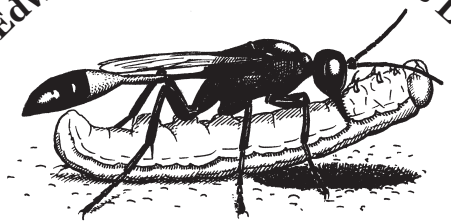
An Entomological survey within Binsted Parish, 2016

MAVES

Edwards Ecological Services Ltd



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MAVES Entomological Report

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1. Introduction

1.1 Binsted Parish has a very active group concerned with increasing the knowledge of the general environment of the parish - MAVES- Mid Arun Environmental Survey. During 2016 Peter Hodge and Mike Edwards were contracted to undertake two days' survey of some of the entomological interest of the parish and provide recommendations for the maintenance or enhancement of this. The survey was part of a larger project managed by Jackie Thompson of Wildlife Splash.

1.2 2016 was not an easy year in which to undertake entomological surveys with many days of overcast and cool weather in a generally unsettled weather pattern. Never-the-less we did get two days of fairly reasonable weather for survey, 8th June, sunny, but cool all day, and 24th July, sunny to start with, overcast and cold by early afternoon.

1.3 Mike Edwards concentrated on aculeate Hymenoptera (ants, wasps and bees), Orthoptera (grasshoppers and crickets) and some groups of Diptera (flies, especially craneflies, hoverflies and the larger Brachycera). Peter Hodge concentrated on Coleoptera (beetles), Hemiptera (bugs) and further groups of Diptera. Insects from other groups were recorded as seen and recognised. Whilst this coverage is not exhaustive, it samples a good cross-section of the species likely to be present, including wetland and dryland components.

1.4 The same route was taken on both visits, this covering a good cross-section of the parish and taking in a number of different broad habitats. This route is shown on map 1. Survey results have been divided into two components, east and west of the minor road past Binsted Church. To the west lies the wetland valley of Binsted Rife, to the east the drier open farmland and woodland adjoining the Rewell Wood, which lies north of the A27 trunk road. Binstead Rife and Old Scotland Lane were visited in the afternoon on both occasions, the remainder of the site (circular walk) in the mornings.

1.5 The visits were too late in the year for doing justice to the potential woodland component, where visits need to be made before canopy closure for the detection of most species, although the route did pass through two arms of the woodland.

1.6 It should be noted that a 1970's private publication on the very significant entomological fauna of the Rewell Wood area (immediately to the north of the current one) did make some very positive reference to the Binstead Woods, noting these as being similar, if a little damper generally, to the Rewell Wood area. Some data from Binsted Woods was included in this report (West Sussex Recording Group, Rewell Wood Report, 1978).

1.7 The survey reported here is very much a 'phase 1' item, much more detailed recording over a longer tine period in the year would be required to do justice to the fauna of the area, especially as it is so close to the well-recorded, and very significant Rewell Wood Area.

1.8 A total of 249 species were recorded during the survey, including 17 which have been listed as being of conservation importance. It should be noted that the 1990 Conservation Review system, plus the 'Section 41' species list has been used as not all groups surveyed have been updated to the modern IUCN-based one. This inevitably means that adjustments should be made to the list, based on modern knowledge and distributions.

1.9 In particular, two Orthoptera (*Metrioptera roeselii,* Roesell's Bush Cricket and *Concocephalus fuscus*, long-winged Cone-head) and two aculeate Hymenoptera (*Lasioglossum pauxillum* and *L. malachurum*) have become very much commoner since the date of the original reviews, so much so that any of these species may be found almost anywhere in southern England and parts of Wales, although not found at all in northern England or Scotland.

1.10 The listing of the Cinnabar Moth under Section 41 is a different situation and is tied up with socio-politics as much as anything. In one camp are the ragwort haters - largely horse owners who are convinced that it is the very worst of all things - despite the fact that horse grazing is often one of the best promoters of Ragwort. On the other, a large group of entomologists who know of a lot of insect species associated with this plant, many of which are considered scarce (often being on the

Map 1. 2016 Survey route for Binstead parish and major locations mentioned in text (para. nos.).

edge of their range. As the Cinnabar Moth feeds on Ragwort it was promoted as a counter to the 'pull it up everywhere' (very poor control management for ragwort) brigade. One man's meat.... What the actual situation is with The Cinnabar (which is an effective control agent itself) is much less clear. See http://www.ragwort.org.uk/ for a fairly dispassionate look at Ragwort.

1.11 Although not reported on here, insect flight traps set on part of our survey route during 2016 are known to have recorded further Coleoptera of conservation significance.

2. Assessment and management suggestions

2.1 Binsted Rife is a different habitat to those found elsewhere, with localised peat deposits at the base of a flushed grassland below the minor road. Such situations are extremely scarce in West Sussex generally, and require careful conservation as they support specialised plant and insect communities; several cranefly species are restricted to such locations, including *Tipula nigrotipula,* recorded here during this survey. The Nationally Scarce Leaf Beetle *Chrysolina oricala* was discovered close by the church, feeding on Hedge Parsley, and the local legume-associated bee *Andrena labialis* was found on the flushed grasslands immediately above the Rife.

The cranefly *Tipula nigrotipula*, recorded at Binsted Rife, is associated with wet peat, a scarce habitat in West Sussex.

2.2 Whilst the larger fields above the flushed zone remain in active farming management, the smaller, sloping and more awkward areas running into the Rife itself could, with real benefit, be grazed rather harder, although this should be done in sections, not all together. Grazing should include periods during the summer, which would help reduce the stands of taller, rank vegetation and create areas of shorter grassland, improving the habitat niches for lower-growing plants of damp meadows and the associated insects. Such grazing would be best done by cattle, especially as sheep are likely to have problems with wet feet in this situation. A degree of poaching, resulting in exposure of some of the peat, is likely to be beneficial, but this must not be excessive!

2.3 This area needs more survey, including at other times of the year, probably with trapping to locate low-density species associated with such habitats. We were not able to locate any areas of open water (Knucker holes) within the peat areas, but understand that these are present. Such features need sampling for water beetles in particular. It should be noted that water beetles were not on our survey brief.

2.4 Old Scotland Lane. This old trackway runs between two arable fields on gravelly soils which have considerable areas not under cultivation. It started off close to the minor road as rather damp and shady, but it soon opened out to reveal two wide field margins which supported a good range of flower species, including stands of Common Knapweed, which was being heavily visited by several Bumblebee species. The Nationally Scarce snail-hunting beetle *Drilus flavescens* was also found here.

2.5 The margins away from the track were not investigated, but these clearly include considerable areas of field corner and uncultivated margin. As these are developed on the same soils which make the Rewell Wood area just to the north so rich entomologically they would repay much closer and prolonged investigation. The margins themselves have become rather dominated by coarser vegetation as they have fallen out of active farming management. Creating some soil disturbance by light ploughing and, if possible, following this with some rotational grazing management, if not a programme of cutting and removing vegetation on rotation would promote the sort of environment seen alongside the trackway itself. Maintaining small areas of bare gravelly soil, perhaps as banks at the foot of the hedges, would be a very positive feature for nesting bees and wasps.

2.6 The small field and hedgerows between the minor road and the easterly tongue of woodland were good examples of modern farmland with smaller, less economically rewarding fields under good management. The hedgerow running across the two large arable units had a good, south-facing aspect to one side and a variety of woody species. The grassy margin, whilst not botanically varied, served to protect the hedge-bottom itself. Maintaining this buffer through the rotational cutting of the hedge-bottom and adjacent margin is a highly recommended action. Such areas provide good nesting habitats, with forage resources in the hedge itself, for a range of spring-flying bees, many of which are important crop pollinators.

This hedgerow (2.6) has good physical quality features. It faces south and has a south-facing sloping foot (probably a result of earlier ploughing to the hedge!). The development of a rather scrubby layer at the base of the hedge includes sucker Blackthorn, a favoured egg-laying situation for Brown Hairstreak Butterflies as well as providing good over-wintering habitat for a range of insect species and nesting habitat for bumblebees. However, it does need cutting back on rotation, so that it doesn't just develop into another part of the hedge, it is maintaining the fairly open structure which is critical. The fairly narrow field margin is a vital part of this overall structure. This could be cut more regularly with considerable advantage for both farmer (weed control) and conservation as it promotes a different range of flower species to taller grassland; open, short grassland, managed for a conservation priority is a rare thing!

2.7 The most surprising find here was the fly *Dorycera graminum,* a Section 41 species more normally associated with damp, but drained, grasslands in the Thames Corridor. It is likely that the larva of the fly feed in the elongating flower head of grasses; the warm, south-facing aspect, with the correct humidity level being the less easily provided part of its habitat. This species was also found on the southern-most margin of our circuit, again in similar conditions.

2.8 The margins referred to in 2.5 are also present along the sides of the woodland running north from the hedgerow, as well as on the eastern side of the woodland finger. There are also two small fields, no longer suitable for cultivation with modern farm machinery, within the woodland itself. The RDB 3 Soldier Beetle *Cantharis fusca* was recorded along these damp woodland edges. This species is also recorded at the nearby Black Ditch to the east of Arundel, but survey there in 2014 failed to find it.

2.9 Establishing a suitable grazing regime, supported by occasional ground disturbance here too is very likely to have high conservation gain, especially as it would provide essential open space for species living in the wood itself. Many species which live within woodland as larvae need to find flowers for adult flight and egg development. It is the loss of this partial habitat component which is more critical in much of the agricultural landscape, as the woodland itself. Further survey of these areas is highly recommended.

2.10 As noted above, the survey was not carried out at a suitable time for investigating the fauna within the wood itself, so little time was spent exploring this. Areas where large-crowned trees maintain open habitat under the canopy stress would be important targets, there are plenty of open-crowned trees, whether they have associated open areas is not known. Again, much more directed survey is required to establish the true value of the area, but I would expect it to be high, especially as many species associated with such woodland systems spend much time being 'rare', only to increase during occasional periods of highly favourable conditions, such as a major tree fall.

2.11 Any woodland management which increases the rotational occurrence of open areas would be highly beneficial. This does not need to be 'short-rotation coppicing', longer term firewood removal would serve well and be more relevant in modern terms.

2.12 Clearance of a high proportion of the trees which currently crowd the pond where the footpath rejoins the minor road would be highly beneficial to aquatic insects. Large numbers of trees eutrophicate the water through leaf fall and reduce the light, leading to a loss of submerged macrophyte vegetation, essential for diverse water-beetle populations. Fish should not be stocked!

2.13 During a winter circuit of the area, before writing this report, I noted that my recommendations regarding cutting the hedge-bottoms were already being carried out (nothing to do with me) along the newly-created hedgerow to the south. This area was where the Section 41 Bumblebee species *Bombus ruderatus* was recorded, the first record which I am aware of in this part of West Sussex since the early 20th Century. This species has responded well to the increased planting of red clover margins fields and as part of agricultural rotations over the past 20 years and is now being found over much of its former distribution, a success story for informed habitat restoration indeed.

Worker *Bombus ruderatus* on Red Clover.

3. The species recorded, with brief notes.

Species	Binsted Park	Binsted Rife	Conservation Status	Distribution	Notes
ODONATA (Damsel and Dragonflies)					
Coenagrionidae (Damselflies)					
Enallagma cyathigerum	1	0		Universal	Common Blue Damselfly. Commonly found. Breeds in a variety of open waters.
ORTHOPTERA (Crickets and Grasshoppers)					
Acrididae (Grasshoppers)					
Chorthippus parallelus	1	0		Universal	Meadow Grasshopper. Commonly found in a variety of grassy habitats.
Omocestus viridulus	1	0		Universal	Common Green Grasshopper. Commonly found. Long grass in moister situations.
Tettigoniidae (Bush Crickets)					
Conocephalus fuscus	1	0	Nationally Scarce a	Southern Widespread	Long-winged Cone-head. Commonly found. Increasingly widespread throughout southern England.
Leptophyes punctatissima	1	0		Southern Widespread	Speckled Bush-cricket. Commonly found. Strongly biased towards southern England and Wales. Scrub.
Meconema thalassinum	1	0		Southern Widespread	Oak Bush-cricket. Commonly found. Wooded localities in the southern British Isles.
Metrioptera roeselii	1	0	Nationally Scarce b	Southern Restricted	Roesel,Äôs Bush-cricket. Commonly found in long grasslands and spreading rapidly in southern Britain.
Pholidoptera griseoaptera	1	0		Southern Widespread	Dark Bush-cricket. Commonly found. A species of scrub.
HEMIPTERA-HETEROPTERA (Bugs)					
Coreidae (Squashbugs)					
Coreus marginatus	0	1		Southern Widespread	Commonly found. On Rumex and Polygonum
Miridae (Capsid Bugs)					
Campyloneura virgula	1	0		Universal	Commonly found. in hedgerows and thickets
Capsus ater	1	1		Universal	Commonly found, associated with grasses
Closterotomus norwegicus	1	0		Universal	Commonly found on a variety of plants
Deraeocoris flavilinea	1	0		Southern Restricted	Infrequently found. Only very recently recorded from Britain, this recent immigrant from European mainland has already been found in several English counties. It is likely that it will continue to spread and no conservation status is likely to be applied. Most records are for specimens beaten off the foliage of Sycamore Acer pseudoplatanus infested with aphids. The species is probably partially predatory.
Deraeocoris ruber	1	0		Southern Widespread	Commonly found, associated with a variety of plants
Dicyphus epilobii	1	1		Universal	Commonly found. Associated with Epilobium hirsutum
Dicyphus errans	1	0		Universal	Commonly found. Associated with a variety of herbaceous plants including Urtica, Stachys sylvatica, Verbascum, Galeopsis, Geranium.
Halticus luteicollis	1	1		Southern Restricted	Frequently found. Local, associated with bedstraws
Heterotoma planicornis	1	0		Universal	Commonly found on a variety of plant species

Leptopterna dolabrata	1	0		Universal	Commonly found. Associated with grasses
Liocoris tripustulatus	1	1		Universal	Commonly found, on Stinging Nettle Urtica dioica
Lygocoris pabulinus	1	0		Universal	Commonly found. Feeds on a wide variety of herbaceous and woody plant species.
Notostira elongata	1	0		Southern Widespread	Commonly found, associated with grasses
Oncotylus viridiflavus	1	0		Southern Restricted	Locally commonly found, on Hardheads Centaurea nigra
Orthocephalus coriaceus	1	0		Souithern Widespread	Frequently found. On several species of Asteraceae
Orthonotus rufifrons	1	0		Southern Widespread	Commonly found. Associated with the flowers and fruits of Stinging Nettle.
Orthops campestris	0	1		Universal	Commonly found, on several species of Apiaceae
Phytocoris ulmi	1	0		Universal	Commonly found, on grasses
Phytocoris varipes	1	0		Southern Widespread	Commonly found associated with grasses
Pinalitus cervinus	1	0		Universal	Commonly found. The adults and young suck the sap of trees through the foliage.
Plagiognathus arbustorum	1	1		Universal	Commonly found. On a variety of herbaceous plants
Plagiognathus chrysanthemi	1	1		Universal	Commonly found. On a variety of herbaceous plants
Stenodema calcarata	0	1		Universal	Commonly found. Associated with grasses
Stenodema laevigata	1	0		Universal	Commonly found associated with grasses
Stenotus binotatus	0	1		Southern Widespread	Commonly found. Associated with grasses.
Nabidae (Damselbugs)					
Nabis flavomarginatus	1	0		Universal	Commonly found. It lives amongst grasses, especially where they grow in damp areas or become tussocky. Widely distributed throughout the British Isles.
Pentatomidae (Sheildbugs)					
Aelia acuminata	1	0		Southern Restricted	Commonly found, associated with grasses
Dolycoris baccarum	1	0		Universal	Commonly found. On a variety of herbaceous plants.
Eysarcoris venustissimus	1	0		Southern Restricted	Commonly found. On Labiatae, especially Stachys sylvatica
Pentatoma rufipes	1	0		Universal	Commonly found It occurs on a variety of deciduous trees, the adults feeding, at least partially, on other insects.
HEMIPTERA-HOMOPTERA (Bugs)					
Cercopidae (Froghoppers)					
Cercopis vulnerata	1	0		Southern Widespread	Commonly found. In grassland and woodland edge habitats
Neophilaenus lineatus	1	0		Universal	Commonly found. On grasses
Philaenus spumarius	1	0		Universal	Commonly found. On a variety of trees and herbaceous plants
Cicadellidae (Leafhoppers)					
Aphrodes makarovi	1	0		Universal	Commonly found, on grasses
Aphrophora alni	1	0		Universal	Commonly found, on a variety of trees and shrubs
Cixiidae (Planthoppers)					
Cixius nervosus	1	0		Universal	Commonly found. Especially in woods
Ditropis pteridis	1	0		Southern Widespread	Commonly found, on Bracken

Issidae (Planthoppers)					
Issus coleoptratus	1	0		Southern Widespread	Frequently Found. Associated with ivy Hedera helix
LEPIDOPTERA (Butterflies and Moths)					
Arctiidae (Tiger Moths)					
Eilema depressa	1	0		Southern widespread	Buff Footman. Locally frequently found. Larvae feed on lichens in woodland.
Tyria jacobaeae	0	1	Section 41 species	Universal	The Cinnabar moth. Commonly found. Larvae feed on Ragwort.
Choruetidae					
Anthophila fabriciana	1	1		Southern Widespread	Nettle Tap. Commonly found. Feeds on the leaves of Stinging Nettle.
Hesperiidae (Skipper Butterflies)					
Thymelicus sylvestris	1	0		Southern Widespread	Small Skipper butterfly. Commonly found. The larva feeds on grasses, especially Holcus spp.
Nymphalidae (Nymphalid, Fritillary and Brown Buterflies)					
Aphantopus hyperantus	1	0		Universal	Ringlet butterfly. Commonly found. The larva feeds on grass.
Inachis io	1	1		Southern Widespread	Peacock butterfly. Commonly found. The larvae feed on common nettle, living communally.
Maniola jurtina	1	0		Universal	Meadow Brown butterfly. Commonly found. The larva feeds on many species of grass, preferring the finer varieties. It occurs in open grassy situations.
Pararge aegeria	1	0		Universal	Speckled Wood butterfly. Commonly found. Associated with shady woodlands, although it still requires patches of sunlight. The larva feeds on grasses, usually in sheltered situations such as woodland and scrub.
Polygonia c-album	1	0		Southern Widespread	Comma butterfly. Commonly found. The larva feeds on the leaves of nettle, elm and hop.
Pyronia tithonus	1	0		Southern Widespread	Gatekeeper butterfly. Commonly found. The larva feeds on various grasses, narrow-bladed species being preferred.
Vanessa atalanta	1	0		Migrant	Red Admiral butterfly. Commonly found. Migrant. The larva feeds on nettle. The adult is a migrant and can turn up almost anywhere.
Vanessa cardui	1	0		Migrant	Painted Lady butterfly. Commonly found. The larva feeds mainly on species of thistle. The adult is a migrant and cannot survive the British winter.
Pieridae (White Butterflies)					
Gonepteryx rhamni	1	0		Southern Widespread	Brimstone butterfly. Commonly found. The larva feeds on buckthorns.
Pieris brassicae	1	0		Universal	Large White butterfly. Commonly found. The larva feeds on various wild crucifers and legumes as well as cultivated cabbage.
Pieris rapae	1	0		Universal	Small White butterfly. Commonly found. The larva feeds on a range of wild crucifers as well as cultivated ones.
Zygaenidae (Burnett and Forester Moths)					
Zygaena filipendulae	1	0		Universal	6-spot Burnet moth. Commonly found. The larva feeds on bird's-foot trefoil but also needs long grass on which to make its cocoon.

COLEOPTERA (Beetles)					
Anobiidae (Woodworm Beetles)					
Anobium inexspectatum	1	0	Nationally Scarce b	Southern Widespread	Infrequently found. This species closely resembles the common furniture beetle but its larvae bore into old ivy.
Ochina ptinoides	1	0		Southern Widespread	Locally frequently found. Breeds in dead Ivy stems.
Apionidae (Weevils)					
Apion frumentarium	1	0		Universal	Commonly found, on dock Rumex
Ceratapion onopordi	1	0		Universal	Commonly found, on Arctium, Centaurea & thistles
Eutrichapion ervi	1	0		Universal	Commonly found. On vetches, especially Lathyrus pratensis
Eutrichapion viciae	1	0		Universal	Frequently found, on Yellow Vetchling Lathyrus pratensis
Oxystoma pomonae	1	0		Southern Restricted	Frequently found. On Yellow Vetchling Lathyrus pratensis
Perapion curtirostre	0	1		Universal	Commonly found, on dock Rumex species
Perapion hydrolapathi	1	0		Universal	Commonly found, on dock Rumex species
Perapion violaceum	0	1		Universal	Commonly found, on dock Rumex species
Bruchididae (Seed Weevils)					
Bruchidius varius	1	0		Southern Restricted	Commonly found, on clover Trifolium pratense & T. medium
Byturidae (Raspberry Beetles)					
Byturus tomentosus	1	0		Universal	Commonly found, on Rosaceae
Cantharidae (Soldier Beetles)					
Cantharis cryptica	1	0		Universal	Commonly found. Associated with areas of lush vegetation.
Cantharis fusca	1	0	RDB 3	Southern Widespread	Infrequently found. A large and conspicuous black and red soldier beetle which was formerly widespread in England and Wales but recently (post-1970) only recorded from four vice counties, all in southern England, suggesting that a decline has taken place. It is still locally plentiful in a few places, notably on the Somerset Levels. Recorded from a variety of unimproved habitats including fens, woodland edges river banks and coastal grasslands. Both adults and larvae are probably predatory. Not listed in the Red Data Book (Shirt, 1987).
Cantharis lateralis	1	0		Southern Widespread	Commonly found, associated with grassland habitats
Cantharis livida	1	0		Southern Widespread	Commonly found.
Cantharis nigra	1	0		Universal	Commonly found. In lowland marshes and meadows
Cantharis pallida	0	1		Universal	Commonly found, in a variety of open wetland habitats
Cantharis rufa	1	0		Universal	Commonly found in lowland marshes and meadows.
Cantharis rustica	1	1		Southern Widespread	Commonly found, in a variety of grassland habitats
Malthinus flaveolus	0	1		Universal	Commonly found, on the foliage of trees and shrubs
Malthinus seriepunctatus	1	1		Southern Widespread	Commonly found, in broadleaf woodland habitats
Rhagonycha fulva	1	1		Universal	Commonly found. In a wide variety of habitats.
Rhagonycha limbata	1	1		Southern Widespread	Commonly found. In grassland habitats
Carabidae (Ground Beetles)					
Demetrias atricapillus	0	1		Southern Widespread	Commonly found. In grassland habitats and cereal fields.

Nebria brevicollis	1	0		Universal	Very commonly found in a variety of habitats.
Poecilus cupreus	1	0		Southern Widespread	Commonly found. Often associated with arable land.
Pterostichus madidus	1	0		Universal	Commonly found, in a wide variety of habitats
Cerambycidae (Long-horn Beetles)					
Grammoptera ruficornis	1	0		Southern Widespread	Commonly found in woodland habitats. Larvae develop in small twigs.
Pseudovadonia livida	1	0		Southern Restricted	Commonly found. In dry grassland
Rutpela maculata	1	0		Southern Widespread	Commonly found, adults visit flowers, breeds in tree stumps.
Stenocorus meridianus	1	0		Southern Wiespread	Locally frequently found. Adults visit flowers, breeds in dead wood
Chrysomelidae (Leaf Beetles)					
Altica lythri	0	1		Southern Widespread	Commonly found. Adult and larvae fed on Willowherbs.
Cassida rubiginosa	1	0		Universal	Commonly found, on thistles
Cassida vibex	1	0		Southern Widespread	Commonly found, on thistles
Chrysolina oricalcia	0	1	Nationally Scarce b	Universal	Locally infrequently found in dry grasslands. Feeds on the foliage of umbelifers.
Chrysolina polita	1	1		Universal	Commonly found, on Labiatae
Crepidodera aurea	1	0		Southern Widespread	Commonly found, on willows Salix species
Cryptocephalus moraei	1	0		Southern Widespread	Frequently found. The adults and larvae feed on St. John,Äôs Wort growing in short vegetation.
Donacia semicuprea	0	1		Southern Widespread	Commonly found. Larvae feed in roots of Reed Sweet grass Glyceria sp. and possibly Branched Bur-reed Sparganium erectum. Adults on foliage.
Galerucella sagittariae	0	1		Universal	Frequently found. Associated with wetlands. feeds on the leaves of a range of plant species, including Runicaceae and Rosaceae
Gastrophysa polygoni	1	0		Universal	Commonly found. Adults and larvae feed on the leaves of Polygonaceae.
Gastrophysa viridula	0	1		Universal	Very commonly found, most often feeding on leaves of Polygonaceae, but will also utilise other plant families.
Oulema obscura	0	1		Universal	Common, on grasses in marshy meadows
Phaedon tumidulus	1	0		Universal	It feeds on the leaves of various umbellifers, especially hogweed.
Pilemostoma fastuosa	1	0	Nationally Scarce a	Southern Restricted	Very local, infrequently found. Associated with Asteraceae, especially Ploughman,Äôs Spikenard and Common Fleabane. The larvae live on the undersides of the leaves.
Podagrica fuscicornis	1	0	Nationally Scarce b	Southern Widespread	Locally frequently found. Adults feed on foliage and larvae on roots of Mallows
Prasocuris junci	0	1		Southern Widespread	Commonly found. Although it may be found on a variety of plants growing in wet places, its hosts are plants of the genus Veronica.
Sphaeroderma rubidum	1	0		Southern Widespread	Commonly found, on Hardheads Centaurea nigra
Sphaeroderma testaceum	1	0		Universal	Commonly found, on thistles
Coccinellidae (Ladybird Beetles)					
Adalia bipunctata	1	0		Universal	Very commonly found. Larvae and adults feed on aphids, usually on shrubs and low-growing plants.
Adalia decempunctata	1	0		Universal	Commonly found, on foliage of broadleaf trees.
Calvia quattuordecimguttata	1	0		Universal	Commonly found, on foliage of broadleaf trees.

Coccidula rufa	0	1		Universal	Commonly found. Often associated with Reeds and Typha in wetlands.
Coccinella septempunctata	1	1		Universal	Commonly found. In a wide variety of habitats
Harmonia axyridis	0	1		Southern Widespread	Harlequin Ladybird. Commonly found. A fairly large ladybird occurring in a wide range of colour patterns. It occurs on various herbaceous plants and trees, the larvae being predatory on aphids and other insects. A recent addition to the British fauna, spreading rapidly.
Propylea quattuordecimpunctata	1	1		Universal	Commonly found. In a wide variety of habitats
Rhyzobius litura	1	1		Universal	Commonly found, in grassland habitats. Feeds on scale insects.
Subcoccinella vigintiquattuorpunctata	1	1		Universal	Commonly found, in dry grassland
Tytthaspis sedecimpunctata	1	0		Universal	16-spot ladybird. Commonly found, in wet grassland
Curculionidae (Weevils)					
Anthonomus rubi	1	0		Universal	Commonly found. On herbaceous Rosaceae species.
Ceutorhynchus obstrictus	1	0		Universal	Commonly found. Feeds on Brassicaceae
Ceutorhynchus pallidactylus	1	0		Universal	Commonly found, on Brassicaceae.
Ceutorhynchus pyrrhorhynchus	1	0		Southern Widespread	Commonly found. Feeds on Brassicaceae, especially Hedge Mustard Sisymbrium officinale and Sea Kale Cakile maritima.
Datonychus melanostictus	0	1		Southern Restricted	Commonly found, on Water Mint Mentha aquatica
Hypera pollux	0	1		Southern Widespread	Commonly found. In wetlandhabitats on Apium, Peucedenum, Oenanthe, also possibly on Daucus. Thereis also a record from Crithmum maritimum.
Isochnus populicola	1	0	pRDBK	Southern Restricted	Infrequently found. Reliably recorded from only East Kent, West Kent, East Sussex andrecently (August 2000) in Middlesex. First found at Canterbury in 1952and Sandwich in 1970, it is now beginning to spread and has been foundrecently in several other places in Kent. It was discovered near RiseFarm on the Lewes Brooks, East Sussex in 1996. Phytophagous, the larvae are leaf miners. Associated with poplar and willow but most records are from Crack Willow Salix fragilis. Not listed in the insect Red Data Book(Shirt, 1987).
Liophloeus tessulatus	1	0		Universal	Commonly found. Adults often found on Ivy, but larvae feed in the rootstocks of Umbellifers.
Nedyus quadrimaculatus	1	1		Universal	Commonly found, on Stinging Nettle Urtica dioica.
Parethelcus pollinarius	1	0		Universal	Commonly found, on Stinging Nettle Urtica dioica
Phyllobius pomaceus	0	1		Southern Widespread	Comonly found. On Stinging Nettle Urtica dioica
Phyllobius roboretanus	1	1		Southern Widespread	Commonly found, in grassland habitats
Sitona lineatus	1	1		Universal	Commonly found. On various species of Fabaceae
Tychius picirostris	1	1		Universal	Commonly found, on Trifolium species
Drilidae					
Drilus flavescens	1	0	Nationally Scarce a	Southern Restricted	Infrequently found and local. Recentrecords for only the Isle of Wight, Hampshire, Surrey, Kent and Sussex.Seldom found away from chalk grassland, the larvae feed on snails. The female is flightless.
Elateridae (Click Beetles)					
Agriotes lineatus	0	1		Universal	Commonly found. In grassland habitats
Athous bicolor	1	0		Southern Widespread	Commonly found, in dry grassland habitats
Athous haemorrhoidalis	1	0		Universal	Commonly found. In grassland and woodland edge habitats.

Hemicrepidius hirtus	1	0		Universal	Commonly found. In grasslands.
Melyridae					
Cordylepherus viridis	1	0		Southern Restricted	Frequently found, in dry grassland
Malachius bipustulatus	1	0		Southern Widespread	Commonly found, on flowers in grassland and woodland.
Mordellidae (Tumbling Flower Beetles)					
Mordellistena neuwaldeggiana	1	0	RDB K	Southern Restricted	Infrequently found. Very local in southern England and only recently (1970 onwards) recorded from a few counties. Due to confusion with closely related species, the current status and distribution is uncertain. Occurs in or at the edges of woodland and pasture woodland. The larvae are stated to develop either in dead wood or plant stems, probably the latter
Mordellochroa abdominalis	1	0		Southern Widespread	Frequently found, but local. Adults occur on flowers and larvae probably develop in dead wood or plant stems.
Nitidulidae (Pollen Beetles)					
Meligethes aeneus	1	0		Universal	Commonly found. Breeds in flowers of Brassicaceae.
Meligethes ruficornis	1	0		Southern Widespread	Infrequently found and localised. Breeds in flowers of Ballota nigra
Oedemeridae					
Oedemera lurida	1	0		Southern Widespread	Commonly found. On a variety of flowers.
Oedemera nobilis	1	1		Southern Widespread	Commonly found. On a variety of flowers
Pyrochroidae (Cardinal Beetles)					
Pyrochroa serraticornis	1	1		Southern Widespread	Frequently found. The larvae are predatory under the bark of fallen trees in shady woodland.
Scirtidae					
Microcara testacea	1	0		Universal	Commonly found. In wetland habitats, larvae are aquatic
Scraptiidae					
Anaspis pulicaria	1	0		Southern Widespread	Commonly found, on a variety of flowers.
Staphylinidae (Rove Beetles)					
Paederus riparius	0	1		Southern Widespread	Commonly found. in wetland habitats
Tachyporus hypnorum	1	0		Universal	Commonly found, amongst litter on the ground.
Tenebrionidae					
Lagria hirta	1	0		Universal	Commonly found. Associated with hedgerows and scrub.
DIPTERA (Flies)					
Asilidae (Robberflies)					
Dioctria atricapilla	1	0		Southern Widespread	Commonly found. Dry, grassy areas and heaths.
Dioctria baumhaueri	1	0		Southern Widespread	Commonly found. Dry, grassy areas and heaths at the edge of woodland.

Leptogaster cylindrica	1	0		Southern Widespread.	Frequently found in long grass. The adult is an active predator of flying insects, the larvae are soil-dwelling predators.
Conopidae (Thick-headed Flies)					
Physocephala rufipes	1	0		Southern Widespread	Frequently found. A parasite of bumble bees.
Empididae (Dance Flies)					
Empis livida	1	0		Universal	Commonly found. The larvae and adults are predatory.
Limoniidae (Craneflies)					
Ormosia nodulosa	0	1		Universal	Commonly found. Dry and wet woodland.
Phylidorea fulvonervosa	0	1		Universal	Commonly found. Wet woodland.
Pseudolimnophila sepium	0	1		Southern Restricted	Infrequently found. Calcareous wet woodland and carr.
Rhagionidae					
Chrysopilus cristatus	0	1		Universal	Commonly found in damp places, particularly marshes and fens.
Rhagio scolopaceus	0	1		Universal	Commonly found in damp places.
Rhagio tringarius	1	0		Universal	Commonly found in damp places.
Stratiomyidae (Soldierflies)					
Chloromyia formosa	1	0		Universal	Commonly found. Breeds in rotting vegetation.
Pachygaster atra	1	0		Southern Widespread.	Frequently found. The larvae develop in rotting vegetation.
Syrphidae (Hoverflies)					
Cheilosia illustrata	1	1		Universal	Commonly found in a variety of habitats. The larvae mine the roots of large umbellifers.
Chrysogaster solstitialis	1	0		Universal.	Commonly found. On the margins of wet woodlands and hedgerows. The larvae live in organically rich wet mud.
Chrysotoxum bicinctum	1	0		Universal	Frequently found. Dry grasslands and heaths, often near scrub. Probably feeds on aphids on roots. There may also be an association with ants.
Criorhina berberina	0	1		Universal	Infrequently found. The larvae live in rotten heartwood of trees
Dasysyrphus albostriatus	1	0		Universal	Commonly found. Woodland edges.
Epistrophe eligans	1	0		Southern Widespread	Commonly found. The larvae prey on aphids on trees.
Epistrophe grossulariae	0	1		Universal	Infrequently found and local. A woodland edge species.
Episyrphus balteatus	1	1		Universal	Very commonly found everywhere. A migratory species.
Eristalis arbustorum	1	0		Universal	Very commonly found. The larvae live in organically rich wet mud.
Eristalis interruptus	1	0		Universal	Commonly found. Local towards the north of the U.K.. The larvae live in organically rich wet mud.
Eristalis intricarius	0	1		Universal	Commonly found. Often in woodland clearings.
Eristalis pertinax	1	0		Universal	Very commonly found. The larvae live in organically rich wet mud.
Eristalis tenax	1	0		Universal	Very commonly found. The larvae live in organically rich wet mud.
Helophilus hybridus	1	0		Universal	Locally frequently found. Associated with decaying vegetation at the margins of ponds.
Helophilus pendulus	1	0		Universal	Very commonly found. The larvae live in organically rich wet mud.
Helophilus trivittatus	1	0		Universal	Infrequently found. Most often associated with grazing marshes and coastal meadows. Increased in distribution and found over many more habitat types recently.

Meliscaeva auricollis	1	0		Universal	Frequently found in southern England, scarcer towards the north of the British Isles. The larvae feed on aphids on bushes.
Myathropa florea	1	0		Universal	Commonly found. The larvae live in wet, decaying leaves.
Pipiza noctiluca	1	0		Universal	Frequently found. The larvae feed on aphids on trees, the adults are associated with woodland edges.
Pipizella viduata	1	0		Universal	Commonly found. A species of dry grassland. The larvae feed on aphids on umbellifer roots.
Sericomyia silentis	1	0		Universal	Frequently found in wet acidic woodlands and meadows. The rat-tailed larvae live in small pools which are rich in organic material.
Sphaerophoria scripta	1	0		Universal	Very commonly found in the southern half of the British Isles. A grassland species, the larvae feed on aphids and Homoptera living in the ground layer.
Sphaerophoria taeniata	1	0		Universal	Frequently found. Associated with wet meadows.
Syritta pipiens	1	1		Universal	Very commonly found in most places throughout Britain. The larvae live in decaying vegetation.
Syrphus ribesii	1	0		Universal	Very commonly found. A migratory species. The larvae feed on aphids.
Volucella bombylans	1	1		Universal	Commonly found. The larvae live in bumble bee nests.
Volucella pellucens	1	0		Universal	Commonly found. Woodland edges and scrub. The larvae live in social wasp nests.
Xylota sylvarum	1	0		Universal	Commonly found. Woodlands and hedgerows. A dead-wood breeding species which will even use sawdust!
Tachinidae (Parasite Flies)					
Eriothrix rufomaculata	1	0		Universal	Commonly found. In grassland habitats
Tachinidae (Parasite Flies)					
Zophomyia temula	1	0	Nationally scarce	Southern Widespread	Frequently found. Associated with a variety of habitats including woodland, calcareous grassland and coastal dunes.
Tephritidae (Picture-wing Flies)					
Urophora cardui	0	1		Southern Restricted	Commonly found, on Creeping Thistles Cirsium vulgare
Urophora jaceana	1	0		Universal	Commonly found, on Hardheads Centaurea nigra
Urophora quadrifasciata	1	0		Southern Restricted	Commonly found on Hardheads Centaurea nigra
Tipulidae (Craneflies)					
Nephrotoma appendiculata	1	0		Universal	Commonly found. A species of dry grassland.
Nephrotoma flavescens	1	1		Universal	Commonly found. A species of dry grasslands.
Nigrotipula nigra		1		Southern Widespread	Infrequently found. Associated with damp peat in fens.
Tipula luna	0	1		Universal	Frequently found. Associated with fens and marshes with rushy vegetation.
Tipula maxima	0	1		Universal	Frequently found. Associated with seepages on cliffs and in woodland.
Tipula paludosa	1	0		Universal	Very commonly found. A pasture pest species.
Ulidiidae					
Dorycera graminum	1	0	RDB 3. A UK BAP species	Southern Restricted	Frequently found. Associated with taller grasslands, often dry ones. However, the larval food plant is unknown; it may be the roots or inflorescences of grasses.

HYMENOPTERA SYMPHYTA (Sawflies)					
Tenthredinidae					
Macrophya annulata	1	1		Universal	Commonly found. The larvae feed on creeping cinquefoil.
HYMENOPTERA PARASITICA (Ichneumon Wasps and allies)					
Gasteruptiidae (Parasitic Wasps)					
Gasteruption jaculator	0	1		Southern Restricted	Commonly found. A clepto-parasite of stem-nesting bees.
ACULEATE HYMENOPTERA (Ants, Bees and Wasps)					
Andrenidae (Mining Bees)					
Andrena chrysosceles	0	1		Southern Widespread.	Commonly found. Especially associated with clay woodlands. Polylectic. Ground nesting.
Andrena dorsata	1	0		Southern Widespread	Commonly found. Often the dominant species in southern Britain. Polylectic.
Andrena flavipes	1	0		Southern Restricted.	Commonly found. Forms very large colonies, especially in bare ground. Polylectic. Ground nesting.
Andrena haemorrhoa	1	1		Universal	Commonly found. Females nest singly but males often congregate on blackthorn and hawthorn blossoms. Polylectic. Ground nesting.
Andrena labialis	0	1		Southern Widespread	Local species of old meadowlands. Oligolectic on the flowers of Fabacaea.
Andrena minutula	1	0		Universal	Commonly found. Polylectic. Ground nesting.
Andrena nigroaenea	1	1		Universal.	Commonly found. Polylectic. Ground nesting.
Andrena nitida	1	1		Southern Widespread	Commonly found. A species of meadows. Polylectic. Ground nesting.
Andrena scotica	0	1		Universal	Commonly found. Several females may share a common burrow entrance. Polylectic.
Andrena semilaevis	0	1		Universal	Commonly found. Polylectic, although with an apparent preference for Apiaceae.
Andrena synadelpha	1	0		Southern Restricted	Infrequently found. Associated with open woodlands and woodland edges. Local. Polylectic.
Apidae (Bees)					
Anthophora furcata	1	0		Southern Widespread	Infrequently found. Oligolectic on Lamiacaea. Nests in dead wood.
Bombus hortorum	1	0		Universal	Very commonly found. Polylectic. Nests underground in cavities.
Bombus hypnorum	1	0		Southern Widespread	Commonly found. Recent colonist, first recorded in 2001 near Southampton, Now spreading rapidly. Strongly associated with gardens and woodland. Often nests in aerial cavities, including bird boxes. Polylectic.
Bombus lapidarius	1	0		Universal	Very commonly found. Nests underground in cavities. Polylectic.
Bombus pascuorum	1	1		Universal	Very commonly found. Polylectic. Nests in surface litter.
Bombus pratorum	1	0		Universal	Very commonly found. Polylectic. Nests underground as well as in aerial cavities, including bird boxes.

Bombus ruderatus	1	0	Nationally Scarce b, Section 41 species	Southern Restricted	A UK BAP species which has recently shown a very favourable response to the planting of red clover as part of Agricultural Stewardship options. This bumble-bee used to be widespread in southern England at the turn of the century but has declined greatly since then. Although the 1980 Bumblebee Distribution Atlas (dateline 1974) gives about 85 10km. squares for the species, many of these are likely to be mis-identifications for the common B. hortorum. It is thought that this is one of the Bombus species of unimproved grazing meadow. It may also favour damper places than some other species.
Nomada ruficornis	1	0		Universal.	Frequently found. Cleptoparasite of Andrena haemorrhoa.
Colletidae (Bees)					
Hylaeus communis	1	0		Southern Widespread	Commonly found. Polylectic. Cavity nesting.
Crabronidae (Solitary Wasps)					
Cerceris rybyensis	1	0		Southern Restricted.	Locally commonly found. Heathland and downland. Preys on various solitary bees. Ground nesting.
Lindenius albilabris	1	0		Universal	Commonly found. Preys on Mirid bugs or sometimes small Diptera. Nests in hard-packed bare ground.
Pemphredon morio	1	0	Nationally Scarce b	Southern Restricted	Widespread but very infrequently found. Preys on aphids. Dead wood nesting.
Formicidae (Ants)					
Lasius flavus	1	1		Universal.	Commonly found. The large, dome-shaped nests are an indicator of long-established pasture.
Lasius niger s.s.	1	1		Universal	Very commonly found. Dry habitats.
Halicitdae (Mining Bees)					
Halictus tumulorum	1	0		Universal	Commonly found. A eusocial species. Polylectic. Ground nesting.
Lasioglossum fulvicorne	1	0		Southern Widespread	Locally commonly found on more alkaline soils. Polylectic. Ground nesting.
Lasioglossum malachurum	1	0	Nationally Scarce a	Southern Restricted	Commonly found. Eusocial species which forms large colonies. Formerly, a largely coastal species. Increased its range during the 1990s,does not merit Nationally Scarce status now. Polylectic.
Lasioglossum minutissimum	1	0		Southern Restricted	Locally frequently found. Associated with sandy places. Polylectic.
Lasioglossum pauxillum	1	0	Nationally Scarce a	Southern Restricted	Commonly found. Polylectic and eusocial. Became much commoner during the 1990s, does not merit Nationally Scarce status now. Ground nesting.
Megachilidae (Leafcutter and Mason Bees)					
Megachile ligniseca	1	0		Southern Widespread	Infrequently found. Dead-wood nesting. Polylectic.
Osmia bicornis	0	1		Universal.	Locally common. Cavity nesting. Polylectic.
Osmia leaiana	1	1		Southern Widespread	Infrequently found. Oligolectic on Asteracea.
Pompilidae (Spider-hunting Wasps)					
Priocnemis perturbator	1	0		Universal.	Frequently found. Particularly associated with woodland. A spring species. Ground nesting.
Sapygidae					
Sapyga quinquepunctata	0	1		Southern Widespread	Infequently found, but may be locally common. A cleptoparasite of various Megachilid bees. A more southerly species.

Vespidae (Social and Potter Wasps)					
Symmorphus gracilis	1	0		Southern Widespread	Infrequently found. It preys on the larvae of the beetles Chrysomela populi and Cionus hortulanus.
Vespa crabro	1	0		Southern Widespread	Locally frequently found and spreading. Associated with areas of old trees, in which it often nests.
Vespula vulgaris	1	0		Universal	Very commonly found. Underground and cavity nesting.

Appendix i

Conservation Status Categories, Distribution and Abundance Terms for Insects

Conservation status categories

RDB (Red Data Book) categories are based upon the most modern work, usually one of the English Nature Research and Survey in Nature Conservation reviews. Where these do not exist the category given in Shirt, D.B., 1987 The British Red Data Books: 2 is given. These categories may require revision in the light of new information but a new Red Data Book has yet to be compiled. Such revisions are indicated as p(rovisional). The new Red Data Book categories will be based on threat, of which distribution is only one part. This is likely to lead to a far more meaningful conservation assessment, as the number of squares recorded for any one species is highly susceptible to recorder effort, especially as data accumulates over time.

RDB 1. Endangered. Species currently (post 1970) known to exist in five or fewer ten-kilometre squares.

RDB 2. Vulnerable. Species in severely declining or vulnerable habitats, or of low known populations. Known to exist (post 1970) in ten, or fewer, ten-kilometre squares.

RDB 3. Rare. Species with small populations, not at present Endangered or Vulnerable, but which are felt to be at risk. Species currently known to exist (post 1970) in fifteen, or fewer, ten-kilometre squares.

RDB K. Species of undoubted RDB rank, but with insufficient information for accurate placement; includes possible recent arrivals.

Nationally Scarce. Species currently (post 1970) known to exist in one hundred, or fewer, ten-kilometre squares.

In some groups these are further sub-divided into:-

Nationally Scarce a. Species currently (post 1970) known to exist in thirty, or fewer, ten-kilometre squares.

Nationally Scarce b. Species currently known to exist in thirty-one to one hundred ten-kilometre squares.

Distribution categories

Distribution refers solely to the geographical extent of a species in the British Isles. Considerable confusion has been caused in the past by the varying meanings given to many assessments of species where geographic distribution has been confused with local abundance.

Distribution comments are based upon national status as far as is known (e.g. published distribution maps or the most recent taxonomic/ecological work giving distribution information). This may be supplemented by personal knowledge of the species.

A distribution classification, based on the known distribution range, is being developed. Where possible a provisional national distribution range status under this system is given. The basic system has been to divide the British Isles into thirds, largely ignoring the influence of altitude. The lines delineating these thirds run approximately:

i). Along a line from the Wash to the Severn and including South Wales.

ii) Along a line running through the Scottish Borders.

Universal. Distributed throughout England and Wales, with at least some extension into central and northern Scotland.

Widespread. Distributed in about three-quarters of England and Wales, perhaps with a few records in southern Scotland, but not significantly found in the northern third (Southern Widespread) or southern third (Northern Widespread) of the British Isles. (NB Northern Widespread species are found in Scotland as well.)

Restricted. Distributed in the southern (Southern Restricted) or northern (Northern Restricted) third of the British Isles only.

Abundance Comments

These often form the first part of the 'Notes' in the species information. An attempt has been made to make something akin to the well-established DAFOR system for botanical abundance recording, but with just four categories. These rate the expectation of finding the species, if all its life-cycle resource requirements and temperature and humidity regimes are apparently met on a site.

i) **Commonly found**. An experienced observer would expect to find the species 90% or more of the time where all its requirements are met.

ii) **Frequently found.** An experienced observer would expect to find the species 60% or more of the time where all its requirements are met.

iii) **Infrequently found.** An experienced observer would expect to find the species 10% or more of the time where all its requirements are met.

iv) **Rarely found.** An experienced observer would expect to find the species less than 10% of the time where all its requirements are met.

These may be modified by a comment as to the degree of restriction to localities , even within its known range and when its requiremetns are met, often something like **Locally frequently found.**

Abundance comments are much more subjective than distribution comments, being dependent upon the precise timing of survey visits and the timing of emergence of the insect species, as well as the experience of the observer. The method of recording, e.g. by sight or hand-netting, sweeping, beating, malaise trap, pan trap, may also affect the observed abundance. It is assumed that recording takes place under favourable conditions of habitat, weather and season. Often a species appears to be rarely found, until the particular way of looking for it is discovered, when it proves to be much more prevalent than previously thought.

Some species, however, seem to exist in low numbers at all times in all suitable places. This may reflect the species' position in its particular ecological pyramid. The abundance may have no connection with the distribution status; some Red Data Book species are numerous in their particular locations: some Universal species may only ever be found as singletons. Comments under this heading rely heavily upon the observer's accumulated experience as the rating given is a measure of the expectation of finding the species in a suitable habitat. Species living towards the edge of their range are often less frequent than they are in the middle of their range.

Specialist Terms for Ants, Bees and Wasps

Cleptoparasitic: A species taking over the stored provisions of another species to feed its young. This usually involves the cleptoparasite laying an egg in the nest of the host, but may involve oviposition on prey being transported by the host.

Socially Parasitic: The queens of some social aculeates do not initiate their own nests from scratch, but take over established nests of other species. Sometimes this results in the gradual replacement of the workers of one species by another. In other cases the parasite does not produce its own workers and the nest just produces males and females of the invading parasite before it dies out. In some ant species the chain of socially parasitic species may have several links.

Nesting situations: Bees and wasps may construct their nesting chambers in the ground (ground nesting) or in aerial situations (aerial nesting). Such aerial nests may be constructed in dead wood (dead-wood nesting), dead bramble stems or similar pith-filled stems (stem nesting) or in a variety of cavities (cavity nesting).

Nest provisioning terms: These relate (in bees) to the preferred sources of pollen for provisioning the nest. Such resources may be very specific for some species. Nectar sources are not so clearly defined, although bees with longer tongues can forage at flowers with longer nectaries. Such flowers often have more concentrated nectar. The structure of the anthers and stigma is often related to the length of the tongue of the preferred pollinating insect.

Oligolectic: Bees which confine their pollen gathering activities to one species of plant, or a closely-related group of plants.

Polylectic: Bees which forage for pollen at a variety of different plants and show no particular preference.

Social organisation: The majority of bee and wasp species are solitary. One female provisions the nest and lays her eggs on the provisions. A number of solitary nesting insects may use the same small area when they are said to nest colonially. Eusocial species have a founding female who lays all the eggs, but the first insects to hatch (females) stay and help run the nest. At the end of the season males and females are produced. These mate and the newly mated females start their own nests. Usually only mated females overwinter. Some ant colonies have several mated females (queens).