and by the Pines. Status has been assessed as Notable-B.

Ctenophora pectinicornis

A large and striking crane fly, associated with dead or decaying wood, and found in May by the old beeches next to compartment A. Status has been assessed as Notable.



Graptus triguttatus

A large and striking weevil, swept from grassland near the Little Wood in April.

Microdynerus exilis

A small wasp, one caught in a yellow bowl trap on 16th July by the Little Wood. Status has been assessed as Notable-B.

Neurigona abdominalis

A dolichopodid fly, swept at the pines (TF809435) on 16th July. This would appear to be a very rare species and was assessed as Endangered and Nationally Rare by Drake (2018), who states this fly has only previously been found at four other locations in Britain, all in East Anglia. This is potentially one of the most significant finds of the 2022 Deepdale invertebrate surveys, therefore.



Pocota personata

A large and striking hoverfly that is a superb mimic of bumblebees. It is rather rare and localised, requiring old dead or decaying trees. One was found by the old beeches next to compartment A in May. This species has never before been recorded in Norfolk (or Suffolk) and was an excellent pointer to the importance of this stand of old trees. Status is currently Nationally Scarce.



Priocnemis cordivalvata

A spider-hunting wasp, two males found in a yellow bowl trap at the pines on 16th July. A little-known species, with status of Notable-B.

Priocnemis schioedtei

Another spider-hunting wasp, one male found in a yellow bowl trap at the Little Wood on 16th July. Also little known with status of Notable-B.

Stigmus pendulus

A small black wasp, swept from the woodland track near the barn on 16th July. Little known but proposed to have a status of Nationally Scarce.



***Tettigonia viridissima* (Great Green Bush-cricket)**

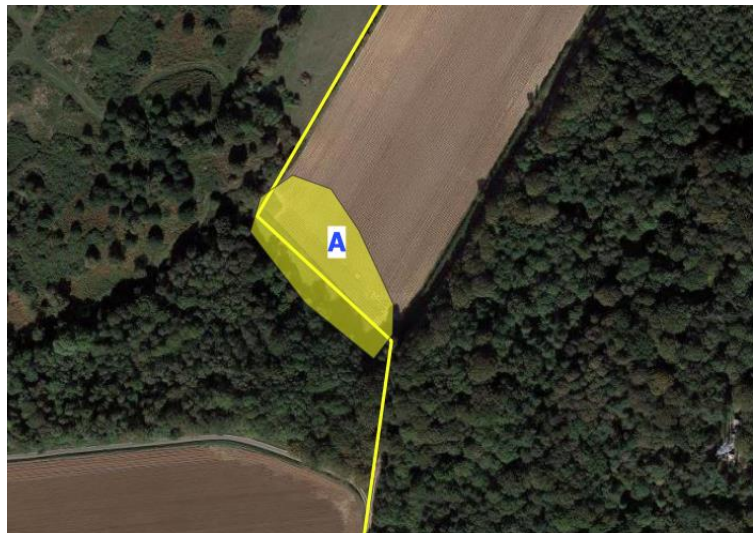
A common species in parts of the south-west of England, but rather localised in East Anglia, mostly along the Suffolk coast but creeping around into Norfolk in recent years. One was heard during early evening on 16th July near the barn (at TF80194317), calling from long, rank vegetation. This would seem to represent another step in the range expansion of this species and may be the most northerly record in Britain to date.

Thricops semicinereus

A muscid fly, seemingly quite local and especially so in the south-east of Britain. Another species that was recorded (in some numbers) around the old beeches near compartment A in May.

COMPARTMENTS

COMPARTMENT A



A total of 237 species was recorded, the highest for any of the compartments, and 75 species were noted here and nowhere else around Deepdale Farm. This diversity is likely due to the juxtaposition of the field with woodland edge, as well as perhaps some spill over of species from the adjacent Barrow Common. Additionally, during a summer drought, the higher degree of moisture retention on the north side of the woodland belt will also have been beneficial for some species. Four of the species had conservation status, proportionally lower than other locations. The Pantheon analysis showed that this was the best compartment for the 'bark and sapwood decay' and 'heartwood decay' assemblages, again relating to the proximity of woodland.

The compartment was in stewardship as a cultivated margin, and the field itself did prove quite rich in plant bugs, ground beetles, rove beetles and bees, amongst many other groups.

The main recommendation for the future would be to retain any dead wood along the woodland edge. When trimming this edge, aim to leave an irregular or scalloped edge, as this maximises the diversity of microhabitats and microclimates, which can all be important for different insects. Maintaining a good range of floral resources in proximity to the woodland is very helpful for species that need dead wood in their larval stage but energy-rich food when the adults emerge to breed and disperse. If standing water appears in ditches or hollows in wetter seasons, this should be encouraged/retained where possible.

COMPARTMENT B



A total of 193 species was recorded, about average across the farm, included 36 that were recorded here and nowhere else. At first site, this hedge line bordered by very dry ground seemed quite unpromising, but a surprising eight species with conservation status were discovered here, including three scarce bees attracted to the wildflower mix that had been seeded here. Indeed, the Pantheon analyses suggested that the most significant invertebrate assemblage here was associated with the 'rich flower resource', and 21 species of bee were recorded here in total. There was also interest provided by the hedge itself, with a colony of a scarce beetle *Longitarsus ballotae* present throughout on Black Horehound growing in the hedge base.

In future, maintaining the hedge in line with best practice would be good (i.e. continue to manage, but not too harshly), and retain any dead wood within the hedge line. Maintaining a diversity of floral resources is also valuable.

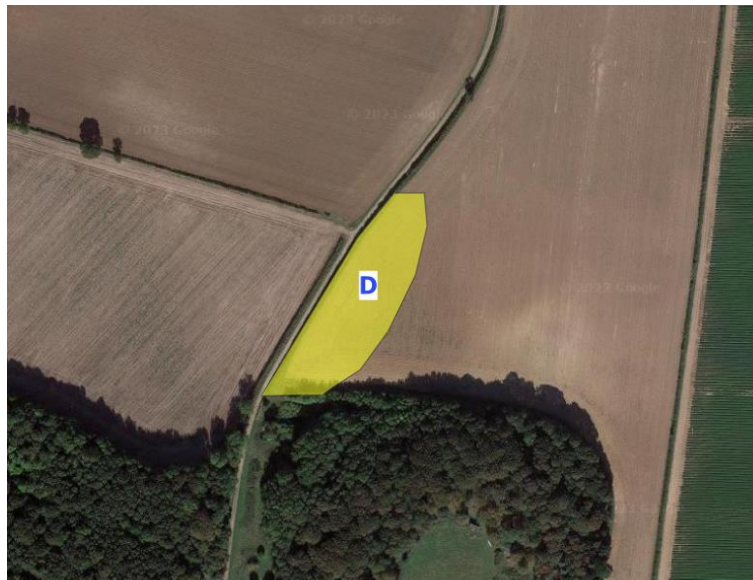
COMPARTMENT C



A total of 192 species were recorded in this compartment, including 34 that were not noted elsewhere around Deepdale. Four species had measures of conservation status, lower than for most other compartments. Several of the species were directly associated with the clover ley itself, including the very abundant clover-feeding weevils (these providing prey for the scarce wasp *Cerceris quinquefasciata*). The scarce beetle *Podagrica fuscipes* on the other hand was recorded regularly on the mallows in the field margin. The Pantheon analysis did not identify any particularly significant assemblages here.

Being south-facing, the hedge at this corner of the field is rather exposed. Managing this hedge to be irregular, or even somewhat scalloped, might add a little more structural diversity and some slightly more sheltered microclimates for some invertebrates, although the potential here may be somewhat limited. Otherwise, continuing to provide wide margins that support a good range of floral resources will help maintain diversity.

COMPARTMENT D



A total of 207 species were recorded in this compartment, somewhat above average and including 38 that were recorded nowhere else. Most notably though, this was the hot-spot for the scarcer species, with no less than 16 species with conservation status found in this corner of the field, nearly 8% of the species here. These included the rather striking bugs *Eurydema ornata* and *Brachycarenum tigrinus*, both seemingly just moving into Norfolk, as well as the scarce butterfly White-letter Hairstreak. The 'Species Quality Index' value of 134 provided by Pantheon was the highest for any of the compartments, although Pantheon did not really draw attention to any strikingly important assemblages. In practice, it will have been the combination of field, hedge and proximity to woodland that were valuable here. In places along the edge of the wood, it was apparent that the underlying chalk was quite close to the surface here, perhaps also explaining something about the different nature of this compartment.

The field itself was unploughed and weedy, had been grazed by sheep previously, and is apparently also somewhat susceptible to wetness at times, this latter probably related to it being on the north side of the woodland. All of this speaks of a wide range of micro-habitats which will all be exploited by different groups of invertebrates. Future maintenance of this diversity will be valuable here. Perhaps some more exposure of the chalk, as a small 'cliff' could provide more opportunities for nesting bees and wasps.

COMPARTMENT E



A total of 192 species was recorded in this compartment, including 35 that were recorded nowhere else. Of these, eight had measures of conservation status. The Pantheon analysis picked out this section as one with a notably high number of species in the 'rich flower resource' assemblage. This margin had a good range of flowers (including a sown 'wildflower' mix), which themselves attracted 16 species of bees, whilst suction-sampling of this margin found a number of noteworthy ground beetles and ground bugs. The hedge line was also important, containing a number of mature trees which supported a wide range of species. White Bryony *Bryonia dioica* in the hedge supported the scarce picture-winged fly *Goniglossum wiedemanni*.

Overall, this is a nice mixed habitat. Managing the hedge and associated trees to best practice will be important, including retaining any dead or decaying wood within the line of the hedge. Retaining a wide flowery margin, albeit with plenty of bare or sparsely-vegetated ground, should maintain good levels of invertebrate diversity here.

COMPARTMENT F



A total of 171 species was recorded in this compartment, including 24 that were recorded nowhere else. This was the lowest species total of any of the compartments, perhaps related to the rather open cross-field nature of much of the site. This beetle bank was less well-established than the one in compartment G also, and notably less lush in terms of vegetation. However, eight species with conservation status were recorded, those having a wide range of habitat requirements, including floral resources, bare ground and dry grassland, and including the Vulnerable and seldom-recorded fly *Dolichopus agilis*. The hedge and trees at the eastern end were clearly different in nature to the rest of the compartment, and consequently added to the species tally considerably.

A number of predatory beetles and bugs were found along the beetle bank, and it would be interesting to compare their diversity between this baseline survey and a potential future survey a few years hence. More in-depth study of the species present in the bank, and extending out into the field, would be even better tackled by use of pitfall traps.

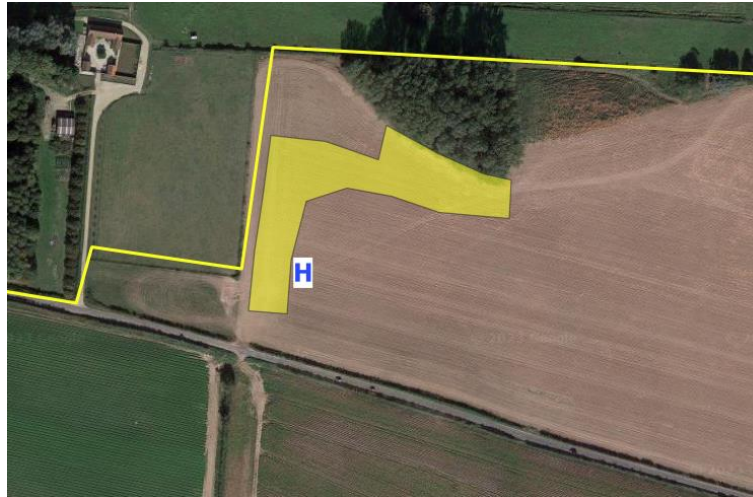
COMPARTMENT G



A total of 180 species was recorded in this compartment, including 33 that were recorded nowhere else. As with compartment F, this somewhat lower than average total was presumably related to the in-field nature of most of the survey, although added diversity was ensured through the inclusion of a small amount of the eastern hedge. Eight species with conservation status were noted here, including the scarce fly *Cistogaster globosa* on more than one occasion, hunting the Bishop's Mitre shieldbug *Aelia acuminata*. The Vestal *Rhodometra sacraria*, a scarce migrant moth, was also noted along the bank in September.

Although the reporting of these surveys focuses mostly on species diversity, some species were notably more abundant along this beetle bank when compared to that in compartment F. In particular, the beetle *Cordylepherus viridis* was extremely common here in May; this is a very distinctive and visible green beetle which develops as a larva in dead wood but the adult beetles disperse to feed on pollen in flower-rich areas. Additionally, the wasps *Cerceris ruficornis* and *C. quinquefasciata* were also common along the bank, and will have been foraging out in the adjacent clover leys on the clover-feeding weevils. Maintenance of the bank as a diverse area of flowery grassland should ensure a good diversity of insects into the future, including many predators of insect pests.

COMPARTMENT H



A total of 219 species was recorded in this compartment, including 65 that were recorded nowhere else. This particularly high level of speciality was clearly related to the presence of the poplar plantation, and associated other trees and scrub, as well as the proximity of the wetter grazing marshes and saltmarshes a short distance to the north. Indeed, this land itself may well have been saltmarsh in the past, prior to the seawall constructed a short way to the north. The Pantheon analysis drew attention to the diversity of the 'rich flower resource' assemblage (23 bee species were noted here), but also the 'bark and sapwood decay' score was higher than for most other compartments. This latter related to dead and decaying poplar wood, with associated species like the flies *Gnophomyia viridipennis* and *Solva marginata*. The proximity of the coast explained the presence of the bee *Colletes halophilus* and the spider *Argenna patula*, amongst others. The sparsely-vegetated flowery margins supported both the rare bug *Brachycarenum tigrinus* and the rare sawfly *Tenthredo baetica*.

Overall, the invertebrate diversity of this area is well served by ensuring the persistence of a good 'scruffy edge' to the poplar plantation, and the retention of wide flower-rich margins.

CONCLUSIONS

Invertebrate surveys at Deepdale in 2022 revealed a rich aspect to the farm's biodiversity that would likely otherwise have gone largely unnoticed. In-depth studies of this sort emphasise that many species can thrive in a modern farmed landscape, including some considered rare or threatened. This is especially the case where attention is paid to enhancement of the environment, as at Deepdale.

As the report makes clear, however, there can be very many species of insects present in quite a small area – and indeed, there will be many more that went undetected by the surveys. Developing conservation plans for every species individually is clearly impractical and there is sense in trying to create a generally biodiversity-sympathetic environment alongside our needs as humans to produce food and other ecosystem services from the land. Organic farming is one of a range of such approaches, and it is interesting and valid to investigate the effects on biodiversity from going organic. Given that Deepdale Farm is in the early stages of making this transition to organic from the more conventional approach, this was an excellent time to undertake this baseline study of the invertebrates on the farm. It is hoped that the information and insights provided by this report are valuable in guiding some of the development of Deepdale in the coming years.

One of the stated aims of this Farming in Protected Landscapes project was “to repeat surveys in 2025 to allow for a comparison, in the final year of our five-year mid-tier Countryside Stewardship agreement.” This would seem a good opportunity to assess any impacts of the change in overall farm management approach on invertebrate biodiversity.

Additionally, one other stated aim of the project was that “results, methodology and any other learning will be shared with peers, NNNS, other interested parties and the press”. It is hoped that dissemination of this report can form a core part of achieving this aim, and the author would be very happy to discuss the project and its findings with anyone interested in learning more about farmland invertebrate biodiversity. It would be particularly interesting to survey other farms (nearby or further afield) in a consistent manner; a larger dataset can only bring benefits in terms of understanding.

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APPENDIX 1: ANNOTATED LIST OF INVERTEBRATES RECORDED AT DEEPDALE FARM DURING 2022 (TIMED SURVEYS ONLY)

ARACHNIDA (SPIDERS AND ALLIES)

ARANEIDAE

Agalenatea redii

A widespread spider in southern Britain, extending to south-west Scotland. Favours heather and gorse, but also in rough grassland. [Compartments: ABFG]

Araneus diadematus (Garden Spider)

A common spider throughout Britain, spinning large orb webs in taller vegetation in woodland, scrub, hedgerows and gardens. [Compartments: AC]

Araneus quadratus

A widespread spider throughout Britain, spinning large orb webs. Variably coloured, and when adult amongst the heaviest of British spiders. [Compartments: H]

Araniella opisthographa

A very common spider across southern Britain, although more local further north, spinning its webs particularly in woodland, scrub and hedgerows. [Compartments: BEGH]

Gibbaranea gibbosa

A distinctive arboreal spider, frequent and widespread in southern Britain in both woodland and more open habitats. [Compartments: EF]

Hypsosinga pygmaea

A small, well-marked spider that occurs on low vegetation, widespread but fairly uncommon throughout much of Britain. [Compartments: B]

Mangora acalypha

A distinctively-marked spider, found mostly on low vegetation. Occurs widely in southern England and Wales and seems to be undergoing a period of rapid expansion at present. [Compartments: CDEFG]

Zygiella atrica

A widespread but patchily distributed spider across much of Britain, mostly found on trees and thorny bushes but also on rocks, metal signposts and other substrates. [Compartments: G]

CLUBIONIDAE

Clubiona brevipipes

A common spider associated with bushes and trees where it can be found under bark and within the canopy, widespread throughout Britain although more sparse further north. [Compartments: A]

Clubiona pallidula

A local but widespread spider, typically found on trees and shrubs but also at ground level and in buildings. [Compartments: A]

Clubiona terrestris

A common spider, especially in the south of Britain. Mostly found at ground level, particularly in leaf litter, and will occasionally venture indoors. [Compartments: A]

CORINNIDAE

Phrurolithus festivus

A small spider associated with more open habitats, in both dry and damp conditions. Widespread in southern Britain and scattered north to central Scotland. [Compartments: BDE]

DICTYNIDAE

Argenna patula

A very local spider, found on estuaries and saltmarshes where it can be frequent. Mostly found in East Anglia and around the Thames Estuary, with scattered localities along the south and west coasts of Britain. Status: Nationally Scarce [Compartments: H]

Dictyna uncinata

A widespread spider but with relatively few records north of Yorkshire, or in Wales and the south-west. Most commonly found in scrub and woodland where it occurs in bushes and trees. [Compartments: H]

GNAPHOSIDAE

Drassyllus pusillus

A fairly uncommon spider, patchily distributed across much of Britain but particularly the south. Has a preference for open, dryish areas, and often found under stones and in tussocks. [Compartments: B]

HAHNIIDAE

Hahnia nava

A small and non-descript ground-dwelling spider, widespread across Britain especially in the south. [Compartments: H]

LINYPHIIDAE

Agyneta rurestris

A small money spider, one of the commonest spiders in British grasslands and on cultivated land. Builds a small horizontal sheet web with which to catch its prey. [Compartments: BCEFGH]

Bathyphantes gracilis

A ubiquitous money spider, common in grassland and undergrowth of all kinds across most of Britain. [Compartments: ACDG]

Dicymbium nigrum

A small money spider, difficult to distinguish from *Dicymbium brevisetosum*, but *nigrum* appears to be much more widespread, found in a wide variety of habitats. [Compartments: A]

Diplostyla concolor

A common and widespread money spider, found in a wide range of habitats although mostly at ground level. Occurs across much of Britain. [Compartments: A]

Erigone atra

One of the commonest spiders, found ubiquitously in all habitats, mostly at or near ground level. [Compartments: BCDEFG]

Erigone dentipalpis

A very common and widespread money spider throughout most of Britain, found mostly at or near ground level in most habitats. [Compartments: BCDF]

Erigone promiscua

A small money spider, widespread in the north and west but scarce and localised in the south-east. Frequents the ground layer in more open habitats. [Compartments: DFG]

Mermessus trilobatus

A North American money spider, first recorded in Europe in Germany in the 1970s, since when it has spread to Britain from 2007 onwards. Occurs mostly on or close to the ground in a range of habitats, and is now well established (and still spreading) in much of southern England. [Compartments: E]

Microlinyphia pusilla

A very common and widespread money spider found in a wide range of habitats but especially grasslands. [Compartments: G]

Oedothorax apicatus

A widespread money spider in much of southern Britain, characteristic of open disturbed habitats including agricultural fields. [Compartments: ACFG]

Pelecopsis parallela

A widespread but somewhat localised money spider, occurring in a variety of habitats across southern Britain. [Compartments: D]

Tenuiphantes tenuis

A very common spider (the most frequently recorded species by the Spider Recording Scheme) and found in most habitats but especially more open, lowland situations. [Compartments: ABCDEFGH]

LYCOSIDAE

Pardosa prativaga

A widespread and locally abundant wolf spider in southern Britain, but much rarer to the north; found in a wide range of open habitats including wetlands. [Compartments: BEGH]

Pardosa pullata

A very common and widespread wolf spider, found in most open habitats across Britain. [Compartments: GH]

PHALANGIIDAE

Mitopus morio

A ubiquitous and numerous harvestman, found in all habitats across Britain. [Compartments: A]

Paroligolophus agrestis

One of the most abundant harvestman species in Britain, occurring both on the ground and in trees; can be recorded throughout the year but most prominent in late summer and autumn. [Compartments: ADFGH]

Phalangium opilio

A common harvestman, widespread in the south but more coastal in Scotland. Occurs in a wide range of mainly open, warm habitats, favouring lower levels of vegetation. [Compartments: BCDEFG]

Rilaena triangularis

A common and widespread harvestman, generally found in lower layers of woodland and grassland. [Compartments: ABCDEFG]

PHILODROMIDAE

Philodromus aureolus

A widespread spider in wooded habitats across much of Britain, occurring mostly on bushes and trees. [Compartments: H]

Philodromus dispar

A common and widespread spider north to Cumbria, found in wooded habitats at a range of levels; will also come into houses. [Compartments: H]

PISAURIDAE

Pisaura mirabilis (Nursery Web Spider)

A common, large spider across much of Britain, easily recognised and readily detected as in tall vegetation where it commonly sits openly on leaves. [Compartments: ABCEFH]

TETRAGNATHIDAE

Metellina mengei

A widespread and common large spider, spinning orb-webs in almost any habitat and found across much of Britain. [Compartments: A]

Metellina segmentata

A widespread and common large spider, spinning orb-webs in almost any habitat and found across much of Britain. [Compartments: AD]

Pachygnatha degeeri

A widespread spider, common at ground-level in many habitats across much of Britain. [Compartments: ABCDEGH]

Tetragnatha extensa

A common and widespread spider across much of Britain, spinning orb-webs on low vegetation, especially in waterside habitats. [Compartments: G]

Tetragnatha montana

A common and widespread spider across much of Britain, spinning orb-webs on low vegetation, and less closely associated with wetland habitats than *Tetragnatha extensa*. [Compartments: H]

Tetragnatha nigrita

A widespread but generally local and uncommon spider in the southern half of Britain, mostly found on trees and shrubs near water although sometimes also in drier situations. [Compartments: F]

Theridiidae

Anelosimus vittatus

A common spider throughout England, although more local in Scotland and Wales. Occurs mostly on tree foliage, although sometimes also on bushes and tall plants. [Compartments: ABCDE]

Enoplognatha ovata

A very widespread and generally abundant spider, typical of open habitats with low vegetation. [Compartments: ABCDEFG]

Neottiura bimaculata

A widespread spider, particularly in southern Britain where it is common on low vegetation and bushes in a variety of habitats. [Compartments: ABCDEFH]

Phylloneta impressa

A widespread and locally frequent spider in southern Britain, but scarcer further north and west, found mostly on gorse, heather and thorny shrubs. [Compartments: CG]

Phylloneta sisypbia

A widespread and common spider in much of Britain, found especially on gorse and heather but also a variety of other trees and shrubs. [Compartments: C]

Theridion varians

A common and widespread spider in most of England, but more local elsewhere across Britain, favouring shrubs and trees. [Compartments: B]

Thomisidae

Diaea dorsata

A striking green spider, widespread but somewhat local across southern Britain where it is strongly associated with woodland and can be found on bushes and trees. [Compartments: A]

ISOPODA (WOODLICE)

ARMADILLIDIIDAE

Armadillidium vulgare (Common Pill Woodlouse)

A very common woodlouse in south-eastern Britain, although more local to the north and west. [Compartments: ACDEG]

PHILOSCIIDAE

Philoscia muscorum (Common Striped Woodlouse)

An abundant woodlouse in much of lowland Britain but more sparse further north. [Compartments: AB]

PORCELLIONIDAE

Porcellio scaber (Common Rough Woodlouse)

An abundant woodlouse throughout Britain, found under stones and dead wood but will also readily climb walls and trees. [Compartments: ABCF]

MYRIAPODS (CENTIPEDES AND MILLIPEDES)

HENICOPIDAE

Lamyctes emarginatus

A centipede, originally native to Australasia but has been spread worldwide and now recorded widely throughout Britain. Typically favours damper habitats and often recorded in late summer. [Compartments: D]

JULIDAE

Ommatoiulus sabulosus (Striped Millipede)

A distinctively-marked millipede, widespread across much of Britain except central-southern England. Found in many habitats although showing a preference for sandier substrates. [Compartments: A]

ODONATA (DRAGONFLIES)

AESHNIDAE

Aeshna cyanea (Southern Hawker)

A common and widespread large dragonfly throughout much of Britain, particularly in the south. Requires ponds for the (longer) larval phase of its life, but the adult insects can wander widely through any habitats. [Compartments: ADEF]

Aeshna mixta (Migrant Hawker)

A fairly large dragonfly, which used to be seen as a migrant but is now a common established resident species throughout much of Britain (although still more local in Scotland). It can be particularly numerous in the late summer. Adult insects regularly occur well away from breeding waterbodies. [Compartments: A]

COENAGRIONIDAE

Coenagrion puella (Azure Damselfly)

A small blue damselfly, occurring commonly throughout almost all of Britain. Mostly found near pools and streams, but adults will wander more widely. Larvae are aquatic predators. [Compartments: H]

Enallagma cyathigerum (Common Blue Damselfly)

A small blue damselfly, occurring commonly throughout almost all of Britain. Mostly found near pools and streams, but adults will wander more widely. Larvae are aquatic predators. [Compartments: H]

Pyrrosoma nymphula (Large Red Damselfly)

A very common and widespread damselfly throughout most of Britain using a wide range of still and flowing water. Usually the first damselfly to emerge each spring. [Compartments: H]

LESTIDAE

Chalcolestes viridis (Willow Emerald Damselfly)

A small green damselfly, first recorded in Britain in 2007 but spreading rapidly subsequently across south-east England. Generally found in wetland habitats with overhanging vegetation (especially willows *Salix*) but can also be encountered in the wider countryside as it disperses. [Compartments: H]

LIBELLULIDAE

Libellula quadrimaculata (Four-spotted Chaser)

A medium-sized dragonfly, widespread throughout Britain and can be locally common, preferring well-vegetated still waterbodies. [Compartments: G]

Orthetrum cancellatum (Black-tailed Skimmer)

A medium-sized dragonfly, fairly frequent in southern and central England and south Wales, and more local into northern England. Frequent around a range of still waters, including quite small ponds, and can often be encountered away from water including in arable fields. [Compartments: G]

Sympetrum sanguineum (Ruddy Darter)

A medium-sized red dragonfly, found widely through southern and central England and Wales and seemingly expanding northwards. Found in areas with shallow water; the larvae are aquatic predators. [Compartments: H]

Sympetrum striolatum (Common Darter)

A medium-sized red dragonfly, found commonly across the whole of Britain and particularly numerous in the late summer and autumn. Found in areas with shallow water but will wander widely; the larvae are aquatic predators. [Compartments: ADFGH]

ORTHOPTEROIDS (GRASSHOPPERS AND ALLIES)

ACRIDIDAE

Chorthippus albomarginatus (Lesser Marsh Grasshopper)

An increasingly widespread grasshopper, previously found in damper habitats in the south-east but increasing north-west and also being found in drier grasslands, up to a line between Yorkshire and south Wales.

[Compartments: AFG]

Chorthippus brunneus (Field Grasshopper)

A very common grasshopper in southern Britain although more coastal further north. Can be abundant where it occurs, particularly amongst shorter grasses. [Compartments: ABCDEFGH]

Pseudochorthippus parallelus (Meadow Grasshopper)

A very common grasshopper across most of Britain. Can be abundant where it occurs, preferring long grasses.

[Compartments: ACD]

CONOCEPHALIDAE

Conocephalus fuscus (Long-winged Cone-head)

A bush-cricket, formerly very rare but has spread rapidly and now widespread in a range of open grassy habitats, north to a line between South Wales and the Humber. [Compartments: H]

FORFICULIDAE

Forficula auricularia (Common Earwig)

A familiar and ubiquitous insect, often found under bark, in log-piles, or more generally around trees and shrubs. [Compartments: ABCDEFGH]

MECONEMATIDAE

Meconema thalassinum (Oak Bush-cricket)

A common bush-cricket in the southern half of Britain, present on oaks *Quercus* but also many other trees and shrubs in woods, scrub and gardens. [Compartments: F]

PHANEROPTERIDAE

Leptophyes punctatissima (Speckled Bush-cricket)

A common bush-cricket in the southern half of Britain, found widely on many trees and shrubs.

[Compartments: CE]

TETRIGIDAE

Tetrix subulata (Slender Ground-hopper)

A fairly widespread small grasshopper in southern Britain north to Yorkshire. Occurs in damp unshaded habitats around bare mud and short vegetation. [Compartments: H]

Tetrix undulata (Common Ground-hopper)

A widespread small relative of the grasshoppers, occurring locally through much of Britain in a range of habitats. [Compartments: A]

TETTIGONIIDAE

Roeseliana roeselii (Roesel's Bush Cricket)

A large bush-cricket, previously very local but has expanded its range and is now common in many areas, north to Yorkshire. Inhabits areas with taller coarse vegetation. Omnivorous, but mostly herbivorous.

[Compartments: ADFGH]

HEMIPTEROIDS (BUGS)

ACANTHOSOMATIDAE

Acanthosoma haemorrhoidale (Hawthorn Shieldbug)

A large shieldbug, widespread and common throughout Britain and showing continued expansion northwards.

[Compartments: ACH]

ANTHOCORIDAE

Anthocoris confusus

A small flower bug, common and widespread on a wide variety of trees across much of Britain.

[Compartments: CE]

Anthocoris nemorum (Common Flower Bug)

An abundant flower bug across the UK, favouring lower vegetation but can be found on almost any plant; a predatory species. [Compartments: ABCDEFGH]

Buchananiella continua

A small flower bug, first recorded in Britain in 1995 since when it has spread north as far as Yorkshire.

[Compartments: C]

Orius laevigatus

A small flower bug, common in a range of habitats in the southern half of Britain, feeding on thrips and aphids and sometimes deployed as a means of biological pest control. [Compartments: BCE]

Orius laticollis

A small flower bug, noted locally across the southern half of Britain. [Compartments: E]

Orius niger

A small flower bug, noted commonly on low plants across the southern half of Britain. [Compartments: ABCDFGH]

Temnostethus gracilis

A small flower bug, occurring widely across most of Britain. [Compartments: E]

APHROPHORIDAE

Aphrophora alni (Alder Spittlebug)

A large froghopper, common and widespread across most of Britain, occurring on a wide range of deciduous trees and shrubs. [Compartments: H]

Neophilaenus lineatus

A very common froghopper in grasslands across the whole of Britain. [Compartments: H]

BERYTIDAE

Berytinus minor

The most widespread and numerous stiltbug, occurring north to southern Scotland in a range of grassland habitats and feeding on restharrow *Ononis* and clovers *Trifolium*. [Compartments: D]

Neides tipularius

A large stilt bug, occurring locally around the coasts of England and Wales, and inland in sandy areas such as the Brecks. Found on dunes and heaths, as well as weedy arable fields. [Compartments: E]

CICADELLIDAE

Anaceratagallia ribauti

A small leafhopper, reasonably common in dry grassy areas in southern England and Wales. [Compartments: BD]

Arthaldeus pascuellus

A small leafhopper, common widespread in dry grasslands across much of Britain. [Compartments: A]

Eupteryx melissae

A small leafhopper, occurring widely in southern Britain and more locally further north, found commonly on sages *Salvia*, mallows *Malva* and other plants. [Compartments: B]

Eupteryx urticae

A small leafhopper, almost ubiquitous on nettles *Urtica* but also on other low plants too, widespread across Britain. [Compartments: G]

Ledra aurita

A large and unmistakable leafhopper, common and widespread north to Yorkshire, found on a range of trees, especially oaks *Quercus*. [Compartments: A]

Megophthalmus scabripennis

A leafhopper, widespread on grasses north to Yorkshire, mostly in sandy areas. [Compartments: H]

Megophthalmus scanicus

One of a pair of very similar leafhoppers, difficult to separate. Seems to be a reasonably common species in grassy habitats throughout much of Britain. [Compartments: AC]

Mocydiopsis attenuata

A small leafhopper, occurring locally in grassy areas in southern Britain, preferring calcareous districts. [Compartments: A]

Oncopsis flavicollis

A leafhopper, widespread throughout most of Britain on birches *Betula*. [Compartments: C]

Stenidiocerus poecilus

A leafhopper, found locally in southern Britain on Black Poplar *Populus nigra* and its hybrids. [Compartments: H]

COREIDAE

Coreus marginatus (Dock Bug)

A large squashbug, occurring commonly amongst docks *Rumex* and related plants from Yorkshire southwards. [Compartments: AD]

Coriomeris denticulatus (Denticulate Leatherbug)

A widespread coreid bug across England and Wales, although seldom north of Yorkshire, found in dry open habitats in association with Black Medick *Medicago lupulina* and related plants. [Compartments: DH]

Gonocerus acuteangulatus (Box Bug)

Historically very rare and confined to Box Hill in Surrey, this large squashbug has expanded its range dramatically in recent years and is now common and widespread as far north as Yorkshire. Now most frequently found on Hawthorn *Crataegus* and Buckthorn *Rhamnus*. [Compartments: CDH]

Syromastus rhombeus (Rhombic Leatherbug)

A distinctively-shaped coreid bug, found locally south of a line between the Wash and south Wales, historically coastal in distribution but has shown a recent expansion inland. Found in dry open habitats in association with a range of plants in the Caryophyllaceae. [Compartments: CDH]

CYDNIIDAE

Legnotus limbosus (Bordered Shieldbug)

A small shieldbug, widespread in England and Wales north to Yorkshire and associated with bedstraws *Galium*. [Compartments: B]

ELIPSOCIDAE

Elipsocus abdominalis

A small barkfly, widespread on a wide range of trees across much of Britain. [Compartments: F]

LYGAEIDAE

Cymus claviculus

A groundbug found locally across southern Britain in generally drier habitats than others in the genus. [Compartments: D]

Drymus ryei

A dark ground bug, fairly common and widespread throughout many parts of Britain. [Compartments: D]

Drymus sylvaticus

A dark ground bug, fairly common and widespread throughout many parts of Britain. [Compartments: CD]

Kleidocerys resedae (Birch Catkin Bug)

An abundant lygaeid bug on birches *Betula* throughout Britain; also occurs on alders *Alnus* although there is debate as to whether this represents a separate species. [Compartments: EH]

Megalonotus chiragra

A dark ground bug, found widely in grassland habitats in the southern half of Britain. [Compartments: H]

Megalonotus praetextatus

A dark ground bug, rather local on warm, well-drained soils in southern Britain, especially in coastal areas and in the Brecks. Status: Notable B [Compartments: E]

Metopoplax ditomoides

A small ground bug, historically a rare vagrant but has recently become established and now spreading northwards in southern England. Favours warm, sparsely-vegetated habitats. [Compartments: D]

Nysius huttoni

A small groundbug, actually native to New Zealand and first recorded in Britain around 2007, since when it has spread rapidly and can now be the commonest member of its genus in many bare ground habitats in southern Britain. [Compartments: ABCDEFGH]

Nysius senecionis

A small groundbug, unrecorded in Britain until 1992 but now common and widespread as far north as Yorkshire. It favours open habitats, particularly associated with ragworts *Senecio* and related plants. [Compartments: ABCDEFGH]

Peritrechus nubilus

A ground bug, locally distributed in a variety of habitats across south-east England. [Compartments: ADF]

Scolopostethus affinis

A small ground bug, common and widespread throughout Britain, often associated with nettles *Urtica*. [Compartments: CDE]

Scolopostethus thomsoni

A small ground bug, common and widespread throughout Britain, often associated with nettles *Urtica*. [Compartments: C]

Stygnocoris fuliginus

A small dark ground bug, common and widespread throughout Britain in grassy habitats. [Compartments: D]

Taphropeltus contractus

A dark ground bug, found widely in dry habitats across southern Britain and becoming more coastal further north. [Compartments: DFG]

MIRIDAE

Amblytylus nasutus

A greenish-yellow plant bug, found widely in dry grasslands across southern Britain. [Compartments: AF]

Apolygus spinolae

A green plant bug, found commonly throughout Britain on a range of taller plants such as Creeping Thistle *Cirsium arvense* and Meadowsweet *Filipendula ulmaria*. [Compartments: AD]

Atractotomus mali

A small plant bug, found commonly throughout the southern half of Britain on apple *Malus* and hawthorn *Crataegus*, the main foodplants although the bug is also partly predatory. [Compartments: BCE]

Campyloneura virgula

A common and colourful predatory plant bug, found widely throughout Britain on a range of deciduous trees. [Compartments: B]

Capsus ater

A dark plant bug, common and widespread throughout Britain in grasslands where it feeds on various grasses. [Compartments: B]

Chlamydatus pullus

A very small dark plant bug, recorded widely across Britain but easily overlooked, often found on sparsely-vegetated ground. [Compartments: B]

Closterotomus norwegicus (Potato Capsid)

A common and widespread mirid bug across much of Britain, feeding in meadows and hedgerows on a wide range of herbaceous plants. [Compartments: ABCDEFGH]

Closterotomus trivialis

A large plant bug, first recorded in Britain in 2009 and has now been widely recorded across England, perhaps having been introduced multiple times in horticultural produce. Occurs in gardens and more natural habitats and seems to feed on a wide range of plants. [Compartments: ABCDE]

Deraeocoris lutescens

A small, predatory bug, found widely across southern Britain, most commonly noted on trees and shrubs. [Compartments: H]

Dicyphus errans

A small predatory plant bug, widespread throughout England and Wales on a variety of herbaceous plants. [Compartments: CF]

Dicyphus globulifer

A small predatory plant bug, widespread throughout Britain, found on campions *Silene*. [Compartments: F]

Dryophilocoris flavoquadrimaculatus

A distinctively marked small plant bug, found throughout Britain during the spring on oaks *Quercus*. [Compartments: E]

Europiella artemisiae

A small plant bug, found widely throughout Britain on Mugwort *Artemisia vulgaris*. [Compartments: H]

Heterotoma planicornis

An abundant and distinctive mirid bug, widespread across southern Britain on various plants and trees, particularly nettles *Urtica*. Diet includes small insects, unripe fruits and plant buds. [Compartments: ABCD]

Leptopterna dolabrata (Meadow Plant Bug)

A large plant bug, widespread and often abundant in grassland habitats, particularly in slightly damper situations. [Compartments: AEG]

Liocoris tripustulatus

A small mirid bug, found commonly across Britain wherever Stinging Nettle *Urtica dioica* occurs. [Compartments: ABD]

Lygocoris pabulinus (Common Green Capsid)

A green plant bug, very common and widespread on a range of woody and herbaceous plants, especially nettles *Urtica*. [Compartments: H]

Lygus maritimus

A plant bug, distributed locally around Britain in coastal and inland sandy areas, on a range of plants but particularly mayweeds. [Compartments: B]

Lygus pratensis

Previously a rare southern species, but now a widespread mirid bug throughout much of southern Britain. Tends to be found on fairly low vegetation. [Compartments: ABCDF]

Lygus rugulipennis (European Tarnished Plant Bug)

A common and widespread mirid bug on a range of low-growing plants; occurs throughout most of Britain. [Compartments: BCDEFGH]

Megacoelum infusum

A large plant bug, found commonly across much of England and Wales, on oaks *Quercus* where they feed on sap as well as predating small insects. [Compartments: G]

Miris striatus

A large and colourful plant bug, found throughout much of Britain but more common in the south. Mostly found on oak *Quercus* and hawthorn *Crataegus* where it is predatory on a range of smaller invertebrates. [Compartments: CDEG]

Notostira elongata

An elongate grass bug, widespread and very common in grasslands across southern Britain. [Compartments: EG]

Orthops basalis

A small plant bug, found across much of Britain, generally found on umbellifers. [Compartments: ABC]

Phytocoris ulmi

A long-legged plant bug, widespread and common across much of Britain, found in woods and hedgerows, particularly on hawthorns *Crataegus*. [Compartments: CE]

Phytocoris varipes

A large and common mirid bug in southern Britain, favouring rough grassland where it feeds on flowers and fruits of a range of plants. [Compartments: GH]

Pinalitus cervinus

A small plant bug, widespread across most of Britain, found on a range of deciduous trees. [Compartments: BEF]

Pithanus maerkelii

A distinctive small plant bug, rather ant-like in appearance, found in damp grasslands across most of Britain. [Compartments: A]

Plagiognathus arbustorum

An abundant mirid bug, found throughout the UK on a range of plants, especially nettles *Urtica*. [Compartments: ABCFH]

Plagiognathus chrysanthemii

A very common mirid bug throughout the UK, occurring in dry grasslands on a range of plants such as Ragwort *Jacobaea vulgaris* and Yarrow *Achillea millefolium*. [Compartments: ACFG]

Psallus assimilis

A small plant bug, found across southern Britain on Field Maple *Acer campestre*. [Compartments: A]

Psallus perrisi

A small plant bug, found across much of Britain on oaks *Quercus*, mostly in the spring. [Compartments: E]

Psallus varians

A small plant bug, found across much of Britain on oaks *Quercus*. [Compartments: EF]

Rhabdomiris striatellus

A strikingly-patterned plant bug, found across much of Britain but more commonly in the south, frequenting oaks *Quercus*. [Compartments: E]

Stenodema calcarata

A common elongate mirid bug, found throughout the UK in drier grassy habitats. Feeds on the unripe grains of a range of grasses. [Compartments: DEFGH]

Stenodema laevigata

An elongate grass bug, common throughout Britain. Feeds on the unripe grains of a range of grasses. [Compartments: AG]

Stenodema trispinosa

An elongate grass bug, locally distributed in East Anglia and the south-east, generally in wetland habitats, including brackish situations, feeding on sedges *Carex*. [Compartments: G]

Stenotus binotatus (Timothy Grassbug)

A fairly large mirid bug, common and widespread throughout much of Britain in a variety of grassland habitats. [Compartments: ACH]

Trigonotylus caelestialium

An elongate grass bug, found across much of England and Wales and possibly increasing. [Compartments: FGH]

NABIDAE

Himacerus apterus (Tree Damselbug)

A large damselbug, found commonly throughout southern Britain and more sparsely further north. Unlike other members of its family, is mostly found in trees and shrubs. [Compartments: ACEH]

Himacerus mirmicoides (Ant Damselbug)

A large predatory damselbug, common in southern Britain in a variety of dry open habitats. [Compartments: ACDEFG]

Nabis ferus (Field Damselbug)

A predatory damselbug, fairly widespread and common across the south of Britain, but more local in the north. [Compartments: ABCDEFGH]

Nabis limbatus (Marsh Damselbug)

A damsel bug, common and widespread across most of Britain in damper grassland habitats. [Compartments: D]

PENTATOMIDAE

Aelia acuminata (Bishop's Mitre)

A large and distinctive shieldbug found in dry grassy habitats from Yorkshire southwards. [Compartments: ADG]

Dolycoris baccarum (Hairy Shieldbug)

A common shieldbug in southern Britain, becoming increasingly coastal in the north. Found particularly around shrubs and woodland edges, the nymphs feeding on a range of trees. [Compartments: ACDGH]

Eurydema ornata (Ornate Shieldbug)

A strikingly-patterned shieldbug and a recent colonist from the continent, with scattered records across much of south-east England. Status: Nationally Rare [Compartments: D]

Palomena prasina (Green Shieldbug)

A very common shieldbug, widespread north to southern Scotland. Nymphs feed on many deciduous trees and shrubs, particularly Hazel *Corylus avellana*. [Compartments: AGH]

Pentatoma rufipes (Red-legged Shieldbug)

A large shieldbug, widespread and common across much of Britain. Adults are omnivorous, feeding on fruits and insects. Mostly found on trees. [Compartments: AEH]

Troilus luridus (Bronze Shieldbug)

A shieldbug, found widely across England and Wales as well as in much of lowland Scotland, favouring woodland and scrub. [Compartments: D]

PIESMATIDAE

Parapiesma quadratum

A small bug, found mostly on saltmarshes as far north as the Moray Firth, feeding mostly on oraches and Sea Purslane *Atriplex*. Can sometimes be found inland also. [Compartments: E]

PSYLLIDAE

Cacopsylla melanoneura

A small psyllid bug, common and widespread across Britain on hawthorns *Crataegus*. [Compartments: BC]

RHOPALIDAE

Brachycarenum tigrinus

A sizeable bug, a recent colonist from the continent, first recorded in 2003 and since found locally as far north as Lincolnshire. Occurs in warm and sparsely-vegetated habitats. Status: Nationally Scarce [Compartments: DH]

Corizus hyoscyami

A striking red and black bug, formerly very much restricted to south and west coasts, but has shown recent significant expansion inland and northwards to southern Scotland. [Compartments: AD]

Liorhyssus hyalinus

A sizeable bug, historically regarded as a rare vagrant to Britain, but has appeared much more frequently since the 1990s and now recorded locally throughout southern England and Wales. Status: Nationally Scarce
[Compartments: ABF]

Myrmus miriformis

A widespread rhopalid bug in grassland habitats in southern Britain, feeding on various grasses.
[Compartments: C]

Rhopalus subrufus

A widespread rhopalid bug in southern Britain, found in scrubby habitats and woodland clearings, and associated with many plants but particularly St John's-worts *Hypericum*. [Compartments: AE]

Stictopleurus abutilon

A sizeable bug, very rare until the 1990s since when it has recolonised Britain as far north as the Midlands and East Anglia, where it can be locally common in dry grassland habitats. [Compartments: BDGH]

Stictopleurus punctatonervosus

A sizeable bug, very rare until the 1990s since when it has recolonised Britain as far north as Yorkshire, occurring in dry grassland habitats. [Compartments: BCDEGH]

STENOPSOCIDAE

Graphopsocus cruciatus

A distinctively-patterned barkfly, widespread throughout Britain on trees and shrubs. [Compartments: BCEF]

THYREOCORIDAE

Thyreocoris scarabaeoides (Scarab Shieldbug)

A small, ground-dwelling shieldbug, associated with violets *Viola* in dry, open habitats, found locally south of a line between the Humber and South Wales with only a few locations further north. Status: Nationally Scarce
[Compartments: EF]

TINGIDAE

Kalama tricornis

A small lacebug, found locally north to Edinburgh, occurring in herbaceous vegetation. [Compartments: E]

Physatocheila dumetorum

A small lacebug, found widely throughout England and Wales, typically on lichen-covered trees.
[Compartments: EFG]

TRIOZIDAE

Trioza urticae

A small psyllid bug, ubiquitous throughout Britain on nettles *Urtica*. [Compartments: DG]

COLEOPTERA (BEETLES)

ANTHICIDAE

Anthicus antherinus

A small beetle, widespread throughout much of Britain in dry and decaying vegetation. [Compartments: BF]

Notoxus monoceros (Monoceros Beetle)

A distinctive small beetle with a striking horn-like projection from the pronotum. Widespread north to southern Scotland, especially on sandy soils and hence mostly coastal and in the Brecks. [Compartments: ABDFG]

Omonadus formicarius

A small beetle, widespread but local north to southern Scotland, particularly frequenting plant litter. [Compartments: A]

ANTHRIBIDAE

Bruchela rufipes

A small weevil, found very locally in the south-east of England although slowly spreading in range, feeding only on Wild Mignonette *Reseda lutea*. [Compartments: D]

APIONIDAE

Aspidapion aeneum

A small dark weevil, occurring on mallows *Malva*, widespread in southern Britain and more local further north. [Compartments: CDF]

Aspidapion radiolus

A small dark weevil, occurring on mallows *Malva*, widespread in southern Britain and more local further north. [Compartments: BCDFG]

Ceratapion gibbirostre

A small dark weevil, widespread throughout Britain on grassland, feeding on thistles *Cirsium* and *Carduus*. [Compartments: G]

Ceratapion onopordi

A small dark weevil, widespread throughout England and Wales on grassland, feeding on thistles *Cirsium* and *Carduus*. [Compartments: CDF]

Malvapion malvae

A distinctive reddish weevil feeding on mallows *Malva* throughout southern Britain, possibly increasing. [Compartments: BCDF]

Perapion curtirostre

A small black weevil, ubiquitous and abundant on docks and sorrels *Rumex* throughout Britain. [Compartments: H]

Perapion hydrolapathi

A blue-black weevil, common on docks *Rumex* throughout England and Wales, more local in Scotland. [Compartments: D]

Perapion violaceum

A blue-black weevil, common throughout Britain on docks *Rumex*. [Compartments: H]

Protapion apricans

A small black weevil with yellow legs, feeding on Red Clover *Trifolium pratense*, abundant throughout most of Britain. [Compartments: ACDEFGH]

Protapion assimile

A small black weevil with yellow legs, feeding on clovers *Trifolium*, abundant throughout most of Britain. [Compartments: CG]

Protapion fulvipes

A small black weevil with yellow legs, feeding on White Clover *Trifolium repens*; widespread and often very abundant throughout Britain. [Compartments: ACDFGH]

Protapion nigritarse

A small black weevil with yellow legs, feeding on trefoils *Trifolium* in grassland on dry soils, widespread across much of Britain. [Compartments: AD]

Protapion trifolii

A small black weevil with yellow legs, feeding on Red Clover *Trifolium pratense* and Zigzag Clover *T. medium*, widespread and often abundant in England and Wales, becoming more local in Scotland. [Compartments: ABCDEFGH]

Pseudapion rufirostre

A dark weevil feeding on mallows *Malva* throughout England and Wales. [Compartments: BCDFH]

BYTURIDAE

Byturus tomentosus (Raspberry Beetle)

A widespread and often common, found widely throughout most of Britain, associated with brambles *Rubus*. [Compartments: ABH]

CANTHARIDAE

Cantharis cryptica

A small soldier beetle, fairly widespread in damper habitats across much of Britain. [Compartments: BCH]

Cantharis decipiens

A common and widespread soldier beetle, found in wooded areas north to southern Scotland. [Compartments: A]

Cantharis flavilabris

A widespread soldier beetle, found especially in damper habitats and occurring throughout much of Britain. This species was previously known as *Cantharis nigra*, which can cause confusion given that name is now used for another species. [Compartments: H]

Cantharis livida

A large and widespread soldier beetle, found north to central Scotland in a wide range of habitats. [Compartments: B]

Cantharis nigra

A localised soldier beetle, found in fens and marshes north to southern Scotland. This name was previously given to the species now called *Cantharis flavilabris* which can cause confusion. [Compartments: H]

Cantharis nigricans

A widespread soldier beetle, found in a wide range of habitats throughout much of Britain. [Compartments: A]

Cantharis pellucida

A common soldier beetle found in woods and scrub throughout much of Britain. [Compartments: D]

Cantharis rustica

A large and common soldier beetle, found widely in a range of open habitats throughout southern Britain, and more locally further north. [Compartments: ABCDEGH]

Rhagonycha fulva (Common Red Soldier Beetle)

An abundant and ubiquitous soldier beetle, found on flowers (especially umbellifers) across most of Britain. [Compartments: BDEFGH]

CARABIDAE

Acupalpus dubius

A small ground beetle of damper habitats near water, widespread in the south-east and more local further north and west. [Compartments: H]

Amara aenea (Common Sun Beetle)

A medium-sized ground beetle, abundant throughout Britain on moderately dry vegetated, often cultivated soils in open country. [Compartments: DE]

Amara apricaria

A medium-sized ground beetle, found widely on vegetated disturbed soils throughout Britain, but most commonly in eastern England. [Compartments: B]

Amara bifrons

A medium-sized ground beetle, occurring on sandy soils with tall ruderal vegetation, widespread in Britain but more local in the west. [Compartments: A]

Amara eurynota

A medium-sized ground beetle, found under stones in open areas, occurring widely across Britain but more commonly in the south-east. [Compartments: B]

Amara ovata

A medium-sized ground beetle, frequent throughout Britain on dry vegetated, often cultivated soils in open areas. [Compartments: F]

Amara plebeja

A medium-sized ground beetle, abundant throughout Britain on vegetated soils, often cultivated and often near water. [Compartments: D]

Asaphidion flavipes (Yellow-legged Velvetback)

A small ground beetle, favouring damper soils. Locally distributed across Britain, mostly south of central Scotland. Status: Nationally Scarce [Compartments: E]

Badister bullatus

A medium-sized ground beetle, found in a range of open habitats across much of Britain although more coastal in Scotland. [Compartments: C]

Bembidion lampros

A small ground beetle, ubiquitous and often abundant in open habitats across most of Britain. [Compartments: ABCDEFGH]

Bembidion quadrimaculatum

A small ground beetle, preferring somewhat damp, sparsely vegetated soils, widespread across England and Wales but local in southern Scotland. [Compartments: ABCD]

Bembidion tetracolum

A small ground beetle, occurring commonly throughout most of Britain in a wide variety of habitats. [Compartments: ABF]

Bradycellus harpalinus

A small ground beetle, widespread and abundant throughout Britain on dry stony or sandy soils. [Compartments: A]

Bradycellus verbasci

A small ground beetle, widespread and sometimes abundant throughout Britain, favouring somewhat damper soils in both wooded and open situations. [Compartments: A]

Calathus cinctus

A medium-sized ground beetle, found locally throughout Britain on dry sparsely vegetated soils near the coast and on lowland heaths. [Compartments: BG]

Calathus melanocephalus

A medium-sized ground beetle, common and widespread throughout Britain in drier habitats and on cultivated soils. [Compartments: D]

Demetrias atricapillus (Hairy-templed Thatcher)

A small ground beetle, found on dry soils in open habitats, ubiquitous and abundant in the south-east but more local further north and west. [Compartments: AEGH]

Dromius meridionalis (Bark Treerunner)

A small ground beetle, although one occurring on trees, found widely across much of Britain to central Scotland. [Compartments: G]

Harpalus rufipes (Strawberry Seed Beetle)

A large ground beetle, occurring commonly throughout Britain on dry vegetated, often cultivated soils in open areas. [Compartments: B]

Harpalus tardus

A medium-sized ground beetle, occurring on dry, sandy or stony soils throughout much of Britain but most frequently in the south-east. [Compartments: F]

Microlestes minutulus

A small ground beetle, favouring dry stony soils. First discovered in the 1990's but spreading rapidly and now widespread across south-east England. [Compartments: BCE]

Nebria salina (Bare-footed Heart-shield)

A large ground beetle, occurring commonly across most of Britain, preferring drier habitats. [Compartments: G]

Notiophilus aquaticus (Black-legged Springtail-stalker)

A small ground beetle, occurring widely across much of Britain although more locally in the south, mostly on poorer soils. [Compartments: DF]

Notiophilus biguttatus (Common Springtail-stalker)

A very common ground beetle in most of Britain, found especially at ground level but also climbing vegetation to some extent. An active diurnal predator, targeting springtails, mites and small larvae. [Compartments: CDEFG]

Notiophilus palustris (Rough-necked Springtail-stalker)

A small ground beetle, occurring widely across much of Britain with a preference for damper, shaded places. [Compartments: D]

Paradromius linearis (Common Bladerunner)

An abundant small ground beetle, found in grassland (and sometimes climbing vegetation) throughout most of Britain. [Compartments: ABEG]

Philorhizus melanocephalus (Black-headed Stemrunner)

A small ground beetle, found commonly in grassland across England and Wales and more locally in Scotland. [Compartments: H]

Poecilus versicolor (Rainbow Greenclock)

A large ground beetle, found in damp fields, meadows and moors, common and widespread in southern Britain, becoming more local further north. [Compartments: B]

Syntomus foveatus

A small ground beetle, widespread and often abundant on sparsely vegetated soils in open situations, most common in the south-east of Britain. [Compartments: ABCDEFGH]

Syntomus truncatellus

A small ground beetle, found in dry grassland, local and uncommon in the south-east of England and very local elsewhere in Britain. Status: Nationally Scarce [Compartments: E]

Trechus quadristriatus

A common small ground beetle found in a range of habitats including agricultural land where it can sometimes be abundant. Predatory on a range of small invertebrates and thought to be important in controlling some pests such as aphids and Cabbage Root Fly *Delia radicum*. [Compartments: ABCDEFGH]

CERAMBYCIDAE

Grammoptera ruficornis (Common Grammoptera)

A small longhorn beetle, abundant throughout much of England and Wales in the spring, especially on blossom of hawthorn *Crataegus*, but more local in Scotland. [Compartments: AH]

Pogonocherus hispidulus (Greater Thorn-tipped Longhorn Beetle)

A longhorn beetle, found widely but sparsely in woods throughout much of Britain. [Compartments: F]

CERYLONIDAE

Cerylon histeroides

A small beetle, mostly found under bark or in the nests of certain ant species, widespread across much of Britain. [Compartments: A]

CHRYSOMELIDAE

Altica palustris

A leaf beetle, feeding on a wide range of plants and widespread across much of Britain. [Compartments: AE]

Aphthona euphorbiae (Large Flax Flea Beetle)

A very small flea beetle, very common throughout the southern half of Britain. Feeds on a wide range of plants; can be particularly numerous in fields of Flax *Linum usitatissimum*. [Compartments: BCEH]

Bruchidius varius

A seed beetle, first recorded in Britain in 1994 but has spread rapidly and now widespread across central and south-east England, mostly on vetches *Vicia* and blossom of hawthorn *Crataegus*. [Compartments: AC]

Bruchus rufimanus (Bean Seed Beetle)

A seed beetle, occurring on a range of leguminous herbs in both wooded and more open habitats, and occasionally on stored beans, widespread throughout England but very local in Wales. [Compartments: BCEFG]

Cassida rubiginosa (Thistle Tortoise Beetle)

A common tortoise beetle, feeding on a range of plants and widespread across much of Britain. [Compartments: D]

Chaetocnema concinna (Mangold Flea Beetle)

A small flea beetle, very common and widespread north to southern Scotland and more local further north. Feeds on a range of plants in the Polygonaceae (docks etc.) and Amaranthaceae (including beet crops). [Compartments: BH]

Crepidodera aurata (Willow Flea Beetle)

A common shiny flea beetle on the leaves of willows *Salix* (and sometimes poplars *Populus*), common particularly in southern Britain. [Compartments: H]

Gastrophysa polygoni

A strikingly coloured leaf beetle, feeding mostly on the leaves of knotgrasses *Polygonum*, occurring widely and often commonly throughout much of Britain. [Compartments: ABGH]

Lochmaea crataegi (Hawthorn Leaf Beetle)

A medium-sized reddish leaf beetle, found commonly on hawthorn *Crataegus* (and other trees) across England and Wales, although is local in Scotland. [Compartments: ABCDEFGH]

Longitarsus ballotae

A small flea beetle, local in south-east England and found on Black Horehound *Ballota nigra*. Status = Nationally Scarce [Compartments: B]

Longitarsus dorsalis

A small flea beetle, found on ragworts *Senecio*, widespread in the south-east of England and increasing elsewhere. [Compartments: E]

Longitarsus pratensis

A very small flea beetle, occurring on plantains *Plantago*. Widespread throughout southern Britain but more local further north. [Compartments: H]

Neocrepidodera transversa

A small red-brown flea beetle, feeding on a wide range of plants and common throughout most of Britain. [Compartments: A]

Phratora laticollis

A small bluish leaf beetle, feeding on the leaves of a range of trees but mostly frequently on poplars *Populus*, found widely across much of Britain. [Compartments: H]

Phyllotreta nigripes (Turnip Flea Beetle)

A small flea beetle, found widely throughout England but very local in Wales and Scotland, feeding on a wide range of plants. [Compartments: BDF]

Phyllotreta vittula (Barley Flea Beetle)

A small flea beetle, widespread in central and south-east England but more local elsewhere, feeding on a range of Brassicaceae as well as some grasses and cereals crops. [Compartments: B]

Podagrica fuscipes (Mallow Flea Beetle)

A small flea beetle, feeding on the leaves of mallows *Malva* and related plants; previously very restricted in range in East Anglia but appears to be expanding its range. Status: Nationally Scarce [Compartments: CD]

Psylliodes chrysocephala (Cabbage-stem Flea Beetle)

A flea beetle, feeding on a wide range of plants but mostly brassicas, widespread and sometimes very common in south-eastern Britain, becoming more local elsewhere. [Compartments: ABDFGH]

Sphaeroderma testaceum

A small reddish flea beetle, occurring mostly on thistles *Cirsium* and *Carduus*, widespread throughout England and Wales but more local in Scotland. [Compartments: A]

COCCINELLIDAE

Anisosticta novemdecimpunctata (Water Ladybird)

A distinctive, black-spotted reddish ladybird, strongly associated with waterside vegetation and occurring widely north to southern Scotland. [Compartments: H]

Calvia quattuordecimguttata (Cream-spot Ladybird)

A widespread, white-spotted orange ladybird, found across most of Britain, usually in wooded habitats. [Compartments: BD]

Coccinella septempunctata (7-spot Ladybird)

An abundant and very familiar ladybird, found throughout Britain in most habitats, feeding on aphids. [Compartments: ABCDEFGH]

Coccinella undecimpunctata (11-spot Ladybird)

A widespread ladybird in southern Britain, becoming more local further north, found mostly on low vegetation. [Compartments: F]

Exochomus quadripustulatus (Pine Ladybird)

A common small ladybird on a wide range of trees (not just pines), widespread in southern Britain and spreading northwards. [Compartments: B]

Halyzia sedecimguttata (Orange Ladybird)

A common and distinctive ladybird, readily found on trees throughout much of Britain. [Compartments: A]

Harmonia axyridis (Harlequin Ladybird)

A large ladybird of very variable appearance, native to E Asia and first detected in Britain in 2003, since when it has become extremely abundant in most of England and Wales and is spreading still in Scotland. Can be found in most situations and forms large aggregations in autumn for hibernation. [Compartments: AH]

Hippodamia variegata (Adonis' Ladybird)

A small, black-spotted red ladybird, found on low vegetation in dryer habitats in southern Britain. Sometimes numerous and seems to be spreading. [Compartments: ABCDEFGH]

Propylea quattuordecimpunctata (14-spot Ladybird)

A ubiquitous and abundant ladybird in England and Wales, although somewhat more local in Scotland, found on low vegetation in a wide range of habitats. [Compartments: ABE]

Psyllobora vigintiduopunctata (22-spot Ladybird)

A small black-spotted yellow ladybird, occurring widely across much of Britain, favouring grassland habitats. Reasonably common although perhaps declining. [Compartments: ABCEH]

Rhyzobius litura (Pointed-keeled Rhyzobius)

A small and easily overlooked ladybird, common in grassland habitats throughout most of Britain, although more coastal in Scotland. [Compartments: BCDEGH]

Scymnus frontalis (Angle-spotted Scymnus)

A small ladybird, found on low vegetation on dry soils, local and quite scarce in much of England and Wales, particularly in the south-east. [Compartments: H]

Tytthaspis sedecimpunctata (16-spot Ladybird)

A very common ladybird in much of Britain, feeding especially on mildews but also on other fungi plus pollen and nectar. [Compartments: ABCDFGH]

CRYPTOPHAGIDAE

Micrambe ulicis

A small beetle, widespread on Gorse *Ulex* and Broom *Cytisus* throughout much of Britain. [Compartments: CE]

CURCULIONIDAE

Anthonomus bituberculatus

A well-marked weevil occurring on hawthorns *Crataegus* in woods and hedges locally as far north as southern Scotland. [Compartments: B]

Anthonomus pedicularius

A well-marked weevil occurring on hawthorns *Crataegus* in woods and hedges throughout much of England and Wales, but more locally in Scotland. [Compartments: EH]

Ceutorhynchus erysimi

A small shiny blue weevil, feeding on Shepherd's-purse *Capsella bursa-pastoris*, widespread in England and Wales but more local in Scotland. [Compartments: CH]

Ceutorhynchus obstrictus (Cabbage Seed Weevil)

A small weevil feeding on the seeds of a range of brassicas, widespread and often abundant throughout much of Britain. [Compartments: ABCDEFGH]

Ceutorhynchus pallidactylus (Cabbage Stem Weevil)

A small weevil feeding within the stems of a range of brassicas, widespread and often abundant throughout much of Britain. [Compartments: BDEG]

Ceutorhynchus picitarsis

A small weevil feeding within the stems of a range of brassicas, local in south-east and central England and north Wales, appears to be increasing. [Compartments: DFGH]

Ceutorhynchus pyrrhorhynchus

A small weevil, feeding on Hedge Mustard *Sisymbrium officinale*, widespread in England and Wales but more local in Scotland. [Compartments: CD]

Ceutorhynchus typhae

A small weevil feeding on the seeds of a range of brassicas, widespread and often abundant throughout England and Wales, more local in Scotland. [Compartments: DF]

Curculio glandium (Acorn Weevil)

A large weevil with an outsized rostrum, occurring on oaks *Quercus* in woods and hedges in southern England and Wales. [Compartments: AEG]

Dorytomus longimanus

A weevil found on Black Poplar *Populus nigra* and its hybrids, widespread across much of Britain north to southern Scotland and often common where it occurs. [Compartments: H]

Hypera meles

A rather localised weevil in southern England, occurring on Red Clover *Trifolium pratense* in grasslands. [Compartments: C]

Hypera nigrirostris

A weevil occurring mostly on Red Clover *Trifolium pratense*, widespread and often common throughout England and Wales, more local in Scotland. [Compartments: C]

Mecinus labilis

A small weevil found on Ribwort Plantain *Plantago lanceolata*, occurring locally north to southern Scotland, generally quite scarce. [Compartments: D]

Nedyus quadrimaculatus (Small Nettle Weevil)

A ubiquitous weevil on Common Nettle *Urtica dioica*, abundant throughout Britain. [Compartments: ABCG]

Otiorhynchus singularis (Clay-coloured Weevil)

A large weevil, feeding on a wide variety of trees, shrubs and herbaceous plants, widespread and often abundant across Britain. [Compartments: BE]

Phyllobius argentatus (Silver-Green Leaf Weevil)

A brightly-coloured weevil, feeding on a wide variety of trees and shrubs in woods and along hedges, widespread and often abundant across Britain. [Compartments: AGH]

Phyllobius maculicornis (Green Leaf Weevil)

A bright green weevil, feeding on a wide variety of trees, shrubs and sometimes herbaceous plants, widespread across much of Britain. [Compartments: E]

Phyllobius pomaceus (Green Nettle Weevil)

A large weevil, found mostly on Common Nettle *Urtica dioica*, widespread and often abundant across Britain although more local in Scotland. [Compartments: H]

Phyllobius pyri (Common Leaf Weevil)

A large weevil, feeding on a wide variety of trees and shrubs, widespread and often abundant across Britain. [Compartments: ABF]

Phyllobius roboretanus (Small Green Nettle Weevil)

A bright green weevil, feeding on a wide variety of herbaceous plants, shrubs and sometimes trees, widespread and often abundant across England and Wales but local in Scotland. [Compartments: GH]

Polydrusus cervinus

A greenish weevil found on a wide variety of trees across much of Britain, sometimes abundantly. [Compartments: DE]

Rhinoncus pericarpus

A weevil occurring on docks *Rumex* in dry situations, widespread throughout much of Britain. [Compartments: G]

Sitona hispidulus (Clover-root Weevil)

A very common ground-dwelling weevil, feeding on clovers *Trifolium* and a range of related plants throughout the whole of Britain. [Compartments: ABCDEGH]

Sitona lineatus (Pea-leaf Weevil)

An abundant weevil, occurring through Britain. Feeds on a range of species of Fabaceae, including commercially grown peas and beans, with the adults feeding on the leaves whilst the larvae make use of the roots. [Compartments: ABCDEFGH]

Sitona obsoletus

A weevil found on clovers *Trifolium*, widespread and sometimes abundant throughout England and Wales, more local in Scotland. [Compartments: H]

Sitona sulcifrons

A medium-sized weevil, found commonly on clovers *Trifolium* and related plants throughout most of Britain except the far north. [Compartments: CD]

Trichosirocalus troglodytes

A ubiquitous weevil on Ribwort Plantain *Plantago lanceolata*, abundant throughout Britain. [Compartments: BCD]

Tychius picirostris

A small weevil occurring commonly on White Clover *Trifolium repens* and Alsike Clover *T. hybridum*, widespread as far north as central Scotland. [Compartments: BE]

ELATERIDAE

Adrastus pallens

A somewhat localised click beetle of wetter habitats, where it is found on trees such as willows *Salix* and alders *Alnus*. Throughout Britain but scarce in Scotland. [Compartments: A]

Agriotes acuminatus

A widespread and often abundant click beetle, on trees and bushes throughout much of Britain. [Compartments: A]

Agriotes pallidulus

A widespread and often abundant click beetle, on trees and bushes throughout much of Britain. [Compartments: AC]

Athous haemorrhoidalis

An abundant and ubiquitous large click beetle, found on vegetation almost everywhere. [Compartments: ABEG]

Dalopius marginatus

A widespread and common click beetle, found mostly in woods on trees and shrubs, throughout most of Britain. [Compartments: A]

Limenius poneli

A widespread click beetle of grassland habitats, found north to southern Scotland. [Compartments: A]

LATRIDIIDAE

Cartodere bifasciata

A minute scavenging beetle, found in leaf litter in a range of habitats throughout much of Britain. [Compartments: ABG]

Corticarina minuta

A very small brown beetle, found in grass heaps, compost and other decaying vegetation. Widespread across England and Wales, more local in Scotland. [Compartments: GH]

Corticaria gibbosa

A very small brown beetle, almost ubiquitous throughout Britain, favouring grass heaps and other decaying vegetation. [Compartments: ABCEFH]

Enicmus rugosus

A small beetle, very locally distributed, mostly in the south-east, favouring woods and fens where it is associated with fungi and slime-moulds. Status: Notable [Compartments: B]

MELYRIDAE

Cordylepherus viridis

A distinctive green beetle, found on flowers widely across England and Wales. [Compartments: ACEFGH]

Dasytes aeratus

A small beetle, widespread and frequent in wooded areas and along hedgerows across much of Britain but especially further south. [Compartments: E]

Malachius bipustulatus (Malachite Beetle)

A distinctive green beetle, found on flowers in woods and meadows, widely across England and Wales. [Compartments: AH]

NITIDULIDAE

Epuraea aestiva

A small beetle, widespread and abundant across most of Britain, usually found on flowers, especially hawthorn *Crataegus*. [Compartments: A]

Glischrochilus hortensis

An orange-spotted black beetle, widespread north to southern Scotland, found at sap, cut wood or around rotting fruit. [Compartments: B]

Meligethes aeneus (Common Pollen Beetle)

An abundant small pollen beetle, very apparent around brassica crops in summer and readily attracted to anything yellow (including clothing). [Compartments: ABCDEFGH]

OEDEMERIDAE

Oedemera lurida

A very common and conspicuous beetle in southern Britain, although more local further north. Favours open habitats where it can be readily located feeding on open flowers. [Compartments: EFGH]

Oedemera nobilis (Swollen-thighed Beetle)

A very widespread beetle on flowers in grassland, often abundant in the south but more local further north. Males are particularly distinctive. [Compartments: ADFH]

PHALACRIDAE

Olibrus aeneus

A small shining flower beetle, occurring widely in southern Britain on mayweeds *Matricaria*, Tansy *Tanacetum* and mugworts *Artemisia*. [Compartments: CDEFH]

Olibrus affinis

A small shining flower beetle, found locally on sandy soils throughout England and Wales, often on Goat's-beard *Tragopogon pratensis* and cat's-ears *Hypochaeris*. [Compartments: ABCDEFGH]

Olibrus corticalis

A small shining flower beetle, occurring widely in southern Britain on ragworts *Senecio* and fleabanes *Conyza*. [Compartments: CEFH]

Olibrus pygmaeus

A very small shining flower beetle, found mostly on sandy soils in East Anglia where it can be found on flowers of various Asteraceae. Status: Nationally Scarce [Compartments: FGH]

Stilbus testaceus

A small beetle, widespread and sometimes abundant throughout much of England and Wales, favouring grass heaps and haystacks. [Compartments: A]

PTINIDAE

Grynobius planus

A small beetle, occurring in the dead wood of broad-leaved trees, widespread across much of Britain north to central Scotland. [Compartments: A]

PYROCHROIDAE

Pyrochroa serraticornis (Red-headed Cardinal Beetle)

A large and striking red beetle, widespread in the south-east and more local to the north and west, occurring on vegetation in woods, parks and gardens. [Compartments: AC]

RHYNCHITIDAE

Tatianaerhynchites aequatus (Apple Fruit Rhynchites)

A distinctive weevil, usually found on hawthorns *Crataegus* and apples *Malus*, occurring widely throughout southern England but more locally in the north of England and Wales. [Compartments: BCDEG]

SCARABAEIDAE

Calomosternus granarius

A dung beetle, although also found in decaying vegetation, widespread across much of Britain, generally in exposed areas on light soils. [Compartments: F]

Phyllopertha horticola (Garden Chafer)

A medium-sized chafer beetle, occurring locally across Britain in grassland habitats, flying around noon on sunny days. [Compartments: ABE]

SCIRTIDAE

Microcara testacea

A small beetle found widely across much of Britain in marshy areas in woodlands. [Compartments: EFH]

SCRAPTIIDAE

Anaspis fasciata

A small beetle found on hawthorn *Crataegus* blossom across England and Wales, and more locally in Scotland. [Compartments: AE]

Anaspis maculata

A small beetle found abundantly on hawthorn *Crataegus* blossom across England and Wales, and more locally in Scotland. [Compartments: CG]

Anaspis pulicaria

A small beetle, found locally across southern Britain, mostly noted on flowers of umbellifers. [Compartments: B]

STAPHYLINIDAE

Anotylus rugosus

A small rove beetle, found in damp vegetable litter, especially in marshes, widespread and common across Britain. [Compartments: A]

Astenus lyonessius

A small rove beetle found in dry, often early successional habitats, occurring in England and Wales north to Yorkshire. [Compartments: B]

Drusilla canaliculata

A small rove beetle, found in a very wide range of habitats including agricultural land, occurring through most of Britain but more locally further north. [Compartments: D]

Othius laeviusculus

A medium-sized rove beetle, found in a wide range of habitats from dry open environments to woodland, widespread through much of Britain. [Compartments: EFG]

Quedius semiaeneus

A medium-sized rove beetle, found in a variety of habitats on damper soils, widespread across much of Britain. [Compartments: AF]

Rugilus orbiculatus

A small rove beetle, occurring in a wide range of habitats including cultivated land, widespread throughout most of Britain. [Compartments: AB]

Stenus aceris

A small rove beetle found in lowland grasslands and woods, widespread in southern England but rarer further north. [Compartments: C]

Stenus impressus

A small rove beetle, very common throughout Britain in woodlands, grasslands, marshes etc. [Compartments: E]

Stenus latifrons

A small rove beetle, found in dense vegetation on lake margins, fens and swamps. Widespread in England and Wales, seemingly rarer in Scotland. [Compartments: A]

Stenus ossium

A small rove beetle, widespread throughout Britain in a range of open habitats. [Compartments: ABCG]

Stenus picipes

A small rove beetle, found in moderately dry to wet grassland, and widespread throughout Britain. [Compartments: A]

Stenus pusillus

A small rove beetle, found in a range of wet habitats as well as occurring in arable settings and along roadsides, widespread in England and Wales. Status: Notable-B [Compartments: D]

Tachyporus chrysomelinus

A small rove beetle, widespread throughout Britain in various habitats, perhaps most commonly at ground level in moss, grass tussocks and litter/refuse. [Compartments: A]

Tachyporus dispar

A small rove beetle, widespread throughout Britain in a very wide range of habitats, including grassland, fens and marshes, moorland, woodland and scrub. [Compartments: ABCG]

Tachyporus hypnorum

An abundant species of small rove beetle, occurring at ground level. Both adults and larvae are predatory, and the species is considered to have an important effect on a number of crop pests, including certain aphids, fly larvae and other beetles. [Compartments: ACDFGH]

Tachyporus nitidulus

A small rove beetle, found in a wide variety of habitats, widespread in England and Wales but more local in Scotland. [Compartments: BDG]

Xantholinus linearis

A medium-sized rove beetle, found mainly in open, dry habitats and widespread across most of Britain. [Compartments: FG]

TENEBRIONIDAE

Gonodera luperus

A large beetle found on vegetation and flowers in wooded areas, found locally in parts of England and Wales. Status: Nationally Scarce [Compartments: A]

Isomira murina

A beetle found on woodland flowers and vegetation, widespread across much of Britain although more locally further north. [Compartments: C]

Lagria hirta

A distinctive brown beetle, formerly scarce but now much more common across much of Britain, found on flowers and vegetation and often attracted to lights. [Compartments: ABCEG]

DIPTERA (FLIES)

ANISOPODIDAE

Sylvicola punctatus

A wood gnat, common and widespread throughout most of Britain, associated with cattle dung. [Compartments: BC]

ANTHOMYIIDAE

Anthomyia liturata

A flower fly, common and widespread across Britain, larvae developing in birds' nests [Compartments: ACDGH]

Botanophila fugax

A flower fly, common and widespread across Britain, larvae reported to feed on decaying organic matter, and/or within the stems of Elder *Sambucus nigra*. [Compartments: F]

Delia criniventris

A flower fly, seemingly widespread across England but few records in Scotland or Wales, larvae feeding on campions *Silene*. [Compartments: BF]

Delia florilega

A flower fly, abundant and widespread across Britain, larvae thought to feed on decaying organic matter. [Compartments: ACDFGH]

Delia platura

A flower fly, abundant and widespread across Britain, larvae feeding on decaying organic matter but also frequently as a pest in crops of peas and beans. [Compartments: ABCDEFGH]

Delia radicum

A flower fly, abundant and widespread across Britain, larvae feeding on the roots of various plants in the Brassicaceae and can be a pest in crops of turnips and cabbage. [Compartments: BCDH]

Hydrophoria lancifer

A flower fly, common and widespread across Britain, the larvae feeding in dung, although it may be that they are predatory on other insect larvae. [Compartments: A]

Phorbia fumigata

A flower fly, common and widespread across Britain, the larvae feeding in grass stems and can be a pest in cereal crops. [Compartments: AFG]

ASILIDAE

Dioctria atricapilla (Violet Black-legged Robberfly)

A distinctive blackish robberfly, widespread and often common in grassland and other open habitats in southern England north to Yorkshire, although scarce in Wales and the south-west. Adult flies hunt a range of other insects whilst larvae are presumed to be predators in the soil. [Compartments: G]

Dioctria baumhaueri (Stripe-legged Robberfly)

A small robberfly, widespread through much of England and Wales north to Yorkshire, with isolated records further north. Adult flies prey on a range of other invertebrates. [Compartments: BE]

Leptogaster cylindrica (Striped Slender Robberfly)

A small thin robberfly, widespread in grassy places in southern Britain but scarcer further north. Adults hunt aphids and other small invertebrates whilst larvae live in the soil. [Compartments: A]

Machimus atricapillus (Kite-tailed Robberfly)

A sizeable robberfly, predatory on a wide range of flies and other insects. Larvae develop in the soil. Found widely in southern Britain and more locally further north, favouring scrub and woodland edge. [Compartments: D]

ASTEIIDAE

Asteia amoena

A very small fly, recorded widely around Britain and occurring on grasses and flowers. [Compartments: C]

BIBIONIDAE

Bibio anglicus

A small fly, widespread in the spring throughout south-east England, especially in chalk districts. [Compartments: BCDEH]

Bibio hortulanus

A small fly, mostly found in south-east England and locally common in East Anglia in the spring. [Compartments: C]

Bibio marci (St Marks Fly)

A large black fly, familiar and often extremely abundant for a short period each spring in most lowland areas, particularly around arable crops. [Compartments: CDEH]

Bibio nigriventris

A small fly, widespread and locally common in the north and west but more local in the south-east. [Compartments: E]

Dilophus febrilis (Fever Fly)

A small black fly, widespread and common almost everywhere including amongst crops where it can reach pest proportions, peaking in spring and again in late summer. [Compartments: EGH]

Dilophus femoratus

A small fly, widespread and locally common across many parts of Britain, numbers peaking in the late spring. [Compartments: AC]

CALLIPHORIDAE

Calliphora vomitoria (Orange-bearded Bluebottle)

A large 'bluebottle' blowfly, widespread and common across most of Britain although preferring cooler and damper settings. Larvae develop in carcasses. [Compartments: A]

Lucilia caesar (Common Greenbottle)

The commonest 'greenbottle', an abundant blowfly throughout Britain occurring in a wide variety of habitats (including inside houses), the larvae developing in carrion of many sorts. [Compartments: H]

Lucilia illustris (Illustrious Greenbottle)

A widespread green blowfly, found across most of Britain with its larvae developing in carrion. [Compartments: G]

Lucilia sericata (Sheep-strike Greenbottle)

A widespread greenbottle throughout Britain, although more numerous in the south. Most associated with urban and suburban habitats. The fly mostly lays its eggs on carrion. [Compartments: BD]

Melinda viridicyanea (Dark-palped Melinda)

A small metallic blue blowfly, widespread throughout most of Britain in a wide variety of habitats, the larvae developing in snails. [Compartments: CD]

CHLOROPIDAE

Chlorops laetus

A small fly, not well recorded but the few confirmed records to date have been from England south-east of the Wash-Severn line from good-quality calcareous grasslands. Status: Nationally Scarce (provisional)
[Compartments: D]

Chlorops pumilionis

A small fly, occurring widely across Britain in arable and grassland habitats, and considered a pest of barley and rye, as well as using wild grasses. [Compartments: DEFGH]

Oscinella frit

A small fly, very common on cereal crops (a recognised pest) and wild grasses across much of Britain.
[Compartments: BG]

Thaumatomyia notata

A small fly, very abundant across much of Britain, feeding on aphids in a variety of habitats. [Compartments: BF]

CONOPIDAE

Conops quadrifasciatus

A striking conopid fly which parasitises the Red-tailed Bumblebee *Bombus lapidarius*. Occurs widely in southern Britain, and more locally north to southern Scotland, frequenting flowery habitats where the host bees can be found. [Compartments: H]

Sicus ferrugineus

A common conopid fly which parasitises a range of bumblebee *Bombus* species, occurring in flowery habitats across most of Britain. [Compartments: G]

Thecophora atra

A small conopid fly, occurring widely throughout Britain although rarely abundant, in a range of open, flowery habitats. Parasitises smaller bees in the genera *Lasioglossum* and *Halictus*. [Compartments: BCEG]

DOLICHOPODIDAE

Dolichopus agilis

A dolichopodid fly, very locally recorded from scattered sites in England and Wales, although from a wide range of habitats. Status: Vulnerable; Nationally Rare [Compartments: F]

Dolichopus griseipennis

A larger dolichopodid fly, seemingly common and widespread north to southern Scotland. [Compartments: FGH]

Poecilobothrus nobilitatus

A common and distinctive dolichopodid fly, widespread in southern Britain in damper habitats, often seen resting on mud or the water surface. [Compartments: H]

Sciapus wiedemanni

A dolichopodid fly, fairly widespread in England and Wales although scarce in Scotland. [Compartments: BE]

DROSOPHILIDAE

Drosophila suzukii (Spotted-winged Drosophila)

A small fly, native to Asia but has become introduced into Europe and now widespread and often common in much of England. Feeds on soft summer fruit, including both crops and wild species such as brambles *Rubus*. [Compartments: C]

EMPIDIDAE

Empis nuntia

A dagger fly, common and widespread across much of Britain. [Compartments: A]

Empis tessellata

A large and common dagger fly, found throughout the whole of Britain north to Shetland. [Compartments: ABFH]

Rhamphomyia tarsata

A dagger fly, very common throughout Britain, particularly frequenting hawthorn *Crataegus* blossom in spring. [Compartments: A]

EPHYDRIDAE

Clanoneurum cimiciforme

A small fly, widespread but local in dry coastal habitats, the larvae thought to feed on the leaves of beet *Beta* and related plants. [Compartments: G]

Philygria flavipes

A small fly, apparently somewhat local north to Yorkshire, preferring drier habitats. [Compartments: F]

FANNIIDAE

Fannia manicata

A small dark fly, widespread across most of Britain, larvae developing in a wide range of dead and decaying animal and vegetable matter. [Compartments: A]

HYBOTIDAE

Platypalpus annulatus

A small hybotid fly, with scattered records mostly in England plus a few from Wales and Scotland also. [Compartments: E]

Platypalpus annulipes

A small hybotid fly, widespread in southern Britain with more scattered records in Scotland. [Compartments: BDH]

LAUXANIIDAE

Calliopum aeneum

A small fly, seemingly widespread in England and Wales at least. The larvae are thought to mine the stems of Red Clover *Trifolium pratense*, although other plants may also be used. [Compartments: CEFH]

Sapromyza quadripunctata

A small orange fly, seemingly common in southern Britain mostly in grassland habitats, the larvae feeding on rotting vegetation. [Compartments: FGH]

LIMONIIDAE

Epiphragma ocellare

A small crane fly with very distinctive wing-markings, common in woodland in England and Wales but more local in Scotland. Larvae feed on dry rotten wood. [Compartments: H]

Gnophomyia viridipennis

A small crane fly, found very locally across much of England where it is reliant on fallen poplar *Populus* trunks. Status: Notable [Compartments: H]

Limonia nigropunctata

A small crane fly, found locally in areas of scrub and light woodland mostly in south-east Britain and more patchily elsewhere. [Compartments: A]

LONCHAEIDAE

Silba fumosa

A small fly, seemingly common and widespread north to central Scotland. The larvae are thought to feed on decaying plant material. [Compartments: AD]

LONCHOPTERIDAE

Lonchoptera bifurcata

A small fly, very common throughout Britain. [Compartments: B]

Lonchoptera lutea

A small fly, very common throughout Britain, with a preference for unshaded habitats. [Compartments: ACFH]

MUSCIDAE

Coenosia testacea

A muscid fly, widespread and common across much of Britain. [Compartments: ABH]

Coenosia tigrina

A muscid fly, widespread and very common across most of Britain in a wide range of habitats. [Compartments: ABDEFGH]

Helina evecta

A muscid fly, common and widespread throughout most of Britain in a variety of habitats. Larvae are found in soil and moss. [Compartments: H]

Helina impuncta

A muscid fly, common and widespread in England and Wales, and more local in Scotland. Larvae feed on cow dung and hence most frequent in pastures. [Compartments: ACEF]

Helina lasiophthalma

A muscid fly, locally distributed in England and Wales along hedgerows and woodland edge. [Compartments: BCDEFH]

Helina latitarsis

A muscid fly, locally distributed in much of Britain. [Compartments: C]

Helina reversio

A muscid fly, very common and widespread throughout most of Britain in a variety of habitats. Larvae are found in dung and rotting wood. [Compartments: ABCDEFGH]

Hydrotaea irritans

A muscid fly, widespread across much of Britain. Females can cause annoyance, and potentially transmit disease, to cattle and sheep. [Compartments: AE]

Morellia hortorum

A muscid fly, widespread and frequent across the whole of Britain, especially in pastoral landscapes. The larvae are coprophagous in cowpats. [Compartments: H]

Musca autumnalis (Face Fly)

One of the most abundant muscid flies, particularly within pastoral landscapes, although much more local in Scotland. The larvae are coprophagous, mainly in the fresh dung of cattle and horses. [Compartments: BH]

Neomyia cornicina

A muscid fly that can be overlooked as a 'greenbottle' blowfly; widespread across Britain, breeding in dung. [Compartments: AF]

Phaonia perdita

A muscid fly, widespread but rather local in England and Wales and scarce in Scotland, and present in a variety of mostly habitat habitats. The larval biology is unknown. [Compartments: H]

Phaonia rufipalpis

A muscid fly, widely recorded throughout Britain but rarely seen in numbers. The larval biology and habitat preferences are unclear. [Compartments: E]

Phaonia rufiventris

A muscid fly, widespread and frequent throughout most of Britain and can be especially abundant in humid woodlands of various sorts. The larvae primarily develop in fungi. [Compartments: C]

Phaonia tuguriorum

A muscid fly, widespread and common throughout Britain and occurs in a wide variety of habitats. The larvae develop in soil, mosses and decaying vegetation and seem to be primarily predators of soil-dwelling leatherjackets [Compartments: A]

Schoenomyza litorella

A muscid fly, widespread and common across much of Britain. [Compartments: E]

OPOMYZIDAE

Geomyza apicalis

A small fly, seemingly very local in open habitats, with scattered records north to Fife. Larvae are thought likely to develop in grasses. Status: Nationally Scarce (provisional) [Compartments: B]

Geomyza tripunctata

A small fly, very common in all grassy habitats throughout Britain. [Compartments: ABCDFGH]

Opomyza florum

A small fly, very common throughout much of Britain; can be a serious pest of cereals and rye-grass *Lolium*. [Compartments: A]

Opomyza germinationis

A small fly, very common and widespread throughout Britain. Prefers open habitats, the larvae feeding within the stems of a range of grasses. [Compartments: C]

Opomyza petrei

A small fly, common and widespread throughout Britain. Prefers open habitats, the larvae feeding within the stems of a range of grasses. [Compartments: C]

POLLENIIDAE

Pollenia angustigena (Narrow-cheeked Clusterfly)

A common blowfly, widespread across Britain in a range of habitats. Larvae are parasites of earthworms. [Compartments: BDEFH]

Pollenia rudis (Awkward Clusterfly)

A common and widespread large fly throughout most of Britain, found in many habitats and the most frequent of the clusterflies to enter buildings. Larvae are parasitoids of earthworms. [Compartments: ADEG]

PSILIDAE

Chamaepsila nigricornis

A small fly, seemingly widespread across most of Britain. [Compartments: E]

SARCOPHAGIDAE

Sarcophaga carnaria

One of the commonest large flesh flies and found over much of Britain in a variety of habitats. The larvae develop as parasitoids of earthworms. [Compartments: G]

Sarcophaga crassimargo

A flesh fly, frequent over much of southern Britain but scarcer in northern England and Scotland, occurring in a variety of open habitats and woodland clearings. The larvae are reported to develop variously in carrion, dung and snails. [Compartments: F]

Sarcophaga nigriventris

A widespread flesh fly, found commonly through much of Britain in a range of habitats. Larvae have been reared from dead mice, snails and various arthropods. [Compartments: F]

Sarcophaga variegata

A common large flesh fly, found in a variety of habitats in most parts of England and Wales but scarce in Scotland. The larvae develop as predators of earthworms but have apparently also been reared from moth pupae. [Compartments: DE]

SCATHOPHAGIDAE

Scathophaga stercoraria (Yellow Dung Fly)

One of the most abundant and widespread flies in Britain, most regularly encountered on fresh livestock dung. [Compartments: AEF GH]

SCIOMYZIDAE

Limnia unguicornis (Stripe-backed Snailkiller)

A snail-killing fly, common in wetland habitats including wet woodlands. Occurs throughout most of Britain. [Compartments: A]

SEPSIDAE

Sepsis cynipsea

A small black fly, found very commonly throughout Britain, especially in proximity to livestock as the larvae develop in dung, mostly of cows but sheep in upland areas. [Compartments: B]

Sepsis fulgens

A small black fly, found very commonly throughout Britain, especially in proximity to livestock as the larvae develop in dung of a range of species. [Compartments: H]

STRATIOMYIDAE

Beris chalybata (Murky-legged Black Legionnaire)

A small soldierfly, occurring in a wide range of habitats with trees and shrubs, and found throughout almost all of Britain. Larvae feed on rotting vegetation. [Compartments: A]

Chloromyia formosa (Broad Centurion)

The most frequently encountered soldierfly, often very apparent on flowers or leaves during the summer. Found in a wide range of habitats throughout most of Britain. [Compartments: D]

Microchrysa flavicornis (Green Gem)

A small soldierfly, widespread across Britain but most numerous further south, found in the vicinity of shrubs and trees. [Compartments: H]

Nemotelus notatus (Flecked Snout)

A small soldierfly, widespread and locally common in coastal districts, especially in upper saltmarsh and grazing marshes. The distribution extends as far north as the Moray Firth. [Compartments: DF]

Pachygaster atra (Dark-winged Black)

A small dark soldierfly, widespread and locally common in southern Britain but more scarce further north and in Wales. Occurs in proximity to shrubs and trees. [Compartments: DE]

Pachygaster leachii (Yellow-legged Black)

A small dark soldierfly, widespread and locally common in southern Britain but more scarce further north and in Wales. Mostly occurs in proximity to mature trees. [Compartments: BE]

SYRPHIDAE

Cheilosia griseiventris

A hoverfly recorded sparsely but widely across much of Britain, favouring grassy habitats. [Compartments: A]

Cheilosia urbana

A hoverfly found locally both in southern Britain and north/west Scotland, found in a variety of habitats hosting the larval foodplant Mouse-ear Hawkweed *Pilosella officinarum*. [Compartments: D]

Cheilosia vernalis

A widespread and common hoverfly across much of Britain, associated with mayweeds and related plants. [Compartments: D]

Chrysogaster cemiteriorum

A small black hoverfly, widespread and locally frequent throughout much of Britain in damper habitats. [Compartments: GH]

Epistrophe eligans

A very common spring hoverfly in much of Britain, particularly in wooded areas. [Compartments: EH]

Episyrphus balteatus (Marmalade Hoverfly)

An abundant hoverfly throughout the whole of Britain, with local populations regularly supplemented by large-scale immigration from the continent. Rapidly attracted to aphid concentrations, including in crops. [Compartments: ABCDEFGH]

Eristalis pertinax (Tapered Dronefly)

A very widespread and often abundant hoverfly around most of Britain, found in a wide range of habitats. [Compartments: AE]

Eristalis tenax (Common Dronefly)

A very widespread and often abundant hoverfly around most of Britain, found in a wide range of habitats. [Compartments: H]

Eupeodes corollae

A hoverfly which at times can be highly abundant, prone to great fluctuations in numbers as a result of mass immigration and/or emergences. Can be found anywhere in Britain. [Compartments: EG]

Eupeodes latifasciatus

A widespread hoverfly, occurring around much of Britain and perhaps most frequent in damper areas. [Compartments: F]

Eupeodes luniger

A very common and widespread hoverfly, found throughout Britain in a wide range of habitats, numbers being boosted periodically by apparent immigration from the continent. [Compartments: BCDEF]

Helophilus pendulus

A very common large hoverfly throughout the whole of Britain, especially around still water. Larvae are found in wet or very damp habitats. [Compartments: ADEH]

Melanostoma mellinum

One of the most common and widespread hoverflies in Britain, found in most habitats. Larvae are found in leaf litter. [Compartments: CDEFH]

Melanostoma scalare

A very common small hoverfly throughout Britain. Found in a range of habitats but prefers lush vegetation and woodland edge. [Compartments: ABCDGH]

Merodon equestris (Greater Bulb-Fly)

A large and common hoverfly occurring across Britain in a wide range of habitats including gardens. A bumblebee mimic, with the larvae developing mostly in daffodils *Narcissus*. [Compartments: A]

Myathropa florea

A large and common hoverfly, particularly in woodland, and found across most of Britain. [Compartments: D]

Orthonevra brevicornis

A widespread but rather local hoverfly usually associated with spring-fed marshy areas or seepage alder carr. Found widely across England and Wales, but more localised in Scotland. [Compartments: G]

Paragus haemorrhous

A tiny black hoverfly, favouring grassland habitats with short swards. Widespread throughout most of Britain. [Compartments: D]

Pipizella viduata

A small hoverfly, widespread around most of Britain but most common in southern lowland areas. Larvae feed on ant-attended root-feeding aphids on umbellifers. [Compartments: D]

Platycheirus albimanus

A common and widespread small hoverfly found in hedgerows and gardens across Britain. Larvae feed on aphids on low growing vegetation. [Compartments: CDE]

Platycheirus clypeatus

A small hoverfly, widespread and often common in wetlands and grasslands, occurring across most of Britain. [Compartments: BDEGH]

Platycheirus fulviventris

A small hoverfly, found very locally in wetlands where it can be abundant, most frequent in the south of Britain but present to northern Scotland also. [Compartments: G]

Platycheirus manicatus

A small hoverfly, widespread and common in grassland across most of Britain. [Compartments: DG]

Platycheirus peltatus

A common small hoverfly, found widely in damper habitats throughout most of Britain. [Compartments: E]

Platycheirus scutatus

A small hoverfly, most frequent along woodland edges and scrub, most widespread in the south but locally also into northern Scotland. [Compartments: C]

Scaeva pyrastris

A hoverfly that occurs mostly as a migrant in Britain, and hence numbers vary greatly between years. Can be found throughout Britain, but more regular in southern areas. [Compartments: BCF]

Sphaerophoria scripta

A very common hoverfly in grasslands, particularly in southern Britain; numbers appear to be bolstered by regular arrivals of migrants from further south. [Compartments: ABDEH]

Sphaerophoria taeniata

A small hoverfly, found rather locally in damper habitats, predominantly to the south-east of the Wash-Severn line, but scattered occurrences are known to the north of Scotland. [Compartments: A]

Syritta pipiens

A very common hoverfly in southern Britain, although more local further north. Breeds in rotting organic matter in a wide range of habitats. [Compartments: BDEFGH]

Syrphus ribesii

A very common hoverfly throughout most of Britain, occurring in a wide range of habitats. [Compartments: EFH]

Syrphus torvus

A common hoverfly throughout most of Britain, occurring in a wide range of habitats, and probably overlooked through its similarity to the other common *Syrphus* species. [Compartments: E]

Syrphus vitripennis

A common hoverfly throughout most of Britain, occurring in a wide range of habitats, and thought to be boosted at times by pulses of immigration. [Compartments: C]

Tropidia scita

A wetland hoverfly, locally common in wetlands in lowland England and Wales, but sites are much fewer in Scotland. [Compartments: H]

Volucella inanis

A large hoverfly, previously very restricted to southernmost England, but has spread significantly and now common north to Yorkshire. Larvae are nest parasites of social wasps. [Compartments: D]

Xylota segnis

A widespread and common hoverfly, particularly in woodland and scrub where it regularly seen on foliage. Found north as far as Shetland. [Compartments: A]

TABANIDAE

Haematopota pluvialis (Notch-horned Cleg)

The most numerous of the horseflies and one of the most persistent in attacking humans, found in a wide variety of more open habitats throughout Britain. [Compartments: FH]

Hybomitra distinguenda (Bright Horsefly)

A large horsefly, found frequently in southern Britain and more sparingly further north, in a variety of habitats including woodland, heathland and wetlands. Not especially troublesome to humans. [Compartments: A]

TACHINIDAE

Cistogaster globosa

A parasitic fly, known to target the Bishop's Mitre shieldbug *Aelia acuminata*. Previously rather rare in the south-east but seemingly expanding its range north and west in open flowery habitats. Status: Nationally Scarce (unofficial change from Endangered) [Compartments: G]

Dexia rustica

A parasitic fly, targeting the larvae of chafer beetles such as the Cockchafer *Melolontha melolontha* amongst others. Common in parts of southern Britain but few records from northern England or Scotland. [Compartments: AE]

Dinera grisescens

A parasitic fly, recorded widely from the south-east quarter of Britain but with only a few noted from Wales or Scotland. Unclear which species are parasitised by this fly. [Compartments: CE]

Eriothrix rufomaculata

A very common tachinid fly across most of Britain, occurring in flowery grasslands. Larvae are parasitic inside moth caterpillars. [Compartments: ACF]

Exorista larvarum

A parasitic fly, targeting moth caterpillars. Regularly recorded from most parts of Britain. [Compartments: G]

Lydella grisescens

A parasitic fly, targeting moth caterpillars. Most records are from England and Wales south of Yorkshire. [Compartments: C]

Macquartia grisea

A parasitic fly, targeting leaf beetles in the genus *Chrysolina*. Mostly recorded north to Yorkshire. [Compartments: A]

Pales pavidus

A parasitic fly, targeting a wide range of moth caterpillars, widespread in England and Wales with some Scottish records also. [Compartments: H]

Phasia obesa

A small parasitic fly, targeting a range of bugs of the Heteroptera, widespread in England but scarce in Wales and Scotland. [Compartments: ACD]

Phasia pusilla

A small parasitic fly, targeting a range of bugs of the Heteroptera, widespread north to Yorkshire in open, flowery habitats. [Compartments: ABCDEFG]

Phryxe nemea

A parasitic fly, targeting a wide range of moth and butterfly caterpillars, mostly in woodland and scrub. Recorded throughout much of Britain, more commonly in the south. [Compartments: C]

Siphona geniculata

A small parasitic fly, targeting the larvae of larger craneflies *Tipula*. Common throughout most of Britain. [Compartments: ABEH]

TEPHRITIDAE

Campiglossa misella

A picture-winged fly, whose larvae feed on Mugwort *Artemisia vulgaris*, widely distributed through England north to Yorkshire. [Compartments: B]

Dioxya bidentis

A picture-winged fly, whose larvae feed on Trifid Bur-marigold *Bidens tripartita*, widely distributed throughout Britain. [Compartments: G]

Euleia heraclei

A picture-winged fly, whose larvae mine the leaves of a wide range of umbelliferous plants, common throughout much of Britain. [Compartments: AB]

Goniglossum wiedemanni

A picture-winged fly, whose larvae feed on White Bryony *Bryonia dioica*, locally distributed in south-east and central England. Status: Notable [Compartments: E]

Sphenella marginata

A picture-winged fly, whose larvae feed on a range of ragworts and groundsels *Senecio*, widespread north to about Yorkshire with isolated records in Scotland. [Compartments: EGH]

Tephritis cometa

A picture-winged fly, whose larvae feed on thistles *Cirsium*, locally distributed throughout much of England and Wales. [Compartments: F]

Tephritis formosa

A picture-winged fly, common and widespread in southern Britain in open habitats. Larvae feed in galls on the flower heads of a range of Asteraceae, particularly sow-thistles *Sonchus*. [Compartments: G]

Tephritis neesii

A picture-winged fly, whose larvae feed on Oxeye Daisy *Leucanthemum vulgare*, very common and widespread throughout much of Britain. [Compartments: EF]

Tephritis vespertina

A picture-winged fly, whose larvae feed on Cat's-ear *Hypochaeris radicata*, common and widespread throughout much of Britain. [Compartments: ACEF]

Trypeta zoe

A picture-winged fly, whose larvae feed on a wide range of wild and cultivated plants in the Asteraceae, found across much of Britain but more commonly in the south. [Compartments: AB]

Urophora stylata

A picture-winged fly, whose larvae feed on Spear Thistle *Cirsium vulgare*, found widely across most of Britain. [Compartments: A]

Xyphosia miliaria

A picture-winged fly, whose larvae feed on thistles *Cirsium*, widespread and common across most of Britain. [Compartments: H]

THEREVIDAE

Thereva bipunctata (Twin-spot Stiletto)

A medium-sized fly, locally common in sandy areas and hence mostly found around the coast (as far north as the Moray Firth), as well as the southern heathlands and the Brecks. [Compartments: AE]

Thereva nobilitata (Common Stiletto)

The commonest of the stiletto flies, less tied to sandy soils than the other species, and can be found commonly throughout much of Britain. [Compartments: BDE]

TIPULIDAE

Nephrotoma appendiculata (Spotted Crane-fly)

A tiger crane-fly, common and widespread in the spring in lowland areas in open grassy areas across much of Britain. [Compartments: BEFGH]

Nephrotoma cornicina

A tiger crane-fly, found mostly in the south-east of England with more scattered occurrences elsewhere, favouring drier habitats. Flies mostly in late summer. [Compartments: H]

Nephrotoma flavescens (Tiger Crane-fly)

A tiger crane-fly, common in grasslands during the midsummer months across much of lowland Britain, although with more of an easterly bias. [Compartments: BCDEGH]

Nephrotoma guestfalica

A tiger crane-fly, found locally across much of Britain in areas with sandy soils. Peaks in midsummer. [Compartments: H]

Nephrotoma scurra

A tiger crane-fly, strongly associated with dry sandy soils and so mostly found in south-east England, being more scattered elsewhere. Peaks in late summer. [Compartments: EF]

Tipula flavolineata

A large cranefly, found locally across much of Britain but especially in well-wooded areas, where the larvae feed on rotting wood. [Compartments: A]

Tipula paludosa

A large cranefly, abundant almost everywhere in both damp and drier grasslands, with the main peak in autumn. [Compartments: F]

Tipula vernalis

A large cranefly, common in grassland across most lowland areas of Britain in the late spring. [Compartments: H]

XYLOMYIDAE

Solva marginata (Drab Wood-soldierfly)

A medium-sized fly, widespread but local in southern Britain north to Yorkshire. Adults are usually found around tree trunks and logs, with larvae developing within wood that has been dead for less than two years. [Compartments: H]

HYMENOPTERA (BEES, WASPS, ANTS AND SAWFLIES)

ANDRENIIDAE

Andrena bicolor (Gwynne's Mining Bee)

A medium-sized mining bee, found commonly throughout Britain although somewhat more coastal in Scotland, using a wide variety of habitats. [Compartments: DH]

Andrena dorsata (Short-fringed Mining Bee)

A medium-sized mining bee, widespread and locally common south of the Wash-Severn line, and spreading northwards through the West Midlands to Shropshire, although still scarce in Wales. Occurs in a wide range of habitats. [Compartments: CDFH]

Andrena flavipes (Yellow-legged Mining Bee)

A medium-sized mining bee, widespread and locally common in southern England and south Wales and expanding its range northwards through central England recently. Found in a wide range of open habitats. [Compartments: EGH]

Andrena fulva (Tawny Mining Bee)

A large mining bee, the females of which are very distinctive. Widespread and often common across much of England and Wales, although scarce still in southern Scotland. Found in a wide range of open habitats. [Compartments: E]

Andrena haemorrhoa (Orange-tailed Mining Bee)

A medium-sized mining bee, widespread and locally common across most of Britain in a wide variety of habitats. [Compartments: B]

Andrena hattorfiana (Large Scabious Mining Bee)

A large mining bee, scarce and localised north to a line between Norfolk and south Wales, with the main concentrations being in the Brecks and on Salisbury Plain. The main habitat is calcareous grassland that is rich in Field Scabious *Knautia arvensis* or Small Scabious *Scabiosa columbaria*. Status: Nationally Scarce (unofficial change from Rare) [Compartments: B]

Andrena minutula (Common Mini-miner)

A small mining bee, widespread and often common in most of England and Wales, extending just into south-west Scotland. [Compartments: BDEF]

Andrena nitida (Grey-patched Mining Bee)

A large mining bee, widespread and common in southern and central England and Wales but with few records north of the Mersey. Can be found in a variety of open grassland habitats. [Compartments: E]

Andrena scotica (Chocolate Mining Bee)

A large mining bee, widespread throughout most of Britain and common in many habitats. [Compartments: BCDE]

Andrena subopaca (Impunctate Mini-miner)

A small mining bee, widespread across much of Britain including more upland areas and found in a range of habitats including open woodland. [Compartments: BC]

APIDAE

Apis mellifera (Honey Bee)

A familiar domesticated (and sometimes feral) bee; occurs widely throughout Britain, depending largely on managed hives. [Compartments: ABCDEH]

Bombus campestris (Field Cuckoo Bee)

One of the smaller cuckoo bumblebees, widespread and locally frequent throughout much of Britain although seldom north of Dundee. It is a nest parasite of the Common Carder Bumblebee *Bombus pascuorum* and probably other related species. [Compartments: DG]

Bombus hortorum (Small Garden Bumblebee)

A large bumblebee, widespread and common throughout most of Britain, occurring in scrub, gardens and woodland edge. [Compartments: AD]

Bombus hypnorum (Tree Bumblebee)

A distinctive bumblebee, this species has colonised rapidly since its arrival in 2001 and is now common across most of England and Wales and is spreading rapidly in Scotland also. It occurs in a variety of habitats but requires trees or buildings within which to situate its nests (unlike most other bumblebees). [Compartments: ACH]

Bombus lapidarius (Red-tailed Bumblebee)

A large bumblebee, widespread and common throughout most of Britain, occurring both open and wooded habitats. [Compartments: BCDEFGH]

Bombus pascuorum (Common Carder Bee)

The most common of the brownish 'carder' bumblebees, occurring almost ubiquitously throughout Britain in most habitats. [Compartments: ABCEF]

Bombus ruderatus (Large Garden Bumblebee)

A large bumblebee, scarce in southern England and known to have declined strongly but showing some recent recovery in parts of central and eastern England where it seems to be benefitting from agri-environment schemes, especially those that promote the creation of clover-rich habitats. Status = Notable B; Section 41 (England); Section 7 (Wales) [Compartments: F]

Bombus terrestris (Buff-tailed Bumblebee)

One of the most common and widespread bumblebees in Britain, occurring throughout the country and on the wing even on mild winter days. [Compartments: ABDFH]

Bombus vestalis (Vestal Cuckoo Bee)

A large cuckoo bumblebee, widespread across England but more local in Wales and Scotland, found in a wide variety and a nest parasite of the Buff-tailed Bumblebee *Bombus terrestris*. [Compartments: AG]

Nomada flava (Flavous Nomad Bee)

A red and yellow patterned nomad bee, widespread and common across most of lowland England and Wales in a variety of habitats, where it is a nest parasite of the Chocolate Mining Bee *Andrena scotica* and other species. [Compartments: BE]

Nomada flavoguttata (Little Nomad Bee)

A small reddish nomad bee, widespread and locally common across much of Britain, a nest parasite of a number of smaller mining bees such as *Andrena minutula*. [Compartments: CGH]

Nomada ruficornis (Fork-jawed Nomad Bee)

A black, red and yellow nomad bee, widespread across much of Britain and a nest parasite of the Orange-tailed Mining Bee *Andrena haemorrhoa*. [Compartments: E]

Nomada rufipes (Black-horned Nomad Bee)

A black and yellow nomad bee, occurring locally north to Scotland but most frequent on southern heathlands where it is a nest parasite of the Heather Mining Bee *Andrena fuscipes* and related species. [Compartments: H]

BETHYLIDAE

Bethylus fuscicornis

A very small wasp, laying its eggs on moth caterpillars. Widespread across southern Britain with some records further north but probably very under-recorded. [Compartments: G]

Epyris niger

A very small wasp, laying its eggs on beetles in the family Tenebrionidae. Recorded from a number of southern English counties but generally little known. [Compartments: BDEG]

CEPHIDAE

Cephus pygmeus (Wheat Stem Borer)

A black and yellow sawfly, widespread in southern Britain where it can be abundant around cereal crops, as the larvae feed within the cereal stems. [Compartments: DG]

Cephus spinipes (Timothy Stem Borer)

A black and yellow sawfly, occurring throughout much of England north to Cumbria but more sparsely distributed in Wales and south-west England, and no records from Scotland to date. Larvae feed within grass stems. [Compartments: C]

CHRYSIDIDAE

Hedychrum niemelai

A metallic green and red cuckoo wasp, seemingly local in sandy habitats south of the Wash-Severn line, where it is a parasitoid of a number of *Cerceris* wasps (themselves mostly weevil predators). Status: Nationally Scarce (unofficial change from Rare) [Compartments: DH]

COLLETIDAE

Colletes daviesanus (Davies' Colletes)

A medium-sized bee, found widely across much of Britain in a wide variety of open habitats, constructing its nests in vertical earth surfaces and walls. [Compartments: C]

Colletes halophilus (Sea Aster Bee)

A medium-sized bee, found almost exclusively on saltmarshes and dunes between Dorset and the Humber where it is strongly associated with Sea Aster *Tripolium pannonicum* and can be locally abundant. Status: Notable A; Section 41 (England) [Compartments: BDH]

Colletes hederæ (Ivy Bee)

A medium-sized bee, first arriving in Britain in 2001 since when it has spread rapidly northwards throughout England and Wales, and has now reached Scotland. It flies late in the summer and is strongly associated with the flowering of Ivy *Hedera*; nesting aggregations can be very large. [Compartments: BD]

Hylaeus communis (Common Yellow-face Bee)

A small bee, found quite commonly across southern Britain but is scarce north of Yorkshire. Occurs in both wooded and open habitats. [Compartments: H]

CRABRONIDAE

Cerceris quinquefasciata (Five-banded Weevil-wasp)

A hunting wasp, found mostly between London and Norfolk although can be common where it occurs. Favours sandy soils and hunts weevils. Status: Nationally Scarce (unofficial change from Rare); Section 41 (England) [Compartments: ACDFGH]

Cerceris ruficornis

A hunting wasp, locally common on heathland from Cornwall to Norfolk, preying mostly on weevils. Status: Nationally Scarce (unofficial) [Compartments: DG]

Cerceris rybyensis (Ornate-tailed Digger Wasp)

A hunting wasp, distributed widely through England north to Yorkshire although scarce in Wales. Favours sandy soils where it constructs its nests, provisioning them with small bees. [Compartments: AF]

Crossocerus podagricus

A small dark hunting wasp, widespread in southern Britain, occurring more sparsely north to Edinburgh. Found in a range of habitats where it hunts small flies, using these to provision nests made in dead wood and hollow stems. [Compartments: A]

Diodontus luperus

A small dark hunting wasp, widespread but local in south-east and central England south of the Humber, constructing nests in sandy ground which it provisions with aphids. [Compartments: F]

Harpactus tumidus

A small red and black hunting wasp, recorded sparingly north to the Moray Firth from a variety of open habitats where it hunts froghoppers. [Compartments: B]

Lindenius albilabris

A small black hunting wasp, found widely north to Yorkshire with sporadic records north to the Moray Firth. Occurs in a wide variety of habitats, hunting small flies and bugs. [Compartments: F]

Psenulus schencki

A small dark wasp, very local in south-east England, constructing its nests in hollow stems and provisioning them with psyllids. Status: Notable-A [Compartments: D]

CYNIPIDAE

Andricus quercuscalicis (Knopper Gall)

A tiny wasp responsible for causing oaks *Quercus* to form 'knopper galls' on acorns, within which the wasp larvae will develop. Arrived in Britain in the 1960s and now widespread throughout. [Compartments: A]

Diplolepis rosae (Bedeguar Gall)

A tiny wasp responsible for causing the Robin's Pin-cushion gall on roses *Rosa* within which the wasp larvae will then develop. Found across much of Britain. [Compartments: D]

Neuroterus albipes (Smooth Spangle Gall)

A gall wasp, most readily recorded through the presence of the distinctive 'smooth spangle galls' on the underside of the leaves of oaks *Quercus*. Common and widespread throughout Britain. [Compartments: G]

FIGITIDAE

Callaspidia defonscolombeii

A small wasp, striking in appearance but little known, a parasitoid of hoverflies. [Compartments: DH]

FORMICIDAE

Formica fusca (Dusky Ant)

A relatively large ant, common in southern Britain but much more local further north. Favours uncultivated habitats, both wooded and open. The ants are predatory on other insects and also seek out aphid honeydew. [Compartments: AD]

Lasius niger (Small Black Ant)

A very common small dark ant, although can easily be confused with other species and close examination is required. Occurs throughout Britain, particularly in dry and open areas. The ants are both predatory and also seek out aphid honeydew. [Compartments: ABCDEFGH]

Myrmica rubra (Red Ant)

A very common red ant, found throughout England and Wales but more locally in Scotland. Prefers sunny but damper habitats. Feed on honeydew from aphids and scale insects, and drink nectar. [Compartments: A]

Myrmica ruginodis

A very common red ant, found throughout Britain in a wide range of habitats from the lowlands to the uplands, where it nests on the ground. [Compartments: A]

Myrmica sabuleti

A red ant of warm, dry habitats, occurring throughout Britain but more coastal in the north of Scotland. Usually nests under stones. [Compartments: H]

HALICTIDAE

Halictus tumulorum (Bronze Furrow Bee)

A small solitary bee, widespread and common throughout much of England and Wales but scarcer further north. Prefers light soils for nesting and visits many types of flower. [Compartments: AFG]

Lasioglossum albipes (Bloomed Furrow Bee)

A small bee, widespread and locally common across Britain, occurring in a wide variety of habitats. [Compartments: C]

Lasioglossum calceatum (Common Furrow Bee)

A small bee, widespread and common across Britain, occurring in a wide variety of habitats. [Compartments: EGH]

Lasioglossum lativentre (Furry-claspered Furrow Bee)

A small bee, widespread north in southern Britain but not north of Yorkshire. It favours woodland edge habitats but can also be found in more open situations. [Compartments: H]

Lasioglossum leucozonium (White-zoned Furrow Bee)

A small bee, widespread in southern Britain but rarer further north. Shows a preference for open habitats with short vegetation, including brownfield sites. [Compartments: ADFH]

Lasioglossum minutissimum (Least Furrow Bee)

A very small bee, widespread but local in southern and central England, north to Yorkshire. Occurs in a range of habitats, with a preference for sandy soils. [Compartments: FG]

Lasioglossum morio (Green Furrow Bee)

A small, metallic green bee, widespread and common in southern Britain and more local from Yorkshire northwards, found in most habitats. [Compartments: ABEH]

Lasioglossum parvulum (Smooth-gastered Furrow Bee)

A small bee, widespread in southern Britain with sporadic records north to Cumbria, occurring in a range of more open habitats. [Compartments: ABEH]

Lasioglossum pauxillum (Lobe-spurred Furrow Bee)

A small bee, historically scarce but has expanded strongly and now found commonly through much of south-east to central England. Prefers more open sites, although including woodland. [Compartments: ABCDEFGH]

Lasioglossum punctatissimum (Long-faced Furrow Bee)

A small bee, most widespread in south-east England but occurs locally north to Ayrshire, favouring sandy soils. [Compartments: ABEFGH]

Lasioglossum quadrinotatum (Four-spotted Furrow Bee)

A small bee, rather scarce in southern England with scattered records north to Yorkshire, occurring in heathland habitats. Status: Notable-A [Compartments: DF]

Lasioglossum villosulum (Shaggy Furrow Bee)

A small bee, widespread across much of England but more coastal in Wales and Scotland. Can be especially abundant where there are soft rock cliffs, including brownfield sites. [Compartments: AFH]

Sphecodes ephippius (Bare-saddled Blood Bee)

A small blood bee, cleptoparasitic and particularly targeting *Halictus tumulorum*, *Lasioglossum leucozonium* and *L. lativentre*. Widespread north to Cumbria, found in a range of open habitats, often particularly common on brownfield sites. [Compartments: ABCDFH]

Sphecodes gibbus (Dark-winged Blood Bee)

One of the larger blood bees, widespread in England and Wales and more locally in Scotland. A nest parasite of the bee *Halictus rubicundus*. [Compartments: H]

Sphecodes longulus (Little Sickle-jawed Blood Bee)

A small blood bee, rather restricted in occurrence in south-east England favouring sandy habitats. A nest parasite of the bee *Lasioglossum morio* and related species. Status: Notable-A [Compartments: D]

Sphecodes monilicornis (Square-headed Blood Bee)

A larger blood bee, widespread across much of Britain north to Inverness, in both open and more wooded habitats. A nest parasite of a range of bees in the genera *Lasioglossum* and *Halictus*. [Compartments: BH]

Sphcodes pellucidus (Sandpit Blood Bee)

A blood bee, locally common in sandy habitats north to Ayrshire, where it is a nest parasite of *Andrena barbilabris* and perhaps some other bee species. [Compartments: H]

Sphcodes puncticeps (Sickle-jawed Blood Bee)

A blood bee, cleptoparasitic and particularly targeting *Lasioglossum lativentre* and *L. quadrinotatum*. Widespread in the south and the Midlands, with records north to Cumbria. Occurs in a range of habitats, including those with soft rock cliffs. [Compartments: B]

Sphcodes reticulatus (Reticulate Blood Bee)

A larger blood bee, cleptoparasitic and particularly targeting *Andrena barbilabris*. Widespread but localised in southern heathland districts, with some recent expansion in the Midlands. Status: Notable-A [Compartments: D]

ICHNEUMONIDAE

Eutanyacra picta

A large and striking ichneumonid wasp, black with orange and ivory stripes. Probably parasitises moth caterpillars. [Compartments: H]

MELITTIDAE

Dasypoda hirtipes (Pantaloony Bee)

A large bee, the females distinctive for their extremely hairy hind legs. Locally common on sandy sites in the south-east, extending to Norfolk and north Wales. Status: Notable-B [Compartments: B]

POMPILIDAE

Anoplius viaticus (Black-banded Spider Wasp)

A large spider-hunting wasp, locally common on heathland and other sandy locations from Yorkshire southwards. [Compartments: G]

SPHECIDAE

Ammophila sabulosa (Red-banded Sand Wasp)

A large and spectacular wasp with an extremely long-stalked abdomen, widespread but local in coastal and heathland areas north to Yorkshire, alongside a handful of sites further north. Nests are built in sandy ground and are provisioned with the caterpillars of noctuid moths. [Compartments: C]

TENTHREDINIDAE

Athalia rosae (Turnip Sawfly)

A common (sometimes abundant) black and orange sawfly, occurring across much of Britain, the larvae feeding on a range of Brassicaceae, both wild and cropped. [Compartments: CF]

Cladius compressicornis

A small black sawfly, occurring widely across Britain. The larvae feed on hawthorns *Crataegus* and related plants. [Compartments: B]

Dineura stilata

A small black and yellow sawfly, occurring widely across Britain. The larvae feed on hawthorns *Crataegus*. [Compartments: E]

Dolerus nigratus

A large black sawfly, occurring widely and commonly across Britain, the larvae feeding on grasses. [Compartments: A]

Euura myosotidis

A small black and yellow sawfly, common in meadows across Britain, the larvae feeding on clovers *Trifolium*, vetches *Vicia* and related plants. [Compartments: CG]

Halidamia affinis

A small black and orange sawfly, occurring widely across Britain, the larvae feeding on Cleavers *Galium aparine* and related bedstraws. [Compartments: E]

Rhogogaster genistae

A large green sawfly, occurring locally across Britain, the larvae feeding on Broom *Cytisus scoparius* and Dyer's Greenweed *Genista tinctoria*. [Compartments: D]

Rhogogaster punctulata

A large green sawfly, occurring widely across Britain, the larvae feeding on a wide range of trees. [Compartments: G]

Selandria serva

A small black and orange sawfly, widespread and often common across much of Britain especially in damper habitats, the larvae feeding on a range of grasses, sedges and rushes. [Compartments: A]

Stromboceros delicatulus

A green and black sawfly, widespread across much of Britain, the larvae feeding on ferns including Bracken *Pteridium aquilinum*. [Compartments: A]

Strongylogaster multifasciata

A large black and tan sawfly, widespread across much of Britain, the larvae feeding on ferns including Bracken *Pteridium aquilinum*. [Compartments: C]

Tenthredo baetica

A large black, red and yellow sawfly previously considered extinct but recently reappearing across East Anglia in a range of open habitats including arable farmland. Larvae feed on a range of plants in the Brassicaceae. [Compartments: GH]

Tenthredo brevicornis

A large black and yellow sawfly, widespread and locally abundant across Britain, favouring flowery meadows with bird's-foot trefoils *Lotus*, the larval foodplant. [Compartments: G]

Tenthredo livida

A large black and red sawfly with a white band on the antennae, occurring widely across Britain, the larvae feeding on a wide range of herbaceous plants. [Compartments: A]

Tenthredo mesomela

A large green and black sawfly, occurring widely in lowland areas across Britain, the larvae feeding on a wide range of plants. [Compartments: A]

Tenthredopsis litterata

A large sawfly, variable in colour, occurring widely across Britain, the larvae feeding on grasses including Cock's-foot *Dactylis glomerata*. [Compartments: E]

TIPHIIDAE

Tiphia femorata

A solitary wasp, which is a parasitoid of scarabeid beetle larvae. Found widely in southern Britain but not north of Yorkshire. Prefers open, sunny habitats. [Compartments: A]

VESPIDAE

Ancistrocerus nigricornis

A mason wasp, generally the first to emerge each spring. Widespread south of the Wash-Mersey line and more sporadic north of here. Nests are built in hollow twigs and the wasp provisions these with caterpillars of tortricid moths. [Compartments: D]

Ancistrocerus trifasciatus

A mason wasp, found commonly across much of England and Wales although scarce in southern Scotland. Occurs in a wide range of habitats, constructing its nests in hollow plant stems. [Compartments: H]

Vespula vulgaris (Common Wasp)

An extremely common and familiar wasp (although widely confused with *Vespula germanica* which is also very common). Found throughout the whole of Britain, in many different habitats. The workers catch various insects and feed them to the larvae in a communal hive. [Compartments: F]

LEPIDOPTERA (MOTHS AND BUTTERFLIES)

ARGYRESTHIIDAE

Argyresthia bonnetella (Hawthorn Argent)

A small moth, fairly common across much of Britain, found mostly around hawthorns *Crataegus*, the foodplant of the caterpillars. [Compartments: A]

CHOREUTIDAE

Anthophila fabriciana (Nettle-Tap)

A small moth, very common across Britain amongst nettles *Urtica*, the foodplant of the caterpillars. [Compartments: BH]

CRAMBIDAE

Evergestis forficalis (Garden Pebble)

A small brown moth, widespread across Britain and common in both gardens and semi-natural habitats, the caterpillars feeding on a range of Brassicaceae. [Compartments: D]

Nomophila noctuella (Rush Veneer)

A small brown moth, occurring mostly as a migrant from the continent but can be seen across the whole of Britain. Caterpillars will feed on both grasses and clovers *Trifolium*. [Compartments: B]

Ostrinia nubilalis (European Corn-borer)

A brown and orange moth, originally known as a migrant species but now appears increasingly established in parts of the south-east of Britain. The caterpillars mostly feed on Mugwort *Artemisia vulgaris* although abroad it can be a pest of maize crops. [Compartments: F]

EREBIDAE

Diaphora mendica (Muslin Moth)

A distinctive moth with a furry appearance, the male grey and female white, widespread in England and Wales but coastal in Scotland. Occurs in both wooded and open habitats, the caterpillars feeding on docks *Rumex* and chickweeds *Stellaria*. [Compartments: C]

Euproctis similis (Yellow-tail)

A distinctive white moth with a tuft of yellow hairs at the tip of the abdomen, widespread in Britain and common in the south, the caterpillars readily found on a number of deciduous trees and shrubs. [Compartments: G]

Orgyia antiqua (Vapourer)

A large reddish moth, the males regularly seen flying erratically by day (females are wingless). Common and widespread, particularly in the south, the distinctive caterpillars feeding on a wide range of trees and shrubs. [Compartments: C]

Tyria jacobaeae (Cinnabar)

A striking black and red moth, widespread in England and Wales though more local in Scotland, favouring grassy areas where the larval foodplant Ragwort *Jacobaea vulgaris* grows. The orange and black caterpillars are equally distinctive. [Compartments: H]

ERIOCRANIIDAE

Dyseriocrania subpurpurella (Common Oak Purple)

A small, metallic golden moth, very common and widespread across Britain, the moths flying in the early spring around oaks *Quercus*, on which leaves the blotch mines of the caterpillars can be seen subsequently.

[Compartments: E]

GEOMETRIDAE

Aspitates ochrearia (Yellow Belle)

A yellow-brown moth, flying both by day and at dusk, occurring mostly around southern coasts from Norfolk to Pembrokeshire and much more local inland, mostly in the Brecks. Favours dry open habitats, the caterpillars feeding on a number of low-growing plants. [Compartments: G]

Camptogramma bilineata (Yellow Shell)

A yellow moth, frequently disturbed by day, common through Britain in many habitats with the caterpillars feeding on a range of low-growing plants including chickweeds *Stellaria* and docks *Rumex*. [Compartments: CD]

Chiasmia clathrata (Latticed Heath)

A distinctive brown and yellow chequered moth, flying by day and night and found across most of Britain in a range of open habitats. Caterpillars feed on clovers *Trifolium* and Lucerne *Medicago sativa*. Status: Near Threatened (provisional) [Compartments: CG]

Erannis defoliaria (Mottled Umber)

A brownish (though variable) moth, flying late in the autumn, widespread in woodland and scrub across most of Britain. The caterpillars feed on a variety of trees and shrubs. Status: Vulnerable (provisional) [Compartments: E]

Opisthograptis luteolata (Brimstone Moth)

A distinctive yellow moth, common and widespread across Britain, the caterpillars feeding mostly on hawthorns *Crataegus* and Blackthorn *Prunus spinosa*. [Compartments: G]

Rhodometra sacraria (Vestal)

A buff moth with a pink-tinged cross-band. A migrant in widely varying numbers each year and can occur anywhere, although most frequent in the south. Caterpillars feed on knotgrasses *Polygonum*, docks *Rumex* and other low plants. [Compartments: G]

Timandra comae (Blood-vein)

A distinctive, red-lined moth, common and widespread in the south but scarce north of Yorkshire. Occurs in a range of often damper habitats, the caterpillars feeding on docks *Rumex* and other low plants.

[Compartments: F]

GLYPHIPTERIGIDAE

Glyphipterix simplicella (Cocksfoot Moth)

A very small moth, easily overlooked but widespread and often abundant across most of Britain. The caterpillars feed on Cock's-foot *Dactylis glomerata* but the adult moths are more often noted on flowers such as buttercups *Ranunculus*. [Compartments: DEFGH]

HESPERIIDAE

Thymelicus lineola (Essex Skipper)

A small orange butterfly, common and widespread in rough grassland habitats across much of central and southern England, where the range has been increasing. Caterpillars feed on a range of grasses. [Compartments: ACDH]

Thymelicus sylvestris (Small Skipper)

A small butterfly, occurring widely in Britain north to around Edinburgh. Favours open grassy habitats, with caterpillars feeding on Yorkshire-fog *Holcus lanatus* and other grasses. [Compartments: C]

LYCAENIDAE

Celastrina argiolus (Holly Blue)

A small blue butterfly, common and widespread in England and Wales although local in southern Scotland, found in woodland, scrub and gardens with the main caterpillar foodplants being Holly *Ilex aquifolium* and ivy *Hedera*. [Compartments: A]

Polyommatus icarus (Common Blue)

One of two widespread blue butterflies, this species occurs north as far as Shetland. Found mostly in open habitats, with the main larval foodplants being Common Bird's-foot Trefoil *Lotus corniculatus* and related species. [Compartments: BCDFGH]

Satyrrium w-album (White-letter Hairstreak)

A small dark butterfly with distinctive white and orange markings on the underwings, widespread but local in England and Wales in scrubby habitats. The caterpillars feed on elms *Ulmus*. Status: Vulnerable; Section 41 (England); Section 7 (Wales) [Compartments: D]

NEPTICULIDAE

Stigmella plagicolella (Scrubland Pigmy)

A tiny black moth, widespread and common across England and Wales. Seldom seen as an adult, but the larval leaf-mines can be found on Blackthorn *Prunus spinosa* (alongside those made by other species of moths). [Compartments: D]

NOCTUIDAE

Acronicta psi (Grey Dagger)

A grey moth with black markings, widespread across much of Britain in woodland and scrub habitats. The adults hard to identify with certainty but the caterpillars are distinctive, feeding on a range of trees and shrubs. [Compartments: H]

Autographa gamma (Silver Y)

A grey moth with a distinctive silver wing marking, this is largely a migrant species and can turn up anywhere in Britain, sometimes in abundance and in any habitat. The caterpillars feed on a range of low-growing plants including nettles *Urtica*. [Compartments: DG]

Dryobotodes eremita (Brindled Green)

A green patterned moth, widespread across Britain although more numerous further south, the caterpillars feeding on oaks *Quercus*. [Compartments: E]

Xestia c-nigrum (Setaceous Hebrew Character)

A brown and grey moth, found widely and sometimes abundantly across most of Britain. The caterpillars feed on a range of herbaceous plants, including nettles *Urtica*. [Compartments: G]

NYMPHALIDAE

Aglais io (Peacock)

A large familiar butterfly, common and widespread throughout Britain in a range of habitats. Caterpillars feed on Common Nettle *Urtica dioica*. [Compartments: B]

Aglais urticae (Small Tortoiseshell)

A familiar colourful butterfly, common and widespread across most of Britain although numbers can vary greatly between years. The caterpillars feed on nettles *Urtica*. [Compartments: FH]

Aphantopus hyperantus (Ringlet)

A dark, medium-sized butterfly, very common and widespread throughout most of Britain, often in woodland and scrub where it will still fly in shady conditions. The caterpillars feed on a range of grasses. [Compartments: ABD]

Coenonympha pamphilus (Small Heath)

A small brown butterfly, favouring grassy habitats with a short sward. Distributed across almost all of Britain, but with a significant decline noted in many areas in recent years. Status: Vulnerable; Section 41 (England); Section 7 (Wales); Scottish Biodiversity List; NI Priority Species List [Compartments: EH]

Lasiommata megera (Wall)

An orange-brown butterfly, widespread in England and Wales (and coastal in southern Scotland) but having experienced a major population decline in recent years. Now quite rare in most inland areas. The caterpillars feed on a range of grasses. Status: Endangered; Section 41 (England); Section 7 (Wales); Scottish Biodiversity List; NI Priority Species List [Compartments: ABCDFG]

Maniola jurtina (Meadow Brown)

A very common butterfly, abundant in most grassy habitats throughout Britain. Caterpillars feed on a variety of grasses. [Compartments: ACD FH]

Vanessa atalanta (Red Admiral)

A large black and red butterfly, common and widespread throughout all of Britain, numbers regularly boosted by continental immigration. The main foodplant for the caterpillars is nettles *Urtica*. [Compartments: ABCEH]

Vanessa cardui (Painted Lady)

A large orange and black butterfly, widespread and common throughout all of Britain but numbers very dependent on the scale of continental immigration in any given year. Caterpillars feed on thistles but it appears that the species seldom (if ever) successfully winters in Britain. [Compartments: BCDEFH]

PARAMETRIOTIDAE

Blastodacna hellerella (Hawthorn Cosmet)

A small black and white moth, widespread in much of England and Wales but scarce in Scotland. Most often found around hawthorns *Crataegus*, where the caterpillars feed within the fruit. [Compartments: A]

PIERIDAE

Anthocharis cardamines (Orange-tip)

A familiar spring butterfly, especially the males with their orange-tipped white wings. Widespread and common in most habitats across much of Britain, the caterpillars feeding on Cuckoo-flower *Cardamine pratensis* and Garlic Mustard *Alliaria petiolata*. [Compartments: C]

Pieris brassicae (Large White)

A common butterfly, can be found anywhere in Britain as numbers are regularly supplemented by migrants from the continent. Caterpillars feed on a range of crucifers in a range of habitats. [Compartments: ADEFGH]

Pieris napi (Green-veined White)

A very common white butterfly, particularly in damper habitats. Distributed throughout the whole of Britain. [Compartments: AD]

Pieris rapae (Small White)

A very common butterfly, abundant in some years. Feeds mostly on crucifers including cabbages. Can be found anywhere. [Compartments: BCDEFGH]

SPHINGIDAE

Macroglossum stellatarum (Humming-bird Hawk-moth)

A well-known and striking migrant moth, appearing more like a hummingbird as it hovers at flowers of various types. Most common in the south, but numbers vary annually and can turn up anywhere. Caterpillars feed on bedstraws *Galium*. [Compartments: C]

TORTRICIDAE

Agapeta hamana (Common Yellow Conch)

A small yellowish moth, widespread and common through much of Britain in many habitats, the caterpillars feeding on thistles. [Compartments: A]

Aleimma loeflingiana (Yellow Oak Button)

A small yellow and brown moth, widespread through much of Britain although scarcer further north, in woodland or other habitats where there are oaks *Quercus* for the caterpillars to feed on. [Compartments: E]

Epiphyas postvittana (Light Brown Apple Moth)

A small brown moth, originally introduced into Cornwall from Australia in the 1930s but now very common in much of Britain, especially gardens and suburban areas. The larvae feed on a very wide range of plants.

[Compartments: H]

Grapholita janthinana (Pale-bordered Piercer)

A small brown moth, found mostly in the southern half of Britain, the caterpillars feeding on the fruits of hawthorns *Crataegus*. [Compartments: F]

YPONOMEUTIDAE

Paraswammerdamia nebulella (Hawthorn Ermel)

A small grey moth, found widely throughout much of Britain, mostly around hawthorns *Crataegus* and related foodplants for the caterpillars. [Compartments: B]

MISCELLAENOUS INSECT ORDERS

CHRYSOPIDAE

Chrysoperla carnea

A distinctive green lacewing, although care is needed with identification to rule out several very similar species. Common and widespread throughout Britain. [Compartments: BCGH]

HEMEROBIIDAE

Hemerobius micans

A small brown lacewing, common and widespread across Britain, closely associated with oaks *Quercus*. [Compartments: A]

Micromus variegatus

A small brown lacewing, common and widespread throughout Britain in dense vegetation. The larvae feed on aphids. [Compartments: C]

LIMNEPHILIDAE

Limnephilus auricula

A medium-sized caddisfly, common and widespread across much of Britain, favouring temporary pools, ditches and marshes. [Compartments: E]

PANORPIDAE

Panorpa communis

A common scorpion-fly across most of England and Wales, although scarce in Scotland. Frequently found in scrub, hedgerows, nettle-beds etc. [Compartments: A]

Panorpa germanica

A common scorpion-fly across much of Britain, frequenting hedgerows and shady areas with lush vegetation. [Compartments: C]

MOLLUSCS (SNAILS AND SLUGS)

GEOMITRIDAE

Xeroplexa intersecta (Wrinkled Snail)

A common snail of open habitats, preferring calcareous soils. Widespread in the south-east but more coastal elsewhere in Britain. [Compartments: B]

HELICIDAE

Cepaea hortensis (White-lipped Snail)

A large terrestrial snail, very widespread and common throughout Britain although somewhat more coastal in northern Scotland. Occurs in a wide variety of habitats. [Compartments: A]

Cornu aspersum (Common Garden Snail)

A familiar, large terrestrial snail, very widespread and common throughout Britain, although more coastal in the north. [Compartments: AF]

HYGROMIIDAE

Ceriuella virgata (Striped Snail)

A common snail of open habitats, preferring calcareous soils. Widespread in the south-east but more coastal elsewhere in Britain. [Compartments: A]

Monacha cantiana (Kentish Snail)

A large snail, initially introduced but now widespread across most of England, as well as parts of Wales and Scotland. Occurs in a wide range of habitats. [Compartments: C]