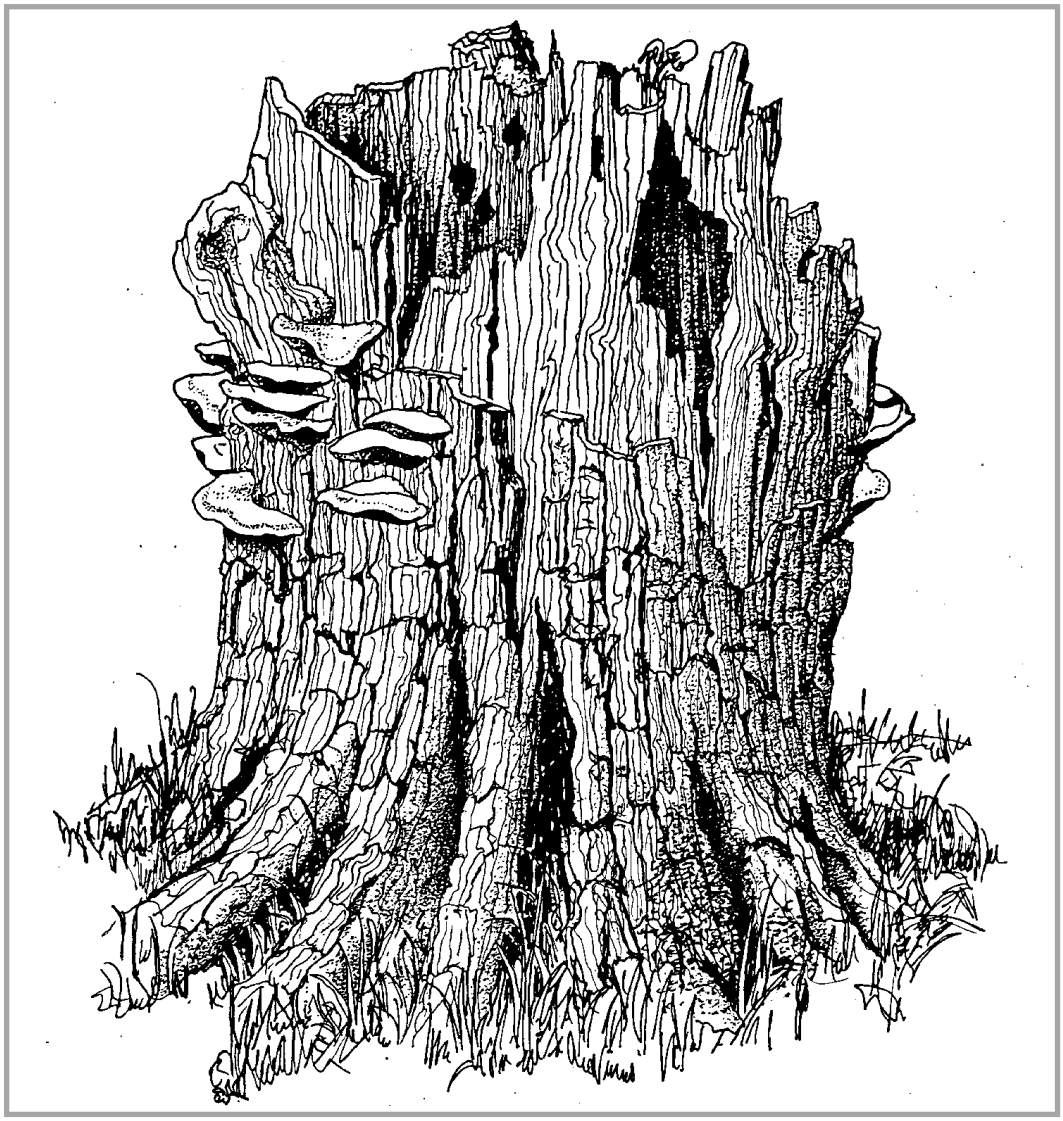
ENGLISH NATURE

The invertebrates of living & decaying timber in Britain and Ireland - a provisional annotated checklist

No. 467 - English Nature Research Reports



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English Nature Research Reports

Number 467

The invertebrates of living and decaying timber In Britain & Ireland

A provisional annotated checklist

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ISSN 0967-876X

Summary

A list of all the invertebrates known to be dependent on decaying wood in Britain and Ireland. The species names are annotated with basic information on the known ecology and distribution. The British list currently approaches 1800 species while the Irish list contains just over 600 species. The listing is intended to be a starting point for further analysis of this important fauna

Contents

1. Introduction

This checklist of the invertebrates that develop in timber and the products of its decay has been compiled for a number of reasons. It is provided as a working tool for field workers, for nature conservationists and for ecologists:

- to facilitate the recording of particular species on particular sites, to focus field workers on the significant habitat features;
- to draw the attention of nature conservationists to the enormous variety of niches exploited in wooded habitats and to emphasis the importance of wood decay succession;
- to stimulate ecological research of the fauna.

It is a working document, not intended to be complete or set in stone, a starting point to focus minds onto its strengths and weaknesses, and to stimulate ideas on where to go from here. Ideally it should be on a web-site for ease of up-dating and dissemination, and this will be one of the next stages. It is very much a statement of the information I have collated to date and so another purpose is to stimulate people to make available information that may contribute to the next edition. There will be lots here for people to criticise - if they so wish - but it is hoped that people will prefer a more constructive approach and help to up-grade this Provisional list into something more useful.

The compilation has made it possible to identify how many of our species are known to be dependant on the process of wood decay – the answer is close 1800 for Britain and over 600 for Ireland (see Summary Table). The next stage will be to break this fauna down into its constituent communities, a process that will inform and develop our understanding of the relative importance of particular sites.

The checklist is very much provisional at this stage. It is provided in a spirit of co-operation and partnership, with the express hope that other specialists will help me to build on it rather than pull it apart with criticism. It is certainly provided as an Aunt Sally, to be knocked around and hammered into something better. It aims to be the first stage in building something more useful, as a baseline for future developments in our understanding and appreciation of this rich and important habitat.

Whether or not a species occurs on a particular site which appears to provide suitable habitat depends on two things: firstly the biogeography of the species and secondly on the management history of the area. A detailed examination of the fauna is also essential if we are to make sensible assessments of which species are characteristic of long-established sites, ie ancient woodlands and ancient wood pastures, and hence which may be used as indicators of ecological continuity and conservation value. While some species individually may be good indicators of ecological continuity, and are clearly part of the *urwaldtiere* or relict old forest fauna of these islands, it is perhaps most advisable to use them collectively - the more of the identified indicators known from a particular site the more ecological continuity can be inferred. This latter approach has been advocated with deadwood Coleoptera and Syrphidae (e.g. Alexander, 1995).

A large proportion of this fauna shows strong association with areas of relict old growth – old forest, medieval parks and chases, wooded commons, old wood pastures and similar

situations. These are sites where there has been sufficient habitat to maintain viable populations throughout the historic period. There may be periodic expansions and contractions from these refugia in response to fluctuations in climate and habitat availability, as we have recently seen following the Great Storm of 1987, the appearance of oak dieback disease as well as human induced climate change.

Content

My working definition for inclusion of particular species in this checklist has been that the immature stages develop in some part of the wood-decay succession or on products of it. I have included species which develop in un-decayed timber and bark as I regard this as the start of the process of wood-decay.

I have included those species that are dependent on tree cavities for a variety of reasons, including those that primarily occur in the nests of cavity-nesting birds and social Hymenoptera, or in bat roosts. The list is not intended to cover epiphyte communities.

The central core of the list is straightforward, but there are many grey areas around the fringes:

> **Fungi**. Species which develop in fungi are very much a case in point. Fungi are fundamental in the timber decay and recycling processes. But not all fungi are wood-rotters or associated with wood-rotters; some species of a particular genus or family of fungi may be wood-rotters but others not. Thus insect species that are associated with that taxonomic grouping may or may not be confined to the wood-decay species. I have tried to include all species where wood-decay fungi are a significant proportion of the species that are used.
>
> **Decay**. The later stages in the decay process of timber are not essentially dissimilar to other decaying organic matter and this introduces similar complications to those that arise from the fungivores. I have included, for instance, the beetle *Denticollis linearis* as it is a widespread species developing in decaying timber, but it also develops in peat on moorland. Decaying timber eventually supports what is essentially a soil fauna, dominated by millipedes, woodlice and centipedes. The present list does not include such species.
>
> **Wood**. Another significant grey area concerns the definition of dead and decaying wood. In some cases the invertebrate species occur in twigs or in the woody growth of herbaceous plants or shrubs such as bramble, rose or even wild cabbage. The dying process of the wood also produces problems. The wood does not need to be strictly dead, as some species will colonise sickly or dying wood, and may even contribute to that condition. For the sake of completeness I have included those relatively few species which actually feed on living wood.
>
> **Rot-holes** are all too often not holes in *decaying* wood but cavities formed on the exterior of the tree, eg in branch crotches, in which debris and rainwater accumulates and composts. This habitat is not strictly "wood-decay" but is included here as cavities actually in wood-decay can similarly fill with debris and rainwater, as can compartmentalised rot cavities – whether there is any real distinction so far as the invertebrates are concerned is unclear.

Epiphyte associates: the algae, mosses, liverworts, lichens and micro-fungi which use exposed bark surfaces as structure to grow upon provide further difficulties, mainly through misinterpretation by the human recorders. Plaited door snail *Cochlodina laminata* is commonly found on tree trunks and branches and may be found sheltering deep inside wood-decay cavities, but it is most definitely part of the epiphyte communities not wood-decay. The greatest difficulties occur with predatory species, as species using the epiphytes as cover and shelter will feed not only on the inhabitants of the epiphyte cover but also on any wood-decay associates which they encounter. Many spiders are characteristic of the outer bark of trees and, like plaited door snail, may shelter deep within decay cavities and even foray for food into the interior of the tree.

Caches, etc: an interesting note by Whitehead (1986) drew attention to the presence of skeletal fragments of a wide range of woodland beetles inside a hollowed oak pollard which were associated with a cache of nuts and seeds gathered by a wood mouse. This is a useful warning for when attempting to draw conclusions based on fragments found in wood decay.

Life history and ecology. Decaying wood provides excellent cover or shelter for many species that do not actually develop within it. Many species which may be encountered while sampling decaying wood may therefore be irrelevant to this listing, although the details of their life histories and ecology may be so inadequate that they are included by mistake. Examples include species that are diurnal and spend the hours of darkness within wood and *vice versa*, others that over-winter or aestivate in deadwood, and even those which pupate in deadwood but develop elsewhere.

Biogeography

There are essentially two major faunas here, the Atlantic version of temperate broad-leaved forest fauna and the boreal forest fauna. The Atlantic temperate fauna is widespread over lowland Britain, as far north as southern Scotland; it becomes increasingly species poor in the west, although this is perhaps a reflection of the increasingly "highland conditions" of the older rocks. In Ireland, the fauna is very much a relict one owing to the very extensive forest clearances, and the character is something of a hybrid between the temperate and boreal forests of Britain. The northern parts of Scotland have boreal pine, birch and aspen forests, with a fauna more akin to that of Scandinavia than to the rest of Britain. A good proportion of the species are common to both broad categories, but others are clearly characteristic of temperate or boreal forest in the British Isles. Relationships with the continental faunas has not been considered to any great extent.

Structure of the annotated list

The species accounts are a synthesis and summary of a large number of records and observations, both published and unpublished, and include some ecological analysis of the available information. It was felt that full citations would make the text unacceptably cumbersome. The decision was therefore taken not to include details of the source, but to provide a bibliography of some of the most important sources. The non-aculeate Hymenoptera is treated as an exception as knowledge of the taxonomy and biology of this

group is particularly dynamic and the compiler was advised that citations were essential if old and out-of-date interpretations were not to cause severe confusion.

The status given alongside the scientific name is the status in Britain only; comments on Irish status are given in the text where sufficient information is available. The terminology is that developed through the Invertebrate Site Register project (Nature Conservancy Council & later Joint Nature Conservation Committee). "Priority Species" are Species of Conservation Concern (SoCC) within the UK Biodiversity Action Plan (BAP), being those species targeted for action through Species Action Plans or Grouped Species Statements. SoCC meet one or more of four criteria – endemic, in rapid decline, internationally significant, and listed in international legislation.

Species known to occur in Ireland are indicated by an asterisk.

Nomenclature largely follows that in the RECORDER software produced and maintained by JNCC.

2. Summary Table

Taxonomic grouping	Number of species reported from Ireland	Number of GB listed native species (excl. extinct species)	Number of Nationally Scarce (GB) species	Number of Red Data Book (GB) species	% of GB species with conservation status
Annelida	1	2	n/a	n/a	
Mollusca	1	2	1	0	
Crustacea		1	n/a	n/a	
Diplopoda	5	6	1	0	
Chilopoda	2	2	0	0	
Pseudoscorpiones	1	5	0	1	
Araneae	7	11	1	3	
Acari	?	?			
Collembola	?	?			
Hemiptera	4	14	3	2	
Thysanoptera	?	21	n/a	n/a	
Raphidioptera		4	0	0	
Trichoptera		2	0	0	
Lepidoptera	6	44	15	8	
Coleoptera					
Carabidae	4	7		1	
Histeridae	1	9	2	4	
Ptiliidae	10	15	3	5	
Leiodidae	5	14	0	3	
Scydmaenidae	1	9	2	6	
Staphylinidae	51	123	38	26	
Pselaphidae	5	16	5	8	
Scirtidae	1	1	1	0	
Eucinetidae		1	0	0	
Clambidae	2	3	0	1	
Lucanidae	2	3	1	0	
Scarabaeidae		5	0	2	
Buprestidae		8	5	0	
Eucnemidae	1	6	1	4	
Throscidae		1	0	1	
Elateridae	7	23	8	11	
Lycidae	1	4	3	1	
Cantharidae	10	15	5	1	
Dermestidae		4	1	2	
Bostrichidae	2	5	1	0	
Anobiidae	9	30	9	5	
Lymexylidae	1	2	1	1	
Phloiophilidae	1	1	1	0	
Trogosittidae	1	3	1	2	
Cleridae	2	6	3	1	
Melyridae	3	13	5	3	
Sphindidae	1	2	1	0	
Nitidulidae	18	29	9	3	
Rhizophagidae	6	13	3	2	
Silvanidae		5	3	1	
Cucujidae		2	1	0	
Laemophloeidae	1	6	2	2	
Cryptophagidae	6	21	4	13	
Erotylidae	1	7	2	2	

Taxonomic grouping	Number of species reported from Ireland	Number of GB listed native species (excl. extinct species)	Number of Nationally Scarce (GB) species	Number of Red Data Book (GB) species	% of GB species with conservation status
Biphyllidae		2	1	0	
Cerylonidae	3	3	1	0	
Endomychidae	1	2	1	0	
Corylophidae	1	3	0	0	
Lathridiidae	1	16	5	3	
Mycetophagidae	1	10	4	0	
Ciidae	11	22	4	3	
Tetratomidae	2	3	2	0	
Melandryidae	7	18	13	4	
Mordellidae	1	4	1	1	
Rhipiphoridae	1	1	0	0	
Colydiidae	1	12	3	6	
Tenebrionidae	4	20	6	5	
Oedemeridae	2	6	2	3	
Pythidae		1	1	0	
Pyrochroidae	1	3	1	0	
Salpingidae	9	10	4	0	
Aderidae		3	2	1	
Scraptiidae	8	15	1	5	
Cerambycidae	21	47	15	12	
Chrysomelidae		1			
Anthribidae	1	5	3	2	
Rhynchophoridae		1		1	
Curculionidae	14	25	14	1	
Scolytidae	16	43	13	4	
Platypodidae		2	1	1	
Sub-total	**259**	**700**	**219**	**162**	**54**
Hymenoptera					
Symphyta		7	n/a	n/a	
Parasitica	27	163	n/a	n/a	
Aculeata	9	76	15	8	30
Diptera					
Tipulidae	8	16	3	7	
Pediciidae	2	2			
Limoniidae	7	22	4	9	
Bolitophilidae	5	7			
Diadocidiidae	2	3		1	
Ditomyiidae	1	3	1		
Keroplatidae	10	18	1	2	
Mycetophilidae	61	123	8	25	
Sciaridae	15	34	n/a	n/a	
Ptychopteridae	1	1			
Cecidomyiidae	3	42	n/a	n/a	
Psychodidae	4	6	n/a	n/a	
Trichoceridae	4	5	1		
Anisopodidae	2	2			
Mycetobiidae	2	3	3		
Scatopsiidae	5	11	n/a	n/a	
Culicidae	1	3		1	
Ceratopogonidae	5	24	n/a	n/a	
Chironomidae	4	7	n/a	n/a	
Xylophagidae	1	3		2	

Taxonomic grouping	Number of species reported from Ireland	Number of GB listed native species (excl. extinct species)	Number of Nationally Scarce (GB) species	Number of Red Data Book (GB) species	% of GB species with conservation status
Rhagionidae		1		1	
Xylomyiidae		2	1	1	
Stratiomyiidae	4	7	4		
Therevidae	1	2		1	
Scenopinidae	1	1	1		
Asilidae		3	1	2	
Hybotidae	9	25	8	7	
Empididae	2	7	1	3	
Dolichopodidae	14	49	13	16	
Opetiidae	1	1			
Platypezidae	14	31	3	6	
Phoridae	8	12	n/a	n/a	
Syrphidae	18	39	17	10	
Pseudopomyzidae		1		1	
Micropezidae		1		1	
Tanypezidae		1		1	
Strongylophthalmyiidae		1		1	
Megamerinidae		1	1		
Psilidae	2	3	2		
Lonchaeidae	5	32	8	1	
Pallopteridae	3	4		1	
Piophilidae		1			
Ulidiidae		3		3	
Lauxaniidae	1	3			
Sciomyzidae		1	1		
Clusiidae	5	10	2	3	
Acartophthalmidae	2	2		1	
Odiniidae	2	8	1	5	
Agromyzidae	1	6	n/a	n/a	
Anthomyzidae		1			
Aulacigastridae		1	1		
Periscelididae		3	1	2	
Asteiidae	3	5		1	
Milichidae		9		4	
Carnidae	1	1			
Chloropidae	2	6	2	1	
Heleomyzidae	4	7		1	
Chyromyidae	1	2			
Sphaeroceridae	3	8			
Drosophilidae	15	31	4	7	
Nycteribiidae		2			
Anthomyiidae	2	7	1	1	
Fanniidae	7	12	2	2	
Muscidae	14	23	2	7	
Calliphoridae		1			
Rhinophoridae	3	3			
Sarcophagidae	1	5	1	1	
Tachinidae	1	10		4	
Sub-total	**293**	**730**	**99**	**143**	**33**
Siphonaptera		3	n/a	n/a	
TOTAL	**615+**	**1792+**	**354**	**327**	**38**

n/a = groups for which conservation status has not yet been assessed by JNCC.

3. An annotated checklist of the invertebrates of living and decaying timber in Britain and Ireland

Annelida

Earthworms are often to be found in the debris beneath loose bark and in moist heart-rot, even high up in a standing tree. The following two species are the most likely to be found in these situations.

Dendrobaena octaedra (Savigny)* - Associated with soils having a high organic content such as peat, rotting tree stumps, leaf litter, etc. Widespread.

Dendrodrilus rubidus (Savigny) - Found under moss and loose bark on old trees and in rotting wood; also in moist litter and under stones in wet habitats generally. Widespread.

Mollusca - Slugs & Snails

A wide range of slugs and snails may be found on the trunks and main boughs of trees, but most of these are browsing epiphytes and are present irrespective of any rot development. The following two species are most often found on older trees, where rot development has started, and are believed to be dependent for food, to some extent at least, on the fruiting bodies of wood-rotting fungi.

Limacidae

Limax cinereoniger Wolf* - Ash-black Slug. Grazes *Pleurococcus* algae on tree trunks and boughs and on dead wood; also feeds on fungi; shelters in nooks and crannies on trees and in dead wood under cold or dry conditions; most active when air relatively still, warm & humid. Thinly scattered in ancient woods and wood pastures over much of GB, but apparently absent from much of E. Midlands & E. Anglia. Very thin scatter of sites across Ireland.

Limax tenellus Müller - Slender Slug. **Nationally Scarce B.** Feeds on fungi on dead and decaying timber; in GB it appears to require large rotting balks for moist shelter as well as feeding, although this isn't the case across the English Channel; ancient wood pastures. Very thinly scattered, but throughout much of GB, and distinct concentrations in Weald, Chilterns, Welsh Borders, N. England and Scottish Highlands.

Crustacea: Copepoda

Moraria arboricola Scourfield - Free-living in water in rot-holes in trees; known from Epping Forest, Felbrigg Woods, New Forest & Savernake Forest. Also reported from among damp dead leaves in woods; and one Yorkshire site in wet moss on moorland.

Diplopoda - Millipedes

The vast majority of millipedes eat decaying plant material and fragments of organic matter; most also require a humid environment. So a wide range could be found in dead and decaying timber. However, only the following can be considered to be particularly associated with this situation.

Polyxenidae

Polyxenus lagurus Linnaeus* - Bristly Millipede. Most often found under bark of dead timber or within dry-rotted heartwood, but also on ground in leaf litter and on rocks. A specialist feeder on encrusting algae. Mostly in Central & Southern Britain, but very thin scatter of sites elsewhere, up into Highlands. Apparently largely coastal in Ireland.

Julidae

Cylindroiulus punctatus (Leach)* - Inhabits dead and decaying timber, but moves into soil and leaf-litter in winter. Common and widespread throughout Britain and Ireland.

Cylindroiulus britannicus (Verhoeff)* - Most often found under bark of dead broadleaves and in wood-decay beneath. Widespread but very local.

Cylindroiulus parisiorum (Brolemann & Verhoeff) - **Nationally Scarce.** Under bark of old stumps. Very thin scatter of sites across England from Dorset to Scottish border.

Blaniulidae

Proteroiulus fuscus (Am Stein)* Typically living under bark of deadwood of conifers and broadleaves; occasionally in leaf litter and soil. Common & widespread.

Nemasomatidae

Nemasoma varicorne C.L. Koch* - Almost exclusively under bark of deadwood of conifers and broadleaves; most frequently associated with beech, ash and poplar. Throughout GB, but local. Apparently very rare in Ireland.

Chilopoda - Centipedes

Centipedes are dorso-ventrally flattened animals and thereby ideally suited to life between bark and sapwood on decaying wood. A wide variety of species may be found within decaying wood but only the following may be considered characteristic of this situation although none are confined to it. All are primarily general predators of other invertebrates.

Geophilidae

Brachygeophilus truncorum (Bergso & Meinert)* - Particularly common beneath bark and in decaying timber generally, but occasionally found in other situations.

Lithobiidae

Lithobius variegatus Leach* - Widespread and common in semi-natural habitats in oceanic Britain and Ireland, but increasingly confined to woodland in the east of its range. In woods, regularly found beneath bark on decaying timber.

Pseudoscorpiones - False Scorpions

False scorpions are all carnivorous and live in a wide variety of habitats. Only a few are associated with dead and decaying timber.

Lamprochernes chyzeri (Tomosvary) - Under bark of deadwood of old broadleaves; phoretic on flies. Scattered across lowland England, mainly in old wood pastures.

Allochernes wideri (C.L. Koch) - Under bark and in rotten wood of dead trees, especially oak; also in hay & grain in barns. Mostly C & E. England; old records for N. Lancashire & Manchester.

Chernes cimicoides (Fabricius)* - Typical of old native woodland and wood pasture; under bark and in rotting wood of dead and decaying trees, especially oak and beech. Widespread in Lowland Britain north to Yorkshire. Reported from Ireland.

Dendrochernes cyrneus (L. Koch) - **RDB3.** Ancient woodland and wood pasture, under pieces of loose bark and in very dry sapwood of dead parts of overmature trees, especially oak; also in rot holes. Prefers timber heated by the sun, and reported to be active on outside surfaces of trunk on calm warm summer evenings. Rare species, most sites within area enclosed by London to Sherwood to Gloucestershire. Phoretic on longhorn beetles.

Withius piger (Simon) - Under dead oak bark at Dunham Park, Cheshire; otherwise only known from warehouses.

Araneae - Spiders

While many spiders can be found amongst dead and decaying timber, few are particularly associated with it. The following appear to be the closest associates. All are carnivorous.

Amaurobiidae

Amaurobius fenestralis (Stroem)* - Webs in crevices in trunks of trees and under stones; needs long tubular crevices in large-sized wood. Common & widespread.

Dysderidae

Harpactea hombergi (Scopoli)* - Occurs within decaying wood of trees, where feeds on woodlice.

Agelenidae

Mastigusa macrophthalma Kulczynski - **RDB3.** Strongly associated with ants, primarily in and around overmature trees and deadwood, usually *Lasius brunneus* and *L. fuliginosus*, but also in underground of *Formica* nests.

Mastigusa arietina (Thorell) - **RDB2.** Only in the nests of the ants *Lasius brunneus* and *L. fuliginosus*, within tree stumps and old trees.

Metidae

Meta menardi (Latreille)* - The Cave Spider. A spider of stable, dark, humid cavities, and known mostly from cave type situations, including cellars and road culverts, but also occurring widely in hollow tree trunks. Widespread across British Isles but apparently very scarce in the East Midlands and East Anglia.

Zygiella stroemi (Thorell) - **Nationally Scarce B.** On deeply fissured trunks of pine and large oaks. Very local; C.S. England & Highlands.

Araneidae

Nuctenea umbratica (Clerck)* - Under bark on dead timber; isolated trees as well as woods, parks, etc. Common and widespread throughout Britain, but rare in Ireland.

Linyphiidae - Money Spiders

Thyreosthenius parasiticus (Westring)* - Regular inhabitant of dark crevices in dead and dying wood in trees, especially oak and hawthorn; also in darker buildings and bird nests. Widespread across Britain, but apparently rare in the south-west, and very local in Ireland.

Lepthyphantes leprosus (Ohlert)* - In holes in trees, walls & buildings generally. Widespread.

Lepthyphantes midas Simon - **RDB2.** Primarily found in hollow trees, associated with bird nest material, squirrel dreys and other litter; beech, hornbeam, oak. Ancient forests and historic deer parks.

Lepthyphantes minutus (Blackwall)* - In holes in trees, walls & buildings generally. Widespread & fairly common.

Acari - Mites & Ticks

Dead and decaying timber normally supports large populations of mites, including free-living and animal-associated species. They feed on a wide variety of substances ranging from decaying organic matter to the living tissues of both plants and animals. The animal associations range from commensalism to true parasitism, the latter including both internal and external parasites. The British Isles have at least 1 600 species. A review of which of these are closely associated with saproxylic habitats has not been attempted but an example is listed.

Order Astigmata

Canestriniidae

Canestrinia dorcicola Berlese - Only known in association with the beetle *Dorcus* and a parasitic relationship has been suggested.

Collembola - Springtails

Dead and decaying timber normally supports large populations of springtails, feeding on dead and decaying plant material. No attempt has been made to review any saproxylic specialists.

Hemiptera - Bugs

Aradidae - Flatbugs & barkbugs. The bugs of this family mainly feed on fungal mycelia in decaying wood.

Aradus corticalis (Linnaeus) - **RDB3**. On fungus covered stumps and under bark on dead timber; beech and other trees, including conifers. Only recorded from a few counties in southern and eastern England; mostly from the New Forest.

Aradus betulae (Linnaeus) - **Nationally Scarce.** Under bark on dead standing or fallen birch, and on *Fomes* fungi growing on birch; a northern species, known in GB only from the Highlands of Scotland.

Aradus depressus (Fabricius)* - On stumps and under bark on various dead trees, but especially beech, birch and oak; feeds on mycelia and fruiting bodies of *Polyporus* and other fungi. Widespread in England & Wales.

Aradus aterrimus Fieber - **RDB3.** Particularly poorly understood, having been found associated with wood-chippings of oak and sweet chestnut in actively managed woodland, and also hedge cuttings and decayed sacking; only Kent & W. Sussex.

Aradus cinnamomeus (Panzer) - Pine flatbug. **Naturalised**. Under bark scales of Scots pine less than 25 years old, feeding on pine sap; S & SE England, first recognised GB in 1951.

Aneurus laevis (Fabricius) - Common barkbug. Adults and larvae gregarious under bark of fallen logs and trees colonised by fungi; most broadleaves, especially oak; feed on fungal mycelia. Widespread in England.

Aneurus avenius (Dufour) - Mostly under bark of small dead boughs and twigs of willow, oak and shrubs such as privet, elder, spindle and wayfaring tree. Widespread in southern Britain.

Reduviidae – Assassin bugs.

Reduvius personatus (L.) - Flybug. Best known from buildings, feeding on silverfish, booklice, etc, but also in old hollow trees.

Cimicidae - These are predominantly predatory bugs, feeding on a variety of thrips, aphids, mites, etc.

Xylocoris cursitans (Fallen) - Beneath bark of dead trunks and limbs, especially beech and oak, which are in early stages of decay; feed on beetles such as *Bitoma crenata* and *Rhizophagus*, springtails, thrips, etc; eggs laid in soft corky material on inside of bark. Widely in ancient woodlands and wood pastures; England, Wales and Scottish Borders.

Cardiastethus fasciiventris (Garbiglietti) - On a wide variety of trees and shrubs, but thought to be mainly subcortical in habits, in dead timber. Widely across southern England.

Xylocoridea brevipennis Reuter - **Nationally Scarce.** Under bark of dead apple, hawthorn and other trees incl. larch. A scatter of localities across southern England.

Dufouriellus ater (Dufour)* - Under sappy bark of recently dead wood of both conifers and broadleaves; also in beehives, where it apparently preys on psocids. Widespread, but uncommon, across southern England; a single Irish locality is known.

Microphysidae - Minute Bugs. These are perhaps more associated with epiphytes but are also found with wood-decay fungi.

Loricula pselaphiformis Curtis* - Found on decaying branchwood and amongst epiphytic lichen cover; probably predatory. Widespread in GB, but rare in Ireland.

Loricula elegantula (Baerensprung)* - Widespread in Britain on the bark of trees and on rocks, associated with lichens and wood-decay fungi; feed on mites, springtails, fly larvae and bark flies (Psocoptera).

Myrmedobia coleoptrata (Fallen) - **Nationally Scarce**. Under bark of various dead trees, including spruce, and in tufts of moss around trunk bases; also in other situations, but usually in well-wooded sites; feeds on small aphids & other insects. Females are flightless. Widespread in England, but largely southern.

Thysanoptera - Thrips

These insects have piercing mouthparts and feed by penetrating the living tissues of plants and sucking up the sap. Some suck the body fluids of small insects. More than 100 species occur in Britain; a few have specialised feeding habits on wood-decay fungi. Information on the Irish fauna has not been incorporated into the following list.

Phlaeothripidae - Most members of this family are associated with the early stages of fungal decay on dead wood or in leaf litter. They apparently feed on fungal hyphae or their breakdown products, although all species in the subfamily Idolothripinae feed on fungal spores.

Idolothripinae

Cryptothrips nigripes (Reuter) - Feeds on spores on dead branches; infrequent.

Megalothrips bonannii Uzel - Feeds on fungal spores beneath bark on deadwood; Woodwalton Fen.

Megathrips nobilis Bagnall - Feeds on fungal spores on dead *Salix* branches; Wicken Fen and Ross-shire.

Phlaeothripinae

Abiastothrips schaubergeri (Priesner) - Probably in dead branches; one record from Box Hill, Surrey.

Acanthothrips nodicornis (Reuter) - Larvae feed on fungi in cracks in tree bark; not very common.

Haplothrips flavitibia Williams - Probably on dead twigs; rare.

Haplothrips fuliginosus Schille - On dead twigs or under bark of various trees and shrubs; widespread but not common.

Haplothrips minutus Uzel - Probably on dead twigs; Westmorland.

Haplothrips subtilissimus (Haliday) - On oak branches, probably feeding on small arthropods; locally common.

Hoplandrothrips bidens (Bagnall) - On dead branches; not common.

Hoplothrips corticis (De Geer) - On dead wood of broadleaves, feeding on fungi; very local.

Hoplothrips fungi (Zetterstedt) - Lives beneath encrustations of *Peniophora* fungus on dead oak branches; widespread and common.

Hoplothrips longisetis (Bagnall) - On dead branches, probably carnivorous; very local.

Hoplothrips pedicularius (Haliday) - Fairly common on deadwood of broadleaves, feeding on *Stereum* fungus.

Hoplothrips polysticti (Morison) - On pine dead wood, feeding on the fungus *Polystictus abietinus*; Only Scotland during 1939-1964.

Hoplothrips semicaecus (Uzel) - On dead wood of broadleaves; mainly in south-east of England.

Hoplothrips ulmi (Fabricius) - On dead wood of broadleaves, feeding on fungi - possibly *Peniophora*; widespread and common.

Hoplothrips unicolor Vuillet - **?Naturalised.** On dead pine branches, feeding on the fungus *Polystictus abietinus*; locally common from 1939-1964 in Aberdeen and Kincardine, probably introduced.

Phlaeothrips annulipes Reuter - Occurs on dead twigs and branches of birch, feeding on fungal mycelia and spores. Widespread and locally abundant.

Phlaeothrips coriaceus Haliday - Infrequent; on dead branches.

Poecilothrips albopictus Uzel - On dead branches; near Ascot, Berkshire.

Raphidioptera

Raphidiidae – Snakeflies. The larvae of snakeflies are predatory and forage beneath bark on dead wood. The adults are largely arboreal. None have been found in Ireland.

Subilla confinis (Stephens) =*Raphidia cognata* Rambur - Local and uncommon; southern and eastern England.

Atlantoraphidia maculicollis (Stephens) - Reputedly restricted to large conifer plantations; larvae have been reared from under loose bark of pine logs; widespread in Britain but most frequent in Surrey and Hampshire.

Phaeostigma notata (Fabricius) - Has been reared from larvae found in oak deadwood; widespread across lowland England, extending into the Welsh borders

Xanthostigma xanthostigma (Schummel) - Has been reared from larvae found in oak deadwood; widespread and locally common in Midlands and East Anglia, but few records in southern and western counties.

Trichoptera - Caddis Flies

Psychomyiidae

Lype phaeopa (Stephens) - Submerged rotting twigs and branches in rivers, lakes and streams, but mainly in the larger water bodies; common throughout Britain, although scarcer in Scotland.

Lype reducta (Hagen) - Submerged rotting twigs and branches in streams and to a lesser extent in rivers; common throughout Britain.

Lepidoptera - Moths

Cossidae

Zeuzera pyrina Linnaeus - Leopard Moth. The larval stage lasts 2-3 years, boring into live branches of various broadleaved trees and shrubs in woods, gardens, parkland and orchards. Widespread in lowland southern Britain, rarer in west.

Cossus cossus Linnaeus - Goat Moth. **Nationally Scarce B.** The larva feeds internally on the solid wood of various broad-leaved trees, most usually elm, poplar, ash & willow, and generally stressed or over-mature trees; overwinters 3-4 times, passing final winter in cocoon in the ground in which it eventually pupates; dense woods to isolated riverbank trees; very local, but widely scattered throughout Britain.

Psychidae

Diplodoma herminata (Geoffroy) - The eggs are laid singly in cracks in bark; the larvae feed on decaying leaves, fungi, dead insects and moss or lichen growing at the base of trees or stumps, or under loose bark; larva in a hard triangular inner case enclosed in a shorter soft case covered with detritus, fragments of dead insects, etc. Usually living 2 years; pupates in case attached low down to a trunk or stump. Locally not uncommon in wooded areas throughout Britain.

Tineidae

Morophaga choragella (D. & S.) - The larvae feed in galleries excavated within the fruiting bodies of various wood-rotting fungi, especially *Inonotus* and *Ganoderma* spp, pupating either in the fungus or in deadwood. In open wood pastures as well as dense woodland. Very local in southern England, extending from Kent to Dorset and Herefordshire, with a thin scatter of old records northwards to Northumberland.

Nemapogon granella (Linaeus) - Corn Moth. Larvae most often encountered feeding on stored vegetable products, but also feed on dry-rot fungus and, out-of-doors, on the fruiting bodies of various wood-rotting fungi. A localised species, but reported widely and as far north as Inverness - distributional differences between wild sites and indoor populations are not clear at present.

Nemapogon cloacella (Haworth) - Cork Moth. The larvae are most frequently found feeding on bracket-fungi, especially birch polypore *Piptoporus betulinus* and on callus tissue around tree wounds; also reared from *Hypoxylon multiforme* on birch; more rarely on stored products. Common in woods and in areas with much dead wood; throughout Britain.

Nemapogon inconditella (Lucas) - The only known British record is of one found in S. Devon in 1979, but it is thought to be a resident. It has been reared on the Continent from the bracket fungus *Trametes versicolor*.

Nemapogon wolffiella Karsholt & Nielsen - **Nationally Scarce B.** Has been reared from the fruiting bodies of the wood-decay fungus *Hypoxylon multiforme* developing on deadwood of birch. Very local in wooded localities from Devon to Kent to Cumbria.

Nemapogon variatella (Clemens) = *N. personella.* Larvae develop in fruiting bodies of wood-rotting fungi, and occasionally in stored vegetable products. Mainly reported from the London area, but also Brighton and Moccas Park.

Nemapogon ruricolella (Stainton)* **- Nationally Scarce B**. Larvae develop in fruiting bodies of wood-rotting fungi. A local species in southern England and more common in the west. Also reported from SW Ireland, and old records from North Wales and Northern England.

Nemapogon clematella (Fabricius)* **- Nationally Scarce B.** Larvae reputedly develop in wood-rotting fungi of various broadleaves, although *Diatrype disciformis* in dead hazel poles may be primary larval habitat. Has been reared from the fruiting bodies of the wood-decay fungus *Hypoxylon multiforme* developing on deadwood of birch. Locally common from Kent and Cornwall to Cumbria; one old Scottish record and reported from Ireland.

Nemapogon picarella (Clerck) - **pRDB1.** The larva develops in bracket fungi, especially birch polypore *Piptoporus betulinus*, and bores into the adjacent wood. Uncommon; a northern and western species in Britain but not reported from Ireland. Most records come from the Durham area and the Scottish Highlands.

Archinemapogon yildizae Kocak - **Nationally Scarce B.** A Scottish speciality, the larvae developing in bracket fungi on birch - *Piptoporus betulinu*s and *Fomes fomentarius*, and when in the latter normally in association with the beetle *Bolitophagus*

reticulatus, which may be necessary to break up this very hard fungus for the moth larvae. Known from a few Highland areas of Scotland.

Nemaxera betulinella (Fabricius)* - The larvae develop in wood-rotting fungi on broad-leaved timber. Very local, but scattered throughout England, with the exception of the south-west. There are old reports from Co. Dublin.

Triaxomera parasitella (Hubner) - Develops in a variety of wood-rotting fungi. Widespread and common over much of lowland southern England; scarcer in the north, with isolated records from Northumberland and Stirlingshire. Not known from Wales or Ireland.

Triaxomera fulvimitrella (Sodovsky) - Larvae develop in various wood-rotting fungi; occasionally on callus-tissue around tree wounds. Southern records mostly from oak and beech, while northern ones are mainly from birch polypore. Locally throughout Britain, and most common in central Highlands of Scotland.

Triaxomasia caprimulgella (Stainton) - **Nationally Scarce B.** Larvae in dead wood of beech, oak or elm. Ecology unclear; possibly associated with tree cavities, perhaps feeding on dead insects in spider webs; but also believed to feed on wood, perhaps on scar tissue. Only reported from SE England, from Kent to Berkshire and Suffolk.

Monopis fenestratella (Heyden) – **pRDB.** A rare species in Britain and Europe, reported from: Chatteris, Cambs in 1877, where thought to have bred in rotten elm stumps in a garden; Loxley, Warks in 1980, reared from kestrel nest in a hedgerow oak; and Richmond Park, Surrey in 1995, at light trap close to old hollow oaks. Elsewhere in Europe has been reared from nests of kestrel, owls, and hornet, as well as associated with fungi, dead wood and dry plant material.

Niditinea piercella (Bentinck) - Develops in bird nests inside hollow trees and in nest boxes; larvae feed on feathers and other animal fibres; lowland southern and eastern Britain; local.

Sesiidae

Sesia apiformis (Clerck)* - Hornet Moth. **Nationally Scarce A.** The eggs are laid low down in bark crevices or in old emergence holes on living poplars; larva tunnels between bark and wood in lower trunk and roots. Occurs over much of lowland England, absent only from south-west and much of north; extends into southern and northern coastal districts of Wales; present in Ireland.

Sesia bembeciformis (Hubner) - Lunar Hornet Clearwing**. Nationally Scarce A**. The eggs are laid low down on the trunks of various living *Salix* spp.; larva initially tunnels haphazardly below the bark at and below ground level, boring deeper into wood in second year, when excavate vertical tunnels. Pupates at upper end of larval borings. Occurs widely throughout Britain.

Paranthrene tabaniformis (Rottemburg) - Dusky Clearwing. Either associated with the galls of the longhorn beetle *Saperda populnea* on aspen, or boring in roots or bark; few GB records, all SE.

Synanthedon vespiformis (Linnaeus) - Yellow-legged Clearwing. **Nationally Scarce B**. The eggs are laid along edges or within bark crevices of oak stumps of up to 3 years age, and in crevices of sap-runs on living trunks; larvae develop under sappy bark, where also pupate; occasionally other broad-leaves. Widespread in southern Britain, but absent from the far west.

Synanthedon spheciformis (Denis & Schiffer) - White-barred Clearwing. **Nationally Scarce A**. Eggs laid in ground near bark crevices of alder and birch; larvae tunnelling in trunks; local but widespread over central and southern England and Wales.

Synanthedon scoliaeformis (Borkhausen) - Welsh Clearwing. **RDB3**. Eggs are laid in old emergence holes or in bark crevices in the lower part of old birch trunks; larvae tunnel below bark; a northern and western species.

Synanthedon myopaeformis (Borkhausen) - Red-belted Clearwing**. Nationally Scarce A.** Eggs laid in bark crevices of various Prunaceae;larvae bore in timber; southern and eastern Britain.

Synanthedon culiciformis (Linnaeus) - Large Red-belted Clearwing**. Nationally Scarce A**. Eggs laid within crevices of birch stumps of 1-3 years and living stems, also on alder; larvae bore under bark; heaths and open woods, widely across lowland Britain; also in N. Scotland.

Oecophoridae

Schiffermuelleria grandis (Desvignes) - **pRDB1.** Larva feeds in soft decaying wood beneath bark on oak, beech, elm and even gorse and ivy; pupates under bark. Local in New Forest, N. Wales & West Midlands.

Schiffermuelleria similella (Hubner) - Larva on fungus under dead bark of pine or sycamore; also reared from *Fomes fomentarius* and *Daldinia concentrica*; pupates in feeding place. Local from Staffordshire northwards; a hill country species.

Schiffermuelleria tinctella (Hubner) - Larva in dead wood and under decaying bark of trees, where pupates; woodland species, widespread in southern England.

Denisia albimaculea (Haworth) - Larvae feed in galleries in dead outer bark of a wide variety of trees, including elm, *Malus*, lime, sycamore and larch. Local in England.

Batia lunaris (Haworth) - Larva under dead bark of various trees and shrubs; in dead wood on fencing, etc; in mite galls on Salix. Locally common in southern England.

Batia unitella (Hubner) - Larva on dead wood and fungus under bark of various trees; dull pinkish brown with yellowish lines, head chestnut brown. Local in southern England.

Dafa formosella (D. & S.) - **pRDB1.** Larva feeds under dead bark, chiefly of *Malus*; larva light grey, head and plate light chestnut; only known from Wanstead and possibly Epping Forest areas, probably extinct in GB.

Telechrysis tripuncta (Haworth) - Larva unknown, but probably in rotten wood in hedges and thickets; local in England.

Esperia sulphurella (Fabricius)* - Eggs laid in crevices in dead and decaying wood; larva on dead wood and under bark of various trees, and on fungus therein, exuding much frass, including *Daldinia concentrica*. Larva greyish white, pinacula dark grey, head and plates chestnut brown; pupates in cocoon of silk and frass. Widespread in Britain and Ireland, north to Clyde.

Esperia oliviella (Fabricius) - **Nationally Scarce B.** Eggs laid in crevices in dead and decaying wood; larva on decayed wood of oak, blackthorn, hazel, *Robinia*, etc; also in rotten cut wood; larva pale yellowish grey with black dots, head and plate brown. Local across southern England.

Oecophora bractella Linnaeus - p**RDB3.** Larva develops under dead bark of oak, ash, larch, pine, etc, especially when tree has been colonised by honey fungus *Armillaria mellea* agg. In gallery of loosely woven silk and frass between bark and tree; larva olive-grey-brown, pinacula darker, head pale brown, plates darker. Northern and western England.

Alabonia geoffrella (Linnaeus)* - Larva on decayed wood; whitish with darker spots, head and prothoracic plate yellow-brown; hedges; common in England and southern Ireland.

Cosmopterigidae

Euclemensia woodiella (Curtis) – **Extinct.** Larva in dead wood; adult taken in 1829 at Kersall Moor, Manchester.

Dystebenna stephensi (Stainton) - **pRDB3.** Eggs laid in crevice in bark of old oak trees, larva feeds in the bark; large and old trees preferred. Local in London area, Dorset, Essex & Yorkshire.

Tortricidae

Cydia leguminana (Lienig & Zeller) - **RDB1.** Larva in decaying bark, especially on elm pollards which have excrescences with soft bark; probably also on other tree species; hedgerows and wood margins; Wicken Fen until elms lost in 1970s; Epping Forest, up until 1890.

Cydia corollana (Hubner) - **RDB1.** Larva in old or occupied galls of beetle *Saperda populnea* on twigs of aspen; one specimen taken c.1850 at Whittlesea Mere, Hunts; and one Burnt Oak Wood, Orlestone, Kent 1982

Pyralidae

Apomyelois bistriatella (Durrant) - **Nationally Scarce B.** Egg laid on *Daldinia vernicosa* on burnt gorse or *D. concentrica* on dead birch; larvae detected by breaking off fungus to look for white threads; full-grown larva usually burrows into the dead wood to hibernate, pupating there next spring, although pupae have been found in the fungus; very local, on heaths and downs across southern Britain.

Euzophera pinguis Haworth - On ash, preferring pollards; larva on living inner bark, forming galleries, throwing black frass from entrance hole, and infesting certain trees that are eventually killed by the larvae; local S of Yorkshire.

Noctuidae

Parascotia fuliginaria (Linnaeus) - Waved Black. **Nationally Scarce B**. Larva feeds on fungi, most commonly on fallen timber: *Trametes versicolor, Hirschioporus abietina* and *Piptoporus betulinus*; also reported from *Daldinia concentrica*, *Phaeolus schweinitzi*, *Paxillus panuoides*, *Stereum hirsutum* and *Botryobasidium*; also on tree stumps, logs, etc; makes a hammock-like cocoon suspended below the fungus or bark by threads from each end; damp woods and wooded heaths. Most frequent in Bagshot Sands area of Surrey-Hampshire border; but also over a wide area from Spithead to Suffolk; may be a recent arrival - first reported in London Docks, later on well-recorded Surrey heaths.

Coleoptera - Beetles

Carabidae - Only a few species are confined to trees, occurring either under bark on dead trunks, boughs and branches, or within rotting timber, and are active predators. Others use deadwood primarily as a refuge during periods of inactivity, and these are not included in the following list.

Bembidion harpaloides Serville* - Under bark on rotting timber; also stones on moist clay; immature adults have been found in nests of jay *Garrulus glandarius*; moderately common & widespread.

Dromius quadrimaculatus (L.)* - Adults feed on mites, Collembola, etc, on bark surface; shelter under loose bark on various standing trees; larval development beneath the bark, where also predatory, may also feed over exposed bark surface; common.

Dromius agilis (F.) - Adults and larvae under loose bark on various standing trees; local.

Dromius angustus Brullé - On pine *Pinus*; probable immigrant to Britain, but in E. Highlands as well as S. England.

Dromius meridionalis Dejean* - Mostly on broad-leaved trees, also in other situations.

Dromius spilotus (Illiger)* =*quadrinotatus* (Panzer) - On various trees; moderately common.

Dromius quadrisignatus Dejean - **RDB1 & BAP Priority Species.** On broad-leaved trees; S. England, Glamorgan, Fife.

Rhysodidae

Rhysodes sulcatus (Fabricius) – **Fossil.** In thoroughly rotten timber where it is thought to feed on fungi, most often in beech *Fagus*; no modern records from British Isles, most recently known c3000 BP; sub-fossil records from Somerset Levels and East Anglia (early Holocene). A relict species of primary, wholly undisturbed forest, ie before it has been disturbed by human activity. Extremely rare and mainly a southern European species, from the Pyrenees to the Caucasus, extending northward through Hungary and Austria to southern Germany; last recorded in Sweden in 1863, and the few German records are old.

Histeridae - Hister Beetles. Predatory, especially on larvae of other deadwood insects, also mites and springtails.

Teretrius fabricii Mazur - **RDB1.** Preys on larvae of the beetles *Lyctus brunneus*, *L. linearis* and *L. fuscus* and other bostrichoids; majority of records from fresh oak *Quercus* palings. 19C records London, W. Glamorgan, Norfolk, Bristol, W. Sussex, and most recently Surrey in 1907.

Plegaderus dissectus Erichson - **Nationally Scarce B.** Confined to ancient wood pastures; lives in moist crumbly decaying timber of various broad-leaved trees, and occasionally found under sappy bark; central southern and eastern England, north up to Nottinghamshire, but absent from west.

Plegaderus vulneratus (Panzer) – **Naturalised.** Under bark of dead conifers, occasionally broad-leaved trees; association with bark beetle *Hylastes attenuatus* has been suggested; first discovered in Britain in 1962.

Abraeus perpusillus (Marsham)* =*globosus* (Hoffman, J.) - In moist rotten wood of various broad-leaved trees; usually ancient woodland or wood pasture, especially in the west; widespread but local throughout much of England, except far north and west. Rare in Wales and Ireland.

Abraeus granulum Erichson - **Nationally Scarce A.** In moist crumbly rotten wood of various broad-leaved trees; sites are typically ancient wood pastures. Scattered from south-east to East Anglia and across to Mersey.

Aeletes atomarius (Aubé) - **RDB3.** Usually in burrows of lesser stag beetle *Dorcus parallelopipedus* in moist crumbly decaying heartwood, although also recorded with *Sinodendron cylindricum* and brown tree ant *Lasius brunneus*; in beech *Fagus*, ash *Fraxinus*, willow *Salix*, alder *Alnus*. Ancient wood pastures; mostly central England, to Yorkshire in north and Hampshire and Kent in south-east.

Gnathoncus buyssoni Auzat - **Nationally Scarce A.** A scavenger, living particularly in the nests of birds within hollow trees, but also in squirrel dreys and other situations. Widespread across the lowlands of southern Britain, but very localised within its range.

Gnathoncus nannetensis (Marseul) - Most often found in the nests of birds within hollow trees, but also in a variety of other situations. Uncommon.

Gnathoncus nanus (Scriba) - Most often found in the nests of birds within hollow trees, but also in a variety of other situations. Uncommon.

Gnathoncus schmidti Reitter - Most often found in the nests of birds within hollow trees, rarely in other situations. Uncommon.

Dendrophilus punctatus (Herbst) - Most often found in the nests of birds within hollow trees, but also in a variety of other situations, including the nests of wood ant *Formica rufa*. Uncommon.

Paromalus flavicornis (Herbst) - Associated with debris beneath bark on deadwood of medium age, and sometimes in the rotten wood and fungi; larvae feed on smaller larvae; broad-leaved trees generally; local, mostly old parks and ancient woodlands in

S. & E. England, north to Yorkshire; rarer in west; Gwent, Powys. Association with ancient sites strongest in west.

Paromalus parallelepipedus (Herbst) - **RDB1.** Under bark on dead timber; New Forest & Kent. Relict old forest species.

Epierus comptus Erichson – **RDBK.** Discovered under bark of a mature fallen beech *Fagus*, 1980, Groveley Wood, S. Wilts, and also under beech bark in the New Forest in 2000.

Ptiliidae Feather-winged Beetles - Mould-feeders, living between the bark and sapwood of dead trees, where conditions are slightly moist and mouldy.

Nossidium pilosellum (Marsham)* - **Nationally Scarce.** Develops in decaying wood, particularly rotten stumps and damp, rotten, fungus-colonised timber, and especially elm *Ulmus* and beech *Fagus*; in *Polyporus squamosus* on ash *Fraxinus* (Glos); in hollow apple tree *Malus* (Worcs); in a gill fungus on oak *Quercus*; in wood frass in *Dorcus* burrows.

Ptenidium formicetorum Kraatz* - Rotten wood is probably the main habitat of this species, even though it does occur from time to time in nests of wood ants *Formica* spp and in decaying vegetable material.

Ptenidium gressneri Erichson* - **Nationally Scarce**. Only found in ancient deciduous forests, generally in moist crumbly wood mould in hollow trunks & rot holes; also in nests of hornet *Vespa crabro* and squirrel dreys in hollow trees; most records from beech *Fagus*.

Ptenidium turgidum Thomson, C.G. – **RDBK.** In moist crumbly decayed cavities inside trunks of old broad-leaved trees, particularly beech *Fagus* and elm *Ulmus*, often in company with ants.

Oligella intermedia Besuchet – **RDBK.** In humus at foot of old trees on Continent; Yorkshire & 19C.

Micridium halidaii (Matthews, A.) – **RDBK.** Has been found in red-rotten wood from inside hollow live oak *Quercus* (Windsor), also under bark of dead oak (Sherwood); probably associated with mycelia of *Laetiporus sulphureus*. Also Richmond Park & Calke Park. All sites are typical ancient wood pastures.

Ptiliolum caledonicum (Sharp) – **RDBK.** Mostly under bark of dead pine *Pinus*, but also recorded on dead standing alder *Alnus*; Highlands.

Plitium subvariolosum (Britten) - With brown tree ant *Lasius brunneus*.

Ptinella aptera (Guérin-Méneville)* - Under bark of decaying oak *Quercus* and *beech* Fagus timber.

Ptinella cavelli (Broun)* - **Naturalised.** Under tight bark of dead broad-leaves and conifers; widespread; immigrant New Zealand species, widespread in Britain and Ireland.

Ptinella denticollis (Fairmaire)* - **Nationally Scarce.** Under tight bark of dead broad-leaved timber; very local & rare.

Ptinella errabunda Johnson* - **Naturalised.** Under tight bark of most species of dead trees; widespread & common in Britain and Ireland; immigrant, probably from New Zealand.

Ptinella limbata (Heer)* - **RDBK.** Under bark of various dead broad-leaved trees and conifers; old forest areas.

Ptinella taylorae Johnson* - **Naturalised.** Under tight bark of dead trees; immigrant New Zealand species; not uncommon in W. England & Ireland.

Pteryx suturalis (Heer)* - Under bark and in rotten wood of dead broad-leaved trees, rarely in conifer; local & scarce.

Leiodidae - Some species feed on carrion, others on subterranean fungi or on slime fungi (Myxomycetes) on dead wood. All species of *Anisotoma* have an obligate association

with slime fungi, with adults and larvae feeding on the spores. Species of *Agathidium* are most likely primarily associated with slime fungi but the evidence is less clear.

Anisotoma castanea (Herbst) - Develops in slime fungi under bark on pine *Pinus*; a northern species recorded from Caledonian pine forests.

Anisotoma glabra (F.) - Under fungoid bark on pine *Pinus*; a northern species not uncommon in Caledonian pine forests, and recently found in Yorkshire.

Anisotoma humeralis (F.)* - Develops in slime fungi under bark on the trunks or fallen boughs of dead trees, adults found in ripe powdery stage, also in bracket fungi; widespread across British Isles, although scarcer in Ireland.

Anisotoma orbicularis (Herbst)* - Possibly a woodland species; widely distributed in Britain.

Amphicyllis globus (F.)* - In rotten, fungus-infested timber, mostly in ancient woodland areas in south and east; records up to Northumberland; rare in Ireland.

Agathidium arcticum C. G. Thomson – **RDBK.** At slime moulds under fungoid bark, pine *Pinus* and birch *Betula*; a northern species best known from Caledonian pine forests, but also recently in SW Yorkshire.

Agathidium badium Erichson – **RDBK.** Thought to be associated with decaying timber; a very few localities in the hill country of northern England.

Agathidium confusum Brisout – **RDBI.** In fungi on tree stumps; very few British records.

Agathidium nigrinum Sturm - Under bark on dead timber, usually associated with fleshy fungi, but larval habitat unknown. Generally distributed in Britain, although very local, and possibly a species of dense shady woodland conditions.

Agathidium nigripenne (F.)* - Usually under sappy bark of various dead broad-leaved trees and conifers in woodland; also beaten from ivy *Hedera* blossom; widespread but local; rare in Ireland.

Agathidium rotundatum Gyllenhal* - Develops in slime fungi on dead trees, broadleaves and conifers. Possibly mainly a species of dense shady woodland. Widespread in Britain, although local.

Agathidium seminulum (L.) - Associated with rotten wood, various broad-leaved trees, in woodland; widespread in Britain, although local.

Agathidium varians Beck* - In piles of small branchwood, under bark on dead timber, damp woodland leaf litter etc. Generally distributed in Britain, rare Ireland. Possibly a species of dense shady woodland.

Nemadus colonoides (Kraatz) - Frequents the rot-holes in trees that have been used by birds for nesting.

Scydmaenidae - Stone Beetles. Predatory on mites, in moist situations; a few frequent decaying wood.

Eutheia formicetorum Reitter - **RDB1.** In moist crumbly dead wood and wood mould, particularly beech *Fagus* and oak *Quercus*; has been found with brown tree ant *Lasius brunneus*; southern old forests: Windsor, New Forest, and the ancient neglected coppice of Prattle Wood, Oxon.

Eutheia linearis Mulsant - **RDB1.** Under dead bark and in moist crumbly dead wood, especially mature oak *Quercus*; old forest areas: Sherwood, Windsor, New Forest, and unconfirmed records elsewhere.

Neuraphes plicicollis Reitter - **Nationally Scarce.** Mainly subcortical, in rotten wood; also in decaying beech *Fagus* leaf litter and in *Sphagnum* moss.

Stenichnus bicolor (Denny)* - Under bark and in moist crumbly decaying timber of various dead trees; widespread in Britain, but apparently absent from East Anglia and much of the eastern Midlands; mostly in ancient wood pastures.

Stenichnus godarti (Latreille) - **RDB3**. Only in areas of ancient woodland and forest, usually under bark and in moist crumbly wood of old hollow fallen trees of oak *Quercus* and

beech Fagus, often in company with tree-nesting ants; flightless; S. England to Cheshire.

Microscydmus minimus (Chaudoir) - **RDB3.** In cavities in old hollow oaks *Quercus* and beech *Fagus*, particularly in wood mould and red-rot; old oak *Quercus* forests: Sherwood, Bagots Park (Needwood Forest), Windsor, New Forest.

Microscydmus nanus (Schaum) - **Nationally Scarce.** In rotten wood and under bark; also in leaf litter and moss. Mostly ancient woodlands and wood pastures.

Euconnus pragensis (Machulka) - **RDB1.** With the ant *Lasius brunneus* in decaying heartwood of old trees, especially oak *Quercus*; Windsor Forest; mainly east-mid European.

Scydmaenus rufus Müller, P.W.J., & Kunze - **RDB2.** Usually under bark and in moist crumbly wood or wood mould of various broad-leaved trees; also found among dung and other farmyard debris during winter months.

Staphylinidae - Rove Beetles. A small number restricted to deadwood, but many associated with fungal fruiting bodies and the degree of association with wood-decay fungi is often unclear.

Staphylinidae: Scaphidiinae - Shining Fungus Beetles. Associated with fungoid wood, fleshy and bracket.

Scaphisoma agaricinum (L.)* - In rotting timber; widespread.

Scaphisoma assimile Erichson – **RDBI.** A specialist of wood-decay fungi; only known from SE.

Scaphisoma boleti (Panzer)* - **Nationally Scarce B.** A specialist of wood-decay fungi.

Scaphidium quadrimaculatum Olivier - Fungivorous in rotting timber; widespread in Britain.

Staphylinidae: Proteininae

Megarthrus hemipterus (Illiger) - **Nationally Scarce A.** Consistently associated with decaying fungi, including beefsteak *Fistulina hepatica*. Widespread across southern Britain.

Staphylinidae: Omaliinae

Phyllodrepoidea crenata (Gravenhorst)* - **Nationally Scarce B.** Adults and larvae occur under bark of relatively freshly dead trees or branches, usually broad-leaved trees in England, pines *Pinus* in relict pine forest; feed on fungal decay; hill country of N & W - relatively common in Scotland, scattered in N England, Wales and Killarney.

Acrulia inflata (Gyllenhal)* - Adults and larvae under fungoid bark on sound timber of various broad-leaved trees, where moist interface; also in fungi growing on wood; general scavengers, feeding on insect material; N & W Britain, including Somerset, Gloucestershire, and Lincolnshire; Killarney.

Phyllodrepa nigra (Gravenhorst) – **RDBI.** Larvae probably develop in bird nests in hollow trees or in wood mould beneath; adults mostly found in decaying wood or mould of old, generally hollow trees or at hawthorn *Crataegus* blossom; but also in tree fungi, at sap runs, in pigeon dung and in hornet *Vespa crabro* nest; predatory and/or scavengers; old forest species of highly restricted distribution: Windsor Forest and unconfirmed records elsewhere.

Dropephylla spp. - Adults and larvae are found under the bark of dead wood, although those of some (perhaps all) are attracted to flowers in early summer. Adults and larvae are cannibalistic and feed on small insects or other arthropods living under bark.

Dropephylla gracilicornis (Fairmaire & Laboulbène)* - **Nationally Scarce.** Under bark and in rotten wood of dead branches of broad-leaved trees, especially oak *Quercus*; adults also occasionally found in reed *Phragmites* refuse. Scarce in GB; Ireland: 2 records.

Dropephylla devillei (Bernhauer)* =*grandiloqua* (Luze) - Under bark of conifers in Highlands, and broadleaves and conifers in old forest areas elsewhere; northern and western species in GB; also in N. Ireland. Widespread but rare in Europe as a whole.

Dropephylla heeri (Heer) - **Nationally Scarce.** In fungi on rotten birch *Betula* trees and under pine *Pinus* bark; Scotland

Dropephylla ioptera (Stephens)* - Under bark of dead branchwood; broad-leaved trees; adults visit flowers of rowan *Sorbus aucuparia*, etc; widespread GB, probably very local in Ireland.

Dropephylla vilis (Erichson)* - Under bark of broad-leaved trees and conifers; widespread GB, probably local in Ireland.

Hapalaraea pygmaea (Paykull)* - Largely confined to areas of mature woodland, where it is found in bracket fungi, bird nests and squirrel dreys in tree canopy, rotten wood, etc.; probably not a true wood-decay associate; widespread in GB, but only one old record from Ireland.

Phloeonomus punctipennis Thomson, C.G.* - Adults and larvae under bark of various broad-leaved trees; fungal feeder; widespread in Britain and Ireland; under-recorded due to confusion with *P. pusillus*.

Phloeonomus pusillus (Gravenhorst)* - Adults and larvae under bark, mostly conifers; widespread GB, less so Ireland.

Phloeostiba lapponica (Zetterstedt) - Under bark on Scots pine *Pinus sylvestris*; formerly confined to Scottish Highlands, but now also in southern pine plantations.

Phloeostiba plana (Paykull)* - Adults attracted to fresh sap of broad-leaved trees – feed on the sap; larvae under bark, feeding on sap as well as insects; mostly in areas of ancient woodland; scarce GB and mainly Killarney area of Ireland.

Xylostiba monilicornis (Gyllenhal) - **Nationally Scarce.** Develops under bark of dead timber of various trees, but especially conifers; larvae predatory; adults also taken in decaying fungi; said to be a characteristic Scottish Highlands species, but now widely in northern and western Britain and has begun to turn up in southern conifer plantations.

Xylodromus testaceus (Erichson) - **RDB1.** Under bark and in decaying wood; old forest species, only known from Blean Woods.

Coryphium angusticolle Stephens* - Under bark and in red-rotten oak *Quercus*, mostly in wooded areas, possibly only ancient sites; widespread GB, but probably very local in Ireland.

Staphylinidae: Piestinae

Siagonium quadricorne Kirby, W.* - Under moist bark on various broad-leaved trees, especially elm *Ulmus*; saprophagous; south of Lancashire & Yorkshire in GB; very local and mainly southern in Ireland.

Staphylinidae: Phloeocharinae

Phloeocharis subtilissima Mannerheim* - Amongst debris under beech *Fagus* bark, in moss on trees, on bracket fungi especially *Daedaleopsis confragrosa* on *Salix*, etc. Very local, Britain & Ireland.

Staphylinidae: Staphylininae

Atrecus affinis (Paykull)* - Under bark and in rotten wood of various trees, conifers & broad-leaved trees. Widespread and locally common throughout Britain and Ireland.

Nudobius lentus (Gravenhorst) - Develops under bark of coniferous logs, preying on other insects and larvae; occasionally in nearby deadwood of broadleaves; originally characteristic of Scottish pine *Pinus* forest, but has spread greatly over recent years and now well established in S England & associated with hardwoods as well as soft.

Xantholinus angularis Ganglbauer - **Nationally Scarce A.** Found in damp wood mould beneath bird nests or in ant nests in hollow trees; various broad-leaved trees; southern England.

Philonthus subuliformis (Gravenhorst) - In bird nests, mainly those in tree holes.

Gabrius splendidulus (Gravenhorst)* - Under bark, especially of beech *Fagus*; widespread, Britain; rare in Ireland.

Velleius dilatatus (F.) - **RDB1.** Within hornet *Vespa crabro* nests inside old trees; adults and larvae prey on fly larvae in nest debris; adults also at sap of goat moth *Cossus* trees and comes to sugary baits. Southern England.

Quedius aetolicus Kraatz - **Nationally Scarce A.** Most often found in squirrel dreys and bird nests in hollow trees, and in wood mould beneath; also in fungi, in rotting wood and under bark. Extreme south-east of England.

Quedius assimilis (Nordmann)* =*fulgidus* (Fabricius) - **Nationally Scarce B.** In rot-holes and compost. Britain; also Counties Down and Armagh.

Quedius brevicornis (Thomson)* - **Nationally Scarce B.** In nests of birds and hornet *Vespa crabro* inside tree cavities, also in rot holes and fungi. Britain; Co. Waterford.

Quedius maurus (Sahlberg, C.R.) - Rather strictly subcortical, and in moist crumbly rotten wood. Widespread in central and eastern England; also in Cumbria and Ayrshire.

Quedius microps Gravenhorst - **Nationally Scarce B.** In moist crumbly, very rotten timber, often with dense, clay-like blackish mould, in tree holes and hollow trunks; wide variety of broad-leaved trees. Widespread in southern and eastern England; also in Co Durham.

Quedius plagiatus Mannerheim* - Under bark, broad-leaved trees & conifers; moist well-rotted timber; in northern hill country woods in Britain, where widespread; rare in Ireland & only known from Counties Dublin, Cavan, Kerry, and Wicklow.

Quedius scitus (Gravenhorst) - **Nationally Scarce B.** Usually subcortical, in moist crumbly red-rot of various broad-leaved trees. Mainly central and eastern England, but records also from Carmarthenshire and Lanarkshire in old parks.

Quedius truncicola Fairmaire & Laboulbène* =*ventralis* (Aragona) - **Nationally Scarce B.** In wet, very rotten timber, often with dense, clay-like blackish mould, in tree holes and hollow trunks, generally beneath bird nests; also reported from rotten fungi and at sap. Widely across lowland England, but absent from far west; only Denbighshire in Wales and Co. Dublin in Ireland.

Quedius xanthopus Erichson - **Nationally Scarce B**. Under bark in decaying timber and in the fruiting bodies of fungi growing from it. A wide variety of tree species form suitable habitat. Primarily a species of ancient woodlands and wood pastures. Widespread in Britain.

Staphylinidae: Trichophyinae

Trichophya pilicornis (Gyllenhal) - **Nationally Scarce B.** A woodland species, associated with freshly cut timber; also from squirrel drey in rotten beech *Fagus*, pine *Pinus* needles, in moss and dead leaves. Larvae and adults fungivorous, feeding on mycelium and spores, but also partly feeding on other arthropods. Europe, Madeira, India, N. America.

Staphylinidae: Tachyporinae

Sepedophilus - Mycetophagous species, feeding on hyphae not fruiting bodies; 10km dot maps in Hammond (1973).

Sepedophilus bipunctatus (Gravenhorst) - **Nationally Scarce B.** Under bark or in very moist/wet logs and tree stumps, mostly willow *Salix*, but also other broad-leaved trees and pine *Pinus*; southern England; Central European species.

Sepedophilus constans (Fowler) - **Nationally Scarce.** Primarily associated with fungoid or rotting wood; also reported from pasture and flood litter. North of Severn-Wash line, largely boreo-montane.

Sepedophilus littoreus (L.)* - Rarely away from dead and decaying wood of some kind; also in leaf and other vegetable litter; generally distributed in GB, largely in ancient woodlands; Co. Derry; Holarctic.

Sepedophilus lusitanicus Hammond - Under pine *Pinus* logs and in pine litter; HQ in pine area of Breckland, but also in band across to S Wales; principally Atlantic or broadly Lusitanian (W. Europe).

Sepedophilus testaceus (F.) - **Nationally Scarce.** Largely rotten and fungoid hardwood, associated primarily with ancient broad-leaved woodland; GB generally scarce and S of Severn-Wash line; widespread in W. Palearctic.

Tachinus bipustulatus (F.) - **RDB1.** A predatory species, most often found at sap-flows from broad-leaved trees, especially at goat moth *Cossus* sap runs. Formerly known from a number of southern English sites, but appears to have declined and was last recorded from Windsor Forest in 1930s.

Tachinus lignorum (L.) - **Nationally Scarce.** Most often reported from decaying fungi and at sap; also in decaying wood frass, and horse dung.

Staphylinidae: Aleocharinae

Cypha imitator (Luze) – **RDBK.** In rotten wood of old beech *Fagus* stump & under sycamore *Acer pseudoplatanus* bark; also in haystack litter.

Cypha seminulum (Erichson)* - **RDBK.** In rotting wood, fungi, under bark and in moss; elm *Ulmus* and sycamore *Acer pseudoplatanus*. Britain & old possibly doubtful records from Ireland.

Holobus (Oligota) apicatus (Erichson)* - **Nationally Scarce.** Occurs in bracket fungi on trees: *Stereum hirsutum, Polyporus squamosus, Trametes versicolor*; possibly preys on *Cis* beetle larvae; also recorded in leaf litter inside a hollow oak *Quercus*, under beech *Fagus* bark, etc. Britain, widespread, & Co. Antrim.

Gyrophaena - Larvae feed on fungal spores.

Gyrophaena affinis Mannerheim* - In bracket fungi in woods. Britain & Ireland; widespread.

Gyrophaena angustata (Stephens) - **Nationally Scarce**. In bracket fungi, e.g. *Polyporus squamosus* on ash *Fraxinus* stump, and under bark.

Gyrophaena bihamata Thomson, C.G.* - On bracket fungi in woods. Very local in southern Britain; Killarney.

Gyrophaena congrua Erichson - **Nationally Scarce.** In bracket fungi *Polyporus squamosus, Trametes versicolor, Pseudotrametes gibbosa*.

Gyrophaena fasciata (Marsham)* - Bracket fungi in woods. Britain; widespread in Ireland but rare.

Gyrophaena gentilis Erichson* - Bracket fungi in woods. Britain: widespread but local; & Ireland: rare, in north.

Gyrophaena joyi Wendeler* - **Nationally Scarce.** Associated with wood-decaying fungi in wet woodland, including *Lentinus tigrinus* and *Polyporus squamosus*. Southern Britain & Co Down.

Gyrophaena latissima (Stephens)* - Amongst fungoid bark and on bracket fungi in woods. Britain; widespread if rare in Ireland.

Gyrophaena lucidula Erichson - **Nationally Scarce.** In fungi on trees, incl. *Lentinus tigrinus* and *Gymnopilus junonius* on ash *Fraxinus* stump. Wet woodlands.

Gyrophaena minima Erichson* - In small yellow fleshy fungus on dead stumps. Britain & Ireland: Cos. Antrim & Sligo.

Gyrophaena munsteri Strand – **RDBK.** In fruiting bodies of wood-rotting fungi, incl. polypores & gill fungi, but also the non-wood-rotter *Hebeloma saccharoliens*. Southern Britain.

Gyrophaena nana (Paykull)* - In fleshy fungus on stump. Britain & Ireland: Co. Meath.

Gyrophaena poweri Crotch* - **RDBK.** In fruiting bodies of wood-rotting fungi, such as *Hypholoma fasciculare* and *Pleurotus*. Rare, south-east England; Killarney.

Gyrophaena pseudonana Strand – **RDBI.** Only known from 2 taken in 1967 from *Hypholoma fasciculare* at Chippenham Fen.

Gyrophaena pulchella Heer* - **RDBK.** Has been recorded from the fungus *Hypholoma fasciculare*. Rare in Britain; possibly less so in Ireland.

Gyrophaena rousi Dvořák – **RDBI.** Discovered on bracket of *Polyporus squamosus* at Chippenham Fen in 1999.

Gyrophaena strictula Erichson* - **Nationally Scarce.** Characteristically associated with the bracket fungus *Daedalea quercina* but occasionally reported with other fungi; Britain & Powerscourt, Co. Wicklow. Widely distributed and not uncommon in N Europe.

Placusa complanata Erichson – **Status unclear**. Recently taken in frass under bark of burnt dead Scots pine *Pinus sylvestris* in Surrey.

Placusa depressa Maeklin - **Nationally Scarce.** Lives in burrows of bark beetle *Tomicus piniperda* under pine *Pinus* bark; predominantly northern Britain.

Placusa pumilio (Gravenhorst) - Under bark of oak *Quercus*, etc.

Placusa tachyporoides (Waltl) - **Nationally Scarce.** Associated with freshly exposed sap of oak *Quercus* and sweet chestnut *Castanea*.

Homalota plana (Gyllenhal)* - Under bark on dead beech *Fagus*; adult feeds on detritus and fungi. Local in southern Britain; Ireland: Cos. Kerry, Antrim & Down.

Anomognathus cuspidatus (Erichson)* - Under fungoid bark of dead beech *Fagus*, oak *Quercus*, etc. Widely distributed but local in Britain & Ireland.

Cyphea curtula (Erichson) - **?RDB.** Under bark on fallen branchwood of various broad-leaved trees; usually in early stages of decay, with bark still attached. Discovered new to GB in Gamlingay Wood, Cambs, in 1996.

Silusa rubiginosa Erichson - **Nationally Scarce.** At sap and under bark, especially goat moth *Cossus* trees.

Thecturota marchii (Dodero) - Found in sawdust from broad-leaved trees.

Leptusa fumida Kraatz* - Under bark on dead wood of various trees, also in rot holes; feed mostly on detritus and fungi, but will eat insect larvae and eggs. Widespread and frequent in Britain; common around Belfast.

Leptusa norvegica Strand - **Nationally Scarce.** Under bark of dead pine *Pinus* and birch *Betula*; widespread in Highlands, but also scattered records southwards as far as southern England.

Leptusa pulchella (Mannerheim)* - Under dead bark on a wide variety of tree species. Mainly in ancient woodlands, especially where wet. Widespread but local in southern Britain & Co. Antrim.

Euryusa optabilis Erichson – **RDBI.** In decaying wood of old trees, especially oak *Quercus* and beech *Fagus*, also elm *Ulmus*; often with *Lasius* ants; also litter at base of goat moth *Cossus* trees.

Euryusa sinuata Erichson – **RDBI.** In decaying wood of old trees, especially oak *Quercus* and beech *Fagus*, often with *Lasius brunneus* ants, but not dependant on them.

Tachyusida gracilis (Erichson) - **RDB1.** In wood mould of old trees, especially oak *Quercus*, usually with *Lasius brunneus*; Windsor Great Park & Forest.

Bolitochara bella Maerkel - Associated with fleshy fungi on dead broad-leaved trees.

Bolitochara lucida (Gravenhorst)* - In fleshy fungus on old stumps. Very local in Britain; Co. Dublin.

Bolitochara mulsanti Sharp - **Nationally Scarce.** In rotten and fungus infested wood, under bark on fungus-infested pine *Pinus*, and in fungus *Piptoporus betulinus* on birch *Betula*.

Bolitochara obliqua Erichson* - Under bark of various deciduous trees, especially associated with the small bracket fungus *Trametes versicolor*; adult fungal feeder, larvae also feeding on phloem and dead larvae. Common in Britain & Ireland.

Bolitochara pulchra (Gravenhorst) - **Nationally Scarce.** In *Piptoporus betulinus* and other fungi, under beech *Fagus* bark and in rotten wood.

Bolitochara reyi Sharp – **RDBI.** In fungus in woodland; Windsor Great Park.

Autalia impressa (Olivier)* - Abundant in decaying fungi on wood. Britain & Ireland.

Autalia longicornis Scheerpeltz - In fungi on deadwood. Widespread.

Nototheca confusa (Markel) - **Nationally Scarce.** Occurs with the ant *Lasius fuliginosus* in hollow trees and sand-hills.

Dinaraea aequata (Erichson)* - Under bark of beech *Fagus* and birch *Betula*. Widespread in Britain; Killarney & Powerscourt

Dinaraea linearis (Gravenhorst)* - Under bark. Uncommon in Britain; Killarney.

Paranopleta inhabilis (Kraatz) – **RDBK.** Under bark of Scot's Pine *Pinus sylvestris*, Highlands & SE England.

Dadobia immersa (Erichson)* - Under pine *Pinus* bark. Widespread in Britain; Co. Kerry.

Atheta autumnalis (Erichson) – **RDBK.** One found in damp rotten wood of a lying willow *Salix* in a field by the River Wye in Herefordshire (1936). On Continent associated with deadwood and wood-rotting fungi; a rare species of middle and southern Europe.

Atheta boletophila (Thomson) – **RDBK.** Has been found in bracket fungus *Pholiota adiposa* on spruce; Rothiemurchus Forest, 1968. Very rare, although widely scattered throughout central Europe, where associated with *Fomes* on *Fagus*; associated with *Pseudotrametes gibbosa*, *Piptoporus betulinus* and *Laetiporus sulphureus* in Sweden.

Atheta consanguinea (Eppels.) – **RDBK.** Found in debris in hollow beech *Fagus* and elm *Ulmus* stumps; also in haystack litter and in nest of brown tree ant *Lasius brunneus*; Britain; widely distributed but rare in C. Europe & Scandinavia.

Atheta hansseni Strand – **RDBK.** Recorded in sap-soaked moss on birch *Betula*, and in nest material in hole in Scots pine *Pinus sylvestris*; Highlands.

Atheta hybrida (Sharp) – **RDBK.** Found at sap; Yorks & Midlothian.

Atheta laevicauda Sahlb., J. – **RDBK.** Cornwall & Devon; under bark on deadwood. Boreo-alpine distribution, in mid-Europe inhabiting the sub-alpine parts of the higher mountains.

Atheta liturata (Stephens) - On bracket fungi in old woods and parks; widespread in Britain.

Atheta picipes (Thomson)* - **Nationally Scarce.** At tree roots, under dead bark, in wood-decay fungi such as *Piptoporus betulinus, Meripilus giganteus* & *Hypholoma*; also in tussocks. Britain. Rare in Ireland.

Atheta pilicornis (Thomson)* - **Nationally Scarce.** Chiefly subcortical; also in wood-decay fungi, moss and among dead leaves; damp woodlands.

Atheta subglabra (Sharp) - In rotten wood of elm *Ulmus* and ash *Fraxinus*.

Atheta taxiceroides Munster - In tree hollow nests of birds or mammals; Hampshire to Kent. Boreo-alpine, a rarity confined to northern Norway and the Beskid Mountains in central Europe.

Thamiaraea cinnamomea (Gravenhorst) - At the exuding frass of goat moth *Cossus* colonised trees.

Thamiaraea hospita (Märkel)* - **Nationally Scarce.** At exuding sap on tree trunks, especially oak. Scattered throughout England.

Zyras cognatus Märkel – **RDBK.** In runs and nests of jet ant *Lasius fuliginosus*; S & SE England.

Zyras funestus (Gravenhorst) - In runs of jet ant *Lasius fuliginosus*.

Zyras haworthi Stephens - **Nationally Scarce A.** In runs and nests of jet ant *Lasius fuliginosus*; also found in leaf litter and flood debris.

Zyras laticollis (Maerkel) - In runs of jet ant *Lasius fuliginosus*.

Zyras lugens (Gravenhorst) - **Nationally Scarce.** In runs and nests of jet ant *Lasius fuliginosus*.

Phloeodroma concolor Kraatz – **RDBI.** Found under bark in 1941 from Gopsall Park, Leics.

Phloeopora bernhaueri Lohse (*teres* (Gravenhorst)) - Under bark on the deadwood of a variety of trees.

Phloeopora corticalis (Gravenhorst)(*angustiformis* Baudi) - **Nationally Scarce.** Under bark on the deadwood of a variety of trees, especially beech *Fagus*.

Phloeopora nitidiventris Fauvel – **Status unclear**. Recently taken in frass under bark of burnt dead Scots pine *Pinus sylvestris* in Surrey.

Phloeopora testacea (Mannerheim)* - Under bark on deadwood of various broad-leaved trees; predator. Britain; local in Ireland.

Amarochara bonnairei (Faunel) – **RDBI.** With the ants *Lasius brunneus* and *L.fuliginosus* in old tree stumps, moss and leaf litter; most found in runs of *L.fuliginosus* at root of an old beech *Fagus* tree, but not in the nest; Ancient forest species in Britain.

Oxypoda recondita Kraatz - Associated with red-rotten wood and ants.

Oxypoda vittata Maerkel* - In runs of jet ant *L.fuliginosus*. Britain; Co. Antrim.

Stichoglossa semirufa (Erichson) – **RDBI.** Develops in decaying wood and wood mould of old broad-leaved trees; also found at base of trees; old forests of southern Britain.

Ischnoglossa obscura Wunderle - From mature timber sites, exclusively beneath bark on deadwood. Bradgate and Donington Parks, Leics.

Ischnoglossa prolixa (Gravenhorst)* - Found beneath bark on freshly dead timber; widespread in Britain, although apparently very rare south of the Thames; very local in Ireland. Widespread on Continent.

Ischnoglossa turcica Wunderle - Mediterranean area as far east as Turkey, but apparently not in central Europe; southern Britain; under bark of dead trunks and branches, and within decaying heartwood, various tree species.

Dexiogyia corticina (Erichson) - **Nationally Scarce.** Old forest species associated with decaying broad-leaved timber.

Thiasophila inquilana (Maerkel) - **Nationally Scarce.** Deep in nests of the ant *L.fuliginosus* in the base of old trees.

Haploglossa gentilis (Maerkel) - With jet ant *L. fuliginosus* and in owl nests.

Pselaphidae - Short-winged Mould Beetles. Predatory, particularly on mites; a number associated with deadwood.

Bibloporus bicolor (Denny)* - Under bark and in rotten wood of a wide variety of trees, broad-leaves and conifers.

Bibloporus minutus Raffray - **Nationally Scarce B.** Adults live under bark on dead broad-leaved timber; larvae predatory; all records from areas of old forest.

Euplectus bescidicus Reitter – **RDBK.** Reported from rotten wood, under bark and in leaf litter.

Euplectus bonvouloiri rosae Raffrey - **Nationally Scarce.** Associated with decaying tree roots.

Euplectus brunneus (Grimmer) - **RDB1.** Found under dead bark and in rotten wood; may be associated with *Myrmica* ants. Cobham Park, Kent, is only confirmed locality.

Euplectus fauveli Guillebeau* - **Nationally Scarce.** In bird nests, under dead bark and in rotten wood; oak *Quercus* and beech *Fagus*.

Euplectus infirmus Raffray* - In rotten wood and under bark, especially willow *Salix*.

Euplectus kirbyi Denny - **Nationally Scarce.** Found beneath bark on dead broad-leaved timber; also in tree hollows.

Euplectus nanus (Reichenbach) – **RDBI.** Under bark and in moist crumbly rotten broad-leaved timber.

Euplectus piceus Motschulsky* - Under bark of oak *Quercus* and beech *Fagus*, and in red-rotten oak.

Euplectus punctatus Mulsant* - **RDB3.** In moist crumbly rotten wood, oak *Quercus* and beech *Fagus*, also pine *Pinus* in Highlands; primarily a relict species of primary forest.

Plectophloeus nitidus (Fairmaire) - **RDB2.** In red-rotten heartwood and wood mould in old hollow oaks *Quercus*; old forests and parks.

Trichonyx sulcicollis (Reichenbach) - **RDB2.** In rotten broad-leaved wood, especially old elm *Ulmus* stumps. Possibly associated with *Lasius* ants.

Batrisus formicarius Aubé – **Fossil.** In Britain up until at least the Late Neolithic/Early Bronze Age, from which fossil material has been found in Somerset Levels.

Batrisodes adnexus (Hampe) - **RDB1.** Adults in decaying timber of old broad-leaved trees, with brown tree ant *Lasius brunneus*; probably a mite predator; has been reared from a bracket fungus. Windsor & Epping Forests.

Batrisodes delaporti (Aubé) - **RDB1.** Adult in nests of brown tree ant *L. brunneus*, in decaying wood of old broad-leaved trees; probably a mite predator. Windsor Forest.

Batrisodes venustus (Reichenbach) - **Nationally Scarce A.** Adults in decaying heartwood of old broad-leaved trees; occasionally found in nests of brown tree ant *L. brunneus* and jet ant *L. fuliginosus*. Widespread in Lowland England, although most often found in the south.

Scirtidae

Prionocyphon serricornis (Müller, P.W.J.)* - **Nationally Scarce B.** Develops in water-logged hollows in old trees, especially beech *Fagus*, and including hollows amongst roots; larvae aquatic, feed on detritus from dead leaves; adults active fliers, short-lived. Widely across lowland England, but scarcer in the west and north; one record from central Scotland.

Eucinetidae - Plate-thigh Beetles.

Eucinetus meridionalis (Laporte de Castelnau) - Larvae feed on fungi under bark of dead trees, especially pine *Pinus*; adults at flowers, wintering amongst litter. Discovered relatively recently; most likely a casual importation.

Clambidae

Clambus nigriclavis Stephens - Develop on damp twigs partly standing in water, larvae feeding on hyphae and spores of moulds; northern & western sp.

Clambus pallidulus Reitter* - **RDBK.** In hollow apple *Malus* tree (Worcestershire); in debris in rotten elm *Ulmus* stump, in moss among rotten logs.

Clambus punctulum (Beck)* - Slime mould feeder.

Lucanidae Stag Beetles - Develop in rotten deciduous wood.

Lucanus cervus (L.) - The Stag Beetle. **Nationally Scarce B & BAP Priority Species**. Larvae in moist decaying wood near or below the soil surface, including decaying old stumps, but also in base of fence posts; generally in light soils; larval development c.4

years; adults feed on fruit and sap and fly mainly in evening. Distribution centred on the Thames, Solent and Severn Basins.

Dorcus parallelepipedus (L.)* - Lesser Stag Beetle. Larvae develop in heartwood of various broad-leave trees where it is being decayed by a white-rot fungus. Flies on summer evenings and attracted to light.

Sinodendron cylindricum (L.)* - Rhinoceros Beetle. Bores in dead heartwood of large broad-leaved trees, and also pine *Pinus*, including stumps. Larval development takes 2-3 years, burrowing even into quite hard timber. Particularly associated with ancient woodlands and wood pastures, although apparently not confined to them. Reported from floating timber in both freshwater and seawater. Widespread in Britain & Ireland. Flies in daylight in early summer.

Platycerus caraboides (Linnaeus) – **Extinct.** Fossil evidence for presence in Britain up until Bronze Age in E.Yorks. Reports of specimens up until 1830; Oxford & Windsor.

Scarabaeidae

Saprosites mendax Blackburn – **Naturalised.** Australian introduction; in borings of *Dorcus* and *Sinodendron* beetles.

Oxythyrea funesta (Poda) - **Status unclear.** 19th C records from the north-west, regarded as casuals; also one found in decaying beech stump in the New Forest in 2000.

Trichius fasciatus (L.) - Bee Chafer. Develops in wood mould of decayed heartwood in large birch *Betula* stumps; prefers mixed broad-leaved woods in river valleys; adults feed on pollen on tall flowering herbs, flying in daylight.

Trichius zonatus Germar – **Vagrant.** Doubtfully native; occasional records.

Gnorimus nobilis (L.) - The Noble Chafer. **RDB2 & BAP Priority Species**. The larvae develop in decaying wood deep within hollowing old trees, feeding on relatively hard wood with their stout mandibles. At least two years are spent in the larval stage. The full-grown larvae stop feeding in the autumn and pupate the following May, hollowing out a space for this purpose among frass and wood fragments. Adults appear in late May or June but spend most of their time below the surface among frass and wood fragments. They apparently mate while buried and eggs are laid at random. The favoured trees in Britain appear to be oak *Quercus*, willow *Salix* and orchard trees – plum and cherry *Prunus*, pear *Pyrus*, apple *Malus*, although beech *Fagus* and false acacia *Robinia* are also used on the continent. The trees need to be open grown individuals, so that the decaying wood maintains a suitable temperature and humidity. The requirement for open grown trees explains why the species is better known from orchard trees within its old forest strongholds. The adult beetles are reported to be attracted to blossom, favouring white or pale colours such as hogweed *Heracleum*, dog rose *Rosa*, elder *Sambucus*, etc, and fly on sunny days during June to August. A speciality of relict old forest areas along the lower Thames, Severn and Solent Basins.

Gnorimus variabilis (L.) - **RDB1 & BAP Grouped Species Statement.** Larvae at interface of hard oak *Quercus* heartwood with moist decayed interior red-rot; 2-3 year development; adults in larval habitat May-July, and at large on bark or in flight July.

Buprestidae - Jewel Beetles or Metallic Wood-borers

Melanophila acuminata (Degeer) - Fire Beetle. Larvae feed in and under bark of scorched and burnt conifers; also recorded from burnt birch *Betula*; adults oviposit on very recently burnt and scorched trees, and fly great distances to forest fires. Ascot district only in GB. Assumed to be an established exotic, although the evidence for this is unclear.

Anthaxia nitidula (L.) – **Extinct.** Larvae under bark of blackthorn *Prunus spinosa* and other woody Rosaceae; adults frequent flowers of hawthorn *Crataegus*, guelder rose

Viburnum, rose *Rosa* and buttercup *Ranunculus*. Only known in GB from New Forest.

Anthaxia quadripunctata (L.) - **Occasional Introduction.** Larvae develop under the bark of dead and dying conifers, especially spruce *Picea* and pine *Pinus*. Not native to Britain but occasionally introduced. Widespread elsewhere in Europe, from west to Siberia and Balkans.

Agrilus angustulus (Illiger) - **Nationally Scarce B.** Larvae feed under the bark of younger stems and branches, causing unevenly raised marks on the outer surface of the thin bark; oak *Quercus*, hazel *Corylus* & other broad-leaved trees and shrubs. Mainly in coppice woodlands. Eurosiberian.

Agrilus laticornis (Illiger) - **Nationally Scarce B.** Larvae in dying branches of oak *Quercus*, usually in larger branches than *A. angustulus* and with thicker bark.

Agrilus olivicolor Kiesenwetter - The larvae are reported to develop under the bark of branches and twigs of live hazel, hornbeam and beech on the Continent. Adults were first taken in Britain in closed woodland in Hertfordshire during 2001. It is unclear whether this is an introduced population or the start of colonisation, or both.

Agrilus biguttatus (Fab.) = *pannonicus* (Piller & Mitterpacher) – Oak Jewel Beetle. **Nationally Scarce A.** Larvae tunnel in and under thick oak *Quercus* bark, mainly old dying and dead trees; main refugia are ancient woodlands and wood pastures, but spreads more widely on occasion. Eurosiberian.

Agrilus sinuatus (Olivier) – Hawthorn Jewel Beetle. **Nationally Scarce A.** Larvae in standing dying main limbs and trunks of hawthorn *Crataegus*; the larvae may cause the premature death of the stems. Wide variety of situations, but with refugia in old wood pastures.

Agrilus sulcicollis Lacordaire - **Recently Established.** Larvae in dying branches of oak *Quercus*. Recently established in country north of London: Hertfordshire 1993, Essex 1997, Middlesex 1998 and Bedfordshire 2000.

Agrilus viridis (L.) - **Nationally Scarce A.** Larvae in dying boughs of *Salix caprea* and *S .cinerea*, especially recently split poles; also reported in oak *Quercus*. Very restricted distribution in south-east, with old record from Wyre Forest. Possibly associated mainly with old wood pasture commons.

Cerophytidae

Cerophytum elateroides Latreille – **Extinct.** Once reputed to have been native.

Eucnemidae False Click Beetles

Melasis buprestoides (L.)* - **Nationally Scarce B.** Develops in rather hard dead timber, especially boughs, of a wide variety of broad-leaved trees; standing & fallen timber. Lowland England, extending into Wales; and SW Ireland.

Hylis cariniceps (Reitter) - **RDB1**. Larvae probably in dead wood of old beeches *Fagus*; New Forest and Brownsea Island. Although only recently discovered, believed to be a relict native distribution.

Hylis olexai (Palm) - **RDB3.** Larvae in decaying heartwood of beech *Fagus*, etc, usually in woodlands and particularly those on Chalk; SE England. Although only recently discovered, believed to be a relict native distribution.

Epiphanus cornutus Eschscholtz - Develops in decaying wood of various trees, conifers and broad-leaves; Glos, Oxon, Bucks, Norfolk & S. Scotland. Reputedly a North American species, only recently established in GB, but evidence unclear and most GB sites are long-established and rich in other saproxylics.

Microrhagus pygmaeus (F.) - **RDB3.** Larvae in well-decayed wood of broad-leaved trees; particularly in old shady oak *Quercus* woods; adult on wing sparingly May-Sept; very thin scatter throughout much of Britain, although particularly widespread in parts of

Hampshire and Sussex, and absent from E Midlands & E Anglia; widespread in north and central Europe. Has become much more frequent in recent decades.

Isorhipis melasoides (Laporte de Castelnau) – **Fossil.** In rotten wood, particularly beech *Fagus*, in old, established forest; relatively thermophilous; locally in Europe but no modern records from British Isles. Sub-fossil records from Somerset Levels, London, Nottinghamshire and Thorne Moors where found in pupal chambers in alder *Alnus*.

Dromaeolus barnabita (Villa) – **Fossil.** Found in late Neolithic deposits at Runnymede, Surrey.

Eucnemis capucina Ahrens - **RDB1 & BAP Grouped Species Statement.** Larvae develop in hard dead wood and under bark, mainly in old beech *Fagus*, also ash *Fraxinus*; pupae have been found in mould beneath fallen beech *Fagus* branch; adults May-August; old forest relic, Windsor, New Forest & north Cotswolds, with sub-fossils from Thorne Moors.

Throscidae - Most beetles of this family develop in the soil, feeding on ectotrophic mycorrhizae.

Aulonothroscus brevicollis (de Bonvouloir) - **RDB3.** Larvae develop under bark in dead branches and in wood mould, probably mainly oak *Quercus*; very thin scatter of records and all ancient wood pastures.

Elateridae Click Beetles - 10km square & VC maps available (Mendel, 1996).

Lacon querceus (Herbst) - **RDB1 & BAP Grouped Species Statement.** Develops exclusively in red-rotten oak *Quercus* trunks and main boughs; larvae probably preying on larvae of the beetle *Mycetophagus piceus*; pupate at end of season and hibernate as adult; adult nocturnal; typical primary forest relic, scarce and sporadic in C. Europe; Windsor Forest.

Calambus bipustulatus (L.)* - **Nationally Scarce B.** Larvae a predator living in relatively soft rotten wood in stumps and trunks of oak *Quercus* & other broadleaves; pupate at end of season and hibernate as adult; adult nectars at blackthorn *Prunus spinosa* and hogweed *Heracleum* in daylight; S Britain, thin scatter, plus old record in SE Ireland.

Denticollis linearis (L.)* - Larvae under bark and in decaying heartwood; broad-leaved trees and pine *Pinus*; omnivorous, feeding on live larvae as well as phloem, etc; pupate in spring; fairly common & widespread. Also develops on moorlands, where larvae are active in the upper peat and moss layers.

Limoniscus violaceus (Müller, P.W.J.) - **RDB1 & BAP Priority Species.** Larvae predatory and develop in mixture of wood and leaf mould in base of hollow beech *Fagus* and ash *Fraxinus*, possibly requiring presence of bird nest material above larval habitat to raise nitrogen level of substrate; larvae pupate at end of their second season, adults over-wintering in pupal cell; adults largely nocturnal, nectaring at hawthorn *Crataegus* blossom; relict species, confined to areas of ancient broad-leaved high forest; Windsor & north Cotswolds; scattered localities in C & S Europe.

Diacanthous undulatus (Degeer) - **Nationally Scarce B.** Larvae under thick bark or in dead wood immediately beneath bark of dead birch *Betula* timber, 4-5 years duration; pupate in spring; adult crepuscular; usually fallen trunks; northern British birchwoods – relatively widespread in northern boreal forest.

Hemicrepidius hirtus (Herbst)* - The larvae are reported to develop in decaying wood. Widespread across Britain and Ireland although generally on richer soils and most commonly in the lowlands.

Stenagostus rhombeus (Olivier) - Larvae develop under loose bark of deadwood of various broad-leaved trees, most frequently in beech *Fagus*; sometimes in the relatively soft rotting heartwood beneath; predator of longhorn beetle (Cerambycidae) larvae; at least two summers in larval stage in southern England and pupate in spring; adults

very short-lived, crepuscular and nocturnal, attracted to light. Widespread in C & SE England; also Wales.

Ampedus balteatus (L.)* - Develops in red-rotten stumps and boughs of various trees; pupates at end of season and hibernates as adult. In woodlands and on peatlands; an association with ancient wood pastures has been suggested in northern England. Adults have been take in flight in June & July, and may be found sheltering amongst tree foliage during daylight at this time. Widespread, although no records from the far west, and in Ireland strangely only known from Rathlin Island.

Ampedus cardinalis (Schiodte) - **RDB2.** Develops in red-rotten heartwood of old oaks *Quercus*, in smaller boughs as well as trunks; relict old forests and ancient parks. Long larval period and adult dormancy; adults in pupal cells Sept-April, and under loose bark May-July; mostly Thames and Severn Basins, very thin scatter elsewhere in central England.

Ampedus cinnabarinus (Eschscholtz) - **RDB3.** Larvae in dead timber of various broad-leaved trees, mainly in heart-rot, but also under bark on rotten limbs; feed on larvae of the beetle *Dorcus*, etc; pupate at end of season and hibernate as adult. Principally associated with old oak *Quercus* forest; centred on Hants, W. Sussex and Forest of Dean; also N. Devon.

Ampedus elongantulus (F.) - **Nationally Scarce A.** Larvae in red-rotten wood of oak *Quercus* and pine *Pinus*, also from beech *Fagus*; pupate at end of season and hibernate as adult; ancient woods and wood pastures. Adults fly mid May to July, and attracted to hawthorn *Crataegus* blossom. Mainly S & SE England.

Ampedus nigerrimus (Lacordaire) - **RDB1 & BAP Grouped Species Statement.** Develops exclusively in large decayed oak *Quercus* - trunk, boughs, especially stumps - chiefly red-rotten ones; pupate at end of season and hibernate as adult; adult has been taken at hawthorn *Crataegus* blossom. Old forest relic only known from Windsor Forest.

Ampedus nigrinus (Herbst) - **Nationally Scarce B.** Larvae in heart-rot of pine *Pinus* and birch *Betula*; probably other trees too; pupate at end of season and hibernate as adult; predominantly in Scottish pinewoods, but also found elsewhere & a thin scatter in N & W England.

Ampedus pomonae (Stephens)* - **Ireland only**. Primarily known from the Glencar area of Co Kerry, where it has been found developing in soft red-rotten heartwood of birch *Betula* on peatland; pupate at end of season and hibernate as adult.

Ampedus pomorum (Herbst)* - **Nationally Scarce B.** Larvae in decayed timber of oak *Quercus*, birch *Betula*, pine *Pinus* & probably other trees; pupate at end of season and hibernate as adult; very thin scatter in N & W Britain and widely in Ireland. Primarily associated with ancient wood pastures, also widely known from birches around peatlands. Adults active May & June.

Ampedus quercicola du Buysson - **Nationally Scarce B.** Develops in decayed heartwood of birch *Betula*, beech *Fagus*, hawthorn *Crataegus* and probably other trees; pupate at end of season and hibernate as adult; adults attracted to hawthorn blossom. Primarily associated with ancient wood pastures. Concentrated in Hants and E.Midlands.

Ampedus ruficeps (Mulsant & Guillebeau) - **RDB1 & BAP Grouped Species Statement.** Develop mainly in red-rotted ancient oaks *Quercus*, often in lining of cavities in trunks & main boughs; pupate at end of season and hibernate as adult; old forest relic, Windsor Great Park; very rare species of S-C & S Europe.

Ampedus rufipennis (Stephens) - **RDB2 & BAP Grouped Species Statement.** Larvae develop in relatively soft rotten heartwood of beech *Fagus* (at Windsor & Moccas), ash *Fraxinus* (Cotswolds), elm *Ulmus* (Moccas & Cotswolds); in trunks, logs and boughs, more rarely in stumps; pupate at end of season and hibernate as adult; adults

have occasionally been taken off hawthorn *Crataegus* blossom; mainly Windsor, Moccas Park & North Cotswolds, plus a few other areas.

Ampedus sanguineus (L.) – **Extinct.** Probably a conifer associate; Salisbury & New Forest C19. Long extinct, if ever native. Widespread on continent.

Ampedus sanguinolentus (Schrank) - **Nationally Scarce A.** Larvae in dead wood of birch *Betula*, especially stumps, on acid soils, heaths and woods; pupate at end of season and hibernate as adult; mainly southern England; also Anglesey.

Ampedus tristis (L.) - **RDB2.** Larvae in well-rotted heartwood of fallen pine *Pinus* trunks (and birch *Betula* elsewhere in Europe); larval stage probably 3-6 years; opportunistic carnivores; pupate at end of season and hibernate as adult. Native old growth pinewoods of Scottish Highlands.

Ischnodes sanguinicollis (Panzer) - **Nationally Scarce A.** Larvae develop in soft decaying wood and black wood mould, mainly in ash *Fraxinus* and elm *Ulmus*, but also field maple *Acer campestre* and beech *Fagus*; generally beneath bird nests; pupate at end of season and hibernate as adult. Adults crepuscular. Mainly S and SE England.

Porthmidius austriacus (Schrank) - **Sub-fossil.** Develops in decaying stumps of broad-leaved trees or in forest soil with deep litter layer. Known from mid-Holocene deposits in Shropshire and present in Britain in the Neolithic period.

Megapenthes lugens (Redtenbacher) - **RDB1 & BAP Grouped Species Statement.** Develops in decaying elm *Ulmus* and beech *Fagus*, mainly hollow trunks and boughs; larvae feed in harder, drier heartwood than *Ampedus*, probably on Cossonine weevil larvae; pupate at end of season and hibernate as adult; adults nocturnal and attracted to blossom. SE England.

Procraerus tibialis (Boisduval & Lacordaire) - **RDB3.** Larvae develop in decaying heartwood of oak *Quercus*, beech *Fagus*, ash *Fraxinus* and probably other trees; probably feed on the larvae of the weevils *Stereocorynes truncorum* & *Phloeophagus lignarius*; pupate at end of season and hibernate as adult. C & SE England, mainly Thames and Severn Basins.

Elater ferrugineus L. - **RDB1 & BAP Grouped Species Statement.** Develops in black wood mould in interior of old trunks and boughs; elm *Ulmus*, beech *Fagus*, ash *Fraxinus*, and once in oak *Quercus*; larvae often in rot-holes where there has been a nest; pupate in the spring; carnivorous, in captivity eats small worms and *Dorcus* larvae; adult short-lived & crepuscular, attracted to lights; Thames Basin & E. Anglia.

Melanotus villosus (Fourcroy)* - Larvae most frequently develop in red-rotted timber, but also in decaying wood generally. Common & widespread. The adult flies after dark and is attracted to light.

Cardiophorus gramineus (Scopoli) – **Extinct.** Associated with deadwood of oak *Quercus* and poplar *Populus* on Continent; larvae in semi-dry wood decay; open sunlit habitats within forest; various localities in Stephens (1830).

Cardiophorus ruficollis (L.) – **Extinct.** Larvae in decaying trunks and stumps of conifers on continent, in pine *Pinus* forest; London & Norfolk in Stephens (1830).

Lycidae - Net-winged Beetles

Dictyoptera aurora (Herbst) - **Nationally Scarce B.** Larvae develop in decaying pine *Pinus* timber; adults fly in evening sunshine; Scottish Highlands.

Pyropterus nigroruber (Degeer)* - **Nationally Scarce A.** Larvae develop in decaying heartwood of various broad-leaved trees, especially birch *Betula* and beech *Fagus*; known from a large area of country in S. Yorkshire and adjacent parts of Nottinghamshire, Derbyshire and Lincolnshire; also Caledonian Pine Forest relicts and Killarney oakwoods of SW Ireland.

Platycis cosnardi (Chevrolat) – **RDBI.** Larvae develop in decaying heartwood of old beech *Fagus* hulks; Wye Gorge and West Sussex Downs.

Platycis minutus (F.) - **Nationally Scarce B.** Larvae develop in large relatively soft moist decaying heartwood, especially beech *Fagus* and probably ash *Fraxinus*; mostly in closed-canopy areas of ancient woodland; southern and eastern England.

Cantharidae - Soldier Beetles. Larvae of Malthininae probably all develop in decaying branchwood or heartwood.

Malthinus balteatus Suffrian* - **Nationally Scarce B.** Associated with poorly-drained broad-leaved woodland across southern Britain, particularly wooded streamsides, but also along base of wooded limestone escarpments. Small relict population in woods of Morecambe Bay limestone.

Malthinus punctatus (Geoffroy)* =*flaveolus* (Herbst) - Widespread in broad-leaved woodland and hedgerows.

Malthinus frontalis (Marsham) - **Nationally Scarce B.** Associated particularly with large old and open-grown trees in parkland or other situations. Formerly widespread but has become increasingly scarce.

Malthinus seriepunctatus Kiesenwetter* - Widespread in southern woodlands, and extending furthest north along the western coastal districts well into Scotland.

Malthodes crassicornis (Maklin) - **RDB3.** Larvae develop in moist crumbly red heart-rot of large old oaks *Quercus*. A speciality of relict old forest with open-grown ancient trees.

Malthodes dispar (Germar)* - A species of wet woodlands and shaded riverbanks.

Malthodes fibulatus Kiesenwetter - **Nationally Scarce B.** A species of calcareous woodlands.

Malthodes flavoguttatus Kiesenwetter* - Most frequent in acidic oak *Quercus* and birch *Betula* woods of north and west, and absent from south and east.

Malthodes fuscus (Waltl)* - Most frequent in acidic oak *Quercus* and birch *Betula* woods of north and west; also widely in south.

Malthodes guttifer Kiesenwetter* - **Nationally Scarce B.** Very thinly scattered throughout the broad-leaved woodlands of the British Isles, but most frequent in certain areas of the north and west.

Malthodes marginatus (Latreille)* - Larvae develop in decaying wood or beneath bark on dead timber; mainly predatory on insect larvae including dead ones, but will also feed on decaying timber to some extent. Widespread.

Malthodes maurus (Laporte) - **Nationally Scarce B.** A little known species.

Malthodes minimus (L.)* - Common and widespread in the south and east, scarcer elsewhere.

Malthodes mysticus Kiesenwetter - A widespread species of the hill country woodlands of the north and west, and present in the Weald.

Malthodes pumilus (Brebisson)* - Possibly associated particularly with large and old open-grown trees, especially oak *Quercus* and willow *Salix*. Also with old scrub such as broom *Cytisus*. But also widely found on chalk and limestone pastures.

Dermestidae - Hide Beetles. Four species specifically attached to trees; all have larvae which live in the crevices beneath dead bark on the trunks of large old living oak *Quercus* trees, or under the dry loose bark of dead standing oaks, where they are associated with the webs of the larger bark-frequenting spiders. They feed on the remains of insects eaten and left over by the spiders; and pupate within the larval skin, which splits along the back, and affords some protection.

Globicornis rufitarsis (Panzer) = *nigripes* (F.) - **RDB1.** Larvae develop under loose bark and in old decayed wood where feed on dry larval & pupal skins of other insects, generally in tree hollows beneath bird nests; adults occasionally found at blossom - especially umbellifers. Two centres known in Britain: i) Windsor Forest, and ii) S.

Worcestershire/Gloucestershire, where it is found in low-lying areas with large old willow *Salix* pollards in ancient field boundaries (P. Whitehead, *pers. comm.*) as well as ancient wood pasture oaks *Quercus*.

Megatoma undata (L.) - **Nationally Scarce B.** A scavenger in the nests or burrows of other insects, and in spider webs, in decaying wood in old trees, feeding on remnants of insects, spider exuviae, etc; also known from bee-hives and bee burrows, where its larvae feed on cast skins, pupae etc; rarely within human buildings. Adults have been found at flowers, and have been observed feeding on cast aphid skins and even dead cat fleas. Widespread in lowland England, although most frequent in south-east and Midlands; Europe & Siberia.

Ctesias serra (F.) – Common Cobweb Beetle. [**Nationally Scarce Category B**]. Larvae under loose webby bark, or in rotting trees or stumps of mainly broad-leaved, over-mature trees; it is found in insect galleries, in old fungus, around webs of tube- and sheet-web building spiders, where it apparently feeds on dead insects and woodlice which accumulate near the webs; it has also been recorded attacking the immature stages of various moths including the egg masses. Adults have been collected at the fermenting sap of an oak *Quercus* tree infested with goat moth *Cossus*. Widespread in lowland Britain, but scarcer in the west and only a few sites in southern Scotland; a relatively mobile species, occurring anywhere there are mature trees, e.g. old parks, woodlands, wood pastures, hedgerows etc, and identified from nearly 150 10km squares.

Trinodes hirtus (F.) - **RDB3.** Adults and larvae amongst webs of tube- and sheet-web building spiders beneath loose dry bark on large ancient trees, mainly of oak *Quercus*, where they feed on the dead remains of insects and spider exuviae. Adults have been found at blossom and on foliage. Relict old forest species of lowland England; Europe, Algeria, Caucasus & Turkmen.

Bostrichidae - False Powder-post Beetles. Developing in dead hard timber continuously until interior reduced to powder.

Bostrichus capucinus (L.) – **Extinct.** Develops in dead oak *Quercus*; last recorded in wild in Britain in early C20th.

Lyctus brunneus (Stephens)* - **Nationally Scarce [no official status].** Adults mate at dusk or later immediately after emergence; females live c.6 weeks, males c.2-3; strong flier & attracted to light; oviposition 2-3 days after mating, in hardwood timbers; ovipositor penetrates wood and 1-3 eggs laid in lumen of a xylem vessel; larvae excavate tunnels in surrounding tissue; high moisture content to wood required; pupates just beneath outer surface; life cycle usually 1 year in Britain. In southern Europe in oak *Quercus* woods, and may have a relict distribution in northern old forest sites. Commonest of family in Britain but still very scarce; cosmopolitan.

Lyctus cavicollis LeConte – **Naturalised**

Lyctus linearis (Goeze)* - **Nationally Scarce B.** Usually found on fresh oak *Quercus* palings; it develops in dead sapwood of oak, beech *Fagus* & ash *Fraxinus*; formerly more frequent then *Lyctus brunneus*.

Lyctus planicollis LeConte – **Naturalised.**

Lyctus sinensis Lesne – **Naturalised.** Established in some timber yards and occasionally found in the wild.

Anobiidae - Most live in dead wood.

Hedobia (Ptinomorphus) imperialis (L.)* - **Nationally Scarce B.** Has been reared from dead stems of *Rosa* and hawthorn *Crataegus*; at least 2 year development; England & Scottish Borders (Lanarkshire & Roxburghshire).

*Grynobius planus** - Develops in dead timber of various broad-leaved trees. Widespread, although locally scarce; more frequent in Ireland than Britain.

Dryophilus pusillus (Gyllenhal)* - **Naturalised.** In wood and debris of pine *Pinus* and larch *Larix*.

Ochina ptinoides (Marsham)* - Develops in dead thick stems of ivy *Hedera* on trees.

Xestobium rufovillosum (Degeer)* - Deathwatch Beetle. Bores in hard dead heartwood of several hardwood species where damp and fungal decay is present - in building timbers one fungus in particular *Donkioporia expansa* may be especially important; larval period anything between 1 and 13 years, usually 3-7; pupates beneath outer surface of timber in late summer (earliest 18 July), 3-4 weeks later adult, but remains in pupal chamber until next Spring, when become sexually mature; males emerge first; adult life short, at most 9-10 weeks after pairing; exit holes 2.1-3.1mm diameter; wings well-developed, but flight very rarely recorded, and unlikely to colonise buildings naturally. Flight occurs only when temperatures exceed 17°C and attracted to light. Reputedly common in lowland England, but very rare in native situations in the north (mainly introduced with timber in these areas?); throughout Europe; introduced elsewhere. Develops in a range of trees on the Continent, but mainly oak *Quercus* and willow *Salix* in southern Britain and confined to oak in the north Midlands.

Ernobius abietis (F.) - **Vagrant?** New Forest, 1899.

Ernobius angusticollis (Ratzeburg) - **Vagrant?** Surrey.

Ernobius gigas (Mulsant & Rey) – **Naturalised.** Associated with burnt and dead pines *Pinus* in S England.

Ernobius mollis (L.)* - Develops in dead branches of softwoods, larvae consuming the bark but scoring sapwood, i.e. cambium feeder. Indigenous to north temperate regions, being common in northern Europe, especially in Scandinavia; widespread in Britain & Ireland; introduction in many parts of World.

Ernobius nigrinus (Sturm) - Develops in thin branches of pine *Pinus* and spruce *Picea* after primary attack of *Magdalis* weevils and *Hylastes* bark beetles. Formerly confined to Scottish Highlands, but now also in southern pine plantations.

Ernobius pini (Sturm) – **Naturalised.** Pine *Pinus* associate in S England.

Gastrallus immarginatus (Müller, P.W.J.) - **RDB1 & BAP Priority Species.** Develops in the bark of old field maple *Acer campestre* and fruit trees, clusters of tiny exit-holes occurring on well-lit live trunks; very localised in Windsor Forest but widely over north Cotswolds and adjoining country. Sub-fossil records from Somerset Levels.

Hemicoelus fulvicornis (Sturm) - Develops in small dead branches of broad-leaved trees in hedges, parks and woods; largely southern and eastern in Britain.

Hemicoelus nitidus (Herbst) – **RDBI.** On grey poplar in Suffolk, and reared from dead fallen branch of field maple *Acer campestre* in Windsor Great Park. Possibly a relict old forest associate.

Anobium inexpectatum Lohse - **Nationally Scarce B.** Develops in thick woody old ivy *Hedera* stems; S. Britain, north to Yorks.

Anobium punctatum (Degeer)* - Furniture Beetle. Eggs laid in crack or groove in exposed dead sapwood of living and dead trees, larvae bore within sapwood and heartwood, and pupate just beneath outer surface; pupal stage a few weeks, but adult remains in pupal chamber initially. Throughout British Isles, but most frequent in mild wet climate of west, and in seaboard counties generally; indigenous in Temperate Europe and probably Asia, introduced elsewhere.

Hadrobregmus denticollis (Creutzer) - **Nationally Scarce B.** Develop in dead heartwood of various broad-leaved trees, e.g. red-rot of *Salix fragilis*, old oak *Quercus*, pear *Pyrus* and hawthorn *Crataegus*. Southern England as far north as Worcester.

Priobium carpini (Herbst) – **Naturalised**. Known from South Kensington area of London since 1980s; in dry timber of conifers and broad-leaved trees. An uncommon species of central and northern Europe.

Ptilinus pectinicornis (L.)* - Bores in exposed dry heartwood of old broad-leaved trees, making small pinholes; especially in beech *Fagus*, but also in most other species; female attracts males by release of pheromone, effective over a few metres; females bore breeding passages into timber to lay eggs, vertical surfaces preferred; may also use existing flight hole to gain entry; only a few females actually leave the old breeding site to initiate new infestation. Widespread.

Xyletinus longitarsus Jansson - **RDB2.** In very brittle & powdery dead wood of broom *Cytisus* and in decaying timber; scattered distribution, clumped in N. Midlands, Herefordshire/Forest of Dean, and southern counties.

Dorcatoma ambjoerni Baranowski – **RDBK**. Reared from fruiting bodies of the bracket fungus *Inonotus cuticularis* on old beeches *Fagus*; and from red-rotten heartwood; probably hibernates in larval stage, like others of genus; active later in summer than others of genus; discovered in Windsor Forest in 1990 and now known from three localities.

Dorcatoma chrysomelina Sturm - Develops in the interior of boughs and trunks of oak *Quercus* which are red-rotten, due to activity of the fungus *Laetiporus sulphureus*; has also been found in a red-rotted ash *Fraxinus* stump. Ancient wood pastures. Dyfed to East Anglia, north to Lancs. and Yorks., but apparently absent from SW England.

Dorcatoma dresdensis Herbst - **Nationally Scarce A.** Develops in hard perennial bracket fungi on broad-leaved trees, incl. *Ganoderma* on old beech *Fagus* and *Phellinus* spp. Ancient wood pastures of south-east England, west to Severn Vale.

Dorcatoma flavicornis (F.) - **Nationally Scarce B.** Similar habits to *D. chrysomelina*; widespread across southern Britain, but rare in south-west.

Dorcatoma serra Panzer - **Nationally Scarce A.** Develops in hard bracket fungi on broadleaved trees, especially *Inonotus dryadeus*; ancient wood pastures of central and south-eastern England, reaching into the Welsh Marches.

Anitys rubens (Hoffmann, J.J.) - **Nationally Scarce B.** Develops in red-rotted heartwood of old oaks *Quercus* in ancient wood pastures; southern England to Yorkshire, and Ceredigion.

Anobiidae: Ptininae - Spider Beetles

Ptinus fur (Linnaeus) - Larvae develop in a wide range of dry organic matter, including fungoid heartwood and old bracket fungi. They are a regular feature of ancient trees.

Ptinus lichenum Marsham - **RDB3.** Larvae bore in dry wood and bark, in old palings, etc. Also a scavenger in bird nests.

Ptinus palliatus Perris - **Nationally Scarce A.** Associated with dry but rotten dead timber, of oak *Quercus*, especially in old posts.

Ptinus pilosus Müller, PWJ - **Vagrant?** In old wood, very rare.

Ptinus subpilosus Sturm* - **Nationally Scarce B.** In old hollow trees and under bark, mainly of oak *Quercus*, and old pines *Pinus* in Highlands; also scavenger in bird nests. Relict old forest species.

Lymexylidae - Larvae develop in dying or dead timber, and cultivate microscopic fungi (ambrosia) in their galleries.

Hylecoetus dermestoides (L.)* - **Nationally Scarce B.** Develops in dead timber and root stumps of hardwoods and softwoods; bores vertically into the heartwood; adult stage

very short, only a few days, from early April to early July; eggs laid in batches in wood crevices, in rough bark or in boreholes; hatch 7-14 days later, larval galleries unbranched and curved, in sapwood and heartwood; bore dust ejected creating piles of dust; feed on ambrosia fungus growing on walls of larval passage, introduced from egg-shell; pupal chamber excavated near the ingress hole, and pupal stage lasts a week. Very common in N & C Europe; most widespread in England in north and west; in Scotland favours northern birchwoods; relict old forest species in southern parts of main range at least. SW Ireland. Has appeared in Surrey in 2001, although whether this represents an expansion of the British or continental ranges, or an accidental introduction through movement of timber, is not clear. Widespread in Europe.

Lymexylon navale (L.) - **RDB2**. Confined to ancient forest areas, where larvae bore into heartwood of living and dead standing oaks *Quercus* and occasionally sweet chestnut *Castanea*, usually well above ground level, of in felled trunks or stumps, but always where bark has been damaged, drying out the underlying sapwood to some extent; eggs laid in such situations from end of May to July; larvae bore very narrow galleries straight into the centre of the trunk; auxiliary passages constructed as larvae get larger; feeds on cellulose, etc, not fungi; pupal chamber under outer wood surface close to ingress point; at least 1 year life cycle. A clustered distribution in Britain, in West Midlands and south-east; N, E, & C Europe.

Phloiophilidae

Phloiophilus edwardsii Stephens* - **Nationally Scarce B.** An autumn species, developing in fungus *Phlebia merismoides*, which grows on the bark of dead boughs and branches of various broad-leaved trees and shrubs. Widespread throughout much of Britain.

Trogossitidae - Flat Beetles

Nemozoma elongatum (L.) - **RDB3.** Lives in the burrows of the bark beetles *Pteleobius vittatus* and *Leperisinus varius*, mostly in old palings.

Ostoma ferrugineum (L.) - **RDB1.** Larvae feed in heartwood and sapwood of large Scots pine *Pinus sylvestris* that have been extensively rotted by the fungus *Phaeolus schweinitzii*; adults usually found under bark; relict old pine forest in GB, also ancient spruce *Picea* forest elsewhere in Europe; widely distributed Palaearctic sp.

Zimioma grossum (L.) – **Fossil.** Apparently associated with birch *Betula* damaged by forest fires, and sub-fossils found at Thorne Moors, 3000 BP.

Thymalus limbatus (F.)* - **Nationally Scarce B.** Larvae and adults live beneath loose bark on decaying broad-leaved timber, especially oak *Quercus*, and in the later stages of white-rot decay when the heartwood is dry and soft. In Britain has a northern & western distribution extending across to the Weald in southern England. Ireland: Kerry. Confined to ancient wood pastures.

Cleridae - Checkered Beetles

Tillus elongatus (L.)* - **Nationally Scarce B.** A predator of other beetles on old broad-leaved trees, especially larvae of *Ptilinus pectinicornis*, and usually in hard dead heartwood of beech *Fagus*. The larvae hunt nocturnally under bark and on the outside of the tree. Mainly in southern and south-eastern England, but with single records from Cumbria and Co Kerry. Throughout much of Europe.

Tilloidea unifasciata (F.) – **Extinct.** A predator on immature stages of *Lyctus* beetles in old stumps and under bark on dead oak *Quercus* and beech *Fagus*; most usually in GB in fresh oak palings. Adults attracted to flowering shrubs. Widespread across Europe.

Opilo mollis (L.) - **Nationally Scarce B.** Larvae predatory on anobiid beetle larvae in old hard timber; *Opilo* larvae crawl through *Anobium* tunnels in search of prey; eggs laid only if adult *Anobium* have been found; pupate beneath bark. Nocturnal. Widespread

in lowland England, but absent from south-west and north; Welsh record from Denbighshire. Widespread on continent.

Thanasimus formicarius (L.)* - Pink larvae and adults feed on bark beetles, and also other beetles, in hard dead timber; especially ash *Fraxinus* and elm *Ulmus*, but also pine *Pinus* and oak *Quercus*. Widespread in central and eastern England, more sparingly in north and west. Rare in Ireland and only reported from Counties Dublin and Wicklow.

Thanasimus femoralis (Zetterstedt) = *rufipes* (Brahm) - **RDB3**. Associated with Scots pine *Pinus sylvestris* in Highlands; feed on bark beetles. North and central Europe.

Paratillus carus (Newman) - **Naturalised.** Larvae feed on the larvae of *Lyctus* beetles; usually in timber yards, but occasionally in native situations. An Australian import, first recorded in Britain in 1933.

Tarsostenus univittatus (Rossi) – **Extinct.** A predator of immature stages of *Lyctus* beetles. Cosmopolitan.

Korynetes caeruleus (Degeer) - **Nationally Scarce B.** Larvae in galleries of *Anobium* and *Xestobium* beetles in old hard timber, both in old trees and in buildings, and predatory on their larvae; also reported from old bones where feed on dermestid larvae.

Melyridae - Soft-winged Flower Beetles. Larvae predatory, some associated with dead timber, although in some cases perhaps only as a pupation site.

Aplocnemus impressus (Marsham) = *pini* Redtenbacher - **Nationally Scarce B.** Larvae feed on scolytid beetle larvae, in branches, eg of pear *Pyrus*, oak *Quercus*, sycamore *Acer* & pine *Pinus*.

Aplocnemus nigricornis (F.) - **Nationally Scarce A.** As above. Possibly some association with hollow oaks *Quercus*. Mainly known from ancient wood pastures.

Dasytes aeratus Stephens* - Favours open woodland situations, especially on neutral to base-rich soils: adults usually found at blossom, especially on hawthorns *Crataegus*; the larvae are carnivorous over and under bark on live trunks as well as deadwood, feeding on dead invertebrates - has been reared in numbers from oak *Quercus* timber. Locally common in southern England, becoming very much more local in the north.

Dasytes niger (L.) - **Nationally Scarce A.** Adults frequent open grasslands, visiting flowers, but have also been found in numbers active over a standing dead tree trunk in warm sunshine. Larvae are believed to develop in decaying wood.

Dasytes plumbeus (Müller, O.F.) - **Nationally Scarce B.** Adults most often found in grasslands, but perhaps always near to trees. Larvae are said to develop in decaying wood.

Dasytes puncticollis Reitter - **Nationally Scarce B.** Associated with a variety of grassland situations.

Ebaeus pedicularius (L.) – **Extinct.** Windsor Forest, 19th C.

Hypebaeus flavipes (F.) - **RDB1 & BAP Grouped Species Statement.** Larvae in galleries made by woodborers in ancient oaks *Quercus* in open sunny situations; Moccas Park.

Axinotarsus marginalis (Laporte) - **Recent Colonist.** Reared from larvae in fallen oak *Quercus* branch; recent arrival apparently from near Continent, probably a natural range extension, now well established over much of S England.

Axinotarsus ruficollis (Olivier) - Probably develops in dead twigs.

Sphinginus lobatus (Olivier) – **RDBK.** Probably develops in dead twigs of oak *Quercus* or other trees; discovered in Hampshire in 1982.

Malachius aeneus (L.) - **RDB3.** Larvae under bark on logs. Adults active in grassy clearings and rides within woodland.

Malachius bipustulatus (L.)* - Larvae partly predatory in holes of wood-borers, partly feeding on their excreta and larval skins; adults sun-loving and feed on pollen, also seen to attack and eat the beetle *Dasytes aerosus*.

Anthocomus fasciatus (L.)* - Larvae probably predatory in borings of anobiid beetles; adults usually found by sweeping beneath trees or at umbel flowers.

Sphindidae - All the known Sphindidae breed exclusively in slime fungus spore bodies.

Sphindus dubius (Gyllenhal) - **Nationally Scarce B.**

Aspidiphorus orbiculatus (Gyllenhal)*

Nitidulidae - Sap or Blossom Beetles. A number of species are attracted to sap flows, especially during fermentation; at freshly cut stumps, sickly trees attacked by bark beetles and *Hylecoetus*, as well as exudations caused by the wood-boring larva of the goat moth *Cossus*.

Soronia grisea (Linnaeus)* - Under bark on dead ash *Fraxinus*; associated solely with ash in Ireland.

Soronia punctatissima (Illiger)* - Associated with oak *Quercus* and alder *Alnus*; attracted to sappy stumps, as well as trees attacked by goat moth *Cossus* and clearwing moths (Sesiidae); associated with ash *Fraxinus* in Ireland.

Amphotis marginata (F.) – **RDBK.** In nests and runs of jet ant *Lasius fuliginosus* in woodland.

Cryptarcha strigata (F.) - **Nationally Scarce B.** Associated with freshly exposed and fermenting sap; oak *Quercus* and ash *Fraxinus* reported.

Cryptarcha undata (Olivier) - **Nationally Scarce B.** Associated with freshly exposed and fermenting sap; oak *Quercus*.

Glischrochilus hortensis (Fourcroy)* - Usually at sappy stumps, in fungi, or amongst chippings from broad-leaved trees or conifers.

Glischrochilus quadriguttatus (Fabricius)* - As above; feeds on fermenting sap; associated with ash *Fraxinus* in Ireland.

Glischrochilus quadripunctatus (Linnaeus)* - On conifers.

Pityophagus ferrugineus (L.)* - Under bark on dead pine *Pinus*. Also reported from plant roots in arable land.

Carpophilus sexpustulatus (F.) - Under bark on sappy recently dead timber, especially sweet chestnut *Castanea*, but has also been reported from under bark with the fruiting bodies of the fungus *Bulgaria inquinans*; may be predator of bark beetles. Peculiar history in Britain, with earlier records all from stored products, but has increasingly been found in old wood pastures. Largely eastern distribution in Britain, and especially in south-east and east side of Pennines, but also known from Gloucestershire, Herefordshire, and Lancashire.

Epuraea aestiva (L.)* - Adults at flowers of trees and shrubs, e.g. rowan *Sorbus*, gorse *Ulex*. Common.

Epuraea angustula Sturm* - **Nationally Scarce B.** Associated with the borings of *Xyloterus* bark beetles in sickly or freshly dead trunks and boughs, especially of birch *Betula*, oak *Quercus* and beech *Fagus*; lowland England, except south-west; pine *Pinus* in Highlands; also in Co Donegal. Associated with ancient wood pastures.

Epuraea biguttata (Thunberg) - Under sappy bark on dead timber and in bracket fungi; feed largely on sap and other vegetable matter, but will also eat insect eggs; larvae below loose bark and on the bark surface, feed readily on scolytid eggs and small larvae, also dead or dying larger larvae; not uncommon in Scotland.

Epuraea binotata Reitter – **Extinct.** Single British specimen swept in N.Essex in 1895.

Epuraea distincta (Grimmer) - **Nationally Scarce A.** Develops in the bracket fungi *Daedaleopsis confragosa* on waterside *Salix*; adults have been reported over-wintering in reed litter; possibly a recent arrival.

Epuraea fuscicollis (Stephens) - **Nationally Scarce B.** At exuding sap of trees, especially those attacked by goat moth *Cossus*; very rare in mid-Europe.

Epuraea guttata (Olivier) - **Nationally Scarce B.** At exuding sap of trees, including those attacked by goat moth *Cossus*.

Epuraea limbata (F.) - In tree fungi.

Epuraea longula Erichson* - **Nationally Scarce B.** Adults have been found at goat moth *Cossus* burrows, but are more regularly found at woodland flowers; also from rotten elm *Ulmus*.

Epuraea marseuli Reitter = *pusilla* (Illiger)* - At flowers, under sappy bark of deadwood and in tree fungi.

Epuraea melanocephala (Marsham)* - At flowers of trees and shrubs.

Epuraea melina Erichson* - At flowers.

Epuraea neglecta (Heer) – **RDBI.** At sap and under sappy bark of deadwood; also in faggots.

Epuraea pallescens (Stephens) = *florea* Erichson* - At flowers and tree-sap; also in fungi.

Epuraea rufomarginata (Stephens)* - Amongst borings of the beetle *Xyloterus domesticus* in a cut bough; also under dead spruce *Picea* bark and in oak *Quercus* faggots; and in *Daldinia* fungus on ash.

Epuraea silacea (Herbst)* = *deleta* Sturm - At flowers, under sappy bark on dead wood, and in bracket fungi. Very rare in mid-Europe.

*Epuraea terminalis** Mannerheim = *adumbrata* Mannerheim - **Nationally Scarce.** Under bark of sappy dead oak *Quercus*, birch *Betula* and pine *Pinus* timber; relict old forest species, rare in England but widespread in Scottish Highlands - first recognised GB in 1972.

Epuraea thoracica Tournier* - **Nationally Scarce.** Under bark of deadwood and on resinous stumps and planks of conifers; mainly Scottish, but appears to have spread with conifer forestry.

Epuraea unicolor (Olivier)* - At sappy birch *Betula* and oak *Quercus* stumps; also develops in compost.

Epuraea variegata (Herbst) – **RDBK.** In brackets of the fungi *Piptoporus betulinus* and *Fomes fomentarius* on birch *Betula*; mainly Scottish Highlands.

Rhizophagidae - Larvae feed on larvae of other small beetles, including certain scolytid bark beetles; in damp conditions where there is mould or sap.

Rhizophagus bipustulatus (Fabricius) - Adults and larvae under bark of most dead broad-leaved trees; feed on fungal hyphae and will also eat dead scolytid bark beetle larvae.

Rhizophagus cribratus Gyllenhal* - Usually found around tree roots in litter, etc, especially oaks.

Rhizophagus depressus (Fabricius)* - Under bark of dead pine *Pinus*.

Rhizophagus dispar (Paykull)* - Under bark of most dead broad-leaved trees, and in bracket fungi; adult has been observed feeding on a fly larva. Common and widespread, particularly so in the north and west.

Rhizophagus ferrugineus (Paykull)* - Under bark on deadwood & in heart-rot.

Rhizophagus grandis Gyllenhal – **Introduction.** Introduced to GB by Forestry Commission since 1983 as a control on the spruce bark beetle *Dendroctonus micans*.

Rhizophagus nitidulus (Fabricius) - **Nationally Scarce B.** Under sappy bark of freshly dead wood of various broad-leaved trees. Ancient woodlands and wood pastures throughout Britain.

Rhizophagus oblongicollis Blatch & Horner - **RDB1.** Probably develops underground at the roots of old oaks *Quercus*, but at times comes to the surface and seeks new larval habitat. Above ground it is attracted to sap associated with damaged bark.

Rhizophagus parallelocollis Gyllenhal* - Under bark on deadwood.

Rhizophagus parvulus (Paykull) - **RDB3.** Under bark of dead broad-leaved trees; Scottish Highlands.

Rhizophagus perforatus Erichson* - Under bark on dead broad-leaved trees.

Rhizophagus picipes (Olivier) - **Nationally Scarce A.** Under sappy bark of various dead trees.

Cyanostolus aeneus (Richter) - **Nationally Scarce A.** Under bark on dead wood and in crevices in bark, usually on or near water; probably a predator of bark beetles; N & W Britain & Weald.

Silvanidae - Larvae predators on other insect larvae beneath bark on deadwood.

Silvanus bidentatus (Fabricius) - **Nationally Scarce B.** Under sappy bark of deadwood of various trees, incl. pine *Pinus*; usually with *S. unidentatus*. Central and eastern England, as far north as Co Durham; absent Wales and south-west; a single Scottish record in west.

Silvanus unidentatus (Olivier) - Under sappy bark of deadwood of oak *Quercus* and beech *Fagus*, but also a wide range of other broad-leaved trees. Central and eastern England; widespread; single locality in Kirkcudbrightshire.

Silvanoprus fagi (Guérin-Méneville) - **RDB1.** Under bark of beech *Fagus* and pine *Pinus* deadwood.

Uleiota planata (Linnaeus) - **Nationally Scarce A.** Larvae probably fungus-feeders under sappy bark, typically beech *Fagus* and sweet chestnut *Castanea*, but also from other broad-leaved trees; adults over-winter. Mainly in southern and eastern England, but with single reports from W. Glamorgan and Aberdeenshire.

Dendrophagus crenatus (Paykull) - **Nationally Scarce B**. Larvae are fungus-feeders under dead bark of broad-leaved trees and conifers; relict woodlands of primary pine *Pinus* forest; Scotland. Limited to the mountainous and colder areas elsewhere in Europe, especially ancient spruce *Picea* forest.

Cucujidae - Flat Bark Beetles. Larvae predators on other insect larvae beneath bark on deadwood.

Pediacus depressus (Herbst) - **Nationally Scarce A.** Attracted to freshly cut or broken stumps; also from goat moth *Cossus* burrows. Very thin scatter of sites across England; one Welsh locality, in Carmarthenshire.

Pediacus dermestoides (Fabricius) - Develops beneath bark on dead broad-leaved timber in the early stages of decay, especially in shattered ends of broken boughs; larvae feed on other insect larvae, while adults are fungivorous. Widespread in ancient woodlands and wood pastures throughout southern Britain, as far north as N. Yorkshire.

Laemophloeidae

Laemophloeus monilis (Fabricius) - **RDB1.** Under bark of cut ends of beech *Fagus*.

Cryptolestes confusus – [**RDB1**]**.** In beech *Fagus* log, Windsor 1987.

Cryptolestes duplicatus (Waltl) - Under bark on dead timber, reputedly widespread in S. England.

Cryptolestes ferrugineus (Stephens)* - Under bark on beech *Fagus*, especially where still sappy; also on oak *Quercus*, horse chestnut *Aesculus*, etc. Possibly associated with ancient wood pastures, but also in granaries. Scattered across southern England.

Cryptolestes spartii (Curtis) - **Nationally Scarce A.** Mainly in dead broom *Cytisus* stems, but also under bark of deadwood of various broad-leaved trees.

Notolaemus unifasciatus (Latreille) - **Nationally Scarce A.** Under sappy bark of freshly dead beech *Fagus* and oak *Quercus*; old beech-woods of south-eastern England; also widely scattered in Midlands.

Prostomis mandibularis (Fabricius) – **Fossil.** Very local and rare in a handful of isolated semi-natural forest remnants in Europe, where it lives in damp decaying timber. A relict old forest species apparently extinct in Central Europe since 1960s. Accidentally introduced in southern British Columbian forests and now established there. Sub-fossil records from Somerset Levels.

Cryptophagidae - Silken Fungus Beetles.

Henoticus serratus (Gyllenhal)* - Under bark on deadwood or at blossom, near fresh water; widely distributed but very sparse, especially in Scotland.

Cryptophagus spp. - usually fungal or detritus feeders.

Cryptophagus acuminatus Coombs & Woodroffe - Old wood of oak *Quercus* and alder *Alnus*.

Cryptophagus angustus Ganglbauer - **Nationally Scarce.** A pine *Pinus* associate, widely reported in Scotland, and also known from southern and eastern England. Found under bark on dead timber.

Cryptophagus confusus Bruce – **RDBK.** In moist crumbly dead beech *Fagus* timber, including saw dust from insect borers; Windsor & Richmond.

Cryptophagus corticinus Thomson,C.G. – **RDBI**. Associated with burnt birch *Betula* wood and the fungus *Daldinia vernicosa*; Speyside & Lanarkshire.

Cryptophagus dentatus (Herbst)* - In fungi and in buildings; larvae will feed on dead or dying insect larvae.

Cryptophagus falcozi Roubal – **RDBI.** Old forest relict. In moist crumbly fungoid dead wood on ancient beeches *Fagus* and associated with *Ganoderma* bracket fungi, Windsor & Reading.

Cryptophagus fallax Balfour-Browne – **RDBI.** Reported from jackdaw nests and bat roosts.

Cryptophagus intermedius Bruce* - **RDBK.** Known from borings of bark beetle *Leperesinus varius* under ash *Fraxinus* bark and at sycamore *Acer pseudoplatanus* sap.

Cryptophagus labilis Erichson - **Nationally Scarce.** Under bark on deadwood and in moist crumbly rotten wood and old stumps, generally where these have been bored by lesser stag beetle *Dorcus parallelipipedus*; ancient wood pastures.

Cryptophagus micaceus Rey – **RDBK.** In tree hole nests of hornet *Vespa crabro* and social wasps (Vespidae); also reported from rotting timber, fungi, sap and nest debris.

Cryptophagus pallidus Sturm

Cryptophagus ruficornis Stephens* - **Nationally Scarce.** Associated with the fungi *Daldinia concentrica* growing on ash *Fraxinus* and *D. vernicosa* on burnt birch *Betula*. Britain & Co Antrim.

Cryptophagus scanicus (L.)

Micrambe bimaculata (Panzer)* - **RDBK.** Thought to be associated with pine *Pinus* deadwood. Northern Britain.

Cryptophagidae: Atomariinae - Adults and larvae of most species probably feed on fungal hyphae and moulds. With the present state of knowledge, individual species are particularly difficult to allocate to the decaying wood category with confidence when individuals have been found in leaf litter or flood refuse (both including decaying twigs), as well as more distinct decaying wood habitats.

Caenoscelis sibirica Reitter – [**RDB?**] Should be sought around rotten tree stumps and wood in the hill country of northern and western Britain. A boreo-alpine species only known in Britain from a single specimen found in S.W. Yorkshire.

Atomaria badia Erichson – **RDBI.** Under bark on deadwood of pine *Pinus* and in wasp (Vespidae) nests; boreo-alpine species, restricted to Caledonian pine forest of Speyside.

Atomaria lohsei Johnson & Strand – **Naturalised.** Apparently a recent immigrant to Britain. Known from rotten wood debris abroad; mainly conifer forest.

Atomaria morio Kolenati – **RDBK.** Primarily associated with bird nests in tree cavities, but also reported from squirrel dreys, a mole nest and a cut stump.

Atomaria procerula Erichson – **RDBK.** In rotting timber of a variety of tree species. Scotland. Mainly a boreo-alpine species in Europe.

Atomaria pulchra Erichson - Has been found in all kinds of decaying wood: heaps of bark shavings, burnt wood, sawn logs and stacked timber. Widely distributed in woodlands.

Atomaria puncticollis Thomson – **RDBK**. Known from sawn timber and mouldy wood shavings; broad-leaved trees.

Atomaria umbrina (Gyllenhal)* - **Nationally Scarce.** Associated with the fruiting bodies of wood-rotting fungi, especially the gill fungi *Armillaria mellea* and *Pholiota* spp, in woodlands. Also taken in grass heaps.

Erotylidae

Triplax aenea (Schaller) - Usually associated with the fungus *Pleurotus ostreatus* growing on trunks of broad-leaved trees. Widespread in old wood pastures of Britain, although possibly absent from East Anglia.

Triplax lacordairii Crotch - **RDB3.** In *Pleurotus* and from ash *Fraxinus* and elm *Ulmus*; centred on Thames and Hampshire Basins, but also reported from Worcestershire.

Triplax russica (Linnaeus) - **Nationally Scarce B.** Develops in fungal fruiting bodies on various broad-leaved trees, particularly *Inonotus hispidus* on ash *Fraxinus* in the west, while preferring *Fomes fomentarius* on birch *Betula* in the north. Also reported from other broad-leaved trees, without reference to the associated fungus. Adults may also be found feeding at the bracket fungi.

Triplax scutellaris Charpentier - **RDB3.** Recorded in *Pleurotus*, and in fungi on elm *Ulmus* and holly *Ilex*; larvae have been found hibernating in moss at foot of trees, adults emerging in spring. Known from a few localities in northern England

Tritoma bipustulata Fabricius - **Nationally Scarce A.** Larvae develop in wood-decay fungi, especially on beech *Fagus*. Widespread in lowland England; a single record from S. Wales.

Dacne bipustulata (Thunberg)* - Adults normally frequent fruiting brackets of the softer polypore fungi on trunks of broad-leaved trees. Has been reared from *Laetiporus sulphureus* & *Piptoporus betulinus*. Widespread in lowland Britain; rare in Ireland.

Dacne rufifrons (Fabricius) - Adults normally frequent fruiting brackets of the softer polypore fungi on trunks of broad-leaved trees. Widespread in lowland England but more local than *D. bipustulata*. .

Biphyllidae - False Hide Beetles

Biphyllus lunatus (Fabricius) - Develop in the fruiting body of the fungus *Daldinia concentrica* growing on ash *Fraxinus* and, to a lesser extent, other broad-leaved trees; pupate in the fruit body. Widespread in lowland England, although rarer in the west where strongly associated with ancient wood pastures; Dyfed. Rare and threatened in central Europe.

Diplocoelus fagi Guérin-Méneville - **Nationally Scarce B.** Until recently, exclusively associated with beech *Fagus*, the adults occurring under bark on deadwood, particularly the loose outer layer. In 1998 found in association with sooty bark disease on sycamore *Acer pseudoplatanus* logs in the London area. Adults over-

winter in deadwood, including oak *Quercus*. Associated with the fungus *Tubercularia confluens* in Scandinavia. Ancient woodlands and wood pastures, although increasingly less so; south and south-east England.

Cerylonidae - Feed on fungal hyphae & spores.

Cerylon fagi Brisout* - **Nationally Scarce B**. Lives under bark of deadwood and within decaying heartwood, especially oak *Quercus*, and especially in later stages of decay. Also found in beech *Fagus* and ash *Fraxinus*. Widespread in lowland Britain and most frequent in south-east; north to Lanarkshire and west to Devon and Gwent. Confined to ancient woodlands and wood pastures.

Cerylon ferrugineum Stephens* - Develops beneath bark on dead broad-leaved timber in the early stages of decay; feed on fungal hyphae and spores. Mostly in ancient woodland and wood pasture; widespread in Britain, scarce in Ireland.

Cerylon histeroides (Fabricius)* - In fungoid and decaying timber of various broadleaves & pine *Pinus*. Mostly in ancient woodland and wood pasture; widespread in Britain, although most frequent in lowland England; rare in Ireland.

Endomychidae

Symbiotes latus Redtenbacher - **Nationally Scarce B.** In fungi and under bark on deadwood; elm *Ulmus*, poplar *Populus*, ash *Fraxinus*, beech *Fagus*.

Endomychus coccineus (Linnaeus)* - Lives gregariously with its larvae on or around fungoid growth under bark of dead timber; especially in beech *Fagus*, but also in apple *Malus*, crack willow *Salix fragilis*, horse chestnut *Aesculus*, birch *Betula*.

Corylophidae

Orthoperus mundus Matthews, A.

Orthoperus aequalis Sharp = *nitidulus* Allen

Orthoperus nigrescens Stephens* - Under fungoid bark.

Lathridiidae - Brown Scavenger or Plaster Beetles. Most feed on mould.

Stephostethus alternans (Mannerheim) – [**RDB**?]Associated with mouldy bark of broad-leaved trees, especially beech *Fagus*. Generally rare in central Europe, extending into northern and western parts; discovered at Dinefwr Deer Park, W. Wales, in 1996, possibly a recent immigrant.

Cartodere constricta (Gyllenhal) - Under bark on deadwood.

Lathridius consimilis Mannerheim - **Nationally Scarce.** In fungi on trees, mainly birch polypore *Piptoporus betulinus*, also from ash *Fraxinus*, beech *Fagus* & elm *Ulmus*. Widely scattered across lowland England, with records from SE Devon and Cardiganshire in the extreme west; 10km square map in Tozer (1973).

Enicmus brevicornis (Mannerheim) - **Nationally Scarce.** Associated with mouldy bark of beech *Fagus*, birch *Betula*, ash *Fraxinus* and sycamore *Acer pseudoplatanus*. Appears to have increased in numbers and range in recent years through favouring the development of sooty bark disease *Cryptostroma corticale* on sycamore. Central and south-eastern England; also in Cumbria.

Enicmus fungicola Thomson - **Nationally Scarce.** In ripe powdery slime fungi on oak *Quercus* and beech *Fagus* boughs and trunks.

Enicmus rugosus (Herbst) - **Nationally Scarce.** In slime mould on trees, often under bark on deadwood; mainly oak *Quercus*, but also ash *Fraxinus*, beech *Fagus*, alder *Alnus* and pine *Pinus*. Old forest areas: Highlands, Lanarkshire, and central and south-eastern England.

Enicmus testaceus (Stephens)* - In ripe slime fungus on beech *Fagus* and other trunks.

Dienerella elongata (Curtis) - Occurs under bark on deadwood and amongst wood-chips and sawdust; also reported from moss in winter, mouldy hay/straw, and in a blackbird nest in February.

Dienerella separanda (Reitter) - Indoors and out; in moist crumbly timber when outdoors. Widespread.

Corticaria alleni Johnson - **Nationally Scarce.** Lives under loose dry bark usually; also in myxomycete fungus and in dry crumbly heartwood. Associated with areas of old deciduous (oak *Quercus*/ beech *Fagus*) woodlands in S/SE England; also recorded from Sherwood Forest and Easterness.

Corticaria dubia Dajoz - In slime moulds on trees.

Corticaria fagi Wollaston – **RDBI.** Associated with old mouldy deadwood; Windsor Forest (1936), Sussex (1974) & Suffolk (1983). Widely distributed in Europe although rare and sporadic.

Corticaria linearis (Paykull) - **Nationally Scarce.** Primarily associated with decaying pine *Pinus* timber; also reported from oak *Quercus*. Mostly Scottish, although widely in England.

Corticaria longicollis (Zetterstedt) – **RDBK.** Recorded in a red-rotten hollow oak *Quercus*, beneath bark on dead wood, and in wood ant *Formica rufa* nest.

Corticaria polypori Sahlberg, J. - Develops in Fomes fomentarius bracket fungi on dead birches Betula in Scottish Highlands; N & C European species; rare.

Melanophthalma suturalis (Mannerheim) - In bracket fungi.

Mycetophagidae - Hairy Fungus Beetles. Associated with fungoid bark and wood.

Pseudotriphyllus suturalis (Fabricius) - Adults associated with bracket fungi, most often *Laetiporus sulphureus* and *Polyporus squamosus*. Widespread over lowland central and eastern England, extending north into the Lothians.

Triphyllus bicolor (Fabricius) - **Nationally Scarce B.** Adults mainly found at fresh fruiting bodies of *Fistulina hepatica,* but also *Laetiporus sulphureu,s* on oak *Quercus* trunks; also reported from fungi on beech *Fagus*. Ancient woodlands and wood pastures of lowland Britain; apparently absent from far west.

Litargus connexus (Fourcroy)* - Larvae develop in the fungus *Daldinia concentrica*; the adults are generally found under dead bark close to the fruiting bodies. Widespread across lowland Britain, but rare in west, and with only single known localities in southern Scotland & northern Ireland.

Mycetophagus atomarius (Fabricius) – Larvae develop in the hard black fruiting bodies of *Hypoxylon fragiforme* on dead & dying beech *Fagus*, or *Daldinia concentrica* on ash *Fraxinus*; pupae reported under bark and in deadwood. Throughout England, although rare in west; Welsh Borders; extending into S and W Scotland.

Mycetophagus fulvicollis Fabricius – **Extinct.** Only a 19th Century record from Black Wood of Rannoch. Sub-fossil records from Somerset Levels.

Mycetophagus multipunctatus Fabricius - With fungi on ash *Fraxinus* and other broad-leaved trees; widespread in lowland England and especially along alluvial floodplain situations, but increasingly scarce to the north and west; not known from Cornwall and Devon, and mainly in border counties of Wales; rare in Scotland.

Mycetophagus piceus (Fabricius) - **Nationally Scarce B**. Most often develops in red-rotten heartwood in oak *Quercus* trunks and boughs, i.e. in the decay caused by the fungus *Laetiporus sulphureus*, the larvae occurring where the decay is fresh and moist. Adults are also found feeding on fruiting bodies of other bracket fungi. Primarily in ancient woodlands and wood pastures. Widespread over much of England and Wales, but absent from far south-west and north; one southern Scottish record.

Mycetophagus populi Fabricius - **Nationally Scarce A.** Larvae probably develop within fungal mycelia within decaying wood, although the favoured situations and conditions are not known. Adults are most often found during winter and spring and so were probably not in breeding habitat at the time; reported from under loose bark on wood and in soft moist decaying sapwood of elm *Ulmus* and other broadleaves; spring records include association with fresh sap. Status probably needs up-grading to RDB.

Mycetophagus quadriguttatus Müller, P.W.J. - **Nationally Scarce A.** In old decaying broad-leaved timber with mildewy cavities, very rare; also very occasionally in stored products where fungal decay, e.g. granary refuse, haystacks, etc.

Mycetophagus quadripustulatus (Linnaeus) - Adults found beneath fungoid bark and at soft bracket fungi, on a wide range of broad-leaved trees; develops most frequently in the fruiting brackets of *Polyporus squamosus*.

Eulagius filicornis (Reitter) - **Naturalised.** A species of southern Europe and N. Africa which has become established in the Reading area, 1993 onwards. Possibly associated with the fungus *Stereum hirsutum* growing on dead branches of broad-leaved trees.

Ciidae - Minute Tree Fungus Beetles. Develop in bracket and other fungi in and on dead and dying timber. While the larvae appear to have restricted fungal associations, adults may feed on wood-decay fungi more widely.

Octotemnus glabriculus (Gyllenhal)* - Develop chiefly in young, expanding brackets of *Trametes versicolor;* also in *Pseudotrametes gibbosa*; particularly characteristic of beech *Fagus* woods, but also found in association with other broad-leaved tree species.

Rhopalodontus baudueri Abeille – **Fossil.** Develops in fungal fruiting bodies on decaying wood. Fossil evidence for presence in Britain up until 980 +/-110 BP, from Thorne Moors.

Rhopalodontus perforatus (Gyllenhal) - **RDB3.** In brackets of *Fomes fomentarius* on birch *Betula*; Highlands.

Sulcacis affinis (Gyllenhal) - Develop in brackets of the fungus *Trametes versicolor*, but occasionally also reported from other fungi

Sulcacis bicornis (Mellié) - **Nationally Scarce B.** Develop in brackets of the fungus *Trametes versicolor*; characteristic of beech *Fagus* woods but also found with ash *Fraxinus*.

Cis alni Gyllenhal* - Associated with Jew's Ear Fungus *Auricularia auricula-judae,* mainly on dead elder *Sambucus*, in S. England, probably also other fungi; larvae found in the soft fungoid sapwood of the colonised dead host tissues.

Cis bidentatus (Olivier)* - Most regularly develops in the brackets of *Piptoporus betulinus* and *Laetiporus sulphureus*, but also reported from *Pleurotus*, *Polyporus squamosus*, and *Ganoderma* spp.

Cis bilamellatus Wood – **Naturalised.** Under fungoid bark and in various bracket fungi, most often in *Piptoporus betulinus* on birch *Betula*; also in *Ganoderma applanatum* and other bracket fungi; reached Britain from Australia in 1870's; now widespread.

Cis boleti (Scopoli)* - Develop in the fully expanded fruit bodies of the fungus *Trametes versicolor*. The most frequent species of the family.

Cis coluber Abeille - **RDB3.** In fungi on trees: oak *Quercus*, *Salix*, alder *Alnus*.

Cis dentatus Mellié - **RDB3.** Birch polypore *Piptoporus betulinus*, and under fungoid pine *Pinus* bark; Scottish Highlands.

Cis fagi Waltl* - Primarily develops in the mycelium of *Laetiporus sulphureus* in cubical red-rotten oak *Quercus* heartwood; larvae have also reported from subcortical mycelial

sheets of *Armillaria* sp; adults reported widely, feeding at wide variety of wood-decay fungi. Very thinly scattered across Britain.

Cis festivus (Panzer)* - **Nationally Scarce B.** In fungal brackets on decaying timber; *Salix*, birch *Betula*, and aspen *Populus tremula*.

Cis hispidus (Paykull)* - Develop in the brackets of the fungi *Trametes hirsutus* and *T. versicolor*; possibly favours open wood pasture situations.

Cis jacquemarti Mellié - **Nationally Scarce B.** In bracket fungi; Scotland.

Cis lineatocribratus Mellié - **Nationally Scarce B.** In hard bracket fungi; Scotland and northern England.

Cis micans (Fabricius) - Most often found in association with oak *Quercus*.

Cis nitidus (Fabricius)* - Develops in the brackets of *Ganoderma* spp in particular; the larvae have particularly heavily developed mandibles for chewing this exceptionally woody fungus; can also develop in *Piptoporus betulinus*. Most often found in old parklands or wood pastures.

Cis punctulatus Gyllenhal - In *Hirschioporus abietinus*, on larch *Larix* and pine *Pinus*; Scotland, but recently established in S and E England.

Cis pygmaeus (Marsham) - Larval ecology not known; adults are reported to be attracted to the ascomycete fungus *Ascodichaena rugosa* on moribund peripheral twigs of oak *Quercus*; southern Britain.

Cis setiger Mellié* - Larvae develop under fungoid bark colonised by *Trametes versicolor.* Adults feed on hyphae of a wider variety of wood-decay fungi.

Cis vestitus Mellié* - Mainly on dead oak *Quercus* branches, especially on old trees; also polypore fungi on elm *Ulmus* and beech *Fagus*. Apparently more frequent now than in the recorded past.

Ennearthron cornutum (Gyllenhal)* - Larvae develop in the fruiting bodies of various bracket fungi.

Tetratomidae - Associated with bracket fungi.

Tetratoma ancora Fabricius* - **Nationally Scarce B.** Larvae under encrusting fruit-bodies of *Phlebia merismoides* and perhaps other fungi on dead branches of oak *Quercus* and other broadleaved trees. Ancient woodlands and wood pastures. Notably thin scatter of records throughout Britain, although none from East Anglia and adjacent Midlands; has declined throughout England.

Tetratoma desmaresti Latreille - **Nationally Scarce A.** Most often associated with dead, shaded out, lower boughs of mature and overmature oaks *Quercus*, possibly developing in *Stereum*; adult has once been found at the fruiting body of *Laetiporus sulphureus* on old oak; probably pupates at ground level as larva and pupae have been recorded under moss below oak. Thinly scattered over much of lowland Britain.

Tetratoma fungorum Fabricius* - Develop successfully, and most commonly, in fruiting bodies of *Piptoporus betulinus* on birch *Betula*; and has been found developing in *Pleurotus cornucopiae*, *P. ostreatus*, *Flammulina velutipes*, *Fistulina hepatica* and *Paxillus panuoides*; has also been taken on *Inonotus cuticularis*, *Bjerkandera adusta* and *Polyporus squamosus*. Adults nocturnal. Widespread throughout much of Britain, but scarcer in west, and only a single record from Ireland.

Melandryidae - False Darkling Beetles

Hallomenus binotatus (Quensel)* - **Nationally Scarce B**. Develops in the fruiting bodies of large polypore fungi in ancient wood pastures, particularly in *Laetiporus sulphureus*, but also in pine-associates in the ancient Scottish pine forests. Thinly scattered over much of Britain and scarcest in the west.

Orchesia micans (Panzer)* - **Nationally Scarce B.** Develops in a variety of large polypore fungi: especially *Inonotus hispidus* on ash *Fraxinus*, but also *I. radiatus* on alder

Alnus, *I. cuticularis* on beech *Fagus*, and even reported from *Fistulina hepatica* on oak *Quercus*; mainly but possibly not exclusively in ancient woodland and wood pasture. Widespread in England and Wales, but rare in southwest and north; Co. Kerry.

Orchesia minor Walker* - **Nationally Scarce B.** Develops in the fruiting bodies of a variety of wood-decay polypore fungi and possibly certain Ascomycetes; especially in permanently damp woodlands, in carr or gorge situations. Most often found in ancient woodland and wood pasture. Widespread in Britain, although increasingly scarce in west. Co. Kerry.

Orchesia undulata Kraatz* - Develops in decaying dead branches of oak *Quercus* trees, where possibly associated with the fungus *Exidia glandulosa*; also reported from other broad-leaved trees to some extent. Adults are relatively mobile and occasionally turn up in association with the dead wood of a wider variety of tree species outside of the period June/July, and these may have been attracted to fruiting wood-decay fungi for feeding (particularly in May) or be merely sheltering between periods of activity, especially while over-wintering. Adults are occasionally found at hawthorn and umbel blossom. Mainly found in ancient wood pastures; widespread in Britain; rare in Ireland. Rare and threatened in central Europe.

Anisoxya fuscula (Illiger) - **Nationally Scarce A.** Larvae in decaying boughs and twigs, of a wide variety of broad-leaved trees. Associated particularly with ancient wood-pasture type habitats, including floodplain willow pollard systems; Glamorgan to Kent and north to Yorkshire.

Abdera affinis (Paykull) - **RDB1.** In fungi on trees; either birch *Betula* or pine *Pinus*; Scottish Highlands.

Abdera biflexuosa (Curtis) - **Nationally Scarce B.** Develops in decaying branchwood of oak *Quercus*, and to a lesser extent other broad-leaved trees. Generally found on lower dead branches which have been shaded out by the tree's own canopy. Widespread across southern and southeastern Britain, as far west as Radnor and SE Devon, and north to Soke of Peterborough and Cheshire; predominantly in ancient woodland and wood pasture.

Abdera flexuosa (Paykull)* - **Nationally Scarce B.** Mainly develops in the small bracket fungus *Inonotus radiatus* which grows especially on the dead trunks of alder *Alnus*, also willow *Salix* & birch *Betula*; adult once reported from under beech *Fagus* bark in winter. Most records are from ancient woodlands and wood pastures. Widely but very thinly scattered over much of Britain. Also found on *I. dryadeus* fruiting on oak *Quercus* in Co Fermanagh and *Phellinus pini* in Aberdeenshire.

Abdera quadrifasciata (Curtis) - **Nationally Scarce A.** Develops in decaying branchwood; most often associated with hornbeam *Carpinus*, oak *Quercus*, and beech *Fagus*, but also horse chestnut *Aesculus*. Generally found on lower dead branches which have been shaded out by the tree's own canopy. Scattered across lowland southern Britain, into the Welsh Marches, but not known from the southwest. Mainly in ancient wood pastures, but occasionally in ancient woods.

Abdera triguttata (Gyllenhal) - **Nationally Scarce A.** Formerly confined to Scottish Highlands, but now also in East Anglia. Has been found in association with oak *Quercus* in Suffolk, as well as pine *Pinus*.

Phloiotrya vaudoueri Mulsant - **Nationally Scarce B.** Develops in relatively soft dead sapwood of boughs and trunks of beech *Fagus* and oak *Quercus*, also other broad-leaved trees. Widespread in lowland England, except the far southwest and north; almost invariably in areas of ancient wood pasture.

Xylita laevigata (Hellenius) - **Nationally Scarce A.** Within decaying wood; Scottish Highlands.

Hypulus quercinus (Quensel) - **RDB2.** In decaying heartwood of oak *Quercus*, hazel *Corylus* and birch *Betula*. Relict old forest species; mostly eastern and southeastern England, as far north as Yorkshire; also Avon Gorge, S. Devon & S. Wales.

Zilora ferruginea (Paykull) - **Nationally Scarce B.** In *Hirschioporus abietinus* on dead pine *Pinus*; pupae under bark on deadwood; Highlands.

Melandrya barbata (Fabricius) - **RDB1.** In decaying wood of oak *Quercus* and beech *Fagus*. Only known in Britain from a very few ancient wood pasture areas of south-east England.

Melandrya caraboides (Linnaeus)* - **Nationally Scarce B.** Develops in relatively soft moist white-rotted heartwood of boughs, trunks and stumps; various broad-leaved trees, especially ash *Fraxinus* and beech *Fagus*. Widespread in England and Wales, but rare in Scotland and Ireland; mostly associated with ancient woodlands and wood pastures, including linear sites such as riverside trees.

Conopalpus testaceus (Olivier)* - **Nationally Scarce B.** Develops in decaying boughs and branches, especially of oak *Quercus*, also hazel *Corylus*; adults may visit flowers, especially umbellifers. Associated with ancient wood pastures; widespread in central and southeastern England, rare in west; Dyfed.

Osphya bipunctata (Fabricius) - **RDB3.** Adults attracted to hawthorn *Crataegus* blossom, also wayfaring and guelder rose *Viburnum*, and field maple *Acer campestre*; larval habitat not known. Concentrated on Huntingdonshire, and extending sparingly in broad spread southwards as far as N. Somerset and E. Suffolk.

Mordellidae - Tumbling Flower Beetles. The larvae of most genera in this family develop in galls or the stems of herbaceous plants, but a few specialise in decaying wood. *Variimorda villosa* (Shrank) is probably a stem species although has often been assumed to be a wood-decay species.

Tomoxia bucephala (Gyllenhal) - **Nationally Scarce A.** Adults lay eggs in vacated anobiid borings in exposed heartwood on standing trunks; larvae develop in decayed timber; beech *Fagus*, horse chestnut *Aesculus* & other broad-leaved trees; adults visit umbel flowers. Confined to relict old forest areas of the southern- and eastern-most counties of England.

Mordellochroa abdominalis (Fabricius) - Develops in dry sapwood of dead broad-leaved trees, including ash *Fraxinus*. Adults locally frequent at flowers of hawthorn *Crataegus*, hogweed *Heracleum*, etc.

Mordellistena humeralis (Linnaeus) – **RDBK.** Adults have been found at blossom of umbels and meadowsweet *Filipendula*. A few confirmed records only, from the southeast and East Anglia.

Mordellistena neuwaldeggiana (Panzer)* - **RDBK.** Has been reared from hornbeam *Carpinus* and field maple *Acer campestre* branch wood in early stages of decay; adults attracted to blossom. Restricted range in south and east of England, with most records from relict old forest or wood pasture.

Rhipiphoridae

Metoecus paradoxus (Linnaeus)* - Eggs deposited on wood, and larvae transported by wasps collecting wood pulp for nest materials into nests as triungulin larvae; larvae feed on wasp larvae, initially endoparasites, later ectoparasites; very quick growing, possibly a few days only; wasp nests in ground most usually, seldom in elevated situations such as buildings; host always the wasp *V. vulgaris*.

Colydiidae - Cylindrical Bark Beetles. Mostly predatory.

Synchita humeralis (Fabricius) - **Nationally Scarce B.** Feed on fungus-colonised sappy bark or timber, of birch *Betula*, hawthorn *Crataegus*, hazel *Corylus*, alder *Alnus*, and especially beech *Fagus*; has been reared from *Daldinia* in long-established birchwoods. Central and eastern England, with single records from Scotland and Ireland.

Synchita separanda (Reitter) - **RDB3.** Feed on fungus-colonised sappy bark and wood, mainly beech *Fagus*, but also sycamore *Acer pseudoplatanus*, where beetles common in dark brown powdery smut-like fungus under thin bark. Southeast England.

Cicones undatus Guérin-Méneville - Associated with sooty bark disease on sycamore *Acer pseudoplatanus*, caused by the ascomycete fungus *Cryptostroma corticale*. Very local nationally, but common and widespread in the London area.

Cicones variegata (Hellwig) - **Nationally Scarce A.** Normally associated with encrustations of the fungus *Ustulina deusta* on recently dead standing beech *Fagus* trunks; also on hornbeam *Carpinus*. South and southeast England, as far west as New Forest and Forest of Dean, and north to Huntingdon.

Bitoma crenata (Fabricius) - Mainly beneath bark on dead beech *Fagus* & oak *Quercus* when in the early stages of decay and still sappy; also less frequently on birch *Betula*, horse chestnut *Aesculus*, sycamore *Acer pseudoplatanus*; mostly in ancient wood pastures, and especially so in the north and west. Very widespread over much of England, excepting the far north and south west; very local in Wales.

Endophloeus markovichianus (Piller & Mitterpacher) - **Extinct.** Adults found under loose bark on dead beech *Fagus* trunks. New Forest, old specimens only.

Langelandia anophthalma Aubé - **RDB3.** Soil dweller, decaying vegetable material, possibly associated with tree roots.

Colydium elongatum (Fabricius) - **RDB3.** Under bark of various dead broad-leaved trees; also in conifers on Continent; predator of *Platypus* & *Xyloterus* beetle larvae. Increasing its distribution and abundance locally from mid 1990s, presumably in response to expansion of range of *Platypus* (q.v.); status now in need of revision.

Aulonium trisulcum (Fourcroy) - **Nationally Scarce A.** Reputed to be a specialist predator of larvae and pupae of *Scolytus* on elm *Ulmus*, although more likely to be a scavenger exploiting the special conditions consequent upon the activities of developing elm bark beetles. Probably introduced into Britain from the Continent in early C20, and now widespread in the southeast, extending to Dorset, Dyfed and Leicestershire. A night flier.

Pycnomerus fuliginosus Erichson* - **Naturalised.** Under bark of dead oak *Quercus*, sweet chestnut *Castanea*, birch *Betula*, hornbeam *Carpinus*, beech *Fagus*; an Australian import; very local, with concentrations in Hampshire/Surrey/Sussex border area, Devon, Epping Forest; also established in N. Ireland.

Pycnomerus terebrans (Olivier) – **Fossil.** Most recently in Britain from Bronze Age in Shropshire, Somerset Levels and London.

Teredus cylindricus (Olivier) - **RDB1.** Probably a predator; under bark of dead old oaks *Quercus*, also sweet chestnut *Castanea* and other trees; in red-rot, often with brown tree ant *Lasius brunneus* or anobiid beetles. Mainly known from Sherwood and Windsor Forests.

Oxylaemus cylindricus (Panzer) – **Extinct.** Dead wood.

Oxylaemus variolosus (Dufour) - **RDB3.** Has been found in litter at base of tree stump, and in the root pathogen fungus *Collybia fusipes* at the base of a red oak *Quercus*.

Tenebrionidae - Darkling Beetles

Bolitophagus reticulatus (Linnaeus) - **RDB3.** In old bracket fungi of *Fomes fomentarius* where it fruits on dead birch *Betula* trunks; confined in Britain to the Scottish Highlands, but much more widespread elsewhere in Europe.

Eledona agricola (Herbst) - **Nationally Scarce B.** Develops primarily in the fruiting bodies of *Laetiporus sulphureus* and very occasionally adults have been reported from other similar soft annual bracket fungi; mostly in old wood pastures. Central and southern Britain; one record from Dumfriesshire.

Diaperus boleti (Linnaeus) - **RDB2.** Develops deep inside large brackets of *Piptoporus betulinus* on birch *Betula;* also reported from *Polyporus squamosus* on black poplar *Populus nigra*; adults and larvae feed on soft fleshy part of the fungus just above the pore tubes and close to the stem; pupates within the fungus; one year development. Has been found widely across England, although very localised.

Scaphidema metallicum (Fabricius) - **Nationally Scarce B.** Associated with decaying wood, frequently on quite small sticks and branches, and usually in very moist and shady conditions; mostly reported from elm *Ulmus*, but also oak *Quercus*, beech *Fagus*, and hawthorn *Crataegus*; known from woods, parks, old scrub & hedgerows. Almost certainly declining and status in need of revision.

Platydema violaceum (Fabricius) - **RDB1.** In the fungus *Auricularia auricula-judae* on elder *Sambucus* and *A. mesenterica* on elm *Ulmus*; larvae and adults in outer rotted parts of fungus, where also pupates.

Alphitophagus bifasciatus (Say) - Mould feeder, mainly associated with mouldy grain and decaying vegetable matter generally including decaying tree stumps.

Pentaphyllus testaceus (Hellwig) – **Extinct.** Found once in Britain in "*Polyporus squamosus*" placed as a trap in a "partially decayed oak", Hornsey, N. London, 1876. Known on Continent from decaying bracket fungus *Laetiporus sulphureus* on oak, also in broad-leaved leaf litter and red-rotten oak and other decaying timber.

Alphitobius diaperinus (Panzer)* - Lesser Mealworm Beetle. Mainly known from stored products and especially deep litter poultry houses, but also very occasionally in the wild associated with decaying timber.

Alphitobius laevigatus (Fabricius) - Black Fungus Beetle. Mainly known from stored products, but occasionally in garden refuse or associated with decaying timber.

Corticeus bicolor (Olivier) - Commensal in burrows of bark beetle *Scolytus scolytus* & *S. multistriatus* in elm *Ulmus*, mainly feeding on fungi and detritus, but will also feed on eggs, larvae and pupae of not only the bark beetle but also other associated insects; more rarely associated with *Daldinia concentrica* on old ash *Fraxinus* and with *Polyporus squamosus*; also occur under bark on oak *Quercus*. Eastern Britain, extending across to the Welsh Marches.

Corticeus fraxini (Kugelann) – **Naturalised**. Inhabits burrows of bark beetle *Ips sexdentatus* in pine *Pinus*, also in burrows of *Orthotomicus* spp.; introduced in pine pit-props from France, early C19th.

Corticeus linearis (Fabricius) - Inhabits burrows of bark beetle *Pityogenes bidentatus* under bark of smaller upper branches of conifers. Probably an adventive? - discovered new to GB in 1898 at Oxshott.

Corticeus unicolor Piller & Mitterpacher - **RDB3**. Develops chiefly in freshly dead birch *Betula* wood, also beech *Fagus* and oak *Quercus*, and is probably predatory on larvae of the beetle *Hylecoetus* and other wood borers. Confined to the north Midlands, with two distinct areas: Nottinghamshire/S. Yorkshire and Cheshire, probably now extinct in latter area.

Tenebrio molitor Linnaeus* - Mealworm Beetle. Stored-products and domestic pest; also develops in bird nests and in bat roosts where larvae scavengers; occasionally found in decaying timber.

Helops caeruleus (Linnaeus) - **Nationally Scarce B.** In decaying trees, principally oak *Quercus*, but also in a wide variety of other species including pine *Pinus*; also in prepared timber; larvae in rather hard and dryish decaying wood; adults come to sugar, nocturnal; probably flightless. Most often found in coastal situations, but also in ancient wood pastures inland. South and east of England.

Cylindrinotus laevioctostriatus (Goeze)* - Develops in decaying timber in ancient woodlands and wood pastures; also in peaty soils of heaths. Larvae feed indiscriminately on organic material. Adults nocturnal; feed on algae encrusting timber or lichens on heaths. Widespread in southern Britain. Mostly short-winged, but with occasional reports of flying individuals.

Prionychus ater (Fabricius) - **Nationally Scarce B.** Larvae most often develop in black wood mould in hollowing broad-leaved trees, often but not invariably beneath nests of birds such as jackdaw; also very occasionally found in accumulations of frass beneath loose bark on trunks and large boughs. Adults nocturnal. Widely in wood pastures across southern Britain, but absent from far west.

Prionychus melanarius (Germar) - **RDB2.** Larvae develop in similar situations to *P. ater*, but with more emphasis on accumulations of frass and other debris beneath loose bark on decaying oak *Quercus* and other broad-leaved trees. Adults nocturnal. Relict old forest species known from Severn Vale, Sherwood, Arundel Park area of South Downs, and Staverton Park.

Gonodera luperus (Herbst)* - Adults usually swept in calcareous woodlands; larvae presumed to be saproxylic.

Pseudocistela ceramboides (Linnaeus) - **Nationally Scarce B.** Larvae in wood-mould of hollow decayed oaks *Quercus*, also beech *Fagus*, etc; generally beneath bird nests; adults generally in small numbers, come to blossom of hawthorn *Crataegus*. Widely in wood pastures of central southern and eastern England; also in old orchards.

Mycetochara humeralis (Fabricius) - **Nationally Scarce A.** Larvae develop in old decaying beech *Fagus*, oak *Quercus* and cherry *Prunus*, generally hollow trees, in wood mould beneath bird nests; adults generally found sheltering under bark. Mainly known from the wood pastures of East Midlands, East Anglia and southeast.

Uloma culinaris (L.) - **Extinct? or Vagrant?** A 1950 specimen from rotten wood is in the Booth Museum, Brighton.

Oedemeridae - False Blister Beetles. This family includes a mix of stem-borers and wood-decay species; two species have been assumed to be in the latter category on no firm evidence: *Oedemera virescens* and *Oncomera femorata*.

Nacerdes melanura (Linnaeus)* - Wharf-borer. In decayed timber, especially in coastal and estuarine areas, but also canal and riversides; also railway sleepers; larvae develop in flooded timber, mainly softwood but occasionally in oak *Quercus* which is damp or wet and in process of fungal decay. Widespread, but commonest in Midlands & S & SE estuaries.

Chrysanthia nigricornis (Westhoff) - **RDB1**. Larvae have been found in soft heartwood of an old pine *Pinus* branch (5cm thick) lying beneath tufts of moss and heather; Scottish Highlands.

Ischnomera caerulea (Linnaeus) - **RDB3.** Larvae develop in relatively soft white-rotting heartwood of elm *Ulmus* in Britain, but reported from oak *Quercus* timber on Continent; adults attracted to hawthorn *Crataegus* blossom. Ancient wood pastures.

Ischnomera cinerascens (Pandelle) - **RDB2.** Develops in white-rot heartwood of large old wych elms *Ulmus glabra* and perhaps other tree species; adults usually found in closed canopy woodlands or at blossom close by, but also in old wood pastures. Pyrenees to Caucasus, widespread but not common across C. Europe, rare or absent in N. Thin scatter of records across lowland England, mostly in limestone districts.

Ischnomera cyanea (Fabricius) - **Nationally Scarce B.** Larvae develop in relatively soft white-rotting heartwood of a great variety of broad-leaved trees; adults over-winter in pupal cell, later attracted to blossom of hawthorn *Crataegus*, privet *Ligustrum*, hogweed *Heracleum*, etc. Widespread in ancient woods and wood pastures over much of lowland England, reaching SE Devon, W. Somerset, Welsh Borders, and N. Yorkshire.

Ischnomera sanguinicollis (Fabricius)* - **Nationally Scarce B.** Develops in old relatively soft dead wood of wych elms *Ulmus glabra*, adults at flowers of hawthorn *Crataegus*, field maple *Acer campestre*, sycamore *A. pseudoplatanus*, oak *Quercus*, lime *Tilia*, and guelder rose *Viburnum*. Most frequent in ancient woods and wood pastures of central southern England, but with outliers in parts of Wales, Sherwood and N. Yorkshire; throughout Europe, although more upland in S & SE.

Pythidae

Pytho depressus (L.) - **Nationally Scarce A.** Under fungoid bark on dead pine *Pinus*; Scottish Highlands.

Pyrochroidae - Cardinal Beetles

Pyrochroa coccinea (L.) - Black-headed Cardinal. **[Nationally Scarce Category B]** Larvae develop over two to three years, under bark of freshly dead broad-leaved timber where hunt other insects; cannibalism known; pupates in cell under bark. Mostly in ancient woodlands and wood pastures; widespread in England, extending into the Welsh Border counties, but not penetrating far into SW England, and northwards only into southern Cumbria; identified from about 120-150 10km squares.

Pyrochroa serraticornis (Scopoli)* - Red-headed Cardinal. Larvae develop under bark on various dead broad-leaved trees, in a wide variety of situations in Britain. Rare in Ireland.

Schizotus pectinicornis (L.) - **Nationally Scarce A.** Larvae under bark of recently dead birch *Betula*, oak *Quercus*, *Salix* and alder *Alnus*; probably feed on detritus or mould; Scottish Highlands & Welsh Borders.

Salpingidae - Narrow-waisted Bark Beetles. Mainly live under bark on deadwood, though some in small branches and twigs, where adult and larva prey on other insects.

Lissodema cursor (Gyllenhal) - **Nationally Scarce A.** Develop in dead and dying branch tips high in ash *Fraxinus* canopy; with pollarded ash only after c.14 years growth, not in young growth. Most widespread in southeastern and eastern England.

Lissodema denticolle (Gyllenhal)* =*quadripustulata* (Marsham) **- Nationally Scarce B.** In dead wood of a wide variety of trees including pine *Pinus*.

Rabocerus foveolatus (Ljungh)* - **Nationally Scarce A.** In dead wood, beech *Fagus* and pine *Pinus*.

Rabocerus gabrieli Gerhardt* - **Nationally Scarce B.** In dead wood.

Salpingus castaneus (Panzer)* - On conifers, dead and dying branches.

Salpingus ater (Paykull)* - In burnt twigs; Scotland, Gower, Ireland.

Salpingus reyi (Abeille)* - In burnt twigs. Locally common in England and Ireland.

Vincenzellus ruficollis (Panzer)* - Under bark on various broad-leaved trees, especially hawthorn *Crataegus*& beech *Fagus*.

Rhinosimus planirostris (Fabricius)* - Under bark on various broad-leaved trees in early stages of decay; normally saprophagous, but will also feed on insect larvae.

Rhinosimus ruficollis (Linnaeus)* - As above.

Aderidae - Larvae in decaying wood, particularly in red-rot.

Aderus brevicornis (Perris) - **RDB2.** Larvae in moist crumbly heart-rot of oak *Quercus*, beech *Fagus* and elm *Ulmus*. Also recorded from pine *Pinus*. Adults active for 8-10 weeks in late summer. Localities include some of the classic ancient wood pastures, but also found in other situations.

Aderus oculatus (Paykull) - **Nationally Scarce B.** Develops in moist crumbly red-rot of old hollowing oaks *Quercus*; also reared from other broad-leaved trees. Adults favour elder *Sambucus* blossom. Widespread in ancient parks and wood pastures of southern Britain: north to Yorkshire and west to Ceredigion.

Aderus populneus (Creutzer) - **Nationally Scarce B.** Larvae probably in decaying heartwood; associated with various broad-leaved trees. Over-wintering adults have been found in decaying straw stacks, and at *Salix* catkins and hawthorn *Crataegus* blossom in the spring. Apparently very localised in southern Britain, from Severn across to East Anglia and Kent. A high proportion of the known localities are ancient wood pastures, including floodplain willow *Salix* pollard systems.

Scraptiidae - Develop in rotten wood, adults fairly indiscriminately on flowers and sometimes on foliage.

Scraptia - Adults active for little more than 2 weeks each year; in burrows of ants in heart-rot.

Scraptia dubia (Olivier) – **Extinct.** Larvae develop in decaying heartwood; adults at flowers of hawthorn *Crataegus*.

Scraptia fuscula Müller, P.W.J. - **RDB1.** Larvae develop in relatively soft rotten heartwood of oak *Quercus*. A speciality of Windsor Great Park & Forest; single unconfirmed record from near Gloucester.

Scraptia testacea Allen - **RDB3.** Larvae develop in relatively soft rotten heartwood of oak *Quercus*, also beech *Fagus*, hawthorn *Crataegus*. South and southeast England.

Anaspis - Most if not all develop in dead wood; larvae of some have been found below loose bark; feed largely on wood fibres and fungi, although will take animal food; adults frequent flowers.

Anaspis bohemica Schilsky - **RDBK.** Beaten from dead pine *Pinus* branches and at broom *Cytisus* blossom; Scottish Highlands; mainly boreo-montane.

Anaspis costai Emery

Anaspis fasciata (Forster)* =*humeralis* (Fabricius) - Has been reared in numbers from dead branchwood of oak *Quercus*.

Anaspis frontalis (Linnaeus)*

Anaspis garneysi Fowler*.

Anaspis lurida Stephens* - Southern species, rare in north. Has been reared from dead branchwood of oak *Quercus*. Adults attracted to blossom, including elder *Sambucus*.

Anaspis maculata Geoffroy* - Develops in small girth branchwood of a wide variety of broad-leaved trees.

Anaspis melanostoma Costa,A. – **RDBK.**

Anaspis pulicaria Costa,A.

Anaspis regimbarti Schilsky* - Has been reared from a larva found in decaying oak *Quercus* log, and from large girth oak branchwood.

Anaspis rufilabris (Gyllenhal)* - Has been reared from large girth oak *Quercus* branchwood.

Anaspis septentrionalis Champion = *schilskyana* Csiki – **RDBI.** Larvae in midland England in half-dry red-rot of oak *Quercus*; adults on the most ancient oaks and at hawthorn *Crataegus* blossom. Confined to relict ancient wood pastures: Blenheim, Moccas, Sherwood, Calke; also known from Aviemore; a generally rare N. European species.

Anaspis thoracica (Linnaeus)* - **Nationally Scarce A.**

Cerambycidae - Longhorn Beetles. Many exotic longhorns turn up in timber yards and buildings due to importation of timber. Some have become established. Obvious casuals are not included. 10km square distribution maps are available (Twinn & Harding, 1999).

Prionus coriarius (Linnaeus) -The Tanner. **Nationally Scarce A**. Develops in stumps and the decaying roots of old oaks *Quercus*, also in a wide range of other tree species; usually where tree growing in damp site; prefers old oak parkland or open wood pasture; larval development 3-4 years; pupates in earthen cocoon among roots and may take several years before reaching adult stage; beetles appear midsummer and are crepuscular. Thinly scattered across southern Britain and apparently extinct in many areas of former range.

Arhopalus rusticus (Linnaeus) - Dusky Longhorn. Larva in standing and fallen trunks and stumps of various conifers, and will attack larvae of the long-horn beetle *Asemum striatum* if encountered; up to 2 years life cycle, pupal eclosion from May onwards; nocturnal, hiding under bark by day, but attracted to light after dark; also active in hot weather; Scottish native but has spread widely with conifer plantations over England.

Arhopalus tristis (Fabricius) – **Naturalised.** Wood-borer in exposed roots and boles, also in dying trees and fire-damaged timber; pine *Pinus* & spruce *Picea*; larvae up to 4 years, pupating from June onwards; largely nocturnal, but sun on logs and stumps; active and agile beetle; presumed introduction.

Asemum striatum (Linnaeus)* - Highland pine *Pinus* forest species which has spread with softwood forestry; mainly develops in pine stumps and exposed roots of freshly cut trees, but will use larch *Larix* and firs; 2-3 year life cycle, eclosion in April and May; crepuscular.

Tetropium castaneum (Linnaeus) – **Naturalised.** Recent established in Scotland, from the Continent; typically a montane species, although has been found in lowlands. Larvae mainly in spruce *Picea*, but also other conifers; attacks standing live and dying trees; adult emerges in April and a strong flier.

Tetropium gabrieli Weise – **Naturalised**. Larch *Larix* plantations, also in other conifers; adult oviposits in freshly cut larch logs and branches; also attacks live trees; one year cycle.

Rhagium - The larvae feed upon bark, phloem and cambium.

Rhagium bifasciatum Fabricius* - Develops in rotten boughs, stumps and trunks, prefers decaying logs and stumps of pine *Pinus*, but found very widely, even in old posts.

Rhagium mordax (Degeer)* - Larvae develop in decaying timber, preferring the cambium and outer sapwood of rotting boles or stumps; most often found in oak *Quercus*, but also in a wide range of other trees; adult formed by August, but remains in pupal cell until following Spring.

Rhagium inquisitor (Linnaeus) - **Nationally Scarce B.** Preference for conifers, but also birch *Betula* & oak *Quercus*, stumps and logs; native only in Scotland, adventives and accidental introductions elsewhere.

Stenocorus meridianus (Linnaeus) - Develops in stumps and dead roots of a wide range of trees, and has been seen emerging from pine *Pinus* posts; two year larval duration; woods and hedgerows.

Acmaeops collaris (Linnaeus) - **RDB1.** Larvae under bark on decaying exposed roots and dead branches of oak *Quercus*; also in ash *Fraxinus* and aspen *Populus tremula*; lives in empty galleries of other wood-borers, feeding on the underside of the loose bark; larva very active, and crawls over ground in search of other deadwood; after 2 years pupates in autumn in shallow underground cell close to host tree's roots; adults at

flowers; claimed to have been formerly common in Kent hop-fields, although this now questionable, also in gardens and hedges, but now mainly Wyre Forest.

Grammoptera holomelina Pool - At flowers; probably a variety of *G. ruficornis*; unknown on Continent.

Grammoptera ruficornis (Fabricius)* - Polyphagous larvae, in dead twigs and decaying small branches of many broad-leaved trees; pupates in Spring; adults at blossom. Common England, Wales, Ireland, but scarcer in Scotland north of the Forth/Clyde line.

Grammoptera ustulata (Schaller) - **RDB3.** Mostly Thames, Hampshire and Severn Basins; also Yorkshire; larva in dry dead or mouldy lichen-covered twigs of maple *Acer campestre* and oak *Quercus*, also other broad-leaved trees, where they feed on the outer sapwood; adults at blossom; life cycle one year.

Grammoptera variegata (Germar)* - **Nationally Scarce A.** Larva feed on the outer sapwood of dead upper branches of oak *Quercus*, pear *Pyrus* and sweet chestnut *Castanea*, boring deeper to pupate; adults at blossom.

Alosterna tabacicolor (Degeer)* - Larva in old damp rotten stumps of hazel *Corylus*, hornbeam *Carpinus*, maple *Acer campestre* and pine *Pinus*, often boring deeply into sapwood; 2 year cycle; adults at flowers. England and Wales, rarer in north.

Leptura fulva Degeer - **RDB3.** Develops in decaying timber and cut logs, aspen *Populus tremula* and beech *Fagus*, including railway sleepers; adults at flowers.

Leptura rubra Linnaeus – **Naturalised.** Larvae in logs and rotten roots and stumps of conifers; duration of larval stage 2 years; mainly East Anglia, presumed immigrant.

Leptura sanguinolenta Linnaeus - **RDB3**. Larvae in dead conifers, especially fir *Abies* and spruce *Picea* and fire-charred pine *Pinus*; eggs laid below ground level in stumps and boles; adults at flowers; Scottish Highlands & S. England.

Leptura scutellata Fabricius - **Nationally Scarce A.** Old forest areas with many ancient trees; larvae develop deep in the decaying heartwood of sun-exposed stumps, trunks and major boughs of beech *Fagus*, also in oak *Quercus*, birch *Betula*, hornbeam *Carpinus* and sycamore *Acer pseudoplatanus*; adults at hawthorn *Crataegus* blossom.

Leptura sexguttata Fabricius* - **RDB3.** Develops in dead branches of oak *Quercus* and beech *Fagus*; adults most often seen nectaring at flowers of plants such as hogweed *Heracleum* and water-dropwort *Oenanthe*. Very much a relict old forest species, with a scattered distribution across southern Britain, reaching N. Yorkshire in the north, and Merionethshire and N, Devon in the west.

*Anoplodera (*formerly *Leptura) virens* (Linnaeus) – **Extinct.** Authentic 19th century records from Forest of Dean.

Judolia cerambyciformis (Schrank) - Develops in exposed recently dead roots of various trees, especially those up-rooted by storms, and prefers damper undersides; after 2 years pupates in ground quite a few inches deep; especially in wooded valleys and gorges; adults visit flowers; NW & Weald distribution.

Judolia sexmaculata (Linnaeus) - **Nationally Scarce A.** Larva in stumps and old exposed roots of pine *Pinus* and spruce *Picea*; pupates after 2 years in shallow earthen cell near host tree's roots; adult at flowers; Scottish Highlands.

Strangalia attenuata (Linnaeus) – **Extinct.** A few early 19th C records from S. England, and sub-fossil records.

Strangalia aurulenta (Fabricius)* - Hornet Beetle. **Nationally Scarce A**. Larvae in dead and decaying stumps of broad-leaved trees, especially of oak *Quercus*; S and SW species; central and southern Europe; reputedly a relatively mobile species.

Strangalia maculata (Poda)* - Develops in moist rotting wood of stumps and roots of broad-leaved trees and pine *Pinus*, but particularly birch *Betula*; adults at flowers. Throughout Europe.

Strangalia melanura (Linnaeus)* - Larvae in thin, decayed oak *Quercus* branches and in broom *Cytisus* roots; also in other trees.

Strangalia nigra (Linnaeus) - **Nationally Scarce A.** Larval stages undescribed in GB, but probably in broad-leaved trees; adults at flowers.

Strangalia quadrifasciata (Linnaeus)* - Four-banded Longhorn. Develops in dead and decaying stumps, especially birch *Betula*, but also a wide range of other broad-leaved trees, and once in spruce *Picea*; larvae make meandering galleries deep in the sapwood; wood sizes down to 15cm diameter, wet or dry, but dry needed for pupation; adults visit flowers, sun-loving and fly on hot sultry days. Widespread in the British Isles, albeit very thinly so in many areas and most sparingly in Ireland.

Strangalia revestita (Linnaeus) - **RDB1.** Larval habitat not known in GB, but most probably in living oak Quercus branches, and possibly other broad-leaved trees; does not come to blossom; lives in tree canopy; S Midlands & SE England. Widespread on Continent, although has become rarer and more localised even there; develops preferably in trees on the edge of woodlands and open-grown situations such as parks; feed in thinner branches, especially those with damaged bark; also in moist decaying tree stumps.

Cerambyx cerdo Linnaeus – **Fossil.** Fossil evidence for occurrence in Britain up until 3690 +/-100 BP, from Cambridgeshire fenland bog oaks *Quercus*. More recent records have all been casual importations. Widespread throughout Europe but increasingly rare or absent in the north.

Cerambyx scopolii Fuessly - **Extinct Native/Casual Import.** 19th Century records from the London area, and most recently 1902. Possibly a native in south-east England which has become extinct, but equally possibly an introduction with imported timber.

Hesperophanes fasciculatus (Fald.) - **Sub-fossil.** A largely Mediterranean species, known in Britain from 2nd Century AD Roman site in Worcestershire, but presumed to have been imported in timber.

Trinophyllum cribratum Bates – **Naturalised.** Import from India, but possibly established; in well-seasoned oak *Quercus* and other hard- and softwoods.

Gracilia minuta (Fabricius) - Basket Longhorn. **RDB2**. Larvae in dry dead twigs and small branches, incl. bramble *Rubus* canes and wickerwork; flight holes c.2mm and oval; 2 year cycle.

Obrium brunneum (Fabricius) – **Naturalised.** Larvae in dead twigs and branches of pine *Pinus*, spruce *Picea* and larch *Larix*; accidental introduction south of the Thames.

Obrium cantharinum (Linnaeus) – **Extinct.** Larvae in dead wood beneath bark on crab apple *Malus*, aspen and poplar *Populus* spp, possibly also oak *Quercus* and birch *Betula*; annual life cycle and larvae feed under bark, entering sapwood only to pupate; mainly northern outer London area in early 19th century, also Bovey Tracey (1929), but not seen for since.

Nathrius brevipennis (Mulsant)* - **Naturalised.** Established in Britain & Ireland; larva particularly attacks thin growths, such as osier *Salix* beds, dog-rose *Rosa canina* stems, wattle fences, wickerwork; 2 year cycle, pupating in April and May.

Molorchus minor (Linnaeus) – **Naturalised.** 2 year cycle, larvae attacking exposed roots and dead or cut branches of various broad-leaves and conifers; pupae over-winter; adults at blossom.

Molorchus umbellatarum (von Schreber) - **Nationally Scarce A.** Larva in trunks, slender or broken off branches and dead twigs of bramble *Rubus*, crab apple *Malus*, dog-rose *Rosa canina*, guelder rose *Viburnum*, pine *Pinus*, spruce *Picea* and fruit trees (Rosaceae); 2 year cycle; pupae over-winter; adults at blossom.

Aromia moschata (Linnaeus)* - Musk Beetle. **Nationally Scarce B**. Develops in old willows and sallows, *S. cinerea* and *S. alba*, in wetlands and water meadows; larvae and pupae in dead wood of trunks and branches; also alder *Alnus*, poplar *Populus* and other broad-leaved trees; prefers young healthy growths rather than established trees; 3-4 year cycle; larvae can endure flooding for many weeks; pupation in Spring; fly in hot sunshine, and visit blossom.

Hylotrupes bajulus (Linnaeus)* - House Longhorn. **Naturalised.** Established in buildings, in very dry well-seasoned timber, principally conifers; known in GB since 1795.

Callidium violaceum (Linnaeus)* - Violet Longhorn. **Naturalised.** In dead birch *Betula*, pine *Pinus*, oak *Quercus*, etc, but mainly conifers, larvae feeding between bark and sapwood; not on standing timber, but favours milled softwood; 2-3 year cycle.

Pyrrhidium sanguineum (Linnaeus) - **RDB2.** Oviposition on dead oak *Quercus* boughs, crown, felled trunks and stumps; also on other hardwoods; larvae develop in dead wood at bark/sapwood interface; 2-3 years to maturity; adults bask in sun and fly actively under suitable conditions, but not known from blossom. Welsh border counties; southern Europe.

Phymatodes - The larvae feed on bark, phloem and cambium.

Phymatodes alni (Linnaeus) - **RDB?** [**Nationally Scarce B**]. In recently dead or decaying twigs, slender branches and freshly cut palings; various broad-leaved trees; tunnels straight and parallel with grain; 1-2 year cycle, pupating in Spring. Very few modern records although formerly much more widespread.

Phymatodes testaceus (Linnaeus) - Oak Longhorn. Develops in dead branches, dead boles and logs of various broad-leaved trees, also in conifers, but favourite is oak *Quercus*. Eggs laid under bark of recently cut or snapped trunks or boughs; larvae make characteristic borings in the bark and sapwood; 1-3 year cycle, pupating in Spring. Adults crepuscular, and attracted to light and sweet secretions. Widespread in southern Britain, extending into Devon in west and southern Scotland in north. Mainly associated with ancient woodlands and wood pastures.

Clytus arietis (Linnaeus)* - Wasp Beetle. Develops in a variety of dead broad-leaved trees, occasionally in conifers; 2-3 year cycle, pupae over-wintering. Widespread in Britain, but very rare in Ireland.

Plagionotus arcuatus (Linnaeus) – **Extinct.** Probably native at some sites in 19th century, eg Hainault Forest in 1830s, although accidental importations also likely.

Anaglyptus mysticus (Linnaeus) - **Nationally Scarce B.** Develops in boles and branches of dry or fresh hardwoods, especially where fire-scorched; adults attracted to hawthorn *Crataegus* blossom; larvae under bark and in the wood of very dry dead boles and branches; 2 year cycle, pupae over-wintering.

Lamia textor (Linnaeus)* - The Weaver Beetle. **RDB1**. Associated with *Salix*, birch *Betula* and aspen *Populus tremula* in damp woodland, larvae developing in living healthy roots or boles of both young trees and moist decaying old boles; 2-4 year cycle; adults nocturnal, resting by day on trunks and roots, will nibble leaves of host plant.

Mesosa nebulosa (Fabricius) - **RDB3.** Eggs laid on uppermost branches of dead or dying broad-leaved trees; larvae feed in cambial layer initially then bore in sapwood; 2 year cycle; adult forms in Autumn, but remains in pupal cell until following July; rarely descends from topmost branches; not attracted to blossom.

Pogonocherus fasciculatus (Degeer) - **Nationally Scarce B.** Dead branches of pine *Pinus* and spruce *Picea*; centred on Scottish Highlands & has become established in southern pine plantations.

Pogonocherus hispidulus (Piller & Mitterpacher)* - Develops in deadwood of a variety of tree species.

Pogonocherus hispidus (Linnaeus)* - Develops in thin dead branches of a variety of broad-leaved trees; especially in old hedgerows.

Leiopus nebulosus (Linnaeus)* - Larvae bore beneath bark of dead lower branches of oak *Quercus*, also reported from a wide variety of other trees; larvae feed in cambial layer.

Acanthocinus aedilis (Linnaeus) – The Timberman. **Nationally Scarce B**. Infests recently dead pines *Pinus*, larvae developing beneath bark of trunks and branches and appear to take 2 years to develop; pupates in cell within bark or beneath; Scottish Highlands, in old long-established pine woods.

Saperda carcharias (Linnaeus) - **Nationally Scarce A.** Mainly aspen *Populus tremula*, also willows *Salix*, in damp woodland; female lays eggs near base of young trees into gnawed pits.

Saperda populnea (Linnaeus) - Lesser Poplar Longhorn. Egg in soft layer of wood under bark of young branch, forming a characteristic gall in which the larva develops over 2 years; mainly aspen *Populus tremula*, but also *Salix*, other *Populus* spp and hazel *Corylus*.

Saperda scalaris (Linnaeus) - **Nationally Scarce A**. Larvae develop in dead wood, feeding in sapwood; from birch *Betula*, oak *Quercus*, sweet chestnut *Castanea*, beech *Fagus* and alder *Alnus*; larval development takes 2 years; pupation within bark or in cell in sapwood; adults feed on leaves, gnawing ragged holes along the veins.

Oberea oculata (Linnaeus) - **RDB1 & BAP Priority Species.** Eggs laid on smooth bark of twigs and slender stems of living healthy *Salix* and larva bores a straight gallery, 30cm plus in length, in pith channel, or sapwood in wider stems; ejected frass clinging to twigs shows larval presence; adults rest on upper branches, flying actively in sunshine.

Stenostola dubia (Laicharting) - **Nationally Scarce B.** The larvae bore and pupate in the dead branches & twigs of various broad-leaved trees, preferring freshly dead ones and not more than 25mm diameter; usually branches lying on ground. Native lime, especially *Tilia cordata*, seems to be key factor in its presence or absence at a particular site in the western parts of its distribution range, although it will develop in hybrid lime *Tilia vulgaris*; also recorded from alder *Alnus*, elm *Ulmus*, hazel *Corylus*, oak *Quercus*, rowan and whitebeam *Sorbus* spp, and *Salix* branches. The larva feeds initially in the cambial layer, later boring in sapwood; adult feeds on leaves, perforating each leaf, and is a sun-loving insect, basking on the leaves of its tree hosts. Widespread in England and Welsh Borders, but most frequent in band of country from Cotswolds to North York Moors; appears to be confined to ancient woods and wood pastures.

Tetrops praeusta (Linnaeus)* - Probably develops in dead branches; in old hedgerows, fruit trees, etc.

Tetrops starkii Chevrolat – **RDBK.** From oak *Quercus* in Oxfordshire, 1991; also on ash *Fraxinus* in Europe. Develops in decaying or recently dead twigs, adults feeding on the leaves.

Chrysomelidae

Cryptocephalus querceti Suffrian - **RDB2.** Associated with ancient oaks *Quercus* inhabited by brown tree ant *Lasius brunneus*, larvae possibly myrmecophilous; favours open parkland to far greater extent than closed woodland.

Anthribidae - Fungus Weevils

Platyrhinus resinosus (Scopoli) - **Nationally Scarce B.** Larvae develop in the fungus *Daldinia concentrica*, which usually grows on ash *Fraxinus*, and *Hypoxylon fragiforme* on beech *Fagus*; frequent along Jurassic Limestone belt of central England; also on Exmoor, SE England and widely in Yorkshire. Also birches *Betula*

in Spey and Clyde Valleys, where presumably developing in *Daldinia vernicosa*. In ancient woods and wood pastures. Palaearctic.

Tropideres sepicola (Fabricius) - **RDB2.** Larvae develop in decaying branches of oak *Quercus*, hornbeam *Carpinus*, beech *Fagus*, etc, in old primary woods. Central southern and south-eastern England.

Tropideres niveirostris (Fabricius) - **RDB2.** Larvae develop in dead wood of branches of a variety of trees and shrubs, in woods and old neglected hedges. Central southern and south-eastern England.

Platystomos albinus (Linnaeus) - **Nationally Scarce B.** Larvae develop in deadwood on dead and dying trees, also the fungus *Daldinia*, usually in woods. Central southern and eastern England.

Choragus sheppardi Kirby, W.* - **Nationally Scarce A.** Larvae develop in rotten, fungus-infested wood of old ivy *Hedera*, in hedges and woods.

Rhynchophoridae Weevils

Dryophthorus corticalis (Paykull) - **RDB1 & BAP Grouped Species Statement**. At interface of hard oak *Quercus* timber with red-rot, also in beech *Fagus*, and often associated with the ant *Lasius brunneus*; larvae wood-feeders; old relict forest species presently confined to Windsor, but known from Somerset Levels and Thorne Moors in Neolithic.

Curculionidae – Weevils

Hylobius abietis (Linnaeus)* - Associated with Scots pine *Pinus sylvestris*.

Pissodes - The larvae are cambium feeders of various conifers, usually only superficially grooving the sapwood.

Pissodes castaneus (Degeer)

Pissodes pini (Linnaeus)

Pissodes validirostris (Sahlberg,C.R.) - **RDB3.**

Magdalis - The larvae are cambium feeders, usually only superficially grooving the sapwood.

Magdalis armigera (Fourcroy)* - Wood-boring species; female drills hole in dead elm branch and deposits egg inside; adults at flowers; hedgerows & scrubby places. Local in Britain & rare in Ireland.

Magdalis barbicornis (Latreille) - **Nationally Scarce A.** Associated with dead Rosaceous trees and shrubs.

Magdalis carbonaria (Linnaeus)* - **Nationally Scarce B.** Associated with dead birch *Betula*.

Magdalis cerasi (Linnaeus) - **Nationally Scarce B.** Develops in dead boughs and branches, especially of Rosaceae, although has also been found on oak *Quercus*.

Magdalis duplicata Germar - **Nationally Scarce A.** Larvae develop in dead twigs and branches of Scots pine *Pinus sylvestris*; Scotland and Cumbria.

Magdalis memnonia (Gyllenhal) – **Naturalised.** Associated with sickly pines *Pinus*; Sussex & Surrey. Recent establishment.

Magdalis phlegmatica (Herbst) - **Nationally Scarce A.** Associated with dead Scots pine *Pinus sylvestris*; Scotland, Cumbria, Yorkshire.

Magdalis ruficornis (Linnaeus)

Euophryum confine (Broun)* - **Naturalised.** Immigrant New Zealand species, first reported in 1937, now widespread throughout Britain; always found associated with timber where damp and decay evident; appear to have two overlapping life cycles per year, and adults long-lived; flight holes c.1.1mm and ragged outline, and dense channelled galleries in heartwood. Regularly found in cuboidal red rot of fungus *Laetiporus sulphureus* outdoors, but also in wet rot on timbers in buildings.

Euophryum rufum (Broun)* - **Naturalised.** Possibly not a distinct species; first recorded in GB in 1934. A secondary pest of timber in buildings.

Pentarthrum huttoni Wollaston* - Larvae and adults bore into timber which is damp and colonised by fungus; eggs laid in cracks and crevices; pupates 6-8 months after hatching; adults live for about 16 months after emergence; more often in floorboards, etc; hard- and softwoods, but softer layers of wood eaten away first, leaving harder rings untouched; flight holes narrowly oval with a ragged margin; very rare in wild, possibly only in N & W - where sufficiently damp climate. Possibly a long-established alien, as all old records are from wooden casks at West Country ports.

Mesites tardii (Curtis)* - Holly Weevil. **Nationally Scarce B**. Develops in dead heartwood of broad-leaved timber; may initiate decay; bore in cambium and xylem, forming random galleries; flight holes 1.57-3.42mm in diameter. Largely coastal and western, inland localities invariably being relict old forest areas; a few localities on damper eastern coasts, *i.e*. North York Moors and Norfolk.

Cossonus linearis (Fabricius) - **Nationally Scarce A.** Larvae and adults in dead wood of poplar *Populus* and willow *Salix*; discovered in East Anglia in 1939, subsequently also in Kent, Surrey & Sussex; a probable immigrant.

Cossonus parallelepipedus (Herbst) - **Nationally Scarce B.** Larvae and adults in hard decaying heartwood of wide variety of trees, including conifers, but especially willows *Salix*; bore communally in heartwood of trunk & root base. Mainly in floodplains; central and eastern England.

Eremotes elongatus Gyllenhal* - **Fossil.** Fossil evidence for presence in Britain & Ireland up until Bronze Age.

Eremotes punctulatus Boheman – **Fossil.** Fossil evidence for presence in Britain up until Bronze Age.

Eremotes strangulatus Perr. – **Fossil.** Fossil evidence for presence in Britain up until Late Neolithic/Early Bronze Age.

Rhyncolus chloropus (Linnaeus) = *ater* (Linnaeus) - Following the decline of mature pine forest, disappeared from lowland Britain during the late Bronze Age, some 3000 years BP. Now confined to old pine *Pinus* forest areas of Scotland.

Rhyncolus gracilis Rosenhauer – **Extinct.** Larvae and adults in dead wood of beech *Fagus*, birch *Betula* twigs, holly *Ilex*; presumed extinct.

Phloeophagus lignarius (Marsham) - Develop in decayed heartwood of beech *Fagus*, hawthorn *Crataegus*, ash *Fraxinus*, etc. Widespread across lowland England, except in south-west and far north.

Stereocorynes truncorum (Germar) - **Nationally Scarce A.** In damp hard dead timber inside of hollow oak *Quercus*, beech *Fagus* and poplar *Populus*. Confined to ancient wood pastures. Southern and south-eastern England, as far west as Herefordshire.

Caulotrupodes aeneopiceus (Boheman)* - In damp rotten timber of various broad-leaved trees, in coastal woods and other coastal situations; also in driftwood; rare in buildings. Coasts of southern and western Britain.

Pselactus spadix (Herbst)* - **Nationally Scarce B.** In rotten timber, coastal; old groins, driftwood, etc.

Trachodes hispidus Linnaeus) - **Nationally Scarce B.** The larvae develop in rotting small branchwood of oak *Quercus* and various other trees lying on woodland floor in ancient woodlands; mainly in southern and western Britain, but also Sherwood Forest region.

Cryptorhynchus lapathi (Linnaeus)* - **Nationally Scarce B.** Attacks dead trunks of alder *Alnus*, poplar *Populus*, willow *Salix* and birch *Betula*, sometimes even living trees.

Acalles - Larvae probably develop in dead branches. Adults flightless.

Acalles misellus Boheman* = *turbatus* sensu auct.Brit. not Boheman

Acalles ptinoides (Marsham)* - **Nationally Scarce B**. - Confined to primary woodland and old heathland.

Acalles roboris Curtis* - **Nationally Scarce B.**

Scolytidae - Bark Beetles. Species feeding on wood (xylem) and/or phloem are usually restricted to one or a few hosts, whereas those which carry their own symbiotic fungi which break down the xylem (ambrosia beetles) may colonize a larger range of hosts. Many species have been imported in timber and some have become established. A number are more strictly phytophagous, their larvae feeding in the still living inner bark of stressed or moribund stems or branches, but these have been included in the list nonetheless.

Hylesinus crenatus (Fabricius)* - Large Ash Bark Beetle. Chiefly dying ash *Fraxinus*, also oak *Quercus*, walnut *Juglans*, etc; in rather thick bark of trunk.

Hylesinus oleiperda (Fabricius) - Lesser Ash Bark Beetle. In recently dead branches & twigs of ash *Fraxinus*; southern.

Hylesinus orni (Fuchs) - **Nationally Scarce B.** In recently dead slender branches of ash *Fraxinus*; possibly not a distinct species.

Hylesinus varius Fabricius) - Common Ash Bark Beetle. In ash *Fraxinus*; in standing and fallen recently dead trunks and boughs; makes short blind hibernation galleries in crotches of live ash trees, where it is associated with bacterial disease ash rose canker; usually two broods annually, probably only one in north.

Acrantus vittatus (Fabricius) - In recently dead thin-barked elm *Ulmus*, ash *Fraxinus* and lime *Tilia*.

Xylechinus pilosus (Ratzeburg) – **Extinct.** In recently dead conifers, especially pine *Pinus*; old specimens only.

Kissophagus hederae (Schmitt) - **Nationally Scarce B.** Develops in decaying ivy *Hedera* stems on trees.

Phloeosinus thujae (Perris) – **Naturalised.** In recently dead *Cupressus, Thuja* and juniper *Juniperus*; new to GB in 1922; SW London, Surrey & Monks Wood.

Hylurgops palliatus (Gyllenhal)* - **Naturalised.** Develops under bark of dead conifer timber.

Hylastes angustatus (Herbst) - **Naturalised.** Pine *Pinus* and spruce *Picea* associate, long-established in SE England.

Hylastes ater (Fabricius) – **Naturalised.** Common in dead branches, stumps and roots of pine *Pinus*, S England.

Hylastes attenuatus Erichson - **Naturalised.** Pine *Pinus*; Sussex etc.

Hylastes brunneus Erichson* - In dying pine, widely, but mostly northern.

Hylastes cunicularius Erichson* - **Naturalised.** In dead spruce *Picea*.

Hylastes opacus Erichson* - In dead pine *Pinus*, but also elm *Ulmus* and ash *Fraxinus*.

Tomicus minor (Hartig) - Lesser Pine Shoot Beetle. **RDB3.** Mainly in dead Scots pine *Pinus sylvestris*, also in Norway spruce *Picea*; only native in Scottish Highlands, but established in Dorset; tunnels under bark transverse.

Tomicus piniperda (Linnaeus)* - Pine Shoot Beetle. Dead conifers, especially pine *Pinus*; tunnels under bark longitudinal; two broods annually. Widespread.

Polygraphus poligraphus (Linnaeus) - **Naturalised.** Dead pine *Pinus* and spruce *Picea*, E.England.

Scolytus intricatus (Ratzeburg) - Develops under bark of sickly or freshly dead oak *Quercus* boughs and branches; also in sweet chestnut *Castanea* and other broadleaves. Widespread in England and Wales, reaching north to Lothians.

Scolytus laevis Chapuis - In dead and dying wych elm *Ulmus glabra*; probably introduced.

Scolytus mali (Bechstein) - Large Fruit Tree Bark Beetle. **Nationally Scarce B**. Larva in galleries in sapwood just under bark, where it feeds on living timber; mainly pear

Pyrus, cherry *Prunus*, elm *Ulmus* and hawthorn *Crataegus*, also other fruit trees; in orchards, old hedgerows & woods.

Scolytus multistriatus (Marsham)* - Small Elm Bark Beetle. In smaller thinner barked dying branches of various broad-leaved trees.

Scolytus ratzeburgi Janson,E.W. - Birch Bark Beetle. **Nationally Scarce B**. Larvae in stumps of birch *Betula*; Scottish Highlands. Sub-fossil records from Thorne Moors.

Scolytus rugulosus (Mueller,P.W.J.) - Small Fruit Tree Bark Beetle. In *Pyrus, Prunus, Rosa*, etc; may be 3 broods annually; widespread.

Scolytus scolytus (Fabricius)* - Common Elm Bark Beetle. Mainly in *Ulmus*, also other broad-leaved trees; two generations a year; feed on bark of top twigs after emerging from thicker bark.

Dryocoetes alni (Georg) - **Nationally Scarce A.** In freshly dead alder *Alnus*, beech *Fagus*, grey willow *Salix cineraria* and hazel *Corylus* timber; mostly in north of Britain.

Dryocoetes villosus (Fabricius)* - Develops in relatively thick bark of freshly dead oak *Quercus* boughs and trunks; also in sweet chestnut *Castanea* & beech *Fagus*. Widespread in England and Wales, rare in Scotland and Ireland.

Dryocoetes autographus (Ratzeburg)* - **Naturalised.** In dead and dying spruce *Picea*; occasionally reported from other conifers. A well-established species in northern and western Britain and spreading southwards. It first noted in GB in a plantation near Scarborough in 1869.

Crypturgus subcribrosus Eggers – **Naturalised.** Dead and dying spruce *Picea*, in the galleries of *Orthotomicus laricis* and *Polygraphus poligraphus*; New Forest and West Sussex.

Lymantor coryli (Perris) - **RDB1.** In dead dry branches of hazel *Corylus*, also in other broad-leaved trees.

Taphrorychus bicolor (Herbst) - **Nationally Scarce A.** In smaller dead branches and twigs of beech *Fagus* and hornbeam *Carpinus*; south-east England.

Trypodendron - Ambrosia beetles. Life cycle in solid wood; dependent for nourishment upon fungi growing on walls of their galleries.

Trypodendron domesticum (Linnaeus)* - An ambrosia beetle, developing in the sapwood of a wide range of freshly dead broadleaved timber. Adults excavate deep galleries in the sappy timber and feed on the fruiting bodies of fungi cultivated therein. Widespread in British Isles, but largely confined to ancient woodlands and wood pastures.

Trypodendron lineatum (Olivier)* - Conifer Ambrosia Beetle. Dead wood of pine *Pinus*, spruce *Picea*, larch *Larix*, and fir *Abies* in N and W Britain.

Trypodendron signatum (Fabricius) - **Nationally Scarce B.** In dead oak *Quercus* and to a lesser extent beech *Fagus*; ancient wood pastures of northern and western Britain, plus the Weald.

Cryphalus abietis (Ratzeburg) – **Naturalised.** In deadwood of conifers.

Cryphalus asperatus (Gyllenhal)* - **Naturalised.** Develops in dead branches of spruce *Picea*.

Ernoporus caucasicus Lindemann - **Nationally Scarce A**. In bark of dead branches of lime, both *Tilia cordata* and common *T. vulgaris*, but perhaps only in sites where former has been present historically; branches range from 1.5cm to 5cm girth; often restricted to one or small group of trees; a relict Wildwood species hanging on in areas of old parkland. Midlands; and found on mid-Holocene sites as far apart as London and Thorne, south Yorkshire. Neolithic records from Somerset Levels. Numbers sufficiently reduced by early Bronze Age to disappear from the fossil record.

Ernoporus fagi (Fabricius) - **Nationally Scarce A.** Mainly in freshly dead beech *Fagus* boughs, also oak *Quercus* and birch *Betula* ; ancient woodlands and wood pastures. Central and south-eastern England, reaching over Welsh border in Denbighshire.

Ernoporus tiliae (Panzer) - **RDB1 & BAP Priority Species.** Freshly dead *Tilia cordata*.

Trypophloeus binodulus (Ratzeburg)

Trypophloeus granulatus (Ratzeburg) – **Extinct.** In freshly dead *Populus*; one old example from Surrey.

Xyleborus dispar (Fabricius) - Shot-hole Borer or Pear-blight Beetle. **Nationally Scarce B.** Various broad-leaved trees, in freshly dead timber, including young trees and especially those oak *Quercus* and birch *Betula* killed by heath fires; also once reported in pines *Pinus*; often in old orchards. An ambrosia beetle. Widely in lowland England, but absent from west.

Xyleborus dryographus (Ratzeburg) - **Nationally Scarce B.** Mainly freshly dead oak *Quercus* and sweet chestnut *Castanea*, also beech *Fagus* and elm *Ulmus*. Southern and south-eastern England; also Carmarthenshire.

Xyleborinus saxeseni (Ratzeburg) - Galleries within thick bark of freshly dead or dying oak *Quercus*, beech *Fagus*, sweet chestnut *Castanea*, and other trees, including conifers on mainland Europe, in October, and in sapwood in small diameter branches of same hosts except beech *Fagus*, in May. Over-winters as adult, under bark. An ambrosia beetle. Lowland England.

Pityophthorus lichtensteini (Ratzeburg) - **RDB3.** Dead pine *Pinus* twigs in Speyside and Deeside.

Pityophthorus pubescens (Marsham)* - Pine *Pinus* and spruce *Picea*; in small dead stems of less than 1cm diameter.

Pityogenes bidentatus (Herbst)* - Pine *Pinus* and spruce *Picea*; in small dead thin-barked branches; widespread.

Pityogenes chalcographus (Linnaeus) - Conifers, widely but rare.

Pityogenes quadridens (Hartig) - **Nationally Scarce A.** Conifers in Highlands and northern England; early to mid Holocene as far south as Nottinghamshire. Develops in small thin-barked dead pine *Pinus* twigs.

Pityogenes trepanatus (Nordlinger) - **Nationally Scarce A.** Scots pine *Pinus sylvestris* and other conifers, spreading from Highlands with plantations, *e.g*. SE England 1951, Suffolk 1970, Norfolk 1973.

Ips acuminatus (Gyllenhal) - Pine *Pinus* and larch *Larix* in north; Caledonian pine forests.

Ips cembrae (Heer) – Larch *Larix*, spruce *Picea* and pine *Pinus*; Scotland.

Ips sexdentatus (Boerner) – Pine *Pinus*; established in Dean; also in Scotland.

Ips typographus (Linnaeus) - Spruce Bark Beetle.

Orthotomicus erosus (Wollaston) – **Naturalised.** Mediterranean species established in Forest of Dean in pine *Pinus*; no recent records.

Orthotomicus laricis (Fabricius)* - Under bark of dead conifers, chiefly pine *Pinus*.

Orthotomicus suturalis (Gyllenhal) - Pine *Pinus* and spruce *Picea* in Highlands and has spread south with softwood forestry: Berkshire, Wiltshire, Surrey, Hampshire.

Dendroctonus micans (Kugelann) - Great Spruce Bark Beetle. **Naturalised.** A solitary coloniser of live spruce *Picea*, not associated with any fungal pathogens, does not use aggregation pheromones, and co-exists with the living host during its whole life cycle, *i.e*. a true parasite; established in Welsh border counties.

Platypodidae

Platypus cylindrus (Fabricius) - Oak Pinhole Borer. **Nationally Scarce B**. Strongly attracted to smell of fermenting sap, arriving at freshly split or felled timber; male appears first and bores into a crack or crevice, female arriving later and entering tunnel; both emerge to mate, then female continues boring, producing white & splintery bore-dust, and eggs laid in main tunnels; larval period 1 year normally, and graze on lining of tunnel which is composed of small fragments of wood on which the fungal growth occurs; adults and larvae in galleries extending deep into heartwood, feeding on fungi

cultured in borings; mainly oak *Quercus*, but also beech *Fagus* and other broad-leaved trees. Widespread in southern England and Wales, but absent from far south-west.

Platypus parallelus (Fabricius) – **RDBI**. Presently expanding its Oriental range; W Kent: only three specimens known - 1832, 1973, 1983, presumed to be only casual imports.

Hymenoptera

SYMPHYTA - Sawflies

Xiphydriidae - The larvae bore in wood of broad-leaved trees; development is within a year; pupation in chamber below sapwood; dependent on the presence of a symbiotic fungus in the tunnels.

Xiphydria camelus (Linnaeus) - Oviposit through bark of recently dead branch of streamside alder *Alnus* or birch *Betula*, eggs deposited in cambial layer; larva tunnels in wood for 10 months; circular flight holes; rare & local.

Xiphydria longicollis (Geoffroy) – [**pRDBK**]. Has been reared from fallen field maple *Acer campestre* branch, Windsor Forest; also at Maidenhead & Wisley.

Xiphydria prolongata (Geoffroy) - Larvae develop in woody stems of willows *Salix*; adults emerge from mid June to mid August; oviposition in bark of fresh willow logs; larvae initially bore in cambial layer, then in superficial sapwood. Rare & local, mostly SE England, as far N as Nottinghamshire.

Siricidae - The larvae bore in standing or freshly cut timber; males spend lives in tree tops where mate; females lay eggs into borings; larvae tunnel in wood for 2-4 years, but if wood cut & dried take longer; pupate below sapwood; abdominal sacs with spores of *Amylostereum areolatum*, which are injected into tree during oviposition.

Tremex columba (Linnaeus) – **Casual/ Importation**. Bores in *Acer*, oak Quercus, elm Ulmus, etc; N. American sp., only in imported wood.

Xeris spectrum (Linnaeus) - Lacks fungal spore sacs & only oviposits in trees previously colonised by other siricids; has been reared from larch *Larix* in Hants, and an occasional import.

Uroceras gigas (Linnaeus) - Holarctic species established in GB, possibly native in Caledonian forest areas; bore conifers.

Sirex noctilio Fabricius – **Naturalised**. Holarctic species established in GB; bores conifers.

Sirex cyaneus Fabricius – **Naturalised**. Holarctic species established in S. England & Scotland, American in origin; bores conifers.

Sirex juvencus (Linnaeus) – Holarctic species established in GB; possibly native.

Cephidae

Janus femoratus (Curtis) - Larvae develop in oak *Quercus* twigs; SE of Wash/Severn line.

PARASITICA - Parasitic Wasps. Approx 5500 species in total, and very diverse in biology; these are particularly under-studied and the following is almost certainly only a poor representation of the total fauna.

ICHNEUMONOIDEA - Exclusively parasitic (parasitoids).

Ichneumonidae

Ichneumonidae: Pimplinae - The majority are ectoparasitoids of immature Lepidoptera, Coleoptera, Hymenoptera, Diptera or Arachnida, while some are pseudo-parasitoids of spider egg sacs, and one group are endoparasitoids in endopterygote pupae and prepupae. Several species are hyperparasitic, often facultatively, and a few are cleptoparasitic on other pimplines. (Fitton et al, 1988).

Ephialtes manifestator (Linnaeus)* - Hosts are rather deeply concealed in long dead and sometimes rotten wood, and it has on several occasions been observed probing old emergence holes of wood-boring beetles in dead trees and fence posts. This suggests that aculeate Hymenoptera may be among the regular hosts, as is borne out by the rearing of a single male from the digger wasp *Trypoxylon* sp. A specimen is also claimed to have been reared from the longhorn beetle *Callidium violaceum*. Uncommon; southern England and Wales; Co Kerry. (Fitton et al, 1988).

Dolichomitus agnoscendus (Roman)* - Has been reared from the weevil *Mesites tardii*, from dead *Rosa* stems, and alder *Alnus* logs. Rare, but widely distributed. (Fitton et al, 1988).

Dolichomitus diversicostae (Perkins) - Has been reared from the longhorn beetle *Acanthocinus aedilis* in pine *Pinus*; rare, northern Scotland (Fitton et al, 1988).

Dolichomitus imperator (Kriechbaumer) - Circumstantial evidence that the hosts are in long dead timber, such as the longhorn beetle *Rhagium*, but one also found in the borings of *Arhopalus rusticus* in recently dead pine *Pinus*. In Scotland often in relict Caledonian pine forest, but also in the ancient birch *Betula* woods of the extreme north and west. Also reported from Hampshire. (Fitton et al, 1988).

Dolichomitus mesocentrus (Gravenhorst) - Appears to be associated principally with beetle hosts in dead oak *Quercus* and beech *Fagus*. Uncommon, but widely distributed in southern Britain. (Fitton et al, 1988).

Dolichomitus messor (Gravenhorst) - One specimen supposedly reared from the clearwing moth *Synanthedon vespiformis* in Herefordshire (Fitton et al, 1988). Reported to be parasitic on the longhorn beetles *Lamia textor, Mesosa nebulosa*.

Dolichomitus populneus (Ratzeburg) - Has mostly been reared from the longhorn beetle *Saperda populnea*, but also from the clearwing moth *Synanthedon flaviventris* and the micro *Lampronia fuscatella*. These hosts all cause galls in small branches and twigs, respectively of *Populus*, *Salix* and *Betula*. Uncommon; widely in southern England. (Fitton et al, 1988).

Dolichomitus pterelas (Say)* - Reared once from the longhorn beetle *Stenostola ferrea*. Southern England, rare; Co Kerry. (Fitton et al, 1988).

Dolichomitus terebrans (Ratzeburg) - Has often been reared as a parasitoid of the large weevils in pine *Pinus* bark *Pissodes castaneus* and *P.pini*; and has become a regular parasitoid of the recently established bark beetle *Dendroctonus micans* in spruce *Picea*. Uncommon, but widely distributed among conifers throughout Britain. (Fitton et al, 1988).

Dolichomitus tuberculatus (Geoffroy)* - Reared from the bark weevil *Hylobius abietis*, the longhorns *Acanthocinus aedilis* and ?*Rhagium mordax*, and more doubtfully from the clearwing moth *Synanthedon culiciformis*; from conifers and *Betula*. Uncommon but widely distributed in GB and Ireland. (Fitton et al, 1988).

Townesia tenuiventris (Holmgren) - In Finland reared from the bee *Chelostoma florisomne* and less often from the digger wasp *Trypoxylon figulus* nesting in dead wood. Rare, but widely distributed in southern England. (Fitton et al, 1988).

Paraperithous gnathaulax (Thomson) - It is suggested that it probes for hosts pupating beneath partly loose bark. Rare, but widely distributed, in Scotland and to a lesser extent southern England. (Fitton et al, 1988).

Liotryphon spp - Use their ovipositors to probe bark crevices, etc, or to penetrate the weak, prepared exit sites of insects with non-mandibulate adults (eg moths) pupating in bark and wood, rather than to drill through bark. They are not therefore part of the saproxylic fauna. (Fitton et al, 1988).

Afrephialtes cicatricosa (Ratzeburg) - Reared from the clearwing moth *Synanthedon formicaeformis* in sallow *Salix* branches. Rare; Dorset. (Fitton et al, 1988).

Perithous scurra (Panzer)* - Hosts are aculeates nesting in standing timber with soft rotten wood, such as the digger wasp *Pemphredon*. Moderately common and widespread. (Fitton et al, 1988).

Pseudorhyssa alpestris (Holmgren) - Mostly reared from the woodwasp *Xiphydria camelus*; a cleptoparasite, using the oviposition drill hole left by the pimpline wasp *Rhyssella approximator* to reach the host larva. Rare, known from only six localities in central southern England. (Fitton et al, 1988).

Poemenia collaris (Haupt) - Reared from a piece of dead elder *Sambucus* containing nests of the digger wasp *Passaloecus eremita* and borings of the beetle ? *Ptilinus pectinicornis*; Aylesford Kent. On the Continent reared from *Passaloecus corniger*. (Fitton et al, 1988).

Poemenia hectica (Gravenhorst)* - No host records but associated with deadwood. Southern England & Killarney. (Fitton et al, 1988).

Poemenia notata Holmgren - Associated with the digger wasp *Passaloecus eremita*; Kent. (Fitton et al, 1988).

Deuteroxorides elevator (Panzer) =*albitarsus* (Gravenhorst)* - Hosts are wood-boring beetles, especially longhorn beetles, but also the weevil *Mesites tardii.* Southern England and Co Wicklow. (Fitton et al, 1988).

Podoschistus scutellaris (Desvignes) - No host records, but collected on standing dead oak *Quercus* with longhorn beetles. Southern England and Wales. (Fitton et al, 1988).

Rhyssa persuasoria (Linnaeus)* - Parasitoid of wood wasps Siricidae inhabiting conifers; uncommon, but widely distributed in GB and Ireland. (Fitton et al, 1988)..

Rhyssella approximator (Fabricius) - Parasitoid of the *Xiphydria* woodwasps. Uncommon; widely distributed in England and Scotland. (Fitton et al, 1988).

Ichneumonidae: Xoridinae - The larvae feed as external parasites of immature stages of wood-boring beetles.

Ischnoceros caligatus (Gravenhorst) - Uncommon; lowland England.

Ischnoceros rusticus (Geoffroy) - On various longhorn beetles; has been taken in cell of *Rhagium inquisitor*; fairly common & widespread.

Odontocolon dentipes (Gmelin) - On longhorn beetles; uncommon, Inverness & Ireland.

Odontocolon quercinum (Thomson) - On wood-boring weevils, possibly also scarabaeid beetles; rare: Devon & Berks.

Xorides brachylabis (Kreichbaumer) - Parasite of longhorn beetles, incl. those in spruce *Picea* timber; rare: Lowland England.

Xorides csikii Clement - One Surrey record.

Xorides fuligator (Thunberg) - Fairly common over England & Wales.

Xorides gravenhorstii (Curtis) - On longhorn beetles; uncommon, S England.

Xorides irrigator (Fabricius) - Parasite of *Mesosa nebulosa* & other longhorn beetles; Ofxordshire.

Xorides niger (Pfeffer) - Rare, Berkshire.

Xorides praecatorius (Fabricius) - Reported to be parasite of *Leiopus nebulosus* & other oak *Quercus* longhorns; uncommon: S England to Herefordshire.

Xorides rufipes (Gravenhorst) - One Oxfordshire record.

Xorides rusticus (Desvignes) - One record Bewdley, Wyre Forest.

Xorides securiformis (Holmgren) - Reported to be a parasite of the longhorn *Leiopus nebulosus.*

Ichneumonidae: Phygadeuontinae

Cubocephalus brevicornis (Taschenberg) - Has been taken in burrows of the longhorn beetle *Tetropium gabrieli* in larch *Larix* timber.

Ichneumonidae: Banchinae

Lissonota distincta Bridgman - Has been reared from bracket fungus *Inonotus hispidus* full of *Orchesia micans* beetle larvae, although said to develop in moth larvae.

Ichneumonidae: Campopleginae

Rhimphoctona melanura (Holmgren) - Reported to be a parasite on the longhorn beetle *Mesosa nebulosa*.

Nemeritis caudatula Thomson - Reported to be a parasite of *Raphidia* snakeflies.

Ichneumonidae: Cremastinae

Dimophora robusta Brischke - Reported to be a parasite of the beetle *Anobium punctatum*.

Cremastus spectator Gravenhorst - Has been reared from the bracket fungus *Inonotus hispidus* full of *Orchesia micans* beetle larvae.

Ichneumonidae: Tersilochinae

Probles gilvipes (Gravenhorst) - Reported to be a parasite of the beetle *Orchesia micans*.

Ichneumonidae: Metopiinae

Hypsicera curvator (Fabricius) - Has been taken emerging from burrows of the beetle *Anobium punctatum*.

Ichneumonidae: Orthocentrinae

Orthocentrus fulvipes Gravenhorst - Reported to be a parasite of the longhorn beetle *Leiopus nebulosus*.

Braconidae

Braconidae: Doryctinae - The majority of British genera are ectoparasitoids of beetle larvae that live beneath bark or in dead wood. Mostly the hosts appear to be attacked as well-grown and actively feeding larvae. The adult females use the ovipositor to penetrate the substrate to oviposit on or near the host. In most cases the host is probably stung and paralysed first. (Shaw & Huddleston, 1991; Shaw & Quicke, 1999).

Doryctes leucogaster (Nees) - Reported to be a parasite of *Anobium* beetles; has also been found in burrows of *Bostrychus capucinus* in imported timber.

Doryctes pomarius Reinhard - Reported to be a parasite of the longhorn beetle *Leiopus nebulosus*.

Doryctes striatellus (Nees) - Has been taken in burrows of the beetle *Ernobius mollis*.

Wachsmannia spathiformis (Ratzeburg) - Reported to be a parasite of *Anobium* beetles.

Dendrosoter protuberans (Nees) - Has been reared from burrows of *Tomicus* beetles in larch *Larix* timber.

Spathius curvicaudis - A specialist parasite on bark-inhabiting buprestid beetles; reared in Britain twice from *Agrilus pannonicus*.

Spathius exarator (Linnaeus)* - The commonest and most regular parasite of *Anobium* beetles, occurring in most infested timbers.

Spathius rubidus (Rossius)* - Reported to be a parasite of *Anobium* beetles.

Hecabolus sulcatus Curtis - Has been observed ovipositing in borings of the beetle *Lyctus brunneus.*

Braconidae: Braconinae - Ectoparasitoids of concealed hosts, usually concentrating attack on the actively feeding late larval instars. Most inject venoms that induce long-term paralysis of the host before they oviposit on or near to it. However, some species

leave the host in a condition in which it can resume activity, becoming quiescent only some days later. (Shaw & Huddleston, 1991).

Bracon spp - The overall host range is very wide although many species are quite narrow niche specialists.

Bracon caudatus Ratzeburg - Has been reared from pupae of the bark beetle *Hylesinus fraxini*.

Bracon ratzeburgi Dalle Torre - Has been reared from pupae of the bark beetle *Hylesinus fraxini*.

Coeloides - Moderately common parasitoids of various bark inhabiting beetles (Scolytidae and Curculionidae). Five species are listed as British (Shaw & Quicke, 1999; Shaw, 2000).

Coeloides abdominalis (Zetterstedt) - A parasitoid of relatively large scolytids in rather thick pine *Pinus* bark, but appears capable of feeding on other beetles in this or similar substrates.

Coeloides filiformis Ratzeburg - Widespread in southern England; particularly a parasitoid of scolytid beetles of the genus *Leperisinus* developing in ash *Fraxinus* bark, but recorded also from other beetles in the same substrate.

Coeloides melanotus Wesmael - Possibly a specialist on *Leperisinus* bark beetles developing in ash *Fraxinus* bark.

Coeloides scolyticida Wesmael - A parasitoid of bark beetles developing in elm *Ulmus* bark, and can become locally common during outbreaks of Dutch elm disease.

Coeloides sordidator (Ratzeborg) - A parasitoid of beetles feeding in pine *Pinus* bark, especially *Pissodes* weevils; discovered in Norfolk 1983-85.

Braconidae: Histeromerinae

Histeromerus - Parasitoids of wood or fungus inhabiting beetle larvae or pupae of various families (Shaw & Huddleston, 1991).

Histeromerus mystacinus Wesmael* - A gregarious ectoparasitoid of wood-boring beetle larvae and pupae; reared from larvae and pupae of *Leptura scutellata* feeding in dead alder *Alnus* in southern England; rare. Females tunnel through beetle-infested wood to find their hosts; the host is paralysed prior to oviposition, and the female remains with it while the brood develops (Shaw, 1995).

Braconidae: Rogadinae - Wood-decay species are ectoparasitoids (Shaw & Huddleston, 1991).

Chremylus have been reared from beetle-infested wood, as well as from clothes moths (Shaw & Huddleston, 1991).

Pambolus reared from beetle-infested wood as well as from Chrysomelidae (Shaw & Huddleston, 1991).

Rhyssalus indagator (Haliday) - Has been reared from cocoons found under bark of fallen oak *Quercus* branches**.**

Braconidae: Helconinae - Hosts of the tribe Helconini appear to be larvae of Cerambycidae, and perhaps other wood-boring beetles. Endoparasitoids. (Shaw & Huddleston, 1991).

Helconidea annulicornis (Nees) - Has been found to be a parasite on the longhorn *Mesosa nebulosa*.

Helconidea dentator (Fabricius)

Helconidea ruspator (Linnaeus) - Has been found to be a parasite on the longhorn *Strangalia quadrifasciata*.

Helcon tardator Nees - Has been found as a parasite of the longhorn *Leiopus nebulosus*.

Diospilus ephippium (Nees) - Has been found parasitic on the anobiid beetles *Dorcatoma serra* and *D.dresdensis*.

Braconidae: Meteorinae

Meteorus - Some species exclusively attack larval beetles in wood or tree bark, or in arboreal bracket fungi; others attack micro-moth larvae in bracket fungi on trees. Most, however, are endoparasitoids of lepidopteran larvae. (Shaw & Huddleston, 1991)

Meteorus obfuscatus (Nees) - Has been found as a parasite of the fungus beetle *Orchesia micans*.

Meteorus profligator (Haliday)* - Has been reared from *Cis boleti* in Ireland (O'Connor et al, 1999).

Meteorus tabidus (Wesmael)* - Has been found as a parasite of the longhorn beetle *Leiopus nebulosus*.

Braconidae: Cenocoeliinae - Endoparasitoids of wood or bark boring beetle larvae, killing the host only after it has prepared for pupation and completing their feeding externally. A cocoon is then spun within the host's pupation cell or gallery. (Shaw & Huddleston, 1991)

Cenocoelius aartseni (van Achterberg) - Has been reared from logs with the longhorns *Grammoptera ruficornis, Pogonocherus hispidus* and *Tetrops praeusta* at Silwood Park, Berkshire; also known from New Forest and Highmeadow Woods, Glos (Shaw, 1999)

Cenocoelius analis (Nees) - Reared from hawthorn *Crataegus* and rowan *Sorbus* twigs with the longhorn *Tetrops praeusta* at Silwood Park, Berkshire (Shaw, 1999). Also known from: Chippenham Fen, Cambridgeshire; Santon Downham, Norfolk; and Pamber Forest, Hampshire.

Lestricus secalis (Linnaeus) - Doubtfully British. A northerly species in Europe and has been recorded from cerambycid and other beetle hosts that feed in the bark or wood of conifers, including the native pine *Pinus* wood speciality longhorn *Pogonocherus fasciculatus* (Shaw, 1999).

Braconidae: Alysiinae

Asobara tabida (Nees)* - Parasitoid of *Drosophila* fruit flies including those associated with fungi.

*Tanycarpa bicolor** - Parasitoid of *Drosophila* fruit flies including those associated with fungi.

Tanycarpa punctata - Parasitoid of *Drosophila* fruit flies including those associated with fungi.

EVANIOIDEA

Aulacidae

Aulacus striatus Jurine - A parasite of *Xiphydria* sawflies.

CYNIPOIDEA

Eucoilidae - Parasitoids of *Drosophila* fruit flies including those associated with fungi. Internal parasites of the larvae and emerge from the puparia (Quinlan, 1978).

Kleidotoma dolichocera Thompson*

Kleidotoma elegans Cameron - Once taken from a *Hylurgops* (Scolytidae) gallery (Quinlan, 1978).

Ibaliidae: Ibaliinae - Internal parasites of siricid wood wasps in timber (Fergusson, 1986).

Ibalia leucospoides (Hochenwarth) - Host: Siricidae in Pinaceae; widespread.

Ibalia rufipes Cresson - Host: Siricidae in Pinaceae; rare.

CHALCIDOIDEA

Chalcididae

Neochalcis fertoni - Believed to be a parasitoid of aculeata Hymenoptera nesting in twigs and stems; Norfolk (Askew, 1992b).

Eurytomidae

Eurytoma arctica Thomson - Has been reared from pupae of the ash *Fraxinus* bark beetle *Hylesinus fraxini.*

Eurytoma nodularis – in GB??. Reported as a parasitoid of *Passaloecus corniger* wasps elsewhere in Europe.

Perilampidae

Perilampus micans Dalman - Has been reared from *Lyctus* beetle larvae (Ferrière & Kerrich, 1958).

Pteromalidae: Cleonyminae include species parasitic on insect larvae in concealed situations, including deadwood and leaf-mines.

Cleonymus laticornis Walker* - Parasitic on deadwood Coleoptera; has been reared in England from the longhorn beetle *Molorchus minor*. Widely distributed in Europe. (Graham 1969).

Cleonymus obscurus Walker - Has been reared in France from the elm *Ulmus* bark beetle *Scolytus scolytus*.(Graham 1969).

Macromesinae

Macromesus amphiretus Walker – Most recorded hosts are Scolytidae on Coniferae on the Continent, where it is widely scattered. The only reported British host is however *Phloeophthorus rhododactylus* on broom *Cytisus scoparius*. A rare and very localised species in Britain: Wytham Wood (Berks), Romsey (S. Hants) and Silwood Park (Berks) (Askew & Shaw, 2001).

Spalangiinae

Spalangia crassicornis Boucek - Hosts are myrmecophilous Diptera associated with the ant *Lasius fuliginosus*.(Graham 1969).

Cerocephalinae

Cerocephala cornigera Westwood - Has been found in Poland as a parasite of the ash *Fraxinus* bark beetle *Leperesinus orni*. (Graham 1969).

Cerocephala rufa (Walker) - Has been reared in central Europe from Anobiidae, *Agrilus* and *Xylocleptes*. Possibly a secondary parasite through *Spathius exarator* (L.) (Braconidae). (Graham 1969).

Theocolax formiciformis Westwood* - Well known as a parasite of *Anobium* spp; and has been said to attach *Leperesinus fraxini*, but this may be erroneous. (Graham 1969).

Miscogasterinae

Trigonoderus cyanescens (Forster) - Biology unknown (Graham 1969).

Trigonoderus filatus Walker - Has been reared in Sweden from the longhorn beetle *Pogonocherus hispidus*.(Graham 1969).

Trigonoderus princeps Westwood* - Has been reared in Sweden from *Scolytus ratzeburgi*. (Graham 1969).

Trigonoderus pulcher Walker - Biology unknown (Graham 1969).

Plutothrix acuminata (Thomson)

Plutothrix cisae Hedqvist - Probably a parasite of the beetle *Cis boleti* (Graham 1969).

Plutothrix coelius (Walker)* - Has been reared from the beetle *Anobium punctatum* in southern England & Ireland (Graham 1969); widespread in Europe.

Plutothrix obtusiclava Graham - Silwood Park, Berkshire, on alder *Alnus* (Graham, 1993)

*Plutothrix bicolorata (*Spinola*)* syn. *scenicus* (Walker)* - Has been reared with the beetle *Anobium punctatum* from gorse *Ulex* stems on Scilly (Graham 1969); widespread in England.

Plutothrix trifasciatus (Thomson) - Biology unknown (Graham 1969).

Janssoniella ambigua Graham - Has been reared from polypore fungi on Continent.(Graham 1969).

Janssoniella caudata Kerrich - Has been reared from polypores, including *Trametes versicolor* on the Continent (Graham 1969); ? associated with *Cis* beetles.

Platygerrhus affinis (Walker) - Has been reared from *Anobium punctatum* (Graham 1969).

Platygerrhus ductilis (Walker)* - Has been taken from burrows of *Ips suturalis* in spruce *Picea* bark, and probably reared from the beetle *Anobium punctatum* (Graham 1969).

Platygerrhus longigena Graham* - Biology unknown (Graham 1969).

Platygerrhus subglaber Graham - Reared from alder *Alnus* logs in Norfolk (Graham 1969).

Platygerrhus tarrha (Walker) - Biology unknown (Graham 1969).

Platygerrhus unicolor Graham - Reared from alder *Alnus* logs in Norfolk; also pine *Pinus* on Continent (Graham 1969).

Pteromalinae

Dinotiscus - These are chiefly parasitic on bark beetles (Scolytidae)(Askew, 1992a).

Dinotiscus aponius (Walker) - Parasite of *Scolytus rugulosus*, *S.multistriatus*, *S.ratzeburgi* and the ash bark beetle *Hylesinus fraxini*. North-west and central Europe.(Graham 1969).

Dinotiscus colon (Linnaeus) - Parasite of *Blastophagus piniperda, B.minor* and *Ips acuminatus*. (Graham 1969).

Dinotiscus eupterus (Walker) - Parasitic on several species of Scolytidae, primarily conifer associates.(Graham 1969).

Rhopalicus - These are chiefly parasitic on bark beetles (Scolytidae)(Askew, 1992a).

Rhopalicus brevicornis Thomson - Parasite of various conifer Scolytidae.

Rhopalicus guttatus (Ratzeburg) - Reared in Sweden from *Pissodes validirostris* (Curculionidae) (Graham 1969).

Rhopalicus tutela (Walker)* - Widely distributed in Europe; a common parasite of a number of genera and species of Scolytidae; also recorded from *Pissodes* (Curculionidae) (Graham 1969).

Acrocormus semifasciatus Thomson - Reared in Sweden from *Scolytus intricatus*; in Bohemia from *Magdalis armigera* in elm *Ulmus* twigs; in Slovakia from *Hylesinus toranio* on ash *Fraxinus*; in England from *Acrantus vittatus* on elm *Ulmus*. (Graham 1969).

Cheiropachus - These are chiefly parasitic on bark beetles (Scolytidae)(Askew, 1992a).

Cheiropachus quadrum (Fabricius) - Has been found parasitic on many species of Scolytidae (Graham 1969).

Rhaphitelus - These are chiefly parasitic on bark beetles (Scolytidae)(Askew, 1992a).

Rhaphitelus maculatus Walker - Recorded widely in Europe and North America as a parasite of various Scolytidae (Graham 1969).

Metacolus azureus (Ratzeburg) - A parasitoid of the bark beetle *Pityogenes* on *Pinus* (Askew, 1992a).

Pandelus flavipes (Förster) - A parasitoid of the beetle *Ptilinus* (Askew, 1992a).

Roptrocerus brevicornis Thomson - A parasitoid of the bark beetle *Pityogenes* on *Pinus* (Askew, 1992a).

Roptrocerus mirus (Walker) - Parasite of Scolytidae; reared in GB from *Myelophilus piniperda*, and in Sweden from *Ips typographus* (Graham 1969).

Roptrocerus xylophagorum (Ratzeburg) - Widely distributed in Europe and reared from many Scolytidae (Graham 1969).
Xiphydriophagus meyerinckii (Ratzeberg) - Parasitic on *Xiphydria* sawflies (Graham 1969).
Habritys brevicornis (Ratzeburg)* - Parasitic chiefly on crabronid wasps (Sphecidae) including *Coelocrabro ambiguus* in a dead willow *Salix* (Graham 1969).
Perniphora robusta Ruschka - Parasite of *Trypodendron domesticum* and other species of that genus; *Xyleborus* spp, etc ; larva lives as an ectoparasite on the host (Graham 1969).
Endomychobius endomychi (Walker) - A parasite of the larvae of the beetle *Endomychus coccineus* (Graham 1969).
Dinotoides tenebricus (Walker) - Reared in Czechoslovakia from twigs of *Malus silvestris* with *Magdalis ruficornis*, *Tetrops praeusta* and *Scolytus* sp.; also recorded from *Magdalis barbicornis* in Sardinia (Graham 1969).
Ablaxia anaxenor (Walker)* - Biology unknown (Graham 1969).
Ablaxia megachlora (Walker) - Biology unknown (Graham 1969).
Ablaxia parviclava (Thomson) - Biology unknown (Graham 1969).
Ablaxia squamifera (Thomson) - Has been reared in England in association with wood-boring beetles (*Magdalis*, *Scolytus*, etc) (Graham 1969).
Ablaxia temporalis Graham - Biology unknown.
Aggelma spiracularis (Thomson) - Biology unknown, but related species are parasites of *Agrilus viridis* and *Magdalis violacea* (Graham 1969).
Holcaeus spp. - biology unknown but taxonomically very close to *Cricellius* (Graham 1969).
Holcaeus calligetus (Walker)
Holcaeus compressus (Walker)
Holcaeus gogasus (Walker)
Holcaeus stenogaster (Walker)
Holcaeus stylatus Graham
Holcaeus varro (Walker)
Cricellius - a non-British species has been reared from lime *Tilia* twigs attacked by insect larvae (Graham 1969).
Cricellius gracilis (Walker) - Local, in woods, particularly in shady areas (Graham 1969).
Cricellius repandus Graham
Kaleva corynocera Graham - Reared with *Spilomena troglodytes* from the decayed branch of an old oak *Quercus* in Norfolk (Graham 1969).
Karpinskiella pityophthori Boucek - A parasitoid of various Scolytidae beetles, especially *Pityogenes* (Askew, 1992a).

Cratominae

Cratomus megacephalus (Fabricius) - Biology unknown, but associated with old wood and palings (Graham 1969).

Calosotinae

Calosota aestivalis Curtis syn. *vernalis* Curtis* - A parasite of the beetle *Anobium punctatum*; has been observed ovipositing in burrows of *Ptilinus pectinicornis*, and taken in burrows of *Priobium castaneum*.

Eulophidae

Astichus arithmeticus (Forster) - Parasitic upon beetles in bracket fungi (Askew, 1968); has been taken in a slime mould in which *Sphindus dubius* developing; also reared from *Cis micans*. Known from south and midland England.
Astichus solutus Forster - A parasite of *Cis* spp. beetles. Berkshire. (Askew, 1968).

Entedon ergias Walker - Has been reared from borings of the bark beetle *Scolytus mali* in apple *Malus* and *S.multistriatus* in elm *Ulmus*.

Tetrastichus brachyopae - A parasitoid of *Brachyopa* hoverfly larvae, discovered in Britain in 1993.

PROCTOTRUPOIDEA

Proctotrupidae

Phaenoserphus calcar (Haliday) - Has been reared from subcortical beetle *Bolitochara obliqua*; internal parasite of larva.

Brachyserphus parvulus (Nees) - Parasite of the beetle *Orchesia micans*.

Diapriidae: **Belytinae** - Hosts little known, probably mostly Diptera, a few have been reared from Mycetophilidae in rotting fungi.

Rhynchopsilus donisthorpei (Nixon) - Has been found in nests of the ant *Lasius brunneus* in Windsor Forest (Nixon, 1957).

Acanosema reitteri Kieffer - Has been found with brown tree ant *Lasius brunneus* in Windsor Park (Nixon, 1957).

Acanosema nervosa (Thomson) - Has once been taken from rotten *Prunus* log in which the gnat *Sciara* was developing (Nixon, 1957).

Diapriidae: Diapriinae - The hosts are believed to be all Diptera, the wasps developing as internal parasites in the puparia (Nixon, 1980).

Psilus inaequalifrons (Jansson) - Has been reared from *Lonchaea cariecola* under elm *Ulmus* bark, and from puparium under bark.

Platygastridae

Platygaster sp - Have been reared from burrows of the bark beetle *Tomicus* in larch *Larix* bark.

CERAPHRONOIDEA

Ceraphronidae

Aphanogmus fasciipennis Thomson - Has been taken in fungus in which the beetle *Sphindus dubius* was developing.

ACULEATA - Bees & Wasps. Cavity-nesting aculeates provide particular difficulties since suitable cavities can include situations as diverse as hollow stems of plants such as bramble and fissures in crumbling mortar, as well beetle exit holes in decaying wood.

Bethylidae - The larvae mostly live as external parasites of beetle larvae.

Cephalonomia formiciformis Westwood - A parasite of Ciidae beetles, taken in burrows of *Cis boleti* in various fungi, and associated with *Cis pygmaeus*.

Cephalonomia hammi Richards - A female has been found carrying a ?*Cis* larva on which were 4 eggs.

Plastanoxus chittendeni (Ashmead) - Has been reared from the fungus *Stereum* growing on rotten oak *Quercus* with *Cis festivus*.

Chrysididae - Ruby-tailed wasps. Many are parasitoids of hosts which use dead wood for nesting to some extent at least, but few are dependent on dead wood.

Chrysis schencki Linsenmaier - **Nationally Scarce A.** Probably a parasitoid of larvae of other aculeates; host(s) possibly nest in dead wood in open sunny situations. Sparsely scattered across southern England.

Chrysogona gracillima (Foerster) - **RDB2.** A parasitoid of larvae of other aculeates; host(s) probably need deadwood for nesting; heaths, downs & hedgerows in south-east England.

Chrysura radians (Harris)- **Nationally Scarce A.** A parasitoid of *Osmia* bees, specialising in species such as *O. leaiana*, which nest in dead wood; open sunny situations. Widespread across lowland England.

Trichrysis cyanea (Linnaeus) - A parasitic on various wood-boring aculeates.

Omalus aeneus (Fabricius) – A brood parasite of stem and wood-nesting Sphecid wasps of the sub-family Pemphredoninae. Widespread across lowland Britain.

Omalus puncticollis (Mocsary) - **Nationally Scarce A.** Probably a parasitoid of larvae of small deadwood-nesting sphecid wasps such as *Passaloecus* and *Pemphredon*; usually found in wooded situations.

Omalus truncatus Dahlbom - **RDB1.** Probably a parasitoid of larvae of small deadwood or stem-nesting sphecid wasps.

Omalus violaceus (Scopoli) - **Nationally Scarce B.** A parasitoid of larvae of small sphecid wasps, with rearing records for *Pemphredon lugubris* and *Passaloecus corniger* nests, both in dead wood and in *Lipara* galls on *Phragmites*; occurs in a wide variety of situations where dead wood available.

Sapygidae

Sapyga clavicornis (Linnaeus) - **Nationally Scarce B.** A brood parasite of megachilid bees of the genus *Chelostoma* and *Osmia*, which nest in dead wood usually at heights of 5-10m, and usually in situations fully exposed to the sun. Widespread in lowland southern Britain.

Sapyga quinquepunctata (Fab.) - Widespread across southern Britain. Its host bees – *Osmia* and *Chelostoma* spp. - nest in a wide range of cavities including dead wood.

Formicidae - 10km square maps, BRC 1979

Leptothorax acervorum (Fabricius) - Nests in tree stumps and under bark of deadwood in the south, but is more usually found under stones, in peat or partly buried twigs in the north & west.

Leptothorax nylanderi (Forster) - Forms small colonies under bark on deadwood or in tree stumps; local; inland in S England from Devon to Shropshire.

Lasius brunneus (Latreille) - Brown Tree Ant. **Nationally Scarce B**. Fugitive tree-dwelling species, typically nesting in heartwood of old oak *Quercus* trees in parkland, also occasionally in open woodland and hedgerows, and also in other broadleaves; frequent in old orchard trees through the Severn Vale; workers tend aphids which are feeding on the tree; a very localised distribution in central southern England.

Lasius fuliginosus (Latreille) - Forms populous colonies in old trees, stumps, hedges, old walls and in sand dunes; nest is of carton, macerated wood hardened by secretions from the mandibular glands.

Lasius umbratus (Nylander) - Nests in the base of old trees, in partly buried logs, stumps, and also under boulders.

Pompilidae - Spider Wasps. None appear to be particularly closely associated with decaying wood. The following four species are the most likely to be found.

Dipogon bifasciatus (Geoffroy) - **RDB3.** Often found running in and around decaying stumps; nests in vacated insect borings in dead wood as well as cavities in walls; partitions are constructed of wood particles; preys on crab spiders (Thomisidae). Southern & eastern England, particularly from wooded downland.

Dipogon subintermedius (Magretti) - A cavity-nesting species, using flight holes in deadwood and even hard bracket fungi, as well as bramble stems and walls,

provisioning with the spider *Segestria senoculata*; a speciality of mature timber and old hedgerows.

Dipogon variegatus (Linnaeus) - Will nest in almost any cavity, including borings in timber, walls & snail shells.

Auplopus carbonarius (Scopoli) - **Nationally Scarce B.** Constructs cells in sheltered situations such as beneath stones or in hollow tree trunks; preys on a wide range of free-living spiders.

Eumenidae - *Symmorphus* and some *Ancistrocerus* nest in tubes, usually selecting hollow plant stems, such as bramble *Rubus*, elder *Sambucus* and even the straws of thatched roofs. Many other kinds of crevices are also used, including holes in dead wood, tree trunks and fence posts.

Microdynerus exilis (Herrich-Schaffer) - **Nationally Scarce B.** Nests in small beetle holes in wood, and very occasionally in bramble *Rubus* stems; nest stocked with weevil larvae. Southern and eastern England, first reported in 1937**.**

Symmorphus bifasciatus Linnaeus* - Often nests in dead wood, as well as plant stems and crevices in old walls. Damp habitats, often near streams. Widespread.

Symmorphus connexus (Curtis) - **Red Data Book Category 3 (Rare).** Often nests in dead wood, as well as plant stems and crevices in old walls. Damp habitats, often near streams. Rare and increasingly so; south-east and eastern England.

Symmorphus crassicornis (Panzer) - **Red Data Book Category 3 (Rare).** Often nests in dead wood, as well as plant stems and crevices in old walls. Damp habitats, often near streams. Southern Britain.

Symmorphus gracilis (Brulle) - Probably nests in holes in wood. Damp habitats, often near streams; preys on larvae of the beetles *Chrysolina populi* and *Cionus hortulanus*; adults at *Scrophularia* flowers. Widespread across the lowlands of England and Wales.

Vespidae

Vespa crabro Linnaeus - The Hornet. Nests usually in hollow trees, less often in buildings; feed on nectar, fruit, honey, and various insects.

Sphecidae

Crossocerus annulipes (Lepeletier & Brulle) - Nest usually in rotten wood; preys on Homoptera.

Crossocerus binotatus Lepeletier & Brulle - **Nationally Scarce B.** Nest in hard dead wood in a wide variety of situations, including logs, old stumps, fence posts and building timbers, in woods, parks, wetlands, farmland and gardens; preys on medium-sized flies such as *Rhagio* and lauxaniids. Very widespread over England & Wales, although very sparingly; only one Scottish record, in Dumbartonshire (1903). Never known as a common insect, but no real evidence of any decline.

Crossocerus cetratus (Shuckard)

Crossocerus dimidiatus (Fabricius)* - Nest in cavities such as those in rotten wood or soft mortar in walls; preys on Diptera, particularly snipe flies *Rhagio* in Britain. Widespread in Britain & Ireland, and most frequent in Britain in the north and west - a northern European species.

Crossocerus distinguendus (Morawitz, A.) – First found in GB in 1979 in Kent, and now well-distributed over south-east and was first found in Yorkshire in 2000. Normally nests in ground, but may also nest in holes in dead wood.

Crossocerus leucostoma (Linnaeus) - **Nationally Scarce A.** Nest in deadwood in warm sunny situations, often using the abandoned larval tunnels of scolytid beetles; preys on small Diptera such as simuliids. A northern, conifer associate, formerly mainly native pine *Pinus* woods but now more widespread through plantations.

Crossocerus megacephalus (Rossius) - Nests in rotten wood; preys on Diptera.

Crossocerus podagricus (Van der Linden) - Nest in hard dead wood; preys on small Diptera, especially Nematocera.

Crossocerus vagabundus (Panzer) - **RDB1.** Nests constructed in old beetle galleries, branched or straight, within dead timber; found where a combination of suitable nest sites in dappled shade and damp or lush areas rich in its prey of crane flies. Formerly sparingly widespread across lowland England, from Dorset to Lincolnshire, but has declined very seriously.

Crossocerus walkeri (Shuckard) - **Nationally Scarce B.** Nest in deadwood of various broadleaves; preys on mayflies (Ephemeroptera). Widespread but very local; associated with rivers and streams of high water quality.

Nitela – very small black wasps, nesting in beetle burrows and other holes in dead wood and walls or in pithy plant stems. Both of the following species are said to be common in northern Europe.

Nitela borealis Valkeila – **RDBK**. Known from gardens and waste ground in the extreme south-east of England; very common in northern and central Europe. Nest sites include vacated beetle borings in wooden posts, as well as small holes in old walls; stocked with bark flies (Psocoptera).

Nitela lucens Gayubo & Felton – **RDBK**. Generally similar to *N. borealis* except the nest sites are more frequent in old walls and the species is more widely distributed in south and south-east England.

Lestica clypeata (Schreber) – **Extinct.** Nest in dead wood; preys on adult Lepidoptera; 19th C, Weybridge only.

Ectemnius borealis (Zetterstedt) – Found in the western Weald of Sussex, Hampshire and Surrey, where first recognised in 1972, although an older specimen has been found dated 1938. Nests in dead wood such as fence posts.

Ectemnius cavifrons (Thomson)

Ectemnius cephalotes (Olivier)* - Nest tunnels are excavated in fairly large pieces of rotten wood, such as stumps, fallen trunks, rotting logs and occasionally building timbers; adults attracted to umbellifer flowers. The wasps prey upon medium-sized Diptera. Widespead in the English lowlands, scarce elsewhere - a small concentration of records in south-east Ireland.

Ectemnius continuus (Fabricius)* - Nests in burrows within rotten wood such as old tree stumps, fallen trunks and limbs, fence posts, even building timbers; preys upon medium-sized Diptera. Widespead in the English lowlands, scarce elsewhere.

Ectemnius dives (Lepeletier & Brullé) - Nest tunnels excavated in dead wood and cells stocked with flies such as syrphids and tachinids. Favour relatively open situations. Very localised distribution, mainly south-east and Yorkshire.

Ectemnius lapidarius (Panzer)* - Nests in decaying wood, even quite small pieces; preys upon medium-sized flies. Widespread.

Ectemnius lituratus (Panzer) - Nests in beetle burrows in a variety of dead wood, including tree stumps and fence posts. The nest cells are stocked with medium-sized flies, particularly calypterates. Mainly in woodlands. The adults are often found at umbellifer flowerheads. Common in the more southern English counties but rapidly decreases northwards.

Ectemnius ruficornis (Zetterstedt) * - **Nationally Scarce B.** Nest in tree stumps, old trees, fence posts and other forms of rotten wood; cells are stocked with hoverflies and other Diptera. Adults often found at umbellifer flowerheads. Southern half of Britain. Reported from Co.Antrim.

Ectemnius sexcinctus (Fabricius) - **Nationally Scarce B.** Nest in beetle burrows in tree stumps, fence posts, building timbers, exposed wood-decay in living trees and rotten wood generally; cells stocked with medium-sized flies such as calypterates and hoverflies. Southern half of Britain.

Rhopalum clavipes (L.)* - A common and widespread cavity nesting species, favouring dead wood, stems and old mortar. Preys on Psocoptera and occasionally certain Diptera or Hemiptera.

Mimumesa dahlbomi (Wesmael)* - Nest in beetle holes in dead wood; preys on delphacids and cicadellids (Homoptera). Widespread across the lowlands of southern Britain; one record from Ireland.

Stigmus pendulus – First recorded in Britain only in 1986, at Smarden, Kent. Well-distributed in south-east England.

Stigmus solskyi Morawitz, A. – Fairly common and widespread. Nests in small old beetle holes in dead wood.

Pemphredon inornatus Say* - A common cavity nesting species over much of England, Wales and Ireland, extending into southern Scotland.

Pemphredon lugubris (Fabricius)* - Nest in rotten wood; prey aphids.

Pemphredon morio Van der Linden - **Nationally Scarce B.** Nest in decaying wood in warm sunny situations; prey aphids. Widespread in lowland England.

Pemphredon wesmaeli (Morawitz, A.) - **RDB3.** Nest in hard wood or bark of dead pine *Pinus* timber in native pine woodland; prey aphids.

Passaloecus are small black wasps which nest particularly in beetle borings in posts and other cavities, and prey on aphids.

Passaloecus corniger Shuckard - Nests in wooden posts or old timber containing nests of other *Passaloecus* wasps; steals aphid prey from other *Passaloecus* or *Psenulus pallipes* wasps. Widespread. Occasionally found in reedbeds where nests in *Lipara* galls on common reed *Phragmites*.

Passaloecus eremita Kohl – Discovered as recently as 1978 in West Sussex, but now known to be locally common in south-east England and found as far north as Warwickshire and Norfolk. Nest constructed in old beetle holes in pine *Pinus* and other trees, fence posts and other dead wood – the hole is plugged with pine resin.

Passaloecus gracilis (Curtis) - Nest in beetle burrows or burrows of tortricid moth *Rhyaciona*; also in dry hollow plant stems; prey aphids. In a wide variety of habitats, including suburban gardens. Widespread in England, although most frequent in south.

Passaloecus insignis (Van der Linden) - Nests constructed in old beetle burrows in decayed wood or in stems with the pith excavated; prey upon aphids; in a variety of open ruderal habitats. Widespread in southern Britain although not common.

Passaloecus monilicornis Dahlbom - Nests in abandoned beetle burrows in deadwood, which are cleaned of wood dust and frass; prey aphids. A northern species.

Passaloecus singularis Dahlbom - Nests in pithy stems or abandoned beetle borings in dead wood, even occasionally in old *Lipara* galls on reed *Phragmites* stems; prey aphids; common and widespread, although scarcer in west.

Passaloecus turionum Dahlbom – **?RDB**. English specimens dating back to 1924 but only recently published. Has been reared from nests in old beetle holes in dead pine *Pinus* bark at Ambersham Common, West Sussex, and may use resins in nest construction; mainly known from pine and heathland localities in Kent, Surrey and Sussex. Thought to be boreo-alpine in Europe.

Spilomena troglodytes (Van der Linden) - Nest in holes in wood; prey thrips nymphs.

Megachilidae

Stelis breviuscula – **RDBK.** Brood parasite of the bee *Heriades truncorum*; only discovered in West Sussex in 1984 and now found almost wherever *Heriades* is present.

Heriades truncorum (Linnaeus) – **RDBK.** Nest in burrows in dead wood and pithy stems, also occasionally crumbling masonry; pollen sources restricted to composites. South-east England, on Bagshot Sand and Chalk; rare and very restricted within its range.

Chelostoma campanularum (Kirby) - Nest in wood; visits *Campanula*.

Chelostoma florisomne (Linnaeus) - Nest in wood.

Osmia pilicornis Smith, F. - **Nationally Scarce A.** Nest in rotten wood, including old coppice stools; visits bugle *Ajuga*. A woodland species found across southern England; very local and has clearly declined.

Osmia uncinata Gerstaecher - **RDB2.** Boreo-alpine old pine *Pinus* forest species; nest in borings in trunk and stumps of pine, especially those of the longhorn beetle *Rhagium inquisitor*; provisions cells with pollen from birds-foot trefoil *Lotus*, broom *Cytisus* and bilberry *Vaccinium*. A speciality of western and central Europe.

Megachile ligniseca (Kirby) - Nest in decaying wood; visits thistle and *Rubus* flowers.

Megachile versicolor Smith, F. - Nest in dead wood; visits flowers of *Lotus corniculatus* and thistles.

Anthophoridae

Anthophora furcata (Panzer) - Nest in wood, e.g.rotten gate posts.

Apidae

Apis mellifera mellifera L. - Native Honey Bee. The main natural nest site for this species in Britain is standing hollow trees, although the bees forage widely in the surrounding countryside.

Diptera – Flies. Over 400 species develop in dead wood situations. Many are polyphagous on fungi.

Craneflies

Tipulidae

Ctenophora (Cnemoncosis) ornata Meigen - **RDB1.** Larvae reared from porridge-like wet wood mould in standing or fallen beech trees. Adults come to m.v. light after dark. Mainly known from the New Forest, but also from Windsor Forest, Ashridge, Ashtead Common, and Portmadoc, N. Wales.

Ctenophora (Ctenophora) flaveolata (Fabricius) - **RDB2.** Probably associated with large overmature trees, especially beech in the south-east, about which a female has been seen flying, although also occurs in sites lacking beech; larvae in decaying wood, probably one year cycle. Adults visit blossom such as hawthorn. Associated with ancient broadleaved woodland and wood pasture, widely across southern Britain – does not warrant RDB status.

Ctenophora (Ctenophora) pectinicornis (Linnaeus)* - **Nationally Scarce.** Associated with rot-holes in large broadleaved trees, especially beech; larvae often occur in the rotten shattered ends of trunks and have been found in rotten boughs which have freshly fallen from at least 10m up. Widespread in southern Britain, scarcer in west and north.

Dictenidia bimaculata (Linnaeus)* - In fens and ancient woodland, developing in well-decayed timber of a variety of broad-leaved trees.

Tanyptera atrata (Linnaeus)* - **Nationally Scarce.** Larvae develop in decaying logs and fallen trunks of birch and alder, and to a lesser extent in other broadleaves; apparently favours harder deadwood for larval development than others of genus. Usually

associated with old forest areas and heaths, and widespread across GB, but not known from New Forest. A rather marked decline seems apparent in Britain.

Tanyptera nigricornis (Meigen) - **RDB3.** Develops in dead wood of a range of broadleaves; recently a female found in open woodland at a live ash tree with one side of the trunk rotted away. Associated with ancient woodland and wood pasture; frequent in New Forest, and widespread though rare across the north Midlands/Lancs/Yorks district; also Scotland.

Tipula (Dendrotipula) flavolineata Meigen* - Develops in soft rotting and also in quite hard white-rotted wood of various broadleaves, especially beech and large birches.

Tipula (Lunatipula) cava Riedel* - Recorded from dead wood but probably not specific to it.

Tipula (Lunatipula) peliostigma Schummel* - **Nationally Scarce.** Occasionally develops under bark on decaying wood; more usually in bird nests.

Tipula (Lunatipula) selene Meigen - **RDB3.** Larvae in dead wood, even in small branches, lying on wet soil; has been reared from a small ash branch on fen peat & from a bird's nest. A species of southern woodlands, best represented in south-west.

Tipula (Mediotipula) sarajevensis Strobl – **RDB1**. Only a single British record, a female take in the New Forest in 1901. The larval ecology is unknown but related species breed in dead wood.

Tipula (Mediotipula) siebkei Zetterstedt - **RDB1.** The larvae on the Continent have been reported from rotting wood of aspen. A male was taken in Mark Ash in New Forest in 1953.

Tipula (Pterelachisus) irrorata Macquart* - Grey leatherjacket larvae often frequent under bark of hardwood logs; also in decaying heartwood and rot-hole material. A local but widespread woodland species.

Tipula (Savtshenkia) confusa van der Wulp* - Develops under bark on dead wood.

Tipula (Vestiplex) hortorum Linnaeus* - **RDB3.** May develop in deadwood.

Tipula (Vestiplex) scripta Meigen* - Has been reared from under bark of rotten wood, but may not be confined to this situation.

Pediciidae

Ula mollissima Haliday* - Larvae mostly develop in fungi growing in and on dead wood in woodlands.

Ula sylvatica (Meigen)* - Polyphagous in fungi; terrestrial species predominate more so than *Ula mollissima*.

Limoniidae - Some species which develop in wet soil, e.g., *Symplecta stictica* (Meigen), or leaf litter, e.g. *Limonia nubeculosa* Meigen, have been reared from rot-hole material but these cannot be regarded as true wood-decay species and are not included.

Gnophomyia elsneri Starý - **RDB1.** Develops in porridge-like wet wood mould in hollow beech or beech stumps; Windsor Forest.

Gnophomyia viridipennis (Gimmerthal) - **Nationally Scarce.** Yellowish larvae develop in the fibrous cambial layer beneath bark of recently felled trees, usually *Populus* (including aspen) or beech, possibly also willows; larvae gregarious; mainly fen and carr. Southern species, but with a few sites in northern Britain.

Scleroprocta pentagonalis (Loew) - **RDB3.** Wet woodland, where case-bearing larvae have been found in rotting birch polypore fungus *Piptoporus betulinus* when it has fallen from the tree in the spring.

Scleroprocta sororcula (Zetterstedt) - **Nationally Scarce.** Has been reared from larvae in galleries in birch polypore *Piptoporus betulinus*.

Tasiocera collini Freeman* - **RDB1.** Only known in Britain from Chippenham Fen; also in Ireland. Larvae may develop in dead wood of poplar.

Austrolimnophila ochracea (Meigen)* - Common species, developing in dead wood, even small pieces, in woodlands.

Epiphragma ocellare (Linnaeus)* - Develops in hard dead wood in long-established woodland.

Achyrolimonia decemmaculata (Loew) - Larvae develop in dead wood invaded by fungi, polyphagous in Polyporaceae, Meruliaceae and Thelephoraceae. Mainly southern, but extends into Scotland.

Atypophthalmus inustus (Meigen) - **Nationally Scarce.** Has been reared from decaying *Merulius tremellosus* fungus.

Discobola annulata (Linnaeus) - **RDB3.** Has been reared from the bracket fungi *Fomes* and *Pholiota*, and various terrestrial fungi. Known only from the Scottish Highlands.

Limonia phragmitidis (Schrank) = *tripunctata* (Fabricius) - Lowland broad-leaved woods on good soils; larvae normally in soil overlain by leaf-litter but has been reared from various bracket fungi - *Laetiporus sulphureus* and *Inonotus hispidus* in Gloucestershire.

Lipsothrix ecucullata Edwards - **RDB3 & BAP Priority Species**. Larvae have been reared from wet decaying wood. Confined to Scottish Highlands, where it occurs at seepages in non-acid woodland.

Lipsothrix errans (Walker)- **Nationally Scarce & BAP Priority Species.** Larvae have been reared from wet decaying wood; wooded streamsides in upland Britain.

Lipsothrix nervosa Edwards – **Endemic & BAP Priority Species.** Woodland seepages, especially in carr, where larvae probably in lying rotting wood; southern species.

Lipsothrix nigristigma Edwards - **RDB1 & BAP Priority Species.** Females have been observed laying eggs in barkless ash branches in a log jam in streams near Ironbridge, Shropshire, 1994; only other known British record is from 1924 at Clapton-le-Dale, Lancashire.

Lipsothrix remota (Walker)* - Develops in wet dead wood in seepages and carr, and in wet ground by streams.

Metalimnobia bifasciata (Schrank)* - Develops in a wide range of fungi – polypores, encrusting species, boleti and gill fungi, terrestrial as well as wood-decay.

Metalimnobia quadrimaculata (Linnaeus) - **RDB2.** Larvae in a wide variety of bracket fungi on trees in broad-leaved woodland.

Neolimonia dumetorum Meigen* - Larvae in very rotten dead wood of various broadleaves; woodland and fenland species.

Rhipidia ctenophora (Loew)* - **RDB2.** Broad-leaved woodlands, where the long almost transparent larvae have been reared from a wide range of dead wood situations, incl. rot-holes, sap and rotting stumps; elm, horse chestnut and sycamore. A few scattered localities from southern England north to Yorkshire.

Rhipidia maculata Meigen =*duplicata* misident. - Has been reared from an oak rot hole.

Rhipidia uniseriata (Schiner) - **RDB3.** Larvae in dead and decaying timber in old broad-leaved woodland and hedgerows; rot-holes; elm, beech, birch, oak. Southern & Midland England.

Bibionidae - Bibionid larvae develop in the soil and some have been reared from rot-hole material and wood in the advanced stages of decay. These are true soil species and cannot be considered as true wood-decay species. The following have all been reared from wood decay: *Bibio clavipes* Meigen, *Bibio hortulanus* (Linnaeus), *Bibio marci* (Linnaeus), *Bibio nigriventris* Haliday, *Bibio pomonae* (Fabricius), *Bibio venosus* (Meigen), *Bibio varipes* Meigen, *Dilophus febrilis* (Linnaeus), and *Dilophus femoratus* Meigen.

Fungus Gnats - About 75% of the species are associated with fungal fruiting bodies, including Myxomycetes, about 20% with rotting wood - these live on the surface or under bark, only a few penetrate the wood; spore-feeding larvae spin webs on bracket and encrusting fungi, and produce cocoons on or near the substrate. Very few are known to be host specific.

Bolitophilidae

Bolitophila (Bolitophila) cinerea Meigen* - Has been reared from *Panaeolus campanulatus, Hypholoma* spp., *Pholiota* spp., and other fungi, not all saproxylic.

Bolitophila (Bolitophila) saundersii (Curtis)* - Has been reared mainly from *Hypholoma fasciculare*, but also the non-wood-rotters *Panaeolus campanulatus*, *Lepista personata* and others, not all saproxylic.

Bolitophila (Bolitophila) tenella Winnertz - Most rearing records from wood-decay agarics, including *Armillaria*, *Pholiota* and *Hypholoma*.

Bolitophila (Cliopisa) hybrida (Meigen)* - Develops primarily in *Paxillus involutus* but has been reported from a variety of other fungi.

Bolitophila (Cliopisa) maculipennis Walker - Polyphagous fungus feeder including *Pholiota*.

Bolitophila (Cliopisa) occlusa Edwards* - Has been reported developing in *Oligoporus (Tyromyces) lacteus*, *O.caesius* and *O.stipticus*.

Bolitophila (Cliopisa) pseudohybrida Landrock* - Has been reared from the non-wood-decay *Clitocybe cerrusata* and *Flammulina velutipes* as well as the wood-rotter *Physisporinus sanguinolentus*; not infrequent in Britain, and in the Antrim Glens.

Diadocidiidae

Diadocidia valida Mik - **RDB2.** Larvae in mucous tubes under rotting logs.

Diadocidia ferruginosa (Meigen)* - Larvae under bark, in long dry silk tubes; reared from *Peniophora*.

Diadocidia spinosula Tollet* - Britain & Ireland. Presumed to be associated with wood-decay.

Ditomyiidae

Ditomyia fasciata (Meigen) - **Nationally Scarce.** Reared from the fruiting bodies of a wide variety of hard polypore wood-decaying fungi, eg *Bjerkandera adusta* and *Trametes versicolor*, but also the non-wood-rotter *Hydnellum spongiosipes*.

Symmerus annulatus (Meigen)* - Larvae in rotting timber; reared from *Hypoxylon rubiginosum*. Ireland: Charleville Woods.

Symmerus nobilis Lackschewitz - Adults around rotten logs; probably develop in dead wood like *Symmerus annulatus*. Only known British site is Glen Coiltie in Inverness-shire.

Keroplatidae

Cerotelion striatum (Gmelin)* - Larvae under rotting logs, especially encrusted with polyporaceous or other encrusting fungi.

Keroplatus testaceus Dalman - **Nationally Scarce.** Larvae have been found under a mucilaginous net on underside of logs, usually with polypore fungi; has been reared from cocoons on rotten wood. Frequency of finds and range appear to be expanding.

Rocetelion humerale (Zetterstedt) - **RDB1.** Larvae have been found on the surface of a resupinate white fungal fruiting body with a porous spore-bearing surface on a birch log; the larvae had spun loose strands of silk with drops of fluid on the spore-bearing surface of the polypore; in native Scots pine woodland. Scotland & unsubstantiated reports from Gloucestershire and Somerset.

Macrorrhyncha flava Winnertz* - Reared from rotting wood; web; adults nectar at flowers; Ireland.

Macrorrhyncha rostrata (Zetterstedt) - Has been found associated with a standing dead beech trunk.
Orfelia fasciata (Meigen)* - Associated with moulds under wet bark.
Orfelia nemoralis (Meigen)* - Web.
Orfelia nigricornis (Fabricius) - Web. Has been reared from rotten wood.
Orfelia unicolor (Staeger)* - Reared from pupa suspended in threads on *Trametes versicolor*.
Platyura marginata Meigen - Under rotting logs; web.
Macrocera anglica Edwards - Larvae under loose bark on damp timber.
Macrocera angulata Meigen - Has been reared from rotten wood.
Macrocera aterrima Stackelberg - **RDB3.** Has been reared from rotten wood.
Macrocera centralis Meigen* - Has been reared from rotten wood.
Macrocera parva Lundström* - Has been reared from rotten wood.
Macrocera stigma Curtis* - Larvae under rotting wood; web.
Macrocera stigmoides Edwards* - Has been reared from rotten wood.
Macrocera vittata Meigen* - Has been reared from rotten wood.

Mycetophilidae: **Gnoristinae**

Apolephthisa subincana (Curtis)* - Larvae under bark or on bark-growing fungi, in a mucilaginous tube anchored with lateral threads; *Phlebia* fungus and under oak bark.
Boletina trivittata (Meigen)* - Has been reared from rotten wood.
Coelosia tenella (Zetterstedt)* - Has been reared from *Stereum hirsutum*.
Ectrepesthoneura hirta (Winnertz)* - From dead wood, sometimes associated with encrusting fungi such as *Trametes*.
Gregorzekia collaris (Meigen) - **RDB3.** Larvae on damp rotten wood, either on the surface or suspended in a web-like structure; pupation on surface of wood.
Saigusaia flaviventris (Strobl)* - Develops in decaying wood.
Syntemna hungarica (Lundstroem) - Rotting beech wood.
Syntemna nitidula Edwards - **RDB3.** Has been reared from rotten wood.
Tetragoneura sylvatica (Curtis)* - Larvae in mucilaginous tube among bark encrusting fungi on small fallen branches. *Xylodon versipora*.

Mycetophilidae: Leiinae

Docosia fuscipes (von Roser) - **Nationally Scarce.**
Docosia gilvipes (Haliday)* - Polyphagous in polypores and *Auricularia*, as well as terrestrial species.
Docosia sciarina (Meigen)
Leia bilineata (Winnertz)* = *bifasciata* Gimmerthal - **Nationally Scarce.** Reared from red squirrel drey and under oak bark.
Rondaniella dimidiata (Meigen) - Polyphagous in fungi; polypores, *Stereum* and *Sparassis*, as well as terrestrial species.

Mycetophilidae: Manotinae

Manota unifurcata Lundstroem - **RDB2.** Has been reared from rotten beech timber with myxomycete growth.

Mycetophilidae: Mycetophilinae

Allodia grata (Meigen)* - Rearing records include *Pluteus cervinus* and *P.salicinus*.
Allodia lugens (Wiedemann)* - Polyphagous in fungi, inclduing both wood-decay and terrestrial species.
Allodia ornaticollis (Meigen)* - Polyphagous in fungi, including both wood-decay and terrestrial species.
Anatella are mostly of unknown biology, but the two known associations suggest that the rest too may be associated with ascomycetes or other small wood-decay fungi.

Anatella alpina Plassmann* - **RDB3**
Anatella ankeli Plassmann* - **RDB3**
Anatella bremia Chandler
Anatella ciliata Winnertz*
Anatella dampfi Landrock - **RDB3**
Anatella emergens Caspers*
Anatella flavomaculata Edwards* - Reared from the ascomycete *Cudoniella aciculare* on a rotten oak stump.
Anatella lenis Dziedzicki* - **Nationally Scarce.** Reared from the wood-decay fungus *Exidia glandulosa*.
Anatella longisetosa Dziedzicki*
Anatella minuta (Staeger)
Anatella pseudogibba Plassmann - **RDB1**
Anatella setigera Edwards*
Anatella simpatica Dziedzicki*
Anatella turi Dziedzicki*
Anatella unguigera Edwards*
Brachypeza armata Winnertz* - **RDB2**. Has been reared from *Pleurotus* sp., like other members of the genus, but also recorded from terrestrial *Cortinarius* and *Hydnum* spp.
Brachypeza bisignata Winnertz - **Nationally Scarce.** Has been reared from *Pleurotus ostreatus*.
Brachypeza radiata Jenkinson - Repeatedly reared from *Pleurotus*, chiefly *P.cornucopiae* but also *P.ostreatus*, and possibly confined mainly to this fungus genus - there is an Estonian record from *Armillaria mellea*; common.
Dynatosoma cochleare Edwards - **RDB2.** Reared from under pine bark at Loch Maree (probably a pupation site; larvae likely to be on polypore fungi like other members of the genus). All records from Scottish pinewoods except one from Conford, Sussex.
Dynatosoma fuscicorne (Meigen)* - Develop in a wide range of polypores, large larvae at base of tube layer.
Dynatosoma nigromaculatum Lundström - **RDB3.** Develops in *Fomes fomentarius* and also a record from *Panellus serotinus*; a very local species confined in Britain to the Scottish Highlands, seen around *Fomes* there in 1997.
Dynatosoma norwegiense Zaitzev & Okland = *thoracicum* sensu Landrock - Biology unknown but closely related non-British species develop in *Laetiporus sulphureus*. Only known in Britain from four localities in south-east England.
Epicypta aterrima (Zetterstedt)* - Case-bearing larvae live on surface of dead wood.
Exechia bicincta (Staeger) - Reared from *Pleurotus ostreatus*, *Pluteus salicinus* and some terrestrial agarics.
Exechia fusca (Meigen)* - Polyphagous in fungi, both wood-decay (some soft polypores) and terrestrial species.
Exechia lucidula (Zetterstedt) - **RDB2.** Mostly develops in terrestrial agarics, but a few records from wood-decay species, *Pholiota* and *Kuehneromyces*.
Exechia macula Chandler - Rearing records from *Armillaria* as well as some terrestrial agarics.
Exechia parva (Lundström)* - Polyphagous in agarics, including both wood-decay and terrestrial species.
Exechia repanda Johannsen* - Mostly reared from terrestrial agarics but also from *Kuehneromyces mutabilis*.
Tarnania fenestralis (Meigen)* - Has been reared from rotten wood.

Mycetophila cingulum Meigen* - Repeatedly reared from *Polyporus squamosus*, and probably confined to it; common.
Mycetophila dentata Lundström* - Rearing record from *Piptoporus betulinus*, also one from terrestrial *Leccinum scabrum*.
Mycetophila forcipata Lundström* - Specific to *Piptoporus betulinus*; Ireland.
Mycetophila formosa Lundström* - Reared from *Phlebia*.
Mycetophila fraterna Winnertz* - Has been reared from *Physisporinus vitreus*.
Mycetophila fungorum (De Geer)* - Polyphagous in fungi including both wood-decay and terrestrial species. Often found in *Armillaria mellea*.
Mycetophila luctuosa Meigen* - Polyphagous in fungi including both wood-decay and terrestrial species.
Mycetophila lunata Meigen - On *Coniophora*.
Mycetophila marginata Winnertz* - Develop in fruiting bodies of various wood-decaying fungi.
Mycetophila ocellus Walker* - Has been reared from a wide range of wood-decay fungi; considered to predominantly have deadwood associations, although also some terrestrial agarics have been reported.
Mycetophila ornata Stephens* - In fruiting bodies of various wood decaying fungi, incl. *Meripilus giganteus*, *Pleurotus ostreatus*, *Stereum*, etc.
Mycetophila pictula Meigen - Has been reared from the wood encrusting fungus *Xylodon versipora*.
Mycetophila pumila Winnertz* - Has been reared from an undetermined polypore fungus.
Mycetophila sepulta (Laffoon) - Has been reared from *Hypholoma elongatum*.
Mycetophila spectabilis Winnertz* - Has been reared from rotten wood.
Mycetophila strigatoides Landrock - **RDB2.** Records from *Polyporus* and ?*Trametes* spp as well as one from terrestrial *Russula*.
Mycetophila tridentata Lundstroem - Has been reared from *Laetiporus sulphureus* on several occasions and also from *Inonotus cuticularis*; a record from *Ganoderma* is probably erroneous.
Mycetophila trinotata Staeger* - Develops in *Trametes versicolor* and other bracket fungi.
Mycetophila vittipes Zetterstedt* - Has been reared from slime moulds.
Phronia basalis Winnertz* - Has been reared from rotten wood.
Phronia biarcuata (Becker)* - Case-bearing larvae on encrusting fungi.
Phronia braueri Dziedzicki* - Larvae feeds on moulds on sodden fallen and barkless branches.
Phronia conformis (Walker)* - Larvae in thin white mucilage on encrusting fungi.
Phronia coritanica Chandler* - Larvae in thin white mucilage on encrusting fungi.
Phronia humeralis Winnertz* - *Corticium* sp.
Phronia nitidiventris (van der Wulp)* - Has been reared from rotten wood.
Phronia siebeckii Dziedzicki - *Calocera viscosa*.
Phronia strenua Winnertz* - Cased larvae feed on moulds on sodden fallen and barkless branches.
Phronia tenuis Winnertz* - Larvae in thin white mucilage on encrusting fungi.
Platurocypta punctum (Stannius)* - Reared from slime moulds; Ireland.
Platurocypta testata (Edwards)* - Has been reared from larvae in slime moulds *Mucilago spongiosa* on hornbeam log, *Tubifera ferruginosa* from Scots pine log and *Reticularia lycoperdon*.
Synplasta gracilis (Winnertz) = *excogitata* (Dziedzicki)* - Only rearing records are from *Pleurotus dryinus* and *Mycoacia uda.*

Trichonta apicalis Strobl = *vernalis* Landruck - Develops in the fungus *Calocera cornea*; larvae feed internally.
Trichonta atricauda (Zetterstedt)* - *Corticium* sp.
Trichonta falcata Lundström* - Apparently develops only in the fungus *Stereum hirsutum*.
Trichonta foeda Loew* = *stereana* Edwards - Develops in the fungus *Stereum hirsutum*.
Trichonta melanura (Staeger)* - *Stereum hirsutum, Pholiota mutabilis*.
Trichonta terminalis (Walker)* - *Corticium, Peniophora cinerea, P. incarnata*.
Trichonta vitta (Meigen)* - *Xylodon* spp.

Mycetophilidae: Mycomyinae

Mycomya annulata (Meigen)* = *incisurata* (Zetterstedt) - Reared from a *Polyporus* sp.
Mycomya cinerascens (Macquart)* - Reared from *Stereum*.
Mycomya griseovittata (Zetterstedt) - **RDB3.** An old rearing record from *Ganoderma applanatum*.
Mycomya insignis (Winnertz) =*wrzesniowskii* (Dziedzicki) - **RDB2.** On *Xylodon*.
Mycomya marginata (Meigen)* - Reared from various fungi, all growing on bark, incl. *Stereum*, *Trametes versicolor*, *Simocybe* sp., *Auricularia mesenterica*; also fungoid wood.
Mycomya occultans (Winnertz) - **RDB1.** Has been reared from polypore fungi elsewhere in the Palaearctic; South Wales. Britain & Ireland.
Mycomya prominens (Lundstroem)* - From Agaricaceae (non-saproxylic), but also from rotten wood.
Mycomya sigma Johannsen* = *duplicata* Edwards - From *Auricularia*.
Mycomya trivittata (Zetterstedt)* - **Nationally Scarce.** Only rearing record is from a rotten birch log in Norfolk; probably associated with encrusting fungi like some other members of the genus.
Mycomya tumida (Winnertz) - Has been reared from *Trametes versicolor*.
Mycomya wankowiczii (Dziedzicki)* - On *Stereum* on fallen birch branches. Also on *Hypholoma* and non-saproxylic *Phallus*.
Mycomya winnertzi (Dziedzicki)* - On *Ganoderma* and *Phellinus*; reared from *Phellinus ferruginosus*.
Neoempheria lineola (Meigen) - **RDB1.** Develops in large decayed beech logs; New Forest & Oakley Wood, Glos.
Neoempheria bimaculata Roser - **RDB2.** Biology unknown.
Neoempheria pictipennis (Haliday)* - Has been reared from rotten wood.
Neoempheria striata (Meigen) - **RDB1.** Larvae in mucous webs under polypore brackets on poplars; and in webs on lying pine branches; carnivorous.
Neoempheria winnertzi (Edwards) - **RDB1.** Has been reared from rotten wood.

Mycetophilidae: Sciophilinae

Acnemia amoena Winnertz - **RDB2.** Relict ancient woodland species; has been swept around a standing beech stump. Reared in Europe from *Thelephora* and *Paxillus*.
Acnemia nitidicollis (Meigen)* - Cocoon in dead wood.
Allocotocera pulchella (Curtis)* - Recorded as associated with *Daldinia*.
Leptomorphus walkeri Curtis - Larvae quite common in webs on bark-growing fungi (on *Xylodon versipora* etc) on fallen branches.
Monoclona rufilatera (Walker)* - Has been reared from rotten wood attacked by ?*Poria*; larva in mucilaginous tube and pupation in a dry silken cocoon in a crevice of the wood.
Phthinia humilis Winnertz - A female, presumed to be this species, associated with dead hornbeam timber; Ireland. Identity needs confirmation.
Phthinia winnertzi Mik* - ?Associated with *Pholiota* on rotting wood; Ireland.

Polylepta guttiventris (Zetterstedt)* - Has been reared from rotten wood.
Sciophila antiqua Chandler - **RDB1.** Adult around dead wood at Scadbury Park, Kent, 1985; subsequently found at Sydling's Copse, Oxon, and at Wicken Fen, Cambs.
Sciophila baltica Zaitzev - **?RDB**. Known from three sites in south-east England; cocoons associated with dead wood overseas; probably develops in wood-decay fungi.
Sciophila buxtoni Freeman - **RDB2.** Develops in tough lignicolous polypores, eg *Trametes*, *Laetiporus sulphureus*, *Daedaleopsis*, *Pseudotrametes*, etc.
Sciophila geniculata Zetterstedt* - **Nationally Scarce.** A little known species, probably feeding in one of the Polyporaceae. A few old woodlands in southern England; Isle of Arran; Ireland.
Sciophila hirta Meigen – Reared from various wood-decay fungi.
Sciophila limbatella Zetterstedt - **RDB1.** Develops in webs on *Fomes fomentarius* and *Phellinus* spp.
Sciophila lutea Macquart* - Polyphagous in fungi, including polypores and encrusting fungi; also terrestrial species.
Sciophila nonnisilva Hutson - **Nationally Scarce.** Has been reared from *Auricularia auricula-judae*.
Sciophila rufa Meigen - **Nationally Scarce.** Specific to *Fomes fomentarius* on birch in Scotland.
Sciophila ochracea Stephens in Walker - **RDB1.** Larvae spin webs on surface of hard bracket fungi (*Phellinus pomaceus*) on plum and cherry, feeding on spores; orchards and gardens.

Sciaridae

Bradysia confinis (Winnertz)* - Reared from rotten wood.
Bradysia fungicola (Winnertz)* - Reared from rotten wood.
Corynoptera abblanda Freeman - Reared from rotten wood.
Corynoptera blanda (Winnertz) - Reared from rotten wood.
Corynoptera minima Meigen* - Reared from rotten wood.
Cratyna pernitida Edwards - Reared from rotten wood.
Cratyna schineri (Winnertz) - Reared from rotten wood.
Cratyna keilini Edwards - Reared from rotten wood.
Cratyna egertoni Edwards - Under dead oak bark.
Cratyna falcifera (Lengersdorf) - Reared from rotten wood.
Cratyna nobilis (Winnertz)* - Develops in rotten wood.
Ctenosciara hyalipennis (Meigen)* - Has been reared from *Bjerkandera adusta*.
Epidapus atomarius (De Geer)* - Reared from rotten wood.
Epidapus gracilis (Walker) - Beech deadwood.*Leptosciarella pilosa* (Staeger) - Reared from rotten wood.
Leptosciarella rejecta (Winnertz)* = *pilosa* misident. - Has been reared from rotting wood.
Leptosciarella scutellata (Staeger) - Reared from rotten wood.
Leptosciarella trochanterata (Zetterstedt)* = *coarctata* (Winnertz) – Associated with wood-decay.
Leptosciarella viatica (Winnertz)* - Has been reared from rotting wood.
Lycoriella ingenua (Dufour)* = *solani* (Winnertz) - Polyphagous in decaying fungi (including soft polypores) as well as decomposing plant material.
Lycoriella lundstroemi (Frey) - Reared from rotten wood.
Scatopsciara atomaria (Zetterstedt) - Reared from rotten wood.
Scatopsciara pusilla (Meigen) - Reared from rotten wood.
Scatopsciara tricuspidata (Winnertz) - Reared from rotten wood encrusted with *Stereum*.
Scatopsciara vitripennis (Meigen)* - Reared from rotten wood.

Sciara hemerobioides (Scopoli)* = *thomae* (Linnaeus) - Develop in wood detritus; adult attracted to sap.
Scythropochroa quercicola (Winnertz) - Reared from a rotten log by J.Cole & added to the British list in 1990.
Scythropochroa radialis Lengersdorf - Reared from rotten timber.
Trichosia glabra (Meigen) - Reared from larva under dead bark.
Trichosia morio (Fabricius)* = *caudata* (Walker) - Reared once from rotten willow log.
Trichosia pulchricornis (Edwards) - Larvae in rotten wood.
Xylosciara heptacantha Tuomikoski - Reared from rotten wood.
Xylosciara lignicola (Winnertz)* - Some reared from bark of spruce and pine; also associated with oak and birch.
Zygoneura sciarina Meigen* - Reared from beneath poplar bark and recorded from *Auricularia*.

Ptychopteridae

Ptychoptera albimana (Fabricius)* - Has been reared from buttress rot holes of beech, although more usually larvae occur in mud.

Cecidomyiidae - Many of the sub-family **Lestremiinae** develop in dead wood.
Bryomyia bergrothi Kieffer - Reared from *Piptoporus betulinus* in Norway.
Campylomyza flavipes Meigen - Reared from *Piptoporus betulinus* in Norway.
Neurolyga bifida (Edwards) - Has been reported at a newly felled birch stump.
Neurolyga fenestralis Ronduris = *xylophila* Edwards - Has been reported over a burnt larch stump.
Lestremia cinerea Macquart* - Reared from *Chondrostereum purpureum*, and larvae reported from brown decayed wood.
Lestremia leucophaea (Meigen)* - Has been reported about old beech logs.
Aprionus associated with old logs and stumps, especially of beech.
Aprionus acutus Edwards - Has been reported about old beech logs.
Aprionus flavidus (Winnertz) - Larvae reported from brown decayed fir wood.
Aprionus halteratus (Zetterstedt) = *flaviventris* (Winnertz) - Adults reported about old beech logs.
Aprionus miki Kieffer - Adults about old beeches and larva found in spruce stump.
Aprionus spiniger Kieffer - Adults about old beeches.
Monardia magna Edwards - Adults reported over fallen cherry trunk.
Monardia stirpium Kieffer = *Pezomyia vanderwulpi* (de Meijere) - Has been found over a hazel stump.
Monardia ulmaria Edwards - Has been reared from a rotten elm stump.
Trichopteromyia modesta Williston - Has been reported from an old beech and an oak log.
Xylopriona atra (Meigen)* =*querceti* Edwards - Found around old beech stumps.
Peromyia muscorum (Kieffer) - Beneath decaying oak bark.
Peromyia monilis Mamaev =*alni* Kleesattel - Below fir and spruce bark.

Cecidomyiidae: Porricondylinae - Includes a number of rotten wood feeders, especially the tribe Heteropezini which has paedogenetic larvae.
Asynapta magdalini (Panelius) - Develops in tunnels of *Magdalis* under pine bark.
Asynapta populina Panelius - Reared from *Populus* trunks in Finland.
Camptomyia multinoda (Felt) =*tiliarum* Mamaev - Under bark of *Tilia* and *Populus*.
Brittenia fraxinicola Edwards - Develops in dead wood of beech, ash, hazel & oak: also recorded from *Daldinia* and *Arcyria incarnata*.
Heteropeza pygmaea Winnertz - Large colony reported from below oak bark.
Heteropezula tenuis Wyatt - Has been found at chestnut logs.
Leptosyna nervosa (Winnertz) - Has been found under bark; chestnut.

Miastor castaneae Wyatt - Has been found at chestnut bark.
Miastor metraloas Meinert - Has been found under bark; birch.
Holoneurus pini (Mamaev) - Reared from fungus on pine stump.
Winnertzia spp. - Most species develop under bark, but the 3 British species have not been recorded from this habitat.

Cecidomyiidae: Cecidomyiinae

Camptodiplosis auriculariae Barnes - Reared on many occasions from the fungus *Auricularia auricula-judae*.
Cecidomyia harrisi Nijveldt - Only the larva known: resin flow on *Pinus sylvestris*. Described in 1987.
Cecidomyia magna (Möhn) - Resin flow on *Picea abies*. Added to the British list in 1986.
Cecidomyia pini (De Geer) - Resin flows on *Pinus* and *Picea* spp.
Cecidomyia sarae Nijveldt - Only the larva known: resin flow on *Pinus sylvestris*. Described in 1987.
Lestodiplosis fascipennis (Winnertz) - Larvae feed on other fly larvae on rotten wood.
Lestodiplosis polypori (Loew) - Larvae feed on other larvae in polypore fungi (recorded from *Polyporus squamosus* and *Fomitopsis pinicola*.
Mycocecis ovalis Edwards - Forms a canopy of silk and frass over a galled area of the fungus *Hypoxylon rubiginosum*. Outside the canopy a yellow gall tissue is produced. South and central England.
Resseliella dizygomyzae (Barnes) - An inquiline of *Phytobia cambii* in *Salix* spp.
Resseliella crataegi (Barnes) - Clusters of larvae occur under bark of hawthorn.
Resseliella quercivora (Mamaev) - Cambium miner of broadleaved trees, not actually on the British list but a possible record of causing growths on oak.
Brachineura quercina Edwards - Has been reported over an oak log.
Brachyneurina peniophorae Harris - Forms galls in the fungus *Peniophora cinerea* and *P. limitata*. The larvae form a cinnamon-coloured fibrous oval gall about 5-20mm. The pupal cases are extruded in the following spring and the midges emerge in June-July. South and central England, locally common.

Psychodidae - Moth Flies. Most British tree-hole species are very rare, with few recent records.
Psychoda lobata Tonnoir - Polyphagous in fungi, including *Trametes*, *Armillaria* and *Pluteus* as well as terrestrial species.
Telmatoscopus tristis (Meigen)* - Has been reared from tree rot-holes, oak, ash and birch.
Telmatoscopus advenus (Eaton)* - Has been reared from tree rot-holes, various broad-leaves; fairly frequent in Britain; the commonest and most catholic of psychodids developing in Irish rot-holes.
Telmatoscopus laurencei Freeman – Develops in tree rot-holes.
Telmatoscopus rothschildii Eaton* - Has been reared from sap-runs and rot-holes. Records scattered across southern Britain; Ireland.
Trichomyia urbica Haliday* - Larva in rotting wood of fallen trees where it makes a gallery running in the direction of the grain. Has been reared from an oak rot hole; also birch in Ireland. A frequent species in Britain.

Trichoceridae - Winter Gnats
Diazosma hirtipenne (Siebke) - **Nationally Scarce.** Unknown in larval stage, probably associated with decaying timber.
Trichocera annulata Meigen* - Develops in various decaying materials including fungi; recorded from *Grifola*.
Trichocera hiemalis (De Geer)* - Polyphagous; fungal hosts recorded are mainly lignicolous species.

Trichocera rufescens Edwards* - A rearing record from *Hypholoma*.

Trichocera saltator (Harris)* - Polyphagous; fungal hosts mainly terrestrial but also including *Piptoporus* and *Pholiota*.

Anisopodidae - Window midges. The larvae of *Sylvicola* spp develop in decaying vegetable matter including decaying leaves in tree rot-holes, slime flux from tree wounds, as well as a wide range of other situations.

Sylvicola cinctus (F.)* - May be particularly associated with soft decaying saproxylic fungi, such as *Bulgaria inquinans* and *Pleurotus ostreatus*.

Sylvicola fenestralis (Scopoli)* - Polyphagous in decomposing plant material; occasional in fungus, including *Piptoporus*.

Mycetobiidae

Mycetobia gemella Mamaev - Scots Pine Wood Gnat. **Nationally Scarce**. Pupae found in a rot hole on a live pine, Rothiemurchus, 1991. Larvae also found in material in a piny water run, mostly under loose bark on a dead standing Scots pine, Abernethy Forest, 1994, and under bark of dead pine in Glen Affric.

Mycetobia pallipes Meigen* - **Nationally Scarce.** Larvae feed on decomposing sap in sap-runs on or beneath the bark on tree trunks; also reared from rot hole broadleaved woodland and parkland. Widespread in Britain; Ireland: Glengarriff, Killarney & Westmeath.

Mycetobia obscura Mamaev* - **Nationally Scarce.** Ireland: Charleville Woods & Glen of the Downs, reared from wet rot-hole material in living oaks. Scotland: Kinnord, reared from larvae in a sap-run on aspen, 1995; Epping Forest.

Scatopsidae - Several species are known to develop in rot-holes or other wood decay habitats.

Ectaetia christii Rotheray & Horsfield - Reared from decayed aspen bark in Inverness-shire, 1990.

Ectaetia clavipes (Loew) - Reared from rotten wood.

Ectaetia lignicola Edwards - Reared from wood debris.

Ectaetia platyscelis (Loew)* - Reared from damp rot-hole material at ground level in living ash and elm; and from rotting beech, elm and lime. Southern Britain. Ireland: Charleville Woods & Wicklow.

Holoplagia richardsi (Edwards) - Reared from rotten elm and beech.

Holoplagia transversalis (Loew) - May be associated with the tree-nesting ant *Lasius fuliginosus*.

Apiloscatopse flavicollis (Meigen)* - Has been reared from *Tricholoma* sp. fungus.

Apiloscatopse scutellata (Loew)* - Has been reared from the fungus *Bjerkandera adusta*. Adults visit ivy blossom.

Scatopse notata (Linnaeus)* - A very widespread synanthropic species; known from cow dung, and nests of birds, mammals and wasps. Reared from oak rot hole.

Coboldia fuscipes (Meigen)* - A synanthropic species, developing in a very wide variety of decomposing materials, including a wide range of fungi.

Rhexoza subnitens (Verrall) - Larvae recorded from beneath decaying poplar bark in fenland.

Culicidae - Mosquitoes & Gnats. A wide range of culicids have been reared from water-filled holes in trees. The following are believed to be particularly associated with this habitat.

Anopheles plumbeus Haliday in Stephens* - Develops in water-filled holes on mature trees; eggs laid on side of tree holes just above waterline and hatch only when flooded.

Aedes geniculatus (Olivier) - Develops in water-filled tree holes, especially in beech but also in a very wide range of broadleaves; most common in larger rot holes, but also small

ones, often at base of trunks. Eggs are laid on the sides of cavities and hatch after rainfall. Widespread and often abundant in English woodlands.

Orthopodomyia pulcripalpis (Rondani) - **RDB3.** Develops in water-filled tree holes, especially in beech, elm and horse chestnut; over-wintering larvae, develop to pupae by June-July and adults emerge soon after; females appear to feed on birds. Only known from old records across south-east England, from Purbeck to Lincolnshire.

Ceratopogonidae - Biting Midges. Some species develop under bark, in sap-runs, and a few in fungi.

Culicoides chiopterus (Meigen)* - Sap in elm wound; also dry cakes of cow dung.

Culicoides obsoletus (Meigen)* - In tree-holes.

Culicoides fagineus Edwards - In tree-holes.

Culicoides riethi Kieffer*

Culicoides scoticus Downes & Kettle* - Polyphagous in fungi, including soft polypores.

Culicoides truncorum Edwards - In tree-holes.

Dasyhelea dufouri (Laboulbene) - Larvae feed on decomposing sap in wounds on elm; also in rot holes?

Dasyhelea flavifrons (Guérin-Méneville) - Larvae feed on decomposing sap of beech and horse chestnut.

Dasyhelea versicolor (Winnertz) = *obscura* (Walker) - Larvae feed on decomposing sap; elm & horse chestnut; also water-filled rot-holes in oak, poplar; also in humus around roots of *Arctium*, *Spiraea*, *Angelica*.

Forcipomyia - Larvae gregarious in dark cavities where very humid and feed on moulds and other fungi.

Forcipomyia bipunctata (Linnaeus)* - Under bark. A North American record from *Phellinus gilvus*.

Forcipomyia brevipennis (Macquart)

Forcipomyia ciliata (Winnertz) - Polyphagous, including a few records from lignicolous fungi.

Forcipomyia costata Zetterstedt = *picea* (Winnertz) - Under bark.

Forcipomyia eques (Johannsen)

Forcipomyia fuliginosa (Meigen) - A record from *Abortiporus*.

Forcipomyia kaltenbachii (Winnertz) - Under bark; oak, pine, poplar sap.

Forcipomyia monilicornis (Coquillett)*Forcipomyia nigra* (Winnertz) - Oak logs.

Forcipomyia pulchrithorax Edwards - In the granular, solidifying sap in open wounds on elm, chestnut & ash trees; also poplar rot hole

Forcipomyia rugosa Chan & Le Roux

Forcipomyia sphagnophila Kieffer =*solonensis* Wirth

Atrichopogon winnertzi Goetghebuer – Has been reared from rotting pine bark, logs and fallen branches in Poland.

Atrichopogon oedemerarum Stora – Has been reared from rotting pine bark, logs and fallen branches in Poland.

Atrichopogon pavidus (Winnertz) = *A. pollinivorus* Downes – Has been reared from under bark of rotting tree.

Chironomidae - Non-biting Midges. Some terrestrial species are associated with lignicolous fungi and some aquatic species burrow in wood.

Glyptotendipes glaucus (Meigen) - Larvae occur in decaying wood.

Stenochironomus gibbus (Fabricius)* - Larvae have been found in alder branches and other unidentified wood.

Bryophaenocladius ictericus (Meigen) - Records from the wood-decay fungus *Xylaria* as well as from *Lycoperdon*.

Metriocnemus albolineatus Meigen* = *atratulus* Zetterstedt - Has been reared from old darkened sporophores of the fungus *Chondrostereum purpureum*.

Metriocnemus martinii Thienemann* - Larvae in water-filled tree-holes, especially beech. S.England & Co Waterford.

Orthocladius lignicola Kieffer* - Larvae mine in submerged rotten wood.

Paraphaenocladius spp - Larvae occur in decaying wood.

Xylophagidae – Awl-flies

Xylophagus ater Meigen* - The Awl-fly. Larvae develop beneath bark on branchwood of a wide variety of dead broadleaves, in early stages of decay. Feed on larvae of larger beetles and possibly other insects, although probably injured larvae, and has been implicated as the cause of those injuries. Confined to ancient woodlands and wood pastures; mainly in the hill country of northern and western Britain, extending into the lowland fringes and across the south into the weald. Rare in Ireland.

Xylophagus cinctus (De Geer) – Red-belted Awl-fly. **RDB3.** Larvae under bark on relatively freshly dead pine timber; prey on pupae and larvae of long-horns and other Coleoptera; primarily known from old Caledonian pine forest relicts, but also reported from commercial pine and spruce plantations in recent years.

Xylophagus junki (Szilady) – Glenmore Awl-fly. **RDB1.** Probably develops in overmature pine trees, old pine forest; once only, Glenmore Forest, 1913**.**

Rhagionidae - The larvae of most species develop in the soil, but there are a few which use decaying wood. Some *Rhagio* that are normally soil dwelling may also be found in the more advanced stages of decaying wood and in accumulations of decaying vegetable matter in cavities such as rot-holes, especially *Rhagio lineola* Fabricius and *Rhagio scolopaceus*. *Ptiolina* larvae feed among mosses on trees and stones, and may occasionally be found within the decaying wood of mossy logs – pupation may occur in the decay.

Chrysopilus laetus Zetterstedt – Tree Snipefly. **RDB1.** Larvae develop in moist wood mould in decaying stumps, rot holes and aerial dead boughs, nearly always in beech. Sites tend to be open structured beech woodland with ancient trees. It appears to be a relict old forest species and is most widespread in Windsor Forest; also known from Cambridgeshire, Burnham Beeches and Cobham Woods, Kent.

Xylomyiidae – Wood-soldierflies

Solva marginata (Meigen) – Drab Wood-soldierfly. **Nationally Scarce.** The hard reddish brown larvae are usually found in dead *Populus*, especially hybrid black poplar, in rotting fibrous cambium layer in fallen trunks after 2-3 years; also other broadleaves.

Solva varia (Meigen) – Long-horned Wood-soldierfly. **Extinct.** Has been reared from oak deadwood abroad. Two early 19th century specimens are allegedly from Britain.

Xylomya maculata (Meigen) – Wasp Wood-soldierfly. **RDB2.** Larvae in rot-holes, in damp wood-decay, in beech; probably feed on rotting organic matter; also described as living a semi-aquatic existence in water-filled rot-holes. May take up to two years to develop. Confined to ancient forest: New Forest, Windsor Forest and Epping Forest.

Stratiomyidae – the larvae of a few of the terrestrial species are most often found in decaying wood and rot holes in trees.

Chorisops tibialis (Meigen)* - Dull Four-spined Legionnaire. Larvae in small shallow rot holes developed where a small limb has ripped off a tree trunk; within small accumulations of mildly moist wood detritus. Also found in grass tussocks.

Chorisops nagatomii Roskozny* - Bright Four-spined Legionnaire. **Nationally Scarce.** Possibly similar habits. Has been reared from flood refuse.

Eupachygaster tarsalis (Zetterstedt) – Scarce Black. **Nationally Scarce.** Larvae in very small rot-holes, especially those high up in trees, either where branches have broken off a trunk or at the edge of where a piece of bark is missing from a trunk; in beech, birch, ash, pine, elm and poplar. Possibly a relict old forest species in Britain.

Neopachygaster meromelas (Dufour) – Silver-strips Black. **Nationally Scarce.** The flattened greyish larvae can be frequent in the moist detritus beneath loose bark on dead poplar; also willow, holly, horse chestnut, elm, etc; and in beetle tunnels. Feed on the detritus. Widely across English lowlands.

Pachygaster atra (Panzer)* - Dark-winged Black. Although larvae are regularly to be found amongst debris beneath loose bark on decaying timber, they appear to be generalist detritivores rather than specialist saproxylics, and are also found in decaying vegetation in other situations. Widespread across English lowlands but rarer in north.

Pachygaster leachii Stephens in Curtis* - Yellow-legged Black. Although larvae are regularly to be found beneath loose bark on decaying timber, especially oak, like *P. atra* they appear to be generalist detritivores rather than specialist saproxylics. Widespread across southern England.

Zabrachia tenella (Jaennicke)* = *minutissima* misident. – Pine Black. **Nationally Scarce.** Larvae in wood detritus in galleries of bark beetles under loose bark of dead pines, also fir, larch, birch; widespread.

Therevidae - Stiletto Flies

Pandivirilia melaleuca (Loew) – Forest Silver-stiletto. **RDB1.** Larvae in very dry powdery red-rotten heartwood of oak and in decaying heartwood of ash, often devoid of other living macro-organisms; wide scatter of reports across southern Britain (although confirmation through rearing only from Windsor), but always ancient wood pastures.

Thereva nobilitata (Fabricius)* - Common Stiletto. Has been reared from decaying heartwood and wood mould in hollow ashes, where the larvae occur with *Prionychus* beetle larvae on which they probably prey. Also develops in a wide range of other situations. Widespread.

Scenopinidae – In the wild, the natural habitat of windowflies is probably old timber, including bird nests in tree cavities and in the decaying wood itself. Some species have become synanthropic and occur within buildings.

Scenopinus niger (De Geer)* - Forest Windowfly. **Nationally Scarce.** Larvae predatory on dermestid and probably other beetle larvae in dry red-rotting heartwood of various broad-leaved trees in ancient wood pastures; also found under bark and in dry rot holes of elm and beech.

Asilidae - Sub-family **Laphriinae** develop as predators in decaying wood.

Choerades gilvus (Linnaeus) – Ginger Robberfly. **RDBK.** Larvae feed on the larvae and pupae of saproxylic weevils and longhorn beetles within pine timber; adults are active hunters, preying upon a wide variety of insects. Established in south-eastern England on pine-covered heaths.

Choerades marginatus (Linnaeus) – Golden-haired Robberfly. **Nationally Scarce.** In ancient oak woods and wood pastures of C and S England. The larvae have been reported from beetle burrows in decaying oak branches, while the adults hunt a wide variety of insects.

Laphria flava (Linnaeus) – Bumblebee Robberfly. **RDB3.** Develops in massive deadwood of Scots pine, where feeds on longhorn beetle larvae; also reported from spruce and birch on Continent. Ancient Caledonian pine forests.

Empids - Dance Flies. A large grouping of flies with inadequate knowledge of life histories; most adults are predators of other insects and this is probably also the case

for larvae; some *Drapetis* and *Tachypeza* are cursorial on bark as adults and develop beneath bark on deadwood, while a few develop in rotten wood, e.g. *Oedalea*, *Euthyneura*, *Hilara lurida*, *Rhamphomyia marginata* and *R. albidiventris*.

Hybotidae

Ocydromiinae

Leptopeza flavipes (Meigen)* - Has been reared from decaying wood of elm.

Oropezella sphenoptera (Loew)* - Seems likely to develop in decaying wood.

Euthyneura albipennis (Zetterstedt) - **RDB1.** Windsor Forest speciality.

Euthyneura gyllenhali (Zetterstedt) - **Nationally Scarce.** Locally frequent in woods throughout Britain.

Euthyneura halidayi Collin* - **Nationally Scarce.** Has been reared from a rot hole in willow; local in woodland, including carr, England, Scotland & Ireland.

Euthyneura inermis (Becker) - **RDB1.** Has been reared from rotten beech timber; also adults taken at hawthorn blossom. New Forest, Windsor & Hartslock Wood, Oxon.

Euthyneura myricae Haliday* - **Ireland only.** One female known, Ireland.

Euthyneura myrtilli Macquart - Beech deadwood; commonest of genus in Britain and not confined to older woodlands; not recorded from Ireland.

Oedalea apicalis Loew - **Nationally Scarce.** Ancient woodlands & old forest; hovers over shattered ends of large fallen trunks, especially beech; *Cossus* oaks & elm; probably develops in dead wood. Southern.

Oedalea flavipes Zetterstedt* - Oak; has been reared in numbers from relatively fresh branchwood..

Oedalea holmgreni Zetterstedt - Probably develops in deadwood.

Oedalea hybotina (Fallén) – **RDB.** Discovered new to Britain in Aberdeenshire, 1991, taken on birch foliage; subsequently found in Kent and Inverness-shire. Widespread in Europe.

Oedalea oriunda Collin - **RDB1**

Oedalea ringdahli Chvala - **RDB1**

Oedalea stigmatella Zetterstedt*

Oedalea tibialis Macquart - **Nationally Scarce.** Larvae in deadwood.

Oedalea zetterstedti Collin* - **Nationally Scarce**

Tachydrominae

Drapetis larvae have been reared from subcortical situations and from decaying tree stumps; adults are generally found running across tree trunks.

Drapetis arcuata Loew - **Nationally Scarce.** Has been reared from inside a hollow horse chestnut.

Drapetis assimilis (Fallén) - Common at tree trunks.

Drapetis simulans Collin - **Nationally Scarce.** Has been found in an owl nest in a hollow willow; also rot holes in sycamore, beech & poplar.

Tachydromia umbrarum Haliday* - Develops in decaying wood, eg ash. Britain & Ireland; rare in Scotland.

Tachypeza fennica Tuomikoski - Recorded from Scotland; not certainly distinct from *T.heeri*.

Tachypeza fuscipennis (Fallén) - **Nationally Scarce.** In wood detritus, rot holes, etc; willow, ash, beech, horse chestnut, etc.

Tachypeza heeri Zetterstedt - **RDB2.** Develops under bark of fallen aspen in north-east Scotland.

Tachypeza nubila (Meigen)* - Has been reared from beneath bark, in rot holes, and fungi such as *Bjerkandera*, but also non-saproxylic species. A very widespread species.

Tachypeza truncorum (Fallén) - **RDB3**

Empididae

Hilara lurida (Fallén) - Develops in rotten wood.

Rhamphomyia albidiventris Strobl - **RDB1.** Has been reared from pine bark.

Rhamphomyia marginata (Fabricius) – **RDBK.** Has been reared from decaying stubs of fir. Only known from woods in Kent,

Rhamphomyia pilifer Meigen = *dentipes* Zetterstedt* - Has been reared from rotten birch timber.

Rhamphomyia sulcata (Meigen)* - Decaying beech.

Dryodromya testacea (Rondani) - **Nationally Scarce.** Possibly develops in deadwood.

Hormopeza obliterata Zetterstedt - **RDB1.** Development unknown, but adults found around burning stumps and in bonfire smoke where they prey on *Microsania* species (Platypezidae). Only known in Britain from Windsor Forest and Crowthorne areas, Berkshire.

Dolichopodidae

Achalcus melanotrichus Mik* - **Nationally Scarce.** Unusual in its genus because of its association with trees. Reared from tree hole rot debris in various living broadleaves; and seen on sapping oak with rot-hole.

Hercostomus nigrilamellatus (Macquart) - **Nationally Scarce.** Has been reared from decomposing wood debris in the base of hollow trees, etc; willow, poplar & elm.

Hercostomus nigriplantis (Stannius) - Has been reared from decomposing wood debris.

Medetera - The larvae are found in burrows of bark beetles and other beetles on whose larvae and pupae they feed. May also be associated with wet decaying sap under bark. The adults court, mate and catch prey on tree trunks and logs, and also walls and signposts. The adults are not known to favour particular tree species, though they may tend to be found more on some trees than others as a result on habitat associations. The range of trees used for egg-laying is narrower than that used for hunting food and courtship.

Medetera abstrusa Thuneberg* - Common on tree trunks, usually beech, but also oak; has been reared from the fruiting body of the wood-decay fungus *Pleurotus cornucopiae*.

Medetera ambigua (Zetterstedt) - **Nationally Scarce.** Has been reared from galleries of *Ips* spp in pine and spruce; also adults on birch.

Medetera bispinosa Negrobov = *M.nitida* Macquart - **Nationally Scarce.** The yellowish maggot-like larvae develop in *Scolytus scolytus* bark beetle galleries under elm bark, and are largely restricted to galleries in branches of more than 7-8cm diameter, effectively restricting it to this scolytid in elm; adults hunt over vertical tree trunks, and have been found on lime. Larvae have on the Continent also been found under beech bark in the burrows of the scolytid *Taphrorychus bicolor* and, and occasionally in the passages of *Trypodendron domesticum* and *T.signatum*. Cornwall, Berks, Essex, Glos, Worcs.

Medetera borealis Thuneberg – **RDBK**

Medetera cuspidata Collin – **RDBK**

Medetera dendrobaena Kowarz* - Larvae feed on *Pityogenes chalcographus* in spruce and *Taphrorychus bicolor* in beech on the Continent. Adults reported from oak, birch & pine.

Medetera diadema (Linnaeus)

Medetera excellens Frey – **RDBK.** Has been reared from Scots pine, spruce and larch in Scotland.

Medetera fasciata Frey - **?RDBK**. Has been reared from larvae found under bark on dead Scots pine; Strathspey, Tayside, Aberdeenshire.

Medetera flavipes Meigen - Reared from detritus-filled hole at end of dead branch on horse chestnut. Southern England; also Midlothian.

Medetera freyi Thuneberg – **?RDBK**. Reared from decaying aspen *Populus tremula* in Inverness-shire in 1998.

Medetera impigra Collin* - Reared from larch, spruce, grey poplar, hornbeam, beech, ash and elm - in galleries of *Scolytus scolytus*. Has also been reared from the fruiting body of the wood-decay fungus *Daldinia*.

Medetera infumata Loew - **RDBK**. Reared from pine.

Medetera inspissata Collin - **RDB3.** Reared from various poplars, including decaying sap under bark, in Suffolk, Cambridgeshire and Somerset; develops under bark of fallen aspen in north-east Scotland.

Medetera jacula (Fallén)* - On sycamore, beech, birch, ash, poplar and pine.

Medetera jugalis Collin - **Nationally Scarce.** Poplars.

Medetera melancholica Lundbeck - **RDB3.** On the continent reared from pine as well as ash and grey alder.

Medetera micacea Loew

Medetera muralis Meigen* - Adults found on oak, pine & holly.

Medetera nitida (Macquart) - **Status not known.** British status unclear due to past confusion with *M.bispinosa* which was only resolved in 1996.

Medetera obscura (Zetterstedt) - **Nationally Scarce.** Has been reared from elm log debris, and pupae under pine bark.

Medetera oscillans Allen - **RDB3.** Has been reared from grey poplar bark.

Medetera pallipes (Zetterstedt) - Adults reported at oozing sap of a wound on horse chestnut.

Medetera parenti Stackelberg – **RDBK.** Reared from bark and sappy material from grey poplars.

Medetera petrophila Kowarz - **Nationally Scarce.** Reported on birch.

Medetera petrophiloides Parent* - Found on oak.

Medetera pinicola Kowarz - **Nationally Scarce.** Reared from bark beetle tunnels in pine logs. Associated in N.America with various conifer scolytids including *Dryocoetes autographus*.

Medetera saxatilis Collin* - Adults reported from poplar & oak.

Medetera setiventris Thuneberg – **?RDBK**. Discovered in a Malaise trap in a Speyside native pinewood in 1985. On the Continent (Finland and Russia) reared from scolytid galleries in spruce and pine, with *Hylurgops palliatus*, *Pityogenes chalcographus*, *P.quadridens* and *P.bidentis*.

Medetera striata Parent - Of doubtful occurrence in Britain owing to confusion with *M. fasciata*.

Medetera tristis (Zetterstedt) - Reported on beech and pine deadwood.

Medetera truncorum Meigen* - A very common species in Britain, on a wide range of broadleaved trees. Established in N.America where has been reared from *Prunus* bark and dead maple.

Medetera unisetosa Collin - **RDB3.** Biology unknown. Only recorded from New Forest, Wiltshire and Westerness.

Medetera veles Loew – **RDBK.** Scotland.

Systenus - All species have been reared from sap exudations on deciduous tree wounds or from moist tree-hole debris; larvae predators of larvae of rot-hole dwelling ceratopogonid midges.

Systenus bipartitus (Loew) - **Nationally Scarce.** Associated with a variety of broadleaves, including elm, beech, horse chestnut and sycamore.

Systenus leucurus Loew* - **Nationally Scarce.** In wide range of broad-leaved trees.

Systenus mallochi MacGowan - **RDB?** Reared from material in detritus-filled crevices in oak trunk in woodland, Morayshire, 1995, new to science. Other material reared from bark on dead aspen, *Cossus* elm, and birch rot-holes.

Systenus pallipes (von Roser)* = *S.adpropinquans* (Loew) = *Systenus pallidus* Vaillant - **Nationally Scarce.** Sap-runs and rot hole detritus in various broad-leaved trees.

Systenus scholtzii sensu auct.Brit.* =*S.alpinus* - **Nationally Scarce.** In wide range of broad-leaved trees; reared from damp black wood mould & decaying leaves in rot-hole 10ft up in ancient beech trunk; also from rot-holes in birch, poplar, horse chestnut and elm; also reared from fungus in a beech rot-hole; adults probably largely arboreal.

Systenus tener Loew - Associated with a variety of broadleaves, including elm, beech, horse chestnut and sycamore.

Neurigona - three non-British species from eastern Asia have been reared from decomposing wood, and one N. American species from rotten hickory wood, but biology in Europe unknown. Adults are mainly found on tree trunks.

Neurigona abdominalis (Fallén) – **RDBI.** Rare, less than five British records.

Neurigona biflexa Strobl – **RDBI.** Known in UK from a single female.

Neurigona pallida (Fallén)*

Neurigona quadrifasciata (Fabricius) - Possibly develops under bark on dead wood.

Neurigona suturalis (Fallén) - **Nationally Scarce**

Sciapus platypterus (Fabricius)* - Under bark.

Opetiidae

Opetia nigra Meigen* - Has been reared from rotten birch wood in Ireland. Adults also found in emergence traps on open ground so evidently not confined to wood.

Platypezidae - All larvae develop in fungi; oligophagous or monophagous.

Platypezidae: Callomyiinae

Agathomyia appear to develop internally in the tougher Polyporaceae fungi.

Agathomyia antennata (Zetterstedt) - Probably develops in the fruiting bodies of the fungus *Trametes versicolor*.

Agathomyia cinerea (Zetterstedt) - Only recently confirmed to occur in Britain; development is unknown but presumed to be in polypore or allied fungi.

Agathomyia collini Verrall - **RDB2.** Possibly develops in fungus on fruit trees.

Agathomyia elegantula (Fallén) = *boreella* (Zetterstedt) - **Nationally Scarce.** Biology unknown.

Agathomyia falleni (Zetterstedt) - **RDB3.** Larvae feed inside the fungus *Bjerkandera adusta*.

Agathomyia lundbecki Chandler = *biseta* misident. - Develops in fruiting bodies of *Inonotus radiatus* on decaying alder trunks.

Agathomyia unicolor Oldenberg* - Larvae feed inside the fungus *Bjerkandera adusta*.

Agathomyia viduella (Zetterstedt)* - Biology unknown.

Agathomyia wankowiczii (Schnabl) - Larvae form galls under brackets of *Ganoderma applanatum*; known from various sites in south-east England as well as Dunham Massey Park, Manchester. Presumed to be a recent establishment as the galls are conspicuous and records increasing.

Agathomyia woodella Chandler =*cinerea* misident. - Development is unknown but presumed to be in polypore or allied fungi.

Callomyia spp - Larva probably surface feeders on encrusting fungi on dead wood; only *amoena* has been reared.

Callomyia amoena Meigen* - Larvae feed on the surface of bark encrusting fungi (*Corticium* spp.) in damp situations.

Callomyia dives Zetterstedt - **Nationally Scarce.**

Callomyia elegans Meigen* - **RDB2.**

Callomyia speciosa Meigen*

Platypezidae: Microsaniinae

Microsania - Smoke flies. Biology unknown but adults attracted to wood smoke.
Microsania collarti Chandler
Microsania pallipes (Meigen)
Microsania pectipennis (Meigen)*
Microsania straeleni Collart - **RDB3.**
Microsania vrydaghi Collart - **?RDBK**. Added to the British list in 2001, from a bonfire site in Wytham Woods, Oxfordshire.

Platypezidae: Platypezinae

Bolopus furcatus (Fallén)* - Larvae feed within the fruiting bodies of polypores.
Paraplatypeza atra (Meigen)* - Develops in the fruiting bodies of the fungus *Pluteus cervinus*.
Paraplatypeza bicincta (Szilady) – Probably associated with gill fungi; known from one site in Surrey
Platypeza aterrima Walker
Platypeza consobrina Zetterstedt* - Larvae feed between the gills of the fruiting body of honey fungus, *Armillaria mellea* agg.
Platypeza fasciata Meigen* - Larvae feed between the gills of the fruiting body of honey fungus, *Armillaria mellea* agg. Has also been reared from non-saproxylic fungi.
Platypeza hirticeps Verrall - **Nationally Scarce.**
Polyporivora ornata (Meigen)* = *infumata* (Haliday) - Larvae feed within the fruiting body of the fungus *Trametes*.
Polyporivora picta (Meigen)* - Larvae feed within the fruiting body of the fungus *Trametes*.
Protoclythia modesta (Zetterstedt)* - Larvae feed between the gills of the soft fruiting body of honey fungus *Armillaria mellea* agg.
Protoclythia rufa (Meigen)* - Has been reared from the soft fruiting body of honey fungus *Armillaria mellea* agg.
Seri obscuripennis (Oldenberg) - **RDB2.** Has been reared from a soft polypore, possibly *Polyporus squamosus*.

Phoridae - Larvae of some in fungi.

Anevrina spp - Adults occur on tree trunks; presumably develop under bark on dead wood.
Megaselia spp - mostly fungus associated but one parasitoid of sciarid larvae.
Megaselia cinereifrons (Strobl)* - Larvae develop in *Merulius* and *Scutiger ovinus* and/or *Ovinus cristatus*.
Megaselia frameata Schmitz* =*buxtoni* Colyer & *imberbis* Schmitz - Develops in the fruits of polypores and other wood-decay fungi - records from *Laetiporus sulphureus*, *Polyporus*, *Bjerkandera*, *Meripilus*, *Plicaturopsis*, *Hypoxylon*, *Pleurotus* and *Xylaria*.
Megaselia halterata (Wood)* =*plurispinulosa* (Lundbeck) - Has been reared from *Pleurotus* as well as some terrestrial fungi (*Coprinus* and *Boletus*).
Megaselia hyalipennis (Wood)* - Has been reared from *Meripilus*.
Megaselia maura (Wood)* - Has been reared from wood-decay agarics.
Megaselia obscuripennis (Wood)* - Reported to be a parasitoid of the sciarid flies *Trichosia morio* and *T.trochanterata.*
Megaselia rubella (Schmitz)* - Polyphagous in fungi including *Pleurotus*, *Lentinus*, *Pholiota* and *Kuehneromyces*.
Megaselia wickenensis Disney - Single male reared from rot hole debris in a willow at Wicken Fen in 1993.
Triphleba gracilis (Wood)* - Has been reared from puparia found under bark of rotting larch and spruce logs.

Triphleba minuta (Fabricius) - Develops in fungus *Gymnopilus junonius* which grows on the base of trees and around cut stumps. Has also been reared from some terrestrial agaric fungi.

Woodiphora retroversa (Wood) – **RDBK.** Larval natural history not known, but association with goat moth larval burrows has been suggested.

Syrphidae

Blera fallax (Linnaeus) - **RDB1 & BAP Priority Species.** Larvae have been found inside wet, heart-rot cavities in pine stumps; old native pine forest areas of Speyside.

Brachyopa bicolor (Fallén) - **RDB3.** Larvae feed on decomposing sap in sap-runs, most often on oak and beech. A rare species of the old forest areas of south-east England, especially the New Forest and the Windsor area.

Brachyopa insensilis Collin* - **Nationally Scarce**. Larvae feed on decomposing sap in sap-runs on various broadleaves: elm, horse chestnut, ash, beech, lime, oak; widespread in Britain & Ireland.

Brachyopa pilosa Collin - **Nationally Scarce.** Associated with beech, birch and oak trees in southern England, but aspen in northern Scotland; a female has been seen to oviposit into fissures in bark surface of felled beech trunk, where in early steps in development of scaling of bark under way; puparium has been found under outer layer of bark on a fallen trunk; larvae feed on decomposing sap in sap-runs. Disjunct distribution: widespread although scarce in southern England, and also in north-east Scotland.

Brachyopa scutellaris Robineau-Desvoidy* - Larvae feed on decomposing sap in sap-runs low down at the base of a wide variety of broadleaves and even yew. Widespread in England and Wales, but more isolated populations in Scotland. Also Ireland.

Brachypalpoides lentus (Meigen)* - Develops in decaying heartwood in old live beech, particularly trees with exposed decay at ground level which extends into the roots. England & Wales; scattered across central Scotland; Ireland.

Brachypalpus laphriformis (Fallén)* **- Nationally Scarce.** Widespread in old forest areas across much of England and Wales, although apparently absent from East Anglia; known from Ireland. Larvae develop in rot-holes in large old broad-leaved trees; adults tend to favour oviposition in standing hollow trunks broken off 2-4m above ground, particularly beech, but also oak and ash.

Caliprobola speciosa (Rossi) - **RDB1.** Larvae develop in decaying heartwood of beech trees, especially large old stumps, extending underground in the roots; southern old forest species, mainly the New Forest and Windsor.

Callicera larvae probably feed on micro-organisms in their tree rot-hole habitats, the duration to pupation varying according to fluctuations in food levels.

Callicera aurata (Rossi) - **RDB3.** Adult primarily arboreal, descending rarely to drink by dapple-shaded streams or to feed at bramble flowers; larvae in water-filled rot-holes in live beeches & birches. A rare species of southern old forests in GB; across Europe, extending into Caucasus.

Callicera rufa Schummel - **Nationally Scarce [RDB3].** Larvae in wet rot-holes in large old Scots pine in old pine forest; will also develop in larch; puparia in fissures and between plates of bark on host tree; duration of larval stage from 2-5 years. Adults primarily arboreal, but females descend to freshly-cut stumps in sunshine or to visit rot-holes; widespread in native pine forest areas of Scottish Highlands and so not meriting its current RDB status in GB; also reported from Holland and Corsica.

Callicera spinolae Rondani - **RDB1 & BAP Priority Species.** Ancient beech-oak forest with overmature and senescent trees; adult primarily arboreal, but descends to feed at flowers of Angelica, ivy, golden-rod, or to drink at streams; larvae in water-filled rot-

holes in living beech, also *Populus* elsewhere in Europe; East Anglia; across southern half of Europe.

Chalcosyrphus eunotus (Loew) - **RDB2.** Develops in sap-runs and other accumulations of sap in bark cavities. Adults tend to be associated with fallen deadwood lying semi-submerged in small streams. A rare species, confined to the rain-shadow country of the south-west, from Dorset to Denbighshire.

Chalcosyrphus nemorum (Fabricius)* - An early successional wood decay species of wet woodlands. Larvae under bark of fallen trunks and branches either in a layer of decaying sap or in moist decaying bark and sapwood. Widespread in Britain but very local throughout its range; Ireland.

Criorhina asilica (Fallén) - **Nationally Scarce.** Develops in decayed heartwood debris in the base of hollowed trees, probably mainly beech; adults at hawthorn blossom. Widespread in England and Wales but scarce within this range.

Criorhina berberina (Fabricius)* - Eggs are mainly laid in bark crevices around the base of stumps and on the undersides of leaves of plants growing on or next to stumps, particularly beech; the larvae develop in wet heart-rot within the tree roots; later puparia are formed in leaf litter around the stumps. The species also develops in wet rot-holes in tree trunks. The adults require blossom for nectaring, especially hawthorn. Mainly associated with ancient woodlands and wood pastures; widespread over much of England, Wales & Ireland, also in southern Scotland.

Criorhina floccosa (Meigen)* - Larvae develop in wet decaying wood debris in cavities and roots of elm, sycamore and beech. A scarce woodland species, although extending out along adjoining hedgerows where available. Widespread but scarce.

Criorhina ranunculi (Panzer)* - **Nationally Scarce.** Develops in moist decaying heartwood in bases and roots of old trees and stumps, especially beech. Adults usually found at blossom of early spring-flowering shrubs. Primarily an old woodland species. Widespread across England; Ireland; rare in Scotland.

Ferdinandea cuprea (Scopoli)* - The larvae mainly develop in sap-runs on oak and other broad-leaved trees, but have also been found in other situations with semi-liquid decaying material; puparia have been found around the roots of such trees. Mainly ancient woodlands and wood pastures; widespread throughout much of Britain. Also in Ireland.

Ferdinandea ruficornis (Fabricius) - **Nationally Scarce.** Develop in sap-runs in ancient woodlands and wood pastures. Very sparsely scattered across lowland England.

Hammerschmidtia ferruginea (Fallén) - **RDB1 & BAP Priority Species.** Develops in accumulations of decaying sap under the bark of recently dead mature aspen; two year development; adult at flowers of rose and bird cherry; mainly Speyside, where populations are very restricted and scattered.

Mallota cimbiciformis (Fallén) - **Nationally Scarce.** Larvae in water-filled rot-holes of varying sizes and heights on a wide variety of small and large broad-leaves; puparia occur just above in drier detritus. A species of relict ancient woodlands and wood pastures, widely but sparingly across lowland England, but also known from North Wales and the Clyde Valley woods.

Microdon analis (Macquart)* = *eggeri* Mik - **Nationally Scarce.** Breeds beneath bark on well-decayed pine and birch logs or stumps on heathland, within nests of *Formica* and other ants; larvae feed on ant larvae and pupae. Disjunct distribution: central southern England and northern Scotland; Ireland.

Myathropa florea (Linnaeus)* - Develops in a wide range of wet decaying timber microhabitats from rot-holes high in the canopy to decaying roots underground and shallow pools of water on the bark of fallen trees; also in sap runs; not yet found

under bark; puparia just above the surface of wet wood detritus or the water, either buried in decaying wood or exposed; wide range of broad-leaved trees. Very widespread in Britain. Ireland.

Myolepta dubia (F.) = *luteola* (Gmelin) - **Nationally Scarce.** Larvae in wet rot-holes of varying sizes on a wide variety of small and large broad-leaves; rot-holes high and low on trees. Ancient woodlands and wood pastures across southern and eastern England.

Myolepta potens (Harris) - **RDB1 & BAP Priority Species.** Develops in water-filled rot-holes at base of ancient beech and other broad-leaved trees; only known from the Avon Gorge area of Bristol and the Somerset Levels; not seen since 1961 and feared extinct.

Pocota personata (Harris) - **RDB2.** Develops in rot-holes, especially in beech but also ash, mostly high above ground; restricted to woodlands and parklands with ancient trees; scattered widely although very sparingly across lowland England, especially Windsor Forest and the New Forest.

Psilota anthracina Meigen - **RDB2**. Larvae have been reported from sap runs on living oak trees on the Continent; adults at hawthorn blossom. Restricted to sites with large numbers of ancient trees, such as Windsor Forest, the New Forest and Richmond Park, but known from as far north as Derbyshire

Sphegina clunipes (Fallén)* - Larvae develop in decaying sap under bark and in sap-runs on a range of trees, including conifers, most abundant in timber lying in streams. Also reported to develop in sap-runs. Adults nectar at partially shaded flowers along the edges of rides and clearings. Associated with damp shady ancient woodland situations. Very widespread in Britain. Ireland.

Sphegina elegans (Schummel)* =*kimakowiczi* Strobl - Larvae develop in accumulations of decaying sap under wet bark; damp shady woodlands, generally in much wetter situations than *S. clunipes*. Scattered but widespread in Britain & Ireland.

Sphegina sibirica Stackelberg - A northern and western species in Britain, only recently discovered: several Scottish records, also Wenlock Edge, Shropshire, & SE Wales. On the continent in *Picea* forest. and known to be spreading westwards.

Sphegina verecunda Collin - **Nationally Scarce.** Larvae in decaying sap under wet bark of broadleaves and conifers, including sap in tunnels of the weevil *Hylobius abietis* in conifer stumps. Most frequent in the damper south-west of Britain, but scattered over much of GB.

Volucella inflata (Fabricius) - **Nationally Scarce.** Larvae develop in sap-runs, probably feeding on other insect larvae. In or near woodland with large mature and older trees. Widespread and locally frequent across central southern and south-eastern England, extending more sparingly into the Midlands and East Anglia.

Xylota abiens Meigen* - **Nationally Scarce.** Larvae in wet decaying roots of beech stumps. Mainly known from ancient wood pastures. Concentrated in central southern England but extending sparingly as far north as the Lake District. Ireland.

Xylota florum (Fabricius)* - **Nationally Scarce.** Larvae in decaying wood and sap; adults usually found in damp places within woodlands such as streamsides. Sparingly scattered across much of England and Wales; Ireland.

Xylota jakutorum Bagachanova = *coeruleiventris* Zetterstedt* - **Nationally Scarce.** Develops in the sap-filled tunnels of the bark weevil *Hylobius abietis*; mainly known from conifer plantations. Originally regarded as a species of native pine forest but has responded to the widespread planting of conifers and now occurs throughout northern and western Britain. Ireland.

Xylota segnis (Linnaeus)* - Develops in decaying sap under freshly dead broad-leaved and coniferous timber, in wet sawdust, sap runs, etc; also in silage and decaying potatoes. Widespread in all sorts of woodland and scrub, also along hedgerows and in parks and gardens; Britain & Ireland.

Xylota sylvarum (Linnaeus)* - Major larval development site is wet decaying roots of broad-leaved trees, larvae ascending, beneath bark, to pupate; also in rot-holes. Widespread in old woods and wood pastures across Britain & Ireland..

Xylota tarda Meigen* - **Nationally Scarce.** Develops in sap-runs of aspen in Scotland; larval habitat in England not known. Usually in damp situations in woodland, nearly always where old trees are present. Thinly scattered across much of lowland England; Scottish populations very restricted and scattered. Ireland.

Xylota xanthocnema Collin - **Nationally Scarce.** Larvae in rot-holes on various broad-leaves and yew; usually in or near ancient woodland or wood pasture. Thinly scattered across southern England, extending northwards as far as Yorkshire.

Pseudopomyzidae

Pseudopomyza atrimana (Meigen) - **RDB1.** Larvae possibly in dead wood - the adults have been found in numbers over fallen trunks in Finland. Only added to GB list in 1983, and known from three specimens: New Forest, Kent and Isle of Skye.

Micropezidae - The larvae of some species develop in rotten wood.

Rainieria calceata (Fallén) - **RDB1.** The larvae are assumed to live in decaying wood of stumps and logs, with a preference for those with bark still attached; probably old beeches and possibly oak; Windsor Forest, Burnham Beeches & sites in Surrey.

Tanypezidae

Tanypeza longimana Fallén - **RDB2**. Possibly associated with decaying wood, although reared in laboratory on watermelon rind and pulp in USA. Usually in damp broadleaved woodland, often by rivers or streams.

Strongylophthalmyiidae

Strongylophthalmyia ustulata (Zetterstedt) - **RDB1.** Larvae develop in thick wet decaying cambial layers under bark of dead aspen stems in northern Scotland; only other GB record a single adult at Monks Wood, Cambridgeshire; elsewhere in Europe known from several countries to east.

Megamerinidae

Megamerina dolium (Fabricius) - **Nationally Scarce.** Larvae under bark of dead and dying broadleaves, apparently predaceous or necrophagous. In GB confined to ancient woodlands. Widespread across Europe, occurring in Germany & Russia.

Psilidae - Some species develop under the bark of trees.

Chyliza annulipes Macquart = *fuscipennis* (Robineau-Desvoidy) - **Nationally Scarce.** Larvae develop in resinous wounds on conifers. Old records for some native pinewoods, but now better known from commercial plantations. Widely recorded across England and Wales; also in Speyside.

Chyliza leptogaster Panzer* =*scutellata* (Fabricius) - Larva of either this or *C. nova* have been recorded under bark of 23 species of broadleaved trees on the Continent. Most associations probably relate to this species which is commonly found on damaged living trees. Larval feeding results in formation of phloem necroses. They were also found in association with the ?non-British cambium-mining cecidomyiid *Resseliella quercivora* (Mamaev).

Chyliza nova Collin* - **Nationally Scarce.** Records of this scarcer species were not separated from *C. leptogaster* in the above research, and it appears that both species have similar habits. There is also a separate record of *C. nova* reared from under bark of a

lilac *Syringa* branch in a note in the Polish checklist. Scattered across southern Britain.

Lonchaeidae - Lance Flies. The larvae of most *Lonchaea* feed on the larvae of bark beetles (Scolytidae) in their galleries in and beneath bark on recently dead or dying timber. The adults of these species are usually to be found around the host trees. Most are found mainly in old established woodland, although few are restricted to the classic ancient woodland sites.

Dasiops perpropinquus Morge - Larvae develop under bark on deadwood; hornbeam & probably other species.

Dasiops spatiosus Becker - Larvae develop under bark on deadwood; in well-decayed soft sapwood of birch & lime.

Lonchaea affinis Malloch - Only recently distinguished in Britain from *L. laxa* Collin. Scottish Highlands; probably associated with pine.

Lonchaea albitarsis Zetterstedt - Apparently a boreal species, known from Rassal Ashwood (Wester Ross), Finland, Sweden and north west Russia.

Lonchaea britteni Collin* - **Nationally Scarce.** Has been reared from under beech bark. England & Ireland.

Lonchaea bukowskii Czerny - **?RDBK**. Discovered in Burnham Beeches, Buckinghamshire (1995) and Somerset (2000).

Lonchaea caledonica MacGowan & Rotheray - One of three species which had been confused as *L. laticornis*. Has been reared from larvae found under bark on Scots pine; Caledonian pinewoods, Finland and Netherlands

Lonchaea caucasica Kovalev - A recent addition to the British list; previously confused with *L .limatula*. Larvae found on surface of a polypore on beech trunk in north-west Caucasus. Found on beech in southern England; has been reared from under birch bark in Scotland.

Lonchaea collini Hackman - **Nationally Scarce.** Usually found on pines and is a facultative predator of scolytid beetles. England & Scotland.

Lonchaea contigua Collin* - Decaying beech timber; widespread England; Ireland.

Lonchaea contraria Czerny - Has been reared from under bark on beeches in New Forest and Burnham Beeches. Quite widespread in central Europe.

Lonchaea corusca Czerny - **Nationally Scarce.** Broadleaves. Widely scattered across Britain.

Lonchaea fraxina MacGowan & Rotheray* - Misidentified as *L.hirticeps* until very recently. All reared material are from puparia found beneath bark on dead ash. Widespread across GB and across western Europe from Finland to Spain.

Lonchaea fugax Becker - Poplar and aspen.

Lonchaea hackmani Kovalev - Has been reared from under bark on *Populus tremula* widely in northern Scotland; also male taken in Sandwell Valley, English Midlands; Russia & Finland.

Lonchaea hirticeps Zetterstedt - Occurrence in GB needs confirmation.

Lonchaea laticornis Meigen - Occurrence in GB needs confirmation.

Lonchaea laxa Collin - **Nationally Scarce.** Beech and birch in GB, but spruce on Continent. Widely scattered across Britain.

Lonchaea limatula Collin

Lonchaea mallochi MacGowan & Rotheray - One of three species which had been confused as *L.laticornis*. Has been reared from larvae found under bark on various broadleaves – *Fraxinus*, *Quercus*, *Betula*, *Fagus*, *Alnus*, *Acer*. Widespread in Scotland; in various lowland wood pastures in England; France, Netherlands & Spain.

Lonchaea nitens (Bigot) - **Nationally Scarce.** Very local in woodland; biology unknown. Widely scattered across Britain.

Lonchaea obscuritarsis Collin - Biology unrecorded but probably develops under bark on deadwood.

Lonchaea palposa Zetterstedt - **Nationally Scarce.** Birch, hawthorn, poplar, aspen. England & Scotland.

Lonchaea patens Collin* - Broadleaves.

Lonchaea peregrina Becker - **Nationally Scarce.** Under bark of *Salix*, *Populus*, elm, sycamore & ash. Common under bark of fallen aspen in north-east Scotland; widely scattered across Britain.

Lonchaea postica Collin - Occurs around decaying beeches, biology unrecorded.

Lonchaea ragnari Hackman - Larvae within decaying sapwood on fallen *Betula;* in various old birch wood areas of Scotland; also Finland, Sweden & Russia.

Lonchaea scutellaris Rondani - Reared from galleries of bark beetle *Scolytus ratzeburgi* in Czech Republic.

Lonchaea serrata MacGowan & Rotheray - One of three species which had been confused as *L. laticornis*. Has been reared from softened sapwood under bark on *Fagus* and *Salix*. Known from various lowland wood pastures in England: Ashridge, Burnham Beeches, New Forest, etc.

Lonchaea sylvatica Beling* =*deutschi* misident. - Reared from under bark on dead oak. Frequent on decayed beeches.

Lonchaea ultima Collin - **Nationally Scarce.** Very local, in woodland; southern England; biology unknown.

Lonchaea zetterstedti Becker - Has been reared from under bark on *Pinus*, *Picea* and an exotic conifer in Scottish plantations. A holarctic species; in Europe known from Scandinavia, Alps and Germany.

Pallopteridae - The larvae of some species occur under bark in detritus of burrowing beetles.

Palloptera anderssoni Rotheray - Reared from under bark of various broadleaved trees, *Tilia*, *Betula, Fagus* and *Acer pseudoplatanus*, in Scotland.

Palloptera muliebris (Harris)* - Has been bred from debris in workings of beetle larvae in pine bark; possibly also in broadleaved trees.

Palloptera usta (Meigen)* - **RDB3.** Mainly Scottish, but with scattered localities throughout England, plus Anglesey; at sappy pine; larvae predatory on scolytid beetle larvae.

Palloptera ustulata Fallén* - Has been reared from elm bark attacked by *Scolytus* bark beetles, and found under grey poplar bark.

Piophilidae – a small group of flies generally associated with carrion, or in some cases rotting fungi or bird nests.

Mycetaulus bipunctatus (Fallén) - Larvae have been found in decaying fungi and it has also been reared from rotten wood and bird nests.

Ulidiidae

Myennis octopunctata (Coquebert) - **RDB2.** Larvae occur beneath bark on deadwood; adults characteristically rest on tree trunks; broad-leaved woods and parks, especially poplars, mostly in south-east England.

Homalocephala albitarsis Zetterstedt = *bipunctata* (Loew) – **RDBK.** Larvae under bark on beech, apparently feeding on the breakdown products of the decaying cambial layers; North York Moors, Midlothian and Inverness-shire. Has been reared from aspen in Norway and pine in Sweden.

Homalocephala biumbrata (Wahlberg) = *albitarsis* misident. - **RDB1.** Larvae and puparia under bark of freshly fallen aspen, the larva apparently feeding on the breakdown products of the decaying cambial layers caused by micro-organisms. Northern Scotland. In Sweden puparia have been found under bark of dead and dying conifers.

Lauxaniidae - The larval stages are mostly saprophagous, including rotting wood.

Lyciella stylata Papp – Often on tree trunks and said to be associated with tree sap.

Meiosimyza (=Lyciella) affinis (Zetterstedt) - Has been reared from a rotting birch stump.

Peplomyza litura (Meigen)* - Reared from beneath bark of beech, ash and aspen, also rot hole on ash; previous rearing records from a withered crab apple leaf and a bird nest so not specific to this habitat.

Sciomyzidae

Pherbellia annulipes (Zetterstedt) - **Nationally Scarce.** Included as the larvae are predators of snails on deadwood and the adult is nearly always found in association with dead wood.

Clusiidae - Larvae in rotten wood and fungi. Adults appear to prefer exposed, bare patches of sapwood on fallen trees and branches above a diameter of about 20cm. Females oviposit in cracks and crevices at broken branch ends, on smooth bark and among encrusting fungi. The larvae occur just below the surface in soft, decayed sapwood.

Clusia flava (Meigen)* - In decaying timber of a wide variety of broadleaves. Widespread in Britain.

Clusiodes (Clusiaria) apicalis (Zetterstedt) - **Nationally Scarce.** Associated with decaying wood of birch and aspen in Scottish Highlands; also reported in North Wales.

Clusiodes (Clusiaria) geomyzinus (Fallén) - **RDB3.** Larvae probably develop in dead wood of pine. Mainly Speyside, plus Sutherland.

Clusiodes (Clusiaria) ruficollis (Meigen) =*facialis* Collin - Larvae & pupae have been found under bark of recently felled hornbeam. Adults seen at beech. Rare species in south-east England; also known from a few northern Scottish localities.

Clusiodes (Clusiodes) albimanus (Meigen)* - Has been reared from damp rotten ash and beech and probably also breeds in birch, usually in large logs and stumps. Widespread in Britain.

Clusiodes (Clusiodes) caledonicus (Collin)* - **Nationally Scarce.** Larvae develop under loose bark of deadwood of pine. Scottish Highlands plus Rhum & Eigg. Ireland.

Clusiodes (Clusiodes) gentilis (Collin)* - Has been reared from rotten willow and birch; usually in large logs or stumps. Also found on beech. Common in southern England; also Midlothian.

Clusiodes (Columbiella) verticalis (Collin)* - Has been reared from rotten fallen small oak branch and birch.

Heteromeringia nigrimana (Loew) - **RDB1.** Larvae probably develop in soft wood decay; known from six scattered localities across southern England.

Paraclusia tigrina (Fallén) - **RDB2.** Larvae develop in decaying wood of broadleaved trees. Highly scattered across southern Britain.

Acartophthalmidae

Acartophthalmus bicolor Oldenberg* - **RDB3.** Widespread in southern England; adult often in numbers about decaying fruiting bodies, mainly of wood-decay fungi incl. *Polyporus squamosus* and a *Mycena*; also recorded at carrion. Larval biology unknown.

Acartophthalmus nigrinus (Zetterstedt)* - In fungi on deadwood; Scotland, Herefordshire, New Forest, Knole Park, Co Wicklow, etc. Has been recorded in numbers attracted to *Meripilus giganteus* on beech.

Odiniidae - Where the larval habits are known, they are all associated with wounded, dead or dying timber. Also mostly associated with the galleries of wood-boring beetles,

but some occur in galleries of Diptera and Lepidoptera. Saprophagous, or possibly feeding on frass or dead insects.

Odinia betulae MacGowan & Rotheray – Adults found under brackets of birch polypore *Piptoporus betulinus* in Wester Ross.

Odinia boletina (Zetterstedt)* - Larva probably develops in beetle borings in Polyporaceae, mainly *Ganoderma*, but also *Fomes*, *Polyporus squamosus*, *Bjerkandera*; females seen on underside of brackets, and also at sap run on horse chestnut. England & Ireland.

Odinia hendeli Collin - **RDB2.** Has been found with larvae of the beetle *Ischnomera* in a decaying large elm. Only known from three sites across southern England.

Odinia maculata (Meigen) - **RDB3.** Larvae associated with sappy workings of wood-boring beetle larvae and goat moth in oak, and adult has been found at a sap run on oak. Five localities across southern England.

Odinia meijerei Collin - **Nationally Scarce.** Larvae are commensal in borings of the elm bark beetles *Scolytus scolytus* & *S. multistriatus*. Southern England.

Odinia ornata (Zetterstedt) - **RDB2.** Known from spruce in USSR, although associated with birch woods in East Anglia.

Odinia pomona Cogan - **RDB1.** Larvae reared from beneath bark on dead apple tree; Danbury, Essex (1964).

Odinia xanthocera Collin* - **RDB2.** Larvae occur in second year galls of the beetle *Saperda populnea* in aspen and *Salix* stems, feeding on pre-pupae, pupae and pre-adults; Glengariff (Co Cork), Bernwood Forest (Oxfordshire) and Cobham (Surrey).

Agromyzidae

Hexomyza schineri (Giraud) - Forms twig galls on *Populus nigra* and *P. tremula*.

Hexomyza simplicoides (Hendel) - Forms twig galls on *Salix* spp., especially *S.caprea*.

Phytobia - All species are believed to feed in cambium of twigs or trunks of trees.

Phytobia cambii (Hendel)* - The larva bores in the cambium of stems of *Salix* spp and aspen, pupating on the ground beneath; widespread.

Phytobia carbonaria (Zetterstedt) - Bores in Rosaceae: *Crataegus*, *Malus*. Hertfordshire, Cambridgeshire, Cornwall, Dunbartonshire.

Phytobia cerasiferae (Kangas) - The larva bores in stems of *Prunus cerasifera*, and pupates in early spring on the ground beneath. East Malling & Corsica.

Phytobia errans (Meigen) - Host species unknown; Kent, Hertfordshire, Oxfordshire, Dunbartonshire.

Anthomyzidae

Fungomyza albimana (Meigen) - Has been recorded visiting various decaying fungi including some wood decay species; presumed to develop in fungi, unlike most other members of family which are higher plant feeders.

Aulacigastridae

Aulacigaster leucopeza (Meigen) - **Nationally Scarce.** Larvae feed on decomposing sap of sap-runs; adults can be fairly frequent at sap on horse chestnut, and were formerly so at elm before Dutch elm disease; also reported at yew and oak. Southern Britain and Scotland.

Periscelididae - Larvae are said to develop in decomposing sap of tree wounds.

Periscelis (Microperiscelis) annulata (Fallén) - **Nationally Scarce.** Larvae appear to develop in the fermenting sap of broadleaved trees, including beech, elm, ash and sycamore. Adults are usually found near to sap runs. Prefers old woods with post-mature trees; mostly in southern England. Also a few records from Edinburgh area and Perthshire where non-woodland trees involved.

Periscelis (Microperiscelis) winnertzi Egger - **RDB1.** Reported at sap; larval biology unknown. New Forest, Wyre Forest & Moccas Park.

Periscelis (Periscelis) nigra (Zetterstedt) - **RDB1.** Probably develops in sap runs, requires confirmation. Spey Valley & elsewhere in Scotland; Yorkshire.

Asteiidae - Larvae in debris in hollow trees, etc.

Asteia amoena Meigen* - Feeds at ivy blossom and sap; develops in wood detritus, in hollow trees, etc.

Astiosoma rufifrons Duda - **RDB2.** Attracted to cold wood ash; may feed at sap.

Leiomyza dudai Sabrosky - Has been reared from fungi, chiefly lignicolous.

Leiomyza laevigata (Meigen)* - Breeds in fungi including those on deadwood, eg *Pleurotus cornucopiae*.

Leiomyza scatophagina (Fallén)* - Breeds in various fungi, including *Polyporus squamosus*. Larvae have also been recorded from dried reed stems.

Milichiidae

Desmometopa palpalia (Wahlberg) - Reared from *Cossus* tree, *Ulmus,* at Barton Mills, Suffolk, in 1909.

Madiza britannica Hennig - **RDB2.** Develops in wood detritus & rot holes; beech, sycamore, poplar and elm.

Madiza pachymera Becker - **RDB3**. Previously confused with *M. britannica*. Most rearing in fact relate to this species, which is commoner than *britannica*. Develops in rotten wood of beech, birch and elm. Nine confirmed localities.

Neophyllomyza acyglossa (Villeneuve) – **RDBK.** Widespread in southern England, especially frequent in Windsor and New Forests; adults usually found running about on oak foliage. A few northern Scottish records, where puparia have been found in moist decaying sapwood of birch. Only previous rearing record is from a birch water trough affected by wet rot in Russia, together with larvae of the fly *Lonchaea limatula*.

Neophyllomyza leanderi Hendel - All specimens known are from New Forest. Biology unknown, but possibly deadwood associated if this is the regular habitat of *N.acyglossa*.

Milichia ludens (Wahlberg) – **RDBK.** Associated with the tree-nesting ant *Lasius fuliginosus*.

Phyllomyza donisthorpei Schmitz - Associated with the tree-nesting ant *Lasius fuliginosus*.

Phyllomyza equitans (Hendel) - Associated with the tree-nesting ant *Lasius fuliginosus*.

Phyllomyza longipalpis (Schmitz) - Biology unknown but most records are from old forest areas, especially Windsor and New Forests; adults running about on oak foliage; may be associated with tree-nesting ants, *Lasius brunneus* being a possibility at some sites.

Carnidae

Meoneura neottiophila Collin* - Has been reared from bird nests and from the terrestrial bolete *Leccinum scabrum*; adult males were found on caps of *Pleurotus* during survey of Ashridge, Hertfordshire. According to A. Godfrey (*pers.comm*.) it has been found on detritus below sap runs.

Chloropidae

Gaurax britannicus Deeming – **RDBK.** Reared from an elm log in Worcestershire; three other records from southern England.

Gaurax dubius (Macquart) - Has been reared from birch polypore *Piptoporus betulinus*, and the adult has been found resting under brackets of *Trametes* and *Bjerkandera*.

Gaurax fascipes Becker* - Reared from under bark in a dead branch; also recorded from *Piptoporus* and from bird nests. Widely distributed in England and Wales; present in Ireland.

Lasiambia baliola (Collin) - **Nationally Scarce.** Associated with sap flows: adults may visit sap for feeding, and has been reared from sappy bark.

Lasiambia brevibucca (Duda) - **Nationally Scarce.** Associated with sap flows and rot holes; adults may visit sap for feeding; has been reared from both rot-hole debris from sappy bark. Widespread in lowland England.

Tricimba cincta (Meigen)* - Polyphagous in fungi including both wood decay (*Bjerkandera* & *Chondrostereum*) and terrestrial species (*Russula*). Common in Britain; only known in Ireland from Glengarriff, Co Cork.

Heleomyzidae - Most are associated with nests of mammals or birds; the larvae of some species develop in rotting wood, while some *Suillia* spp breed in subterranean fungi.

Neossus nidicola (Frey) - **RDB3.** Probably needs old hollow trees where it is associated with bird nests (barn owl & starling) or bat roosts (noctule); also in other dark, damp environments with the same hosts. Only three GB localities known.

Neoleria ruficeps (Zetterstedt) - Polyphagous in fungi including some wood-decay species.

Heteromyza oculata Fallén* - Has been reared from an unidentified lignicolous fungus.

Tephrochlamys flavipes (Zetterstedt) - Polyphagous in fungi including some wood decay species. Also develops in bird nests and rot holes.

Suillia atricornis (Meigen)* - Polyphagous in terrestrial agarics; also develops in *Armillaria*.

Suillia bicolor (Zetterstedt)* - Polyphagous in fungi including some wood decay species.

Suillia variegata (Loew)* - Polyphagous in fungi including some wood decay species.

Chyromyidae - The larvae of some species develop in guano near the nests or roosting places of birds, in mammal burrows and under the bark of trees.

Chyromya flava (Linnaeus)* - Common in Britain, developing in bird nests and wood detritus.

Gymnochiromyia inermis (Collin) - In wood detritus or bird nests, and reared from rotten wood debris in a decaying elm**.**

Sphaeroceridae - Some are associated with sap-runs or fungi, but possibly none specialising on old trees.

Crumomyia roserii (Rondani)* - Has been reared from *Armillaria mellea* and other decay fungi.

Apteromyia claviventris (Strobl) - Polyphagous in fungi including some wood decay species.

Opalimosina denticulata (Duda) - On decaying tree fungi.

Opalimosina mirabilis (Collin)* - On decaying fungi, especially tree fungi.

Opalimosina simplex (Richards) - Decaying tree fungi.

Phthitia (Kimosina) plumosula (Rondani) - Reported from a fungus-encrusted log; Knole, Windsor, Cliveden.

Spelobia parapusio (Dahl) - Polyphagous in fungi including some wood decay species, eg *Pleurotus*.

Sphaerocera curvipes Latreille* - In rotting tree fungi, including *Polyporus squamosus*.

Drosophilidae - *Chymomyza* spp develop under bark on freshly dead timber. The adults are attracted to wood which has recently had its bark removed or has been freshly exposed, through physical damage, where they perform their courtship displays.

Chymomyza costata (Zetterstedt) - **Nationally Scarce**. Widely in Scotland, where puparia found under bark of *Picea* and *Pinus* stumps; also reported from birch stumps; only a handful of southern English records. Adults attracted to tree sap and decaying fruit; also use *Fomes* brackets on birch as courtship sites (P.J. Chandler, pers.comm.).

Chymomyza distincta Egger – **RDBK.** Adults have been found on cut ends of recently felled pine trunks. Possibly confined to Windsor Forest.

Chymomyza fuscimana (Egger)* - Larvae develop in fermenting sap under bark, adults usually being found at cut ends of fresh logs and freshly broken ends, eg ash, beech and poplar.

Drosophila (Dorsilopha) busckii Coquillett* - Has been reared from rot-hole debris, as well as woodland agarics, and decaying plant material generally, and the adult is attracted to fruit. Widely distributed and cosmopolitan.

Drosophila (Drosophila) cameraria Haliday* - Polyphagous in decaying fungi and other decaying materials, including *Laetiporus sulphureus* as well as many terrestrial fungi.

Drosophila (Drosophila) funebris (Fabricius) - Polyphagous in fungi including both wood decay and terrestrial species.

Drosophila (Drosophila) histrio Duda - Polyphagous in fungi including some soft polypores: *Meripilus* and *Grifola*.

Drosophila (Drosophila) immigrans Sturtevant* - Sap.

Drosophila (Drosophila) kuntzei Duda - Has been reared from *Polyporus* and *Auricularia*.

Drosophila (Drosophila) littoralis Meigen* - Has been reared from sap on a sycamore stump in Midlothian.

Drosophila (Drosophila) phalerata Meigen* - Polyphagous in fungi including both wood decay and terrestrial species.

Drosophila (Drosophila) transversa Fallén* - Polyphagous in fungi including both wood decay (*Polyporus* & *Ustulina* recorded) and terrestrial species.

Drosophila (Hirtodrosophila) confusa Staeger - Adult flies have been taken on *Polyporus squamosus* on elm, and at fresh *Ganoderma*: often seen at rest beneath *Ganoderma* brackets among droplets of reddish moisture weeping from the spore-producing surface.

Drosophila (Scaptodrosophila) deflexa Duda* - Associated with trees and shrubs in damp situations.

Drosophila (Sophophora) obscura Fallén* - A widespread species, most often found in broadleaved woodlands and parks. Larvae have been found beneath sappy bark with yeast on elm and the fly has been reared from sappy stumps of *Salix* and sycamore sap. The fly is attracted to a wide range of sweet and decaying substances.

Drosophila (Sophophora) subobscura Collin* - The natural breeding media are tree sap and fungus, but it has also been reared from diseased *Iris* root and fermenting oak galls of *Biorrhiza pallida*. Adults are attracted to a wide range of sweet and decaying materials. Common and widespread throughout Britain, in open as well as wooded country.

Drosophila (Sophophora) subsilvestris Hardy & Kaneshiro* = *silvestris* Basden - Discovered, new to Science, in Scotland in 1951, but earlier material has subsequently been found in collections. Also in England & Ireland. Only found near trees and bushes, in woods, plantations, copses and occasionally in hedgerows, but most abundantly in broadleaved woodland.

Drosophila (Sophophora) tristis Fallén* - Most often found in woodland and parkland, but also in unwooded terrain. It is attracted to a variety of tree saps and also decaying fruit. Uncommon.

Amiota albilabris (Roth) - **RDB2.** Biology unrecorded, possibly similar habits to other members of genus. Only known from three localities.

Amiota alboguttata (Wahlberg) - **Nationally Scarce.** Mainly a tree top species, the adults attracted to sap and decaying timber. Larvae have been reared from the gelatinous contents of atypical stromata of the fungus *Daldinia concentrica* growing on birch, alder, beech, oak, etc, (although strangely not reported from ash, which most commonly has *Daldinia*) and also *D. vernicosa* on gorse.

Amiota basdeni Fonseca - **RDB2.** Known from only five British localities, four in the southeast, one in Yorkshire; thought to breed in fermenting tree sap.

Amiota collini Beuk & Maca - Added to British list in 1995 from Chippenham Fen; also known from Ashridge, Hertfordshire.

Amiota rufescens (Oldenberg) - Biology unrecorded, possibly similar habits to other members of genus.

Amiota subtusradiata Duda – **RDBK. P**reviously confused with *A. alboguttata*; known from a handful of sites across south-east England. Adults found on a fallen beech trunk with *Daldinia*.

Amiota variegata (Fallén) - **RDB1.** Life history unknown, though adults have been found in large numbers at sap runs. New Forest speciality.

Leucophenga maculata (Dufour)* - Has been reared from the fruiting bodies of many species of fungi, including *Inonotus cuticularis* on beech, *Trametes*, *Meripilus*, *Hypoxylon*, *Ganoderma*, *Sarcodon*, *Polyporus* and *Pleurotus*. Uncommon.

Stegana coleoptrata (Scopoli)* - **Nationally Scarce.** The most widespread of genus in Britain, although less frequent than *S. similis* in the south. Several localities are birch woodland; also in mixed woodland; generally ancient woodlands. Taken from foliage, at sap, and on a fallen birch bearing *Stereum* fungus. Scottish sites mostly aspen, where has been reared from under bark of fallen trees; also developing in black fungal growth under lenticels on dead birch timber. In Ireland known from three very widely dispersed localities: Co Down, Killarney National Park and Co Cavan.

Stegana hypoleuca Meigen – **RDBK.** Known from one birchwood in Perthshire, although reported on oak on the Continent.

Stegana longifibula Okada - **RDB3.** Apparently southern and very local. Biology unknown.

Stegana nigrithorax Strobl - **Nationally Scarce.** Principally found in beechwoods, around decaying logs and stumps; larvae develop in the fungus *Hypoxylon fragiforme*. Frequent in the south; also in Dumbarton and Cumbria.

Stegana similis Laštovka & Máca* - Mixed woodland throughout south; around rotten wood.

Nycteribiidae

Basilia nana Theodor & Moscona - An external parasite of tree bats, eg Bechstein's.

Nycteribia kolenatii Theodor & Moscona - An external parasite of tree-roosting bats, principally Daubenton's.

Anthomyiidae

Anthomyia procellaris Rondani - Has been reared from the fungus *Pleurotus ostreatus* and from bird nests.

Hylemya nigrimana (Meigen)* - May develop under bark; also in other habitats.

Eustalomyia - Cuckoo parasites of crabronid wasp nests, probably all in deadwood; adults bask in sunshine on dead timber.

Eustalomyia festiva (Zetterstedt)* - Associated with *Ectemnius cavifrons* and *E. cephalotes*, ovipositing into the entrance of the beetle exit holes in which the wasp is nesting; scarce, but widely in lowland England; northern and central Europe & N. America.

Eustalomyia hilaris (Fallén) - **RDB3.** Throughout Europe; various London area, Hampstead Heath & Windsor Forest. Associated with sphecid wasps nesting in deadwood.

Eustalomyia histrio (Zetterstedt) - Reared from nest holes of sphecids in deadwood. Uncommon; lowland England; northern and central Europe & N. America.

Eustalomyia vittipes (Zetterstedt) - **Nationally Scarce.** S. England; northern and central Europe & N.America. Develops in sphecid nests in deadwood.

Pegomya transversa (Fallén) - Larvae burrow in the fruiting bodies of the fungus *Oudemansiella mucida* on old beech trunks; has also been reared from *O. radicata* and *Armillaria mellea* agg.

Fanniidae

Fannia - Many of the rarer species have been obtained by rearing from bird nests and debris from bat roosts.

Fannia aequilineata Ringdahl* - The larvae have been reared from wood detritus, from the fungi *Inonotus dryadeus* and *Daldinia concentrica*, and from blackbird nest; adults associated with sap-runs.

Fannia difficilis (Stein) - Has been reared from sap runs, although also from bird nests and terrestrial fungi.

Fannia gotlandica Ringdahl - **Nationally Scarce.** Has been reared from detritus and litter collected from hollow bole of elm tree; also from beech.

Fannia lineata (Stein) – **RDBK.** Nidicolous species; reared from rotten debris in tree; also from heron nest.

Fannia manicata (Meigen)* - Polyphagous in fungi, including *Laetiporus sulphureus*, but mostly terrestrial agarics and boleti.

Fannia monilis (Haliday)* - Has been reared from various fungi incl. *Pleurotus* and *Polyporus squamosus*, from decaying beech timber, and from decomposing leaf litter and detritus from a rotten oak tree; larvae also found in rotten bracken; and in house martin nests. The larva is believed to feed primarily on fungi. It has been suggested that it flourishes in a maritime, rather than a continental, climate. Britain & Co.Down.

Fannia polychaeta (Stein)* - Has been reared from leaf-litter and detritus in a rotten tree stump.

Fannia postica (Stein)* - Has been reared from a pupa found in a rotten oak stump. Generally distributed and frequent in Britain; also in Counties Down & Antrim.

Fannia umbrosa (Stein)* - Has been reared from leaf-litter and detritus from rotten oak.

Fannia vespertilionis Ringdahl - **Nationally Scarce.** Has been reared from noctule droppings; Glos, Herefs, Brecons.

Piezura boletorum (Rondani) – **RDBK.** Females have been reported visiting fungi on poplar trunks & elm stump; known from localities across south-east England.

Piezura graminicola (Zett.)* – Associated with the fungus *Coprinus micaceus* on stumps and tree debris.

Muscidae

Hydrotaea lundbecki (Michelsen) – **pRDB.** Probably confined to areas of old beech woodland; reared from decaying wood in beech woods near Copenhagen, Denmark, and taken in Wytham Wood (1962) and Failand (1968). Males probably swarm aerially.

Muscina levida (Harris)* =*assimilis* (Fallén) - Predatory larvae in many fungi, mostly terrestrial but also *Polyporus*, *Pleurotus*, *Pluteus* and *Armillaria*.

Muscina stabulans (Fallén)* - Predatory larvae in wide range of substrates, only occasionally in fungi, but including *Pleurotus*.

Potamia littoralis Robineau-Desvoidy =*Dendrophaonia querceti* (Bouché) - Rot-holes in elm; other habitats.

Potamia setifemur (Stein) - **RDB1.** Has been reared from detritus collected in beech rot hole and in artificial rot hole containing beech sawdust; New Forest, Windsor, Wandlebury (Cambridgeshire).

Mydaea maculiventris Zetterstedt =*spinipes* Karl - **RDB3.** Has been reared from the fungus *Polyporus squamosus*.

Helina abdominalis (Zetterstedt)* - **Nationally Scarce.** Larvae in rot-holes in old or dead trees. Mainly southern Britain; also one Irish record, from Rostrevor Oakwood, Co. Down.

Helina pertusa (Meigen)* - Larvae under the loose bark of decaying trees and in rot-holes, where they prey on other fly larvae; also reported from a bird nest in a dead willow branch. Midlands & south England, uncommon; Cos. Clare and Antrim.

Helina pulchella (Ringdahl) - **RDB3.** Has been reared from the nest of a tawny owl.

Helina subvittata (Séguy)* = *rothi* Ringdahl - Has been reared from larvae found beneath poplar bark.

Phaonia - The larvae of various species can occur under bark, though not exclusive to dead wood habitats; there are also more specific deadwood species the larvae of which are predators:

Phaonia canescens Stein - **RDB3.** Has been reared from under bark, in rotten wood and from fungi; south Britain.

Phaonia cincta (Zetterstedt)* - Develops in sap runs of broad-leaved trees, especially elm and horse chestnut, where larvae prey upon those of lonchaeid, clusiid and *Mycetobia pallipes* flies; also from wet, rotten fungus-ridden wood within trunk base of large old live beech, and from damp tree humus from rot-hole in large live sycamore; south Britain & Ireland.

Phaonia exoleta (Meigen)* - **RDB3.** Develops in water holes in old trees: elm, ash, beech, horse chestnut, sycamore; its larva swims actively and feeds on mosquito larvae. England & Scotland.

Phaonia gobertii (Mik)* - Larva found under sodden bark, especially elm and poplar, where it preys on lonchaeid and clusiid fly larvae; it also develops in woodland leaf-litter and fungi; widespread in Britain but very localised to older woods.

Phaonia laeta (Fallén) = *trigonalis* (Meigen) - **RDB3.** Develops in sap-runs on birch, horse chestnut and oak, including trees with goat moth *Cossus*; has been reared from pupa in birch rot-hole; southern Britain, but also reared from spruce in Tayside.

Phaonia mystica (Meigen)* = *vittifera* (Zetterstedt) - Has been reared from a rotten log.

Phaonia pallida (Fabricius)* - Has been reared from terrestrial fungi and rotten wood in woodland; common and widespread in Britain and Ireland.

Phaonia palpata (Stein)* - Has been reared from wood mould and rotten wood in damp shady woodland; wide-ranging but localised over most of Britain and Ireland.

Phaonia pratensis (Robineau-Desvoidy) - **Nationally Scarce.** Has been reared from larvae in sap exuding from birch; south Britain.

Phaonia rufiventris (Scopoli)* = *populi* Meigen - Has been reared from fungi and dead or dying trees; widespread and fairly common throughout Britain and Ireland.

Phaonia serva (Meigen)* - Has been reared from larvae found beneath poplar bark; in wooded or at least well-treed areas. Wide ranging and fairly common in Britain and Ireland.

Phaonia subventa (Harris)* =*variegata* (Meigen) - Develops in mostly terrestrial fungi; also rotten wood, including conifers. Widespread and common in woods.

Calliphoridae

Bellardia bayeri (Jacentkovský) - A parasitoid of earthworms living in rotten wood, reared in Scotland and adults collected at two English sites: Mark Ash in New Forest, and Buckingham Palace Gardens.

Rhinophoridae

Melanophora roralis (Linnaeus)* - Parasitic on woodlice in deadwood.

Paykullia maculata (Fallén)* - Parasitic on woodlice under loose bark on deadwood; adult runs actively over surface of tree trunks.

Rhinophora lepida (Meigen)* - Parasitic on woodlice in deadwood.

Sarcophagidae - Cleptoparasites in crabronid wasp nests and on other insects.

Amobia signata (Meigen) - Develops in nests of sphecid wasps, mainly wood-nesting species, but also nests of potter wasps and solitary bees.

Macronychia polyodon (Meigen)* - **RDB3.** Specialist parasite of deadwood-nesting sphecid wasps.

Macronychia striginervis (Zetterstedt) - **Nationally Scarce.** Specialist parasite of deadwood-nesting sphecid wasps.

Oebalia cylindrica (Fallén) - Associated with wasps such as *Crossocerus.*

Oebalia minuta (Fallén) =*rufitarsis* (Meigen)

Tachinidae - All tachinids are parasitoids, their larvae developing within other arthropods, predominantly other insects. The majority attack Lepidoptera larvae. *Admontia* are specialist parasitoids of Tipulidae larvae.

Billaea irrorata (Meigen) - A specialist parasitoid on *Saperda populnea* beetle larvae in timber galls; may also use other Cerambycidae or clearwing moth larvae as hosts. Over-winters as a larva within the host, killing it in the spring and pupating inside the gallery. Most localities are woodlands. Known from S. England & Edinburgh.

Admontia blanda (Fallén) - Only host records are from Continent and include *Tipula hortorum*. First instar larva very sensitive to drying out and has little mobility, so egg probably laid directly on the host in moist conditions. Widespread across Britain.

Admontia maculisquama (Zetterstedt) - Parasitic on crane fly larvae in deadwood. *Tipula irrorata*, *T. meigeni* and *T. lunata*. Widespread across Britain.

Admontia seria (Meigen) - **RDB2.** Associated with ancient semi-natural woodlands in Southern England, where a parasitoid on saproxylic crane flies: *Ctenophora bimaculata*, *Tipula flavolineata* and *T. irrorata*.

Xylotachina diluta (Meigen) - **RDB1.** Specific parasitoid on goat moth larvae in timber. Pupation occurs in host gallery. Rare; southern England.

Elodia ambulatoria (Meigen) - **RDB3.** Specialised parasitoid of Tineid moth larvae, mainly *Morophaga choragella,* developing in bracket fungi. S & SE England.

Loewia phaeoptera (Meigen) - Parasitic on centipedes in deadwood.

Phytomyptera cingulata (Robineau-Desvoidy) - Chiefly parasitic on microlepidoptera larvae in rotting wood, fungi or lichens. Widely across Britain.

Leskia aurea (Fallén) - **RDB1.** Eggs laid on bark of trees infested with wood-boring clearwing moth larvae, first instar larva searches for host gallery. Over-winters as second instar in the host, pupating in host gallery. Recorded near Romsey, Hants in 1928.

Triarthria setipennis (Fallén)* - Parasitic on earwigs in deadwood.

Siphonaptera – Fleas

Ischnopsyllus elongatus (Curtis) - A flea on noctules.

Ischnopsyllus intermedius (Rothschild) - A flea on serotine, noctule & Leisler's bats.

Nycteridopsylla eusarca Dampf - A flea of noctule.

4. Acknowledgements

The author is very grateful to English Nature for publishing this work in their Research Reports series. Roger Key and Jonathan Webb have been instrumental in taking this to fruition.

Many invertebrate specialists have helped this project reach the present stage, in providing advice as well as information. Special thanks are due to:

PJ Chandler and A Godfrey for the considerable help that they have provided with regard to Diptera, and also to CE Dyte and I.Perry; Mark Shaw, for helpful advise with non-aculeate Hymenoptera; MW Storey for help with fungal information; AE Stubbs for his constructive comments throughout the lengthy process of compilation and verification; and more latterly to Roger Key and Oliver Cheeseman for the encouragement to make the irretrievable step of publication.

Particular thanks are due to Hazel Horton for dealing with the final formating and for compiling the Index.

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6. Index