

Two hundred and twenty-five species of reared western Palaeartic Campopleginae (Hymenoptera: Ichneumonidae) in the National Museums of Scotland, with descriptions of new species of *Campoplex* and *Diadegma*, and records of fifty-five species new to Britain

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Synopsis

Host and in some cases detailed rearing data are presented for 225 species of western Palaeartic Campopleginae from reared material in the National Museums of Scotland, with comments on phenology of all species and particular attention to their means of overwintering. For many species there were previously no host records. Fifty-four species are recorded from Britain for the first time, of which two species of *Campoplex* and one of *Diadegma* are described as new. Attention is drawn to type material of other campoplegine taxa present in the collection.

Key words: Hymenoptera, Ichneumonidae, Campopleginae, hosts, phenology, overwintering, faunistics, British Isles, *Alcima*, *Bathyplectes*, *Benjaminia*, *Callidora*, *Campoletis*, *Campoplex*, *Campoplex linosyridellae* sp. nov., *Campoplex sexguttellae* sp. nov., *Charops*, *Clypeoplex*, *Cymodusa*, *Diadegma*, *Diadegma luffiae* sp. nov., *Dolophron*, *Dusona*, *Enytus*, *Eriborus*, *Gonotypus*, *Hyposoter*, *Lathroplex*, *Lathrostizus*, *Lemophagus*, *Leptocampoplex*, *Macrus*, *Melanoplex*, *Meloboris*, *Nemeritis*, *Nepiesta*, *Olesicampe*, *Phobocampe*, *Porizon*, *Rhimphoctona*, *Scirtetes*, *Sinophorus*, *Tranosema*, *Tranosemella*, *Venturia*.

Introduction

The National Museums of Scotland (NMS) contains a large collection of western Palaeartic Ichneumonoidea that is of relatively recent origin, has good standards of data and specimen preservation and is particularly rich in reared material. Many parts of this collection have been catalogued in outline (cf. Diller & Shaw, 2014 and references therein; also Stigenberg & Shaw, 2013), which has contributed much distributional, phenological and biological information on the groups covered, including the description of a number of new species and numerous species recorded from Britain for the first time.

The NMS holding of the large ichneumonid subfamily Campopleginae has not yet been tackled comprehensively, and indeed it is not the intention to do that here, as a high proportion of the non-reared material of most of the large genera

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remains for now unidentified (*Dusona* is a major exception). However, the great majority of the reared specimens of Campopleginae in NMS have now been determined. Partly this has been done over the years as needs arose, in all but the simplest cases by KH (and in very many cases specimens have already featured in his published descriptions of new species and/or accounts of little-known ones). Additionally, in about 2010, KH was persuaded that it would be opportune for him to review all of the remaining undetermined campoplegine material in NMS that was reared from known hosts (with the exception of certain genera, including *Sinophorus*, *Casinaria* and *Olesicampe*), with a view to making these data available through this publication; and also in order to make the best use of his expertise and the opportunity afforded by the NMS material for the detection and description of new species (which we had agreed he would do under his name alone). Although MRS and KH both knew that KH was possibly terminally ill, we hoped that this process could be completed – and it very nearly was, including the description of new species – before his untimely death at the end of July 2013. Subsequently the material has been returned to NMS and the specimens from both this relatively recent effort and the previous accumulations have been combined to provide a comprehensive listing. Included in the returned material of *Campoplex* and *Diadegma* were several series of specimens sorted to species for which KH had added type labelling with manuscript names; while mostly we are not listing these taxa, in three cases full descriptions had been prepared and we include these by describing them as new species with authorship attributed to Horstmann alone.

Presentation of records

For each campoplegine species the number of specimens in NMS from each host is recorded, together with country or countries involved and the names of the collector (or other person who determined the host). Additional specimens with the same host name given only doubtfully are mentioned in square brackets, for example as [+ 1 ♀ from ?this host]. Otherwise host uncertainty is clearly expressed as for example *Orthosia ?gothica* (meaning certainly *Orthosia*, perhaps *gothica*) or *?Orthosia gothica* (meaning it might be something other even than *Orthosia*). When the parasitoid determination is in doubt the words ‘doubtfully determined’ are used. In a few cases rearings from unidentified hosts are included if they give a clear indication of the phenology and searching location of the parasitoid. Voltinism has to be estimated with caution from rearing data, as it is not necessarily the case that rearings (other than those by M. R. Shaw – see Shaw, 1997) were done under essentially natural conditions; nevertheless, in many cases it is possible to deduce this aspect of the parasitoid’s biology. The term ‘plurivoltine’ means simply that there is more than a single annual generation; it does not imply more than two, although in some situations that may be the case. Conversely, a species may be plurivoltine over much of its range, but univoltine under less favourable circumstances: a situation very different from being strictly univoltine with an obligate diapause. Mention of food plant is always from the recorded data but does not imply that all individuals from that host are so labelled. Unless stated otherwise, hosts are Lepidoptera. Rather than simply transcribing often obsolete names from data labels, host names are updated as currently correct according to Agassiz, Beavan & Heckford (2013) or, for non-British species, Karsholt & Razowski (1996). Some of the reared material listed

below has already been cited in other publications, and care should be taken not to double-score these rearing records. Species stated to be recorded from Britain for the first time have been added to the British Isles checklist (Broad, 2016) in anticipation of formal citation here. So that they are easily seen, they are also preceded by an asterisk (*) in the listing below.

Material in NMS

Alcima orbitale (Gravenhorst, 1829)

Heterogynidae: *Heterogynis* sp. on *Spartium* (2 ♀) (Spain; R. R. Askew, N. Hall); Nymphalidae (Satyriinae): *Arethusana arethusa* ([Denis & Schiffermüller]) (1 ♂) (Spain; E. Garcia-Barros), *Hipparchia semele* (Linnaeus) (1 ♀, 2 ♂) (Spain; E. Garcia-Barros), *Maniola jurtina* (Linnaeus) (2 ♀) (Greece, Spain; G. E. King, T. Lafranchis); Geometridae: *Casilda consecraria* (Staudinger) on *Limonium* (6 ♀, 11 ♂ from a prolonged survey at one site) (Spain; G. E. King), *Rhodometra sacraria* (Linnaeus) on *Atriplex* (1 ♀) (Spain; G. E. King); Noctuidae: *Calophasia lunula* (Hufnagel) on *Linaria* (1 ♂) (France; M. R. Shaw); Zygaenidae: *Zygaena carniolica* (Scopoli) (1 ♀, 1 ♂) (Germany, Turkey; A. Hofmann, W. G. Tremewan), *Zygaena christa* Reiss & Schulte (1 ♀) (Iran; A. Hofmann), *Zygaena cocandica* Erschoff (2 ♀, 1 ♂) (Uzbekistan; A. Hofmann), *Zygaena essenii* Blom (1 ♂) (Iran; A. Hofmann), *Zygaena filipendulae* (Linnaeus) (22 ♀, 25 ♂) (England, Wales; R. R. Askew, T. H. Ford, S. B. Hanapi, M. R. Shaw, W. G. Tremewan), *Zygaena haematina* Kollar (1 ♀) (Iran; A. Hofmann & P. Kautt), *Zygaena lonicerae* (Scheven) (13 ♀, 9 ♂) (England; T. H. Ford, B. T. Parsons, M. R. Shaw, P. Summers), *Zygaena romeo* Duponchel (1 ♂) (Italy; W. G. Tremewan), *Zygaena trifolii* (Esper) (19 ♀, 3 ♂) (England, Wales, France; E. Briolat, E. Drouet, D. R. Lees, E. C. Pelham-Clinton, W. G. Tremewan). It is noteworthy that in Britain, where this is a common parasitoid of *Zygaena* species, no other family appears to serve as host, yet in the Mediterranean region it is clearly a regular parasitoid of a much wider span of host groups. Both MRS and KH have failed to find consistent morphological differences between specimens from *Zygaena* and its other hosts, but it seems quite likely that molecular genetics (and/or rearing experiments) might reveal the existence of sibling species. At least in Britain, this is a univoltine species that overwinters in the *Zygaena* larva.

Bathyplectes Foerster, 1869

The brown cocoons of *Bathyplectes* species are very smooth, ovoid and have a narrow pale central band. They are formed in the host cocoon, typically constructed in an exposed position, and the larva is capable of violent jerking actions within its cocoon, causing it to break free and continue to jump under the influence of heat and light until a secluded spot suitable for diapause is reached. Similar habits are seen in *Scirtetes*, *Phobocampe* (most species), and probably *Callidora*, but none is able to jump literally inches at a time in the manner of *Bathyplectes*.

Bathyplectes anura (Thomson, 1887)

Curculionidae (Coleoptera): *Hypera plantaginis* (DeGeer) on *Lotus corniculatus* (3 ♀) (England; M. R. Shaw). [Specimens were regarded as subspecies *contractus* (Thomson).] The rearing data indicate that this is a univoltine species, overwintering in its cocoon.

**Bathyplectes balteatus* (Thomson, 1887)

This species is here recorded from Britain for the first time. 2 ♀, 1 ♂, England: Herefordshire, Wormlow, ex *Hypera pollux* (Fabricius) (Coleoptera: Curculionidae) on *Apium nodiflorum*, coll. as cocoons viii.2004, em. 28.iv.2005 (♂), 2.v.2005 and 8.v.2005 (M. J. Leech). Evidently overwintering in its cocoon, but voltinism unclear.

Bathyplectes curculionis (Thomson, 1887)

Curculionidae (Coleoptera): *Hypera plantaginis* (DeGeer) on *Lotus corniculatus* (1 ♀) (England; M. R. Shaw), *Hypera* sp. on *Rumex crispus* (1 ♀) (England; R. R. Askew), cocoons on *Lotus* (1 ♀ [+ 3 ♂, doubtfully determined]) (England; S. G. Compton). The rearing data indicate that this is a univoltine species, overwintering in its cocoon.

Bathyplectes exiguus (Gravenhorst, 1829)

Curculionidae (Coleoptera): *Hypera* sp. on *Trifolium repens* (2 ♀) (England; *R. Uffen*), ex cocoons on *Trifolium pratense* (1 ♀) (Scotland; *K. P. Bland*). Rearing data suggest that this is probably a univoltine species that certainly overwinters in its cocoon.

Bathyplectes rostratus (Thomson, 1887)

Curculionidae (Coleoptera): *Hypera arator* (Linnaeus) on *Silene maritime* (1 ♀) (Scotland; *M. R. Shaw*). Overwinters in its cocoon; univoltine according to rearing data.

***Bathyplectes rufipes** Horstmann, 1974

This species is here recorded from Britain for the first time. 1 ♀, England: Norfolk, Catfield, *Hypera pollux* (Fabricius) (Coleoptera: Curculionidae) on *Peucedanum palustre*, coll. as cocoon 16.viii.1980, em. 13.v.1981 (*M. R. Shaw*). Additionally, 2 ♀ were collected by Malaise trap at the same site (viii.1980 and vii.1983). Evidently overwintering in its cocoon, but voltinism not clear from the data.

Benjaminia fumigator Aubert, 1971

Nymphalidae: *Melitaea didyma* (Esper) (5 ♂) (France, Greece; *T. Lafranchis*, *M. R. Shaw*). Plurivoltine, presumably overwintering in the host larva. The cocoon is formed within the host's larval skin (as in several *Hyposoter*).

Benjaminia shawi Wahl, 1989

Holotype ♀ purportedly ex *Colias alfacariensis* Ribbe (Pieridae) (France; *L. McLeod*). Mounted with a *Colias* pupa from which, however, it is clear (Wahl, 1989) that the *Benjaminia* had not emerged. The true host of this species is thus unknown; a pierid seems improbable for a genus otherwise known only from Nymphalidae: Melitaeinae, and *Benjaminia* species as far as is known always form their cocoon inside the host's larval skin.

***Callidora analis** (Gravenhorst, 1829)

This species, which appears not to have been reared previously, is here recorded from Britain for the first time. 1 ♂, England: Hampshire, Bartley Heath, ex indet. Noctuidae (possibly on *Calluna*) coll. 21.viii.1987, em 27.vi.1988 (*N. Hall & B. T. Parsons*). The dark brown unattached cocoon is short-ovoid and similar to that of *Scirtetes robusta* (Woldstedt), but has the central paler band broader and more diffuse.

Campoletis Foerster, 1869

In general the host is killed before it is fully grown and the parasitoid spins a discrete cocoon outside the host remains.

Campoletis annulata (Gravenhorst, 1829)

Noctuidae: *Apamea scolopacina* (Esper) (1 ♀) (England; *M. R. Shaw*), *Cerapteryx graminis* (Linnaeus) (4 ♀, 1 ♂) (England; *M. R. Shaw*), *Cucullia chamomillae* ([Denis & Schiffermüller]) (2 ♀, 1 ♂) (England, Scotland; *A. P. Foster*, *R. Leverton*); Nymphalidae (Satyrinae): *Lasiommata megera* (Linnaeus) (1 ♂, doubtfully determined) (Spain; *R. Obregón*), *Maniola jurtina* (Linnaeus) (1 ♀) (England; *M. R. Shaw*); Pterophoridae: *Crombrugghia distans* (Zeller) on *Crepis capillaris* (1 ♀) (England; *C. Hart*), *Stenoptilia millieridactyla* (Bruand) (1 ♀) (Ireland; *C. Hart*), *Stenoptilia pterodactyla* (Linnaeus) (2 ♀) (England, Scotland; *M. R. Shaw*, *M. R. Young*), *Stenoptilia saxifragae* Fletcher (1 ♀) (Ireland; *C. Hart*). Plurivoltine. All cocoons have hatched in the year of formation, but several are from hosts that had probably overwintered as larvae with the parasitoid within.

Campoletis crassicornis (Tschek, 1871)

Crambidae: *Udea ferrugalis* (Hübner) (1 ♀, 2 ♂) (Malta; *J. L. Gregory*).

Campoletis ensator (Gravenhorst, 1829)

Noctuidae: ?*Apamea unanimitis* (Hübner) on *Phalaris* (1 ♀, 1 ♂) (England; *M. R. Shaw*), *Agrotis trux* (Hübner) on *Armeria maritima* (1 ♀) (England; *R. Plumbley*), *Eupsilia transversa* (Hufnagel) (1 ♀) (Austria; *J. Connell*). Plurivoltine, overwintering in its cocoon.

Campoletis latrator (Gravenhorst, 1829)

Gelechiidae: *Anacamptis blattariella* (Hübner) on *Betula* (1 ♀) (England; *A. N. B. Simpson*);

Noctuidae: *Amphipyra* sp. on *Crataegus* (1 ♂) (England; *M. R. Shaw*), *Orthosia incerta* (Hufnagel) (1 ♂) (Scotland; *R. Leverton*), *Orthosia* sp. on *Quercus* (1 ♀) (Scotland; *M. R. Shaw*), *Xanthia citrigo* (Linnaeus) on *Tilia* (1 ♂) (England; *W. A. Watson*), indet. Plusiinae (2 ♀) (England, France; *M. R. Shaw*). All adults have emerged in the year of cocoon formation. The data suggest it is plurivoltine, but the overwintering mode is unclear.

Campoletis punctata (Bridgman, 1886)

Noctuidae: *Abrostola triplasia* (Linnaeus) on *Urtica* (2 ♂) (England; *A. Cronin, M. Noble*), *Diachrysia ?chrysitis* (Linnaeus) on *Urtica* (2 ♀, 2 ♂) (England, Scotland; *T. H. Ford, G. M. Haggatt*), *Diachrysia chryson* (Esper) on *Eupatorium* (1 ♀, 2 ♂) (England; *M. R. Britton*). Overwinters in its cocoon. Presumably plurivoltine: most hosts were collected in late summer and autumn, with adult emergence from the overwintered cocoon the following spring.

Campoletis rapax (Gravenhorst, 1829)

Noctuidae: *Anarta myrtilli* (Linnaeus) on *Calluna* (2 ♀ [+ 1 ♂ from ?this host]) (England; *R. I. Lorimer, M. R. Shaw*), *Ceramica pisi* (Linnaeus) on *Pteridium aquilinum* (8 ♀, 1 ♂) (Wales; *P. Baker, A. Lord*), *Euplexia lucipara* (Linnaeus) on *Pteridium aquilinum* (1 ♀) (Wales; *P. Baker*), *Laconobia oleracea* (Linnaeus) on *Pteridium aquilinum* (1 ♀) (Wales; *P. Baker*). Plurivoltine, overwintering in its cocoon.

****Campoletis thomsoni*** (Roman, 1915)

This species is here recorded from Britain for the first time. 8 ♀, 4 ♂, England: West Sussex, Midhurst Common, ex *Agrochola haematidea* Duponchel on *Erica cinerea*, vi/vii.1993, (*G. M. Haggatt*); 1 ♂, Scotland: Morayshire, Ordiquish, ex *Panolis flammea* ([*Denis & Schiffermüller*]) on *Pinus contorta*, coll. 13.vii.2000, em. 25.vii.2000 (*B. Hicks*); 2 ♀, 2 ♂, England: Hampshire, Lyndhurst, ex *Amphipyra ?berbera* Rungs on *Quercus*, coll. 21.v.1975, em. 12.vi.1975 (*M. R. Shaw*). All hosts are Noctuidae. Adults have all emerged in the year of cocoon formation: although its means of overwintering are unclear this species seems likely to be plurivoltine.

****Campoletis trichoptili*** (Bauer, 1936)

This species is here recorded from Britain for the first time. 1 ♂, England: Hampshire, New Forest, Matley Bog, ex *Buckleria paludum* (Zeller) (Pterophoridae) on *Drosera rotundifolia*, coll. 30.vii.1984, emergence date not given (*P. H. Sterling*); 6 ♀, 2 ♂, England: Hampshire, Ringwood, Vales Moor, same host on same plant, coll. 24.vii.2000, em. viii.2000 (*C. Hart*); 1 ♂, England: Devon, Colaton Raleigh Common, same host, coll. 4.vii.2009, emergence date not recorded (*B. P. Henwood*). From the data there is no clear indication of voltinism or how the winter is passed, but this appears to be a specialized parasitoid and since the host is plurivoltine and overwinters as a small larva the parasitoid might be expected to follow the same pattern.

Campoletis varians (Thomson, 1887)

Geometridae: *Campptogramma bilineata* (Linnaeus) (17 ♀, 9 ♂ from a prolonged survey at one site) (Austria; *Ĵ. Connell*), *?Electrophaes corylata* (Thunberg) (1 ♂) (England; *R. I. Lorimer*), *Epirrita dilutata* ([*Denis & Schiffermüller*]) on *Calluna*, *Quercus* (2 ♀, 2 ♂ [+ 1 ♀ from ?this host]) (England, Scotland; *R. R. Askew, T. H. Ford, M. R. Shaw*), *Eupithecia pulchellata* (Stephens) (1 ♀) (Norway; *M. Lindeborg*), *Eupithecia vulgata* (Haworth) (1 ♀) (England; *T. H. Ford*), *Eupithecia* sp. (1 ♂) (Wales; *E. C. Pelham-Clinton*), *Gymnoscelis rufifasciata* (Haworth) on *Cytisus*, *Erica* (5 ♀, 6 ♂) (England, Scotland; *Ĵ. R. Langmaid, M. R. Shaw*), *Perizoma didymata* (Linnaeus) (1 ♀, 1 ♂) (Scotland; *M. R. Shaw*), *Thera cognata* (Thunberg) (1 ♀) (Scotland; *M. R. Shaw*). Additionally, doubtfully determined specimens from Geometridae: *Eupithecia subfuscata* (Haworth) (1 ♀, 1 ♂) (England; *T. H. Ford*); Pterophoridae: *Stenoptilia millieridactyla* (Bruand) (2 ♀, 1 ♂) (Ireland; *C. Hart*), *Cnaemidophorus rhododactyla* ([*Denis & Schiffermüller*]) (1 ♀) (England; *C. Hart*). Plurivoltine. Some cocoons have overwintered but the long series from Austria reared from *Campptogramma bilineata* collected as early as March may suggest that it can also overwinter in some of its hosts.

****Campoletis vimmeri*** (Gregor, 1935)

This species (det. *M. Riedel*) is here recorded from Britain for the first time. 1 ♀, Scotland: Selkirkshire, Ettrick Marsh, 11.v.1984 (*A. D. Liston*); 1 ♂, Scotland: Banffshire, Ordiquhill, ex



Figs 1–3. Central part of body of female paratypes of Campopleginae, in dorsal view, to show propodeum. 1, *Campoplex linosyridellae* Horstmann, sp. nov.; 2, *Campoplex sexguttellae* Horstmann, sp. nov.; 3, *Diadegma luffiae* Horstmann, sp. nov. (Scale bars = 1 mm).



Figs 4–7. Female paratypes of Campopleginae, in dorsal view. 4–6 to show head; 7 apex of metasoma. 4, *Campoplex linosyridellae* Horstmann, sp. nov.; 5, *Campoplex sexguttellae* Horstmann, sp. nov.; 6, 7, *Diadegma luffiae* Horstmann, sp. nov. (Scale bars = 1 mm).

Xanthia togata (Esper) (Noctuidae), coll. v.2009, em. 7.iv.2010 (R. Leverton). The rearing data show clearly that this is a univoltine species. It overwinters in its cocoon.

****Campoletis* sp. A.** [Horstmann MS]

3 ♀, 2 ♂, England: Surrey, Chobham common, ex *Gymnoscelis rufifasciata* (Haworth) on *Erica/Calluna*, coll. 22.viii.1978, coc. ix.1978, em. iv/v.1979 (M. R. Shaw). Overwinters in its cocoon. The data suggest that it may be plurivoltine. This species will be described from the above specimens under Horstmann's authorship in a forthcoming revision of European *Campoletis* (Riedel, in prep.).

***Campoplex* Gravenhorst, 1829**

The host is usually killed in its pupation site but exceptions occur, especially when 'Macrolepidoptera' are used as host.

****Campoplex alticolellae* Horstmann, 1980**

This species is here recorded from Britain for the first time. Coleophoridae on *Juncus*: *Coleophora alticolella* Zeller (7 ♀, 8 ♂ [+ 1 ♀, 1 ♂ from ?this host]) (England, Scotland, Germany; K. P. Bland, E. S. Bradford, M. F. V. Corley, K.-H. Lampe, G. E. Rotheray), *Coleophora alticolella* or *C. glaucicolella* Wood (4 ♀, 7 ♂) (England, Scotland; A. N. B. Simpson), *Coleophora taeniipennella* Herrich-Schäffer (1 ♀) (England; A. M. Emmet). Evidentially fairly common and widespread. Host cases were collected fully developed late in the year, with adult parasitoids emerging early the following summer. The parasitoid attacks the fully grown host larva in early autumn and overwinters as an immature larva in it (Lampe, 1984). Univoltine, like its hosts.

***Campoplex brevicornis** (Szépligeti, 1916)

This species is here recorded from Britain for the first time. 1 ♂ England: Bedfordshire, Houghton Regis, ex *Eupithecia venosata* (Fabricius) (Geometridae), 1986 (*A. M. Riley*); also 6 ♀, 3 ♂ from the same host, Netherlands (*G. Bryan*). The rearing data are unclear regarding voltinism and overwintering, but in every case the adult parasitoid has emerged from the host pupa.

Campoplex caloptiliae Horstmann, 2013

Holotype ♀ and 11 ♀ 7 ♂ paratypes. *Caloptilia alchimiella* (Scopoli) on *Quercus robur* (7 ♀, 4 ♂ [+ 3 ♀ from ?this host]) (England, Scotland; *M. R. Shaw*), *Caloptilia robustella* Jäckh on *Quercus robur* (2 ♂) (England; *M. R. Shaw*), *Caloptilia* sp. on *Quercus robur* (2 ♀, 1 ♂) (England; *M. R. Shaw*). Evidently fairly common and widespread. Overwinters in its cocoon constructed within that of its host. All hosts were collected relatively late in the year and emergence early the following summer suggests that, like one of its hosts, it is plurivoltine.

Campoplex continuus (Thomson, 1887)

Cosmopterigidae: *Pancalia leuwenhoekella* (Linnaeus) on *Viola hirta* (1 ♀) (England; *S. D. Beavan*). The single specimen emerged in ix from a host collected in viii. Presumed to be plurivoltine but how it overwinters is unclear.

***Campoplex crassus** Horstmann, 1980

This species is here recorded from Britain for the first time. 2 ♀, 7 ♂, England: Gloucestershire, Leckhampton Hill, ex *Epermenia profugella* (Stainton) (Epermeniidae) on *Pimpinella saxifraga*, coll. ix.1988, em.1989 (*A. N. B. Simpson*); 2 ♂, England: Oxfordshire, Crog Hill (near Lambourn, Berkshire) from the same host [or *Eupithecia pimpinellata* (Hübner), an alternative possibility indicated on the data label, which we discount] on *Pastinaca sativa*, coll. 3.x.1988, em. 10 and 17.vii.1989 (*M. F. V. Corley*); 2 ♀, doubtfully determined larger specimens, Scotland: Glasgow, Possil Marsh, ex *Phaulernis fulviguttella* (Zeller) on *Angelica* seeds, coll. 29.viii.1982, em. 22.vii.1983 (*R. P. Knill-Jones*). Univoltine, like the hosts. No cocoons or host remains are present for the certainly determined specimens, but those from *P. fulviguttella* are accompanied by cocoons inside slightly ruptured host pupae from which the adult parasitoids had emerged. See comment under *Diadegma scotiae*.

Campoplex deficiens Gravenhorst, 1829

Pyralidae: *Phycita roborella* ([Denis & Schiffermüller]) on *Quercus* (2 ♀) (England; *M. R. Shaw*), ?*Myelois circumvoluta* (Fourcroy) in *Cirsium eriophorum* stems (2 ♀, 2 ♂) (England; *D. Gibbs*). Probably univoltine, overwintering in the host larva.

Campoplex eudoniae Horstmann & Yu, 1999

Crambidae: *Dipleurina lacustrata* (Panzer) in moss on fallen *Fraxinus* (1 ♂) (England; *M. R. Shaw*), *Eudonia angustea* (Curtis) on moss (1 ♂) (England; *R. J. Heckford*), *Eudonia mercurella* (Linnaeus) (1 ♀) (England; *R. J. Heckford*). A further 6 ♀, 1 ♂, reared from moss containing *Bryotropha senectella*, *Dipleurina lacustrata* and/or *Eudonia* sp. (England; *E. S. Bradford*, *M. F. V. Corley*, *R. J. Heckford*, *M. R. Shaw*, *A. N. B. Simpson*). Additionally doubtfully determined specimens (2 ♂) reared from moss on tree trunks containing *Eudonia crataegella* and *E. mercurella* (England; *A. N. B. Simpson*). All specimens have emerged in the year of host collection, but particularly from spring-collected hosts, leaving voltinism and the mode of overwintering unclear.

Campoplex faunus Gravenhorst, 1829

Pyralidae: *Phycitodes maritima* (Tengström) on *Senecio jacobaea* (6 ♀, 10 ♂) (England; *S. D. Beavan*, *R. J. Heckford*, *M. R. Shaw*); Tortricidae: *Cydia nebritana* (Treitschke) on *Cohutea arborescens* (1 ♀, 1 ♂) (France; *L. McLeod*). The specimens from *P. maritima* emerged in viii from recently collected hosts. Presumably plurivoltine, and it would have the potential to overwinter in young larvae of that plurivoltine host.

***Campoplex formosanae** Horstmann, 2012

This species is here recorded from Britain for the first time. Evidently fairly common and widespread in southern England north to Warwickshire. Tortricidae: *Acleris rhombana* ([Denis & Schiffermüller]) on *Crataegus* or *Prunus* (1 ♀, 2 ♂) (England; *J. L. Gregory*, *M. R. Shaw*),

Endothenia gentianaeanana (Hübner) in *Dipsacus* heads (10 ♀, 3 ♂ [+ 2 ♀, 1 ♂ from ?this host]) (England; R. R. Askew, E. S. Bradford, B. Dickerson, D. Gibbs, R. J. Heckford, G. A. T. Jeffs, M. Jennings, I. Sims), *Endothenia nigricostana* (Haworth) in *Stachys sylvatica* stem (1 ♀) (England; R. J. Heckford). Also 1 ♀ from dying evergreen *Prunus* bark with *Enarmonia formosana* (Scopoli) (Tortricidae) and *Esperia sulphurella* (Fabricius) (Oecophoridae) (England; M. R. Shaw) and 1 ♂ from an identified host in *Ulmus* bark (Hungary; M. R. Shaw). One of the males from *A. rhombana* made its cocoon within the ruptured pupa of its host, but the other nine cocoons present were constructed outside the host (?prepupal) remains. The rearing data suggest that this species is plurivoltine, parasitizing hosts in woody plants including tree bark in its overwinter generation, and using leaf-feeding hosts during the summer (the types were reared from *E. formosana* feeding in *Prunus* bark in southern Germany).

****Campoplex interruptus*** Horstmann, 1993

This species is here recorded from Britain for the first time. The hosts are all Tortricidae. 1 ♀, Scotland: South Uist, Loch Eynort, ex *Epinotia cruciana* (Linnaeus) on *Salix repens*, coll. 28.vi.2006, em. vii.2006 (M. R. Young); 1 ♀, Scotland: West Sutherland, Duartmore Burn, ex *Notocelia cynosbatella* (Linnaeus) on *Rosa canina*, coll. 8.v.2012, em. 29.v.2012 (R. J. Heckford); 1 ♂, England: Worcestershire, Mill Meadow, ex *Strophedra nitidana* (Fabricius) on *Quercus*, coll. x.1983, em. 1984 (A. N. B. Simpson); 1 ♀, England: Worcestershire, Wyre Forest, ex *S. nitidana* on *Quercus*, coll. x.1983, em. 1984 (A. N. B. Simpson). Plurivoltine, overwintering in its cocoon.

****Campoplex investigator*** (Habermehl, 1923)

This species is here recorded from Britain for the first time. 1 ♀, England: Worcestershire, Middleyard Coppice, ex *Ypsolopha dentella* (Fabricius) (Ypsolophidae) on *Lonicera*, coll. and em. 1980 (A. N. B. Simpson); 1 ♀, England: Cheshire, Abbots Moss, *Ypsolopha parenthesesella* (Linnaeus) on *Betula*, coll. 8.vi.1976, em. 3.vii.1976 (M. R. Shaw); 1 ♀, England: London, Hampstead Heath, ex *Ypsolopha* sp. on *Quercus*, coll. 5.vi.1983, em. 6.vii.1983 (R. A. Softly). Also 1 ♀, *Ypsolopha parenthesesella* on *Betula* (Germany; M. R. Shaw). All specimens have emerged in the year of host collection. Species of the host genus overwinter either as eggs or as adults. While oviposition into eggs with developed embryos cannot be ruled out, it seems likely that a different overwintering host is used or possibly that the parasitoid overwinters as an adult.

Campoplex jaeckhi (Bauer, 1936)

Coleophoridae: *Coleophora pyrrhulipennella* Zeller on *Calluna/Erica* (4 ♀, 1 ♂ [+ 1 ♀, doubtfully determined]) (England; J. M. Chalmers-Hunt, S. M. Palmer, M. R. Shaw, M. R. Young); Gelechiidae: *Monochroa cytisella* (Curtis) (1 ♀, 2 ♂) (England; J. M. Chalmers-Hunt, R. J. Heckford). Most individuals have emerged in about late v–vi from hosts collected earlier in the same year, in which they had presumably overwintered. Presumably univoltine, like its hosts (though it should be noted that the overwintering mode of *M. cytisella*, which feeds in the upper part of the stem of *Pteridium aquilinum*, is unknown; so it is possible that this is a summer host and that the species is plurivoltine). However, the diverse host range might suggest that this is an aggregate of two cryptic species: if so, it should be borne in mind that the lectotype of *C. jaeckhi* was reared from *C. pyrrhulipennella*.

****Campoplex linosyridellae*** Horstmann, sp. nov.

(Figs 1, 4)

By its strongly punctured mesopleuron and yellowish-marked scapus this species is near *Campoplex punctipleuris* Horstmann, but that species differs by its shorter ovipositor (0.8–0.9 times as long as hind tibia).

Holotype ♀: [England:] 'Canvey Island, Essex. Ex *Coleophora linosyridella*, *Aster tripolium* coll. 21.4.1983 em. 5.83 J. R. Langmaid' (in National Museums of Scotland, Edinburgh).

Paratypes: (4 ♀, 4 ♂). England: 3 ♀, 4 ♂, same data as holotype; 1 ♀, Kent, Nagden Marshes, same host, coll. 12.vi.1996, em. 20.vii.1996 (R. J. Heckford). Paratypes in NMS and Horstmann coll. in ZSM Munich.

Description of female

Length of body 4.3 mm, of fore wing 3.75 mm. Head dorsally 1.9 times wider than long and 1.13 times wider than mesosoma, temple 0.7 times as long as eye, (virtual) tangents meeting on propodeum. OOL 1.2 times diameter of ocellus. Face 0.9 times as wide as frons. Malar space 0.7 times width of mandibular base. Mandibular teeth small, the lower a very little longer than the upper one. Genal carina low, meeting hypostomal carina close to mandibular base. Clypeus small, almost flat, granulate and matt, with very fine punctures, apical margin slightly rounded, medially with a distinct protuberance. Face and frons matt, granulate, partly with very superficial punctures. Vertex and temples with fine granulation, somewhat shining, with very fine scattered punctures. Flagellum with 23 segments, filiform, distally narrowed. First, second, third, fourth, middle, and preapical flagellomeres respectively 4.5, 3.0, 2.9, 2.7, 1.6 and 1.3 times as long as wide.

Mesosoma 1.67 times longer than high. Propleurum almost completely striate, dorsally granulate and finely punctate. Epomia present but indistinct. Mesoscutum granulate, mainly with fine scattered punctures, at notauli and in front of prescutellar groove densely rugose-punctate. Prescutellar groove with fine striation, scutellum carinate in the anterior 0.3, granulate and finely punctate. Speculum smooth, impression strongly striate, mesopleuron otherwise mainly granulate and with distinct and rather dense punctures, partly with finer granulation and fine and scattered punctures. Metapleuron with fine granulation and distinct and rather dense punctures. Epicnemial and postpectal carinae low, normally developed.

Fore wing with distal part of R1 (beyond Rs) as long as width of pterostigma, areolet small, with long stalk, 2m-cu at or slightly beyond its middle, cu-a slightly postfurcal, postnervulus broken slightly below middle. Hind wing with nervellus more or less vertical, at lower 0.7 broken by unpigmented Cu1. Hind leg with femur 5.1 times as long as wide, tibial spur about 0.5 times as long as basitarsus, claws small, at base with 2–3 short teeth. Propodeum with area basalis trapezoid, 1.2 times longer than wide. Area superomedia and anterior lateral fields granulate, at the borders finely rugose. Area superomedia 1.1 times longer than wide, caudally with parallel sides, closed posteriorly by fine wrinkles. Area petiolaris flat, with distinct irregular or transverse rugae. Postpetiolus dorsally and laterally rounded, 1.05 times wider than long. Second tergite of metasoma 0.8 times as long as first and 1.15 times longer than wide, thyridium roundish, distance from tergal base about 1.5 times its diameter, apical tergites not excised apically. Ovipositor sheath 1.08 times longer than hind tibia, ovipositor slightly bent upwards at base and center, somewhat more strongly bent distally, with a small triangular preapical dorsal notch.

Colour. Black. Palps, tegulae, fore and mid trochanters and all trochantelli yellow. Mandibles blackish, medially yellowish brown or reddish (variable), scape ventro-distally with yellow spot (or sometimes yellowish-brown or completely dark). Fore leg with femur, tibia and tarsus yellowish to yellow-red, femur at base and tarsus apically with brownish suffusion. Mid leg with femur reddish-brown, with variable brownish pattern, tibia yellowish (pattern as hind tibia) and tarsus yellowish and pale brownish. Hind leg with femur dark brownish to blackish, tibia basally and medial-dorsally strongly ivory, medial-ventrally somewhat darker, subbasally and apically brownish-black. Pterostigma pale brown. Metasoma largely black, caudal tergites with yellowish-red apical margins

Male. Flagellum with 23 segments, somewhat more strongly narrowed apically. Preapical flagellomere 1.7 times longer than wide. Propodeum with somewhat stronger carination. Area superomedia 1.5 times longer than wide, caudally slightly narrowed and closed apically with fine rugae. Scape ventrally almost or completely yellow. Fore and mid coxae at apex narrowly yellow, otherwise legs as the female. Mandibles medially with yellow spots.

Although it is not clear from the rearing data, this is presumably a univoltine species overwintering in its larval host.

***Campoplex lyratus* (Thomson, 1887)**

Choreutidae: *Anthophila fabriciana* (Linnaeus) on *Urtica* (1 ♀ [+ 1 ♀, doubtfully determined]) (Scotland; *M. R. Shaw*), *Choreutis pariana* (Clerck) on *Malus* (1 ♀, 1 ♂) (Scotland; *M. R. Shaw*); Coleophoridae: *Coleophora* sp. on *Ahnus* (1 ♂) (Scotland; *K. P. Bland*); Depressariidae:

Agonopterix alstromeriana (Clerck) on *Conium maculatum* (1 ♀) (England; I. F. Smith), ?*Depressaria pastinacella* (Duponchel) mining *Heracleum* (2 ♀) (England; M. R. Shaw); Glyphipterigidae: *Acrolepia autumnitella* Curtis on *Solanum dulcamare* (3 ♂) (England; H. C. J. Godfray); Gracillariidae: *Caloptilia elongella* (Linnaeus) on *Alnus* (1 ♀, 2 ♂) (England, Scotland; M. R. Shaw, A. N. B. Simpson), *Caloptilia syringella* (Fabricius) on *Ligustrum* (1 ♂, 1 ♀) (England, Isle of Man; F. D. Bennett, M. R. Shaw), *Caloptilia* sp. on *Betula* (1 ♂) (Scotland; R. J. Heckford); Noctuidae: *Orthosia ?incerta* (Hufnagel) (1 ♀) (Scotland; M. R. Shaw); Nymphalidae: *Vanessa atalanta* (Linnaeus) (1 ♀) on *Urtica* (England; M. R. Shaw); Tortricidae: *Ancylis apicella* ([Denis & Schiffermüller]) on *Frangula alnus* (1 ♀) (Belgium; M. R. Shaw), *Epinotia immundana* (Fischer von Röslerstamm) (2 ♀, 1 ♂ [+ 1 ♀ from ?this host]) (England, Wales, Isle of Man; J. M. Chalmers-Hunt, J. L. Gregory, A. N. B. Simpson), ?*Acleris sparsana* ([Denis & Schiffermüller]) on *Acer pseudoplatanus* (1 ♂) (Isle of Man; F. D. Bennett); Yponomeutidae: *Paraswammerdamia albicapitella* (Scharfenberg) on *Prunus spinosa* (1 ♀) (Scotland; M. R. Shaw). This is evidently a plurivoltine species, but all adults have emerged in the year of host collection and there is no clear indication of its means of overwintering, although a few of the above would allow it to do so within a host larva.

Campoplex melanostictus (Gravenhorst, 1829)

Incurvariidae: *Incurvaria praelatella* ([Denis & Schiffermüller]) below *Geum rivale* (1 ♂) (Scotland; K. P. Bland). Emergence was in vi from a case collected in v. Almost certainly univoltine, overwintering in the host larva.

Campoplex melanostoma (Strobl, 1904)

Depressariidae: *Agonopterix* sp. on *Centaurea sphaerocephala* (2 ♀) (Portugal; M. F. V. Corley). Emergence was in v from hosts collected in iv.

Campoplex multinctus Gravenhorst, 1829

Tortricidae: *Aethes beatricella* (Walsingham) on *Conium* (2 ♀, 1 ♂) (England; R. J. Heckford). Emergence was in iv from plant stems collected in iii and in which the winter must have been passed. Voltinism is unclear.

Campoplex psammae (Morley, 1915)

Coleophoridae: *Coleophora alticolella* Zeller or *C. glaucicolella* Wood on *Juncus* (1 ♀) (England; A. N. B. Simpson), *Coleophora atriplicis* Meyrick on *Atriplex* (1 ♀) (Scotland; K. P. Bland), *Coleophora conspicuella* Zeller on *Centaurea nigra* (2 ♀, 3 ♂) (England; M. J. Sterling), *Coleophora deviiella* (Zeller) on *Suaeda maritima* (1 ♀) (England; M. J. Sterling), *Coleophora follicularis* (Vallot) (3 ♀, 2 ♂) (England; J. R. Langmaid, I. Sims), *Coleophora frischella* (Linnaeus) on *Centaurea nigra* (2 ♀) (England; J. M. Chalmers-Hunt), *Coleophora lineolea* (Haworth) (1 ♀) (England; G. A. T. Jeffs), *Coleophora lineola* (Haworth) [or *Nemophora fasciella* (Fabricius) (Adelidae) according to the labelling, but discounted] on *Ballota nigra* (2 ♀, 1 ♂) (England; P. J. Johnson), *Coleophora paripennella* Zeller on *Centaurea* (5 ♀, 5 ♂) (England; M. F. V. Corley, R. J. Heckford, I. Sims, P. A. Sokoloff, P. H. Sterling, M. R. Young), *Coleophora peribenanderi* Toll on *Cirsium arvense* (13 ♀, 1 ♂) (England; M. F. V. Corley, R. J. Heckford, J. R. Langmaid, I. Sims), *Coleophora prunifoliae* Doets (1 ♀, 1 ♂) (England; R. J. Heckford), *Coleophora solitariella* Zeller on *Stellaria holostea* (11 ♀, 3 ♂) (England; R. J. Heckford, G. A. T. Jeffs, J. R. Langmaid, W. Rait-Smith, I. Sims), *Coleophora spinella* (Schränk) (1 ♀) (England; A. N. B. Simpson), *Coleophora sternipennella* (Zetterstedt) on moss on wall near *Chenopodium* (1 ♀) (England; E. S. Bradford), *Coleophora trochilella* (Duponchel) on *Tanacetum vulgare* (1 ♀) (England; S. E. Whitebread), *Coleophora* sp. on *Achillea millefolium* (1 ♀) (England; E. S. Bradford); Gelechiidae: *Scrobipalpa instabilella* (Douglas) (1 ♀) (England; E. S. Bradford), *Scrobipalpa obsoletella* (Fischer von Röslerstamm) on *Atriplex prostrata* (1 ♀, 1 ♂) (Ireland; J. R. Langmaid), *Scrobipalpa ?salinella* (Zeller) on *Suaeda maritima* (1 ♀) (England; R. J. Heckford). This species may be predominately univoltine, overwintering in univoltine *Coleophora* larvae but, as at least some of its *Scrobipalpa* hosts are plurivoltine, it may also be partly so. Like most *Coleophora*, many *Scrobipalpa* species start life as leaf miners. A series of 1 ♀, 5 ♂ from *Apterona* sp. (Psychidae) (France, Italy; K. P. Bland, M. R. Shaw) comes close to *C. psammae* but probably belongs to a different species.

Campoplex punctipleuris Horstmann, 1980

Coleophoridae: *Coleophora serratella* (Linnaeus) on *Betula*, *Sorbus aria* (26 ♀, 17 ♂ including 3 ♀, 1 ♂ paratypes [+ 2 ♂ from ?that host]) (England, Scotland, Wales, France; *K. P. Bland*, *P. Brown*, *M. F. V. Corley*, *H. A. Ellis*, *D. Gibbs*, *N. Hall*, *L. W. Hardwick*, *B. A. Hawkins*, *R. P. Knill-Jones*, *J. R. Langmaid*, *S. M. Palmer*, *M. R. Shaw*, *P. A. Sokoloff*, *S. Thomas*, *M. R. Young*), *Coleophora* sp. on *Betula* (1 ♀, 2 ♂) (England, Sweden; *J. R. Langmaid*, *M. Lindeborg*), *Coleophora cerasicolella* (Herrich-Schäffer) or *C. serratella* (Linnaeus) (1 ♂) (England; *J. Robbins*). Univoltine, overwintering in the host larva. Both this species and *Campoplex serratellae* Horstmann are parasitoids of *Coleophora serratella*, and have been misidentified as *Campoplex borealis* (Zetterstedt). Although so far *C. serratellae* has not been found in Britain, it is unclear to which of these two species various biological studies (e.g. Coshan, 1974) of 'C. borealis' as a parasitoid of *C. serratella* really refer.

***Campoplex punctulatus** (Szépligeti, 1916)

This species is here recorded from Britain for the first time. Widespread and moderately common in England and Scotland. Tortricidae: *Aphelia paleana* (Hübner) (2 ♀, 1 ♂) (England; *J. M. Chalmers-Hunt*, *J. R. Langmaid*), *Aphelia unitana* (Hübner) on *Rumex acetosa* (1 ♀) (England; *R. J. Heckford*), *Aphelia* sp. on *Heracleum* (1 ♀) (England; *R. J. Heckford*), *Cnephasia asseclana* ([Denis & Schiffmüller]) (1 ♀) (England; *R. L. E. Ford*), *Cydia* sp. on *Vicia sativa* (1 ♂) (England; *S. Koptur*). Additionally from indet. tortricids on *Caltha* and *Centaurea* (Scotland; respectively *K. P. Bland*, and *R. P. Knill-Jones*) and uncertain 'Microlepidoptera' on *Lavendula stoechas* (Portugal; *M. F. V. Corley*) and *Lotus corniculatus* (England; *S. M. Palmer*). All hosts were feeding on field-layer plants. The rearing data suggest that this is a plurivoltine species and (although all material has emerged in the year of host collection) it presumably passes the winter within the larva of hosts such as *Aphelia* and *Cnephasia* spp. There are additional English and Irish specimens (det. J. F. Perkins, and KH) in BMNH, but they are not reared (G. R. Broad, pers. comm.)

Campoplex pyraustae Smith, 1931

Choreutidae: *Anthophila fabriciana* (Linnaeus) on *Urtica* (6 ♀, 1 ♂) (England, Belgium; *M. R. Shaw*), *Prochoreutis myllerana* (Fabricius) on *Scutellaria galericulata* (5 ♀) (England; *J. L. Gregory*, *R. J. Heckford*, *M. R. Shaw*, *A. N. B. Simpson*), *Prochoreutis* sp. on *Scutellaria galericulata* (2 ♀, 4 ♂) (Scotland; *K. P. Bland*, *M. R. Shaw*); Crambidae: *Pyrausta aurata* (Scopoli) on *Mentha* (2 ♀) (England; *R. J. Heckford*); Depressariidae: *Agonopterix alstromeriana* (Clerck) (1 ♀, 1 ♂) (England; *L. T. Ford*), *Agonopterix ciliella* (Stainton) on *Angelica sylvestris* (1 ♀) (Ireland; *J. R. Langmaid*), *Agonopterix heracliana* (Linnaeus) on *Conium maculatum*, *Chaerophyllum* (2 ♂) (England, Isle of Man; *J. M. Chalmers-Hunt*, *E. C. Pelham-Clinton*), *Depressaria chaerophylli* Zeller (1 ♀) (England; *A. N. B. Simpson*); Elachistidae: *Elachista argentea* (Clerck) (1 ♀) (England; *I. Sims*), *Elachista poae* Stainton on *Glyceria plicata* (3 ♀, 1 ♂) (England; *I. Sims*); Epermeniidae: *Epermenia chaerophylliella* (Goeze) on *Heracleum spondylium* (1 ♂) (Scotland; *M. R. Shaw*); Gelechiidae: *Scrobipalpa acuminatella* (Sircom) on *Cirsium palustre* (1 ♀) (England; *J. R. Langmaid*); Glyphipterigidae: *Acrolepia autumnitella* Curtis on *Solanum dulcamara* (1 ♀, 3 ♂) (England; *H. C. J. Godfray*, *M. R. Shaw*), *Glyphipterix thrasonella* (Scopoli) on *Juncus acutiflorus* (1 ♀, 1 ♂) (England; *R. J. Heckford*); Gracillariidae: *Aspilapterix tringipennella* (Zeller) on *Plantago lanceolatum* (3 ♀, 4 ♂) (England; *M. R. Shaw*), *Caloptilia syringella* (Fabricius) on *Fraxinus* (2 ♂) (England, Isle of Man; *F. D. Bennett*, *R. A. Softly*); Nymphalidae: *Aglais io* (Linnaeus) (1 ♀, 1 ♂) (England; *B. T. Parsons*). Plurivoltine. Most adults have emerged in the year of host collection, but some overwintered in their cocoons. Some of its hosts would provide a means for passing the winter in a living host but it is unclear whether it does so.

Campoplex ramidulus (Brischke, 1880)

Tortricidae: *Rhyacionia buoliana* ([Denis & Schiffmüller]) on *Pinus radiata* (2 ♂) (England; *R. J. Heckford*). Univoltine, hibernating in the host larva.

Campoplex raschkiellae Horstmann, 1980

Momphidae: *Mompha raschkiella* (Zeller) on *Epilobium angustifolium* (16 ♀, 4 ♂ including 2 ♀, 1 ♂ paratypes) (England, Scotland; *P. A. Sokoloff*, *M. R. Shaw*, *C. Streets*). Plurivoltine, overwintering in its cocoon.

Campoplex restrictor Aubert, 1960

Tortricidae: *Acleris kochiella* (Goeze) (1 ♀) (England; *W. Rait-Smith*), *Archips podana* (Scopoli) on *Ligustrum* (1 ♂) (Spain; *G. E. King*), *Epiphyas postvittana* (Walker) on *Viburnum* (2 ♀, 1 ♂) (England; *J. R. Langmaid*), *Epinotia sordidana* (Hübner) on *Alnus* (1 ♂) (England; *A. N. B. Simpson*), *Pandemis cerasana* (Hübner) on *Lonicera periclymenum* (1 ♀) (England; *B. Fox*), *Pandemis heparana* ([Denis & Schiffermüller]) on *Crataegus* or *Prunus* (1 ♀) (England; *M. R. Shaw*). The specimens all emerged in the year of host collection; the above hosts not only overwinter as larvae but several are also plurivoltine, which may provide similar opportunities for the parasitoid.

Campoplex rothii (Holmgren, 1860)

Incurvariidae: *Incurvaria pectinea* Haworth (5 ♀, 6 ♂) (Scotland; *K. P. Bland*), *Incurvaria zinckenii* (Zeller) (1 ♀, 2 ♂) (Scotland; *K. P. Bland*). This species is presumably univoltine and overwinters in the overwintering host, but all have emerged in the year of host collection.

Campoplex serratellae Horstmann, 2012

Coleophoridae: *Coleophora serratella* (Linnaeus) (2 ♀, 3 ♂ including 2 ♀, 2 ♂ paratypes) (Germany; *K.-H. Lampe*). See remarks under *C. punctipleuris*. Horstmann (2012) states that it is univoltine and overwinters in the host. This species is not yet reliably recorded from Britain. A few British specimens in NMS that may be this species are only doubtfully determined and are not listed here.

****Campoplex sexguttellae*** Horstmann, **sp. nov.**

(Figs 2, 5)

Near to *Campoplex crassus* Horstmann in having the hind femur darkened, hind tibia darkened at base but subbasally with a pale spot, and the second tergite short; but in *C. crassus* the area basalis is much wider in relation to its length and the second tergite is distinctly wider than long.

Holotype ♀: 'Scotland: South Edinburgh suburbs. *Chrysoesthia sexguttella*, *Chenopodium* 4.8.1993 em. 1.8.1994 M. R. Shaw' (in National Museums of Scotland, Edinburgh).

Paratypes: (8 ♀, 34 ♂). 1 ♂, as holotype but em. 2.viii.1994; 19 ♂, as holotype but em. x.1993; 1 ♂, as holotype but coll. 8.vii.2000, em. viii/ix.2000; 1 ♀, 3 ♂, Scotland, West Lothian, South Queensferry, same host, *Atriplex*, coll. 18.viii.1987, em. vi/vii.1987 (*K. P. Bland*); 2 ♀, 2 ♂, Isle of Man, Peel Castle, same host, *Atriplex*, coll. 10.vii.1957 (*J. M. Chalmers-Hunt*); 5 ♀, 6 ♂, same host, Wales, Caernarfon, Y Foryd, 10.vii.2002 (*M. Hall*); 2 ♂, England, Oxfordshire, Faringdon, same host, *Atriplex hastata*, coll. 7.ix.1989, em. 17.x.1989 (*M. F. V. Corley*). Paratypes in NMS, BMNH London, and Horstmann coll. in ZSM Munich.

Description of female

Length of body 3.3 mm, of fore wing 3.0 mm. Head dorsally 1.67 times wider than long and 1.1 times wider than mesosoma, temples 0.7 times as long as eye, (virtual) tangents meeting on petiolus. OOL 1.2 times diameter of ocellus. Face 0.95 times as wide as frons. Malar space 0.6 times width of mandibular base. Mandibular base wide, teeth equal. Genal carina low, meeting hypostomal carina close to mandibular base. Clypeus granulate, with very fine scattered punctures, apical margin straight. Face and frons matt, granulate, without visible punctation. Vertex and temples with fine granulation, with very fine scattered punctures. Flagellum with 23 segments, narrowly filiform, distally narrowed, all segments longer than wide. First, second, third, fourth, middle and preapical flagellomeres respectively 3.7, 3.15, 2.9, 2.7, 2.2 and 1.3 times as long as wide.

Mesosoma 1.47 times longer than high. Propleuron medially and ventrally striate, dorsally granulate. Epomia present but indistinct. Mesoscutum granulate, matt, mainly with fine scattered punctures. Prescutellar groove smooth, scutellum carinate in the basal 0.2, granulate. Speculum dorsally with very fine granulation, medially and ventrally smooth, impression completely with distinct short striae, mesopleuron mainly granulate, partly with very fine punctures. Metapleuron with fine granulation and very fine scattered punctures. Epicnemial and postpectal carinae low, normally developed.

Fore wing with distal part of R1 (beyond Rs) as long as width of pterostigma, areolet very oblique, with short stalk, 2m-cu at the distal 0.7–0.8, cu-a slightly postfurcal, postnervulus broken in the middle. Hindwing with nervellus more or less vertical, at lower 0.75 weakly broken by unpigmented Cu1. Hind leg with femur 4.6 times as long as wide, tibial spur about 0.5 times as long as basitarsus, claws small, narrow and without distinct teeth.

Propodeum with fine carination, completely with fine granulation, somewhat shining. Area basalis about as long as wide. Area superomedia 0.9 times as long as wide, caudally with parallel sides, completely open posteriorly. Costulae completely developed. Area petiolaris flat, with few rugae apically. Petiolus without glymma. Postpetiolus dorsally and laterally rounded, 1.1 times wider than long. Second tergite of metasoma 0.78 times as long as first and 1.02 times longer than wide, thyridium weak, oval, distance from tergite base about 1.5 times its longitudinal diameter, apical tergites not excised apically. Ovipositor sheath 0.7 times as long as hind tibia, ovipositor slightly bent upwards at base and center, somewhat more strongly bent distally, with a small triangular preapical dorsal notch.

Colour. Black. Palps, mandibles medially, fore and mid trochanters, tips of fore and mid coxae and all trochantelli yellow. Fore and mid femora, tibiae and tarsi yellow-red. Hind leg with femur brown to dark brown, tibia basally and apically widely brownish, subbasally dorsally with small yellowish spot (sometimes missing), medio-dorsally yellowish, medio-ventrally narrowly yellow-red, tarsus brown, its basitarsus at base narrowly yellowish. Pterostigma pale brown. Metasoma largely black, caudal tergites from the third onwards with narrow yellowish apical margins.

Male. Flagellum with 24 segments, somewhat more narrowed apically, preapical segment 1.6 times as long as wide. Otherwise as the female except for sexual differences.

The host is killed after pupation and the host pupa is partly ruptured as the parasitoid spins its cocoon within. This species is capable of being univoltine, overwintering in its cocoon, but many adults emerge soon after cocoon formation, suggesting at least partial plurivoltinism.

Campoplex sulcatus Horstmann, 1985

Tortricidae: *Lozotaenia forsterana* (Fabricius) on *Hedera* (4 ♀, 4 ♂) (Isle of Man; *F. D. Bennett*), same host on *Vaccinium vitis-idaea* (1 ♀) (Scotland; *R. J. Heckford*), *Rhopobota ustomaculana* (Curtis) on *Vaccinium vitis-idaea* (1 ♂) (Scotland; *E. C. Pelham-Clinton*), indet. Tortricidae on *Vaccinium vitis-idaea* (2 ♀) (Scotland; *K. P. Bland*, *R. P. Knill-Jones*). Emergence has in all cases been relatively early in the year, soon after cocoon formation, which might seem to suggest that this species is plurivoltine. However, the above univoltine hosts both overwinter as larvae, inside which the parasitoid presumably overwinters, and they may be available soon enough in summer for the parasitoid to be univoltine.

Campoplex tumidulus (Gravenhorst, 1829)

Choreutidae: *Anthophila fabriciana* (Linnaeus) on *Urtica* (3 ♀) (England; *M. F. V. Corley*, *M. R. Shaw*), *Choreutis nemorana* (Hübner) on *Ficus carica* (1 ♀) (France; *M. R. Shaw*), *Choreutis pariana* (Clerck) (2 ♀, 1 ♂) (Scotland; *M. R. Shaw*), *Prochoreutis* sp. on *Scutellaria galericulata* (2 ♀, 1 ♂) (England; *M. R. Shaw*); Coleophoridae: *Coleophora lithargyrinella* Zeller on *Stellaria* (1 ♀) (England; *R. J. Heckford*), *Coleophora saturatella* Stainton on *Sarothamnus scoparius* (1 ♀) (England; *A. M. Emmet*); Crambidae: *Pyrausta aurata* (Scopoli) (1 ♀) (England; *W. Wakely*); Depressariidae: *Agonopterix heracliana* (Linnaeus) on *Anthriscus caudalis*, *A. sylvestris*, *Pastinaca sativa*, *Daucus carota*, *Chaerophyllum temulus* (5 ♀, 1 ♂) (England, Scotland; *J. M. Chalmers-Hunt*, *J. R. Langmaid*, *E. C. Pelham-Clinton*, *M. R. Shaw*, *A. N. B. Simpson*), *Agonopterix subpropinquella* (Stainton) (1 ♂) (Ireland; *J. M. Chalmers-Hunt*), *Depressaria chaerophylli* Zeller (1 ♀) (England; *A. N. B. Simpson*), *Depressaria pastinacella* (Duponchel) on *Heracleum* (1 ♀) (Scotland; *K. P. Bland*), *Luquetia lobella* ([Denis & Schiffermüller]) on *Prunus spinosa* (1 ♀, 1 ♂) (England; *P. H. Sterling*); Epermeniidae: *Epermenia chaerophyllella* (Goeze) on *Heracleum spondyleum* (8 ♀, 1 ♂) (Scotland; *M. R. Shaw*); Gelechiidae: *Dichomeris marginella* (Fabricius) (7 ♀, 6 ♂) (England; *E. S. Bradford*), *Mirificarma lentiginosella* (Zeller) on *Genista tinctoria* (2 ♀) (England; *J. R. Langmaid*), *Scrobipalpa obsoletella* (Fischer von Röslerstamm) on *Atriplex prostrata* (1 ♀) (England; *J. R. Langmaid*), *Scrobipalpa* sp. on *Suaeda maritima* (1 ♀, 1 ♂)

(England; *J. R. Langmaid*), *Scrobipalpa tussilaginis* (Frey) on *Tussilago farfara* (1 ♀) (England; *R. J. Heckford*), *Teleiodes notatella* (Hübner) on *Salix aurita* (1 ♀) (England; *M. J. Sterling*), *Telephila schmidtella* (Heyden) on *Clinopodium vulgare* (1 ♀) (Portugal; *M. F. V. Corley*); Glyphipterigidae: *Acrolepia autumnitella* Curtis on *Solanum dulcamara* (1 ♀) (England; *H. C. J. Godfray*); Gracillariidae: *Aspilapteryx tringipennella* (Zeller) on *Plantago lanceolata* (2 ♀, 1 ♂) (Scotland; *K. P. Bland*), *Caloptilia ?robustella* Jäckh (1 ♀) (England; *A. N. B. Simpson*); Tortricidae: ?*Eucosma tripoliana* (Barrett) ex seedhead of *Aster tripolium* (3 ♂) (England; *A. N. B. Simpson*), *Isotrias rectifasciana* (Haworth) as cocoon in host cocoon (1 ♀) (France; *M. R. Shaw*), ?*Lobesia littoralis* (Humphreys & Westwood) in stem of *Armeria maritima* (1 ♀) (England; *R. J. Heckford*), *Notocelia cynosbatella* (Linnaeus) on *Rosa canina* (2 ♂) (England; *R. J. Heckford*), *Xerocnephasia rigana* (Sodoffsky) on low *Clematis* (2 ♀, 1 ♂) (France; *M. R. Shaw*); Nymphalidae: *Vanessa atalanta* (Linnaeus) (2 ♀, 1 ♂) (England, Spain; *C. Hallett*, *C. Stefanescu*); Pterophoridae: *Platypitilia gonodactyla* ([Denis & Schiffermüller]) on *Tussilago* (6 ♀, 6 ♂) (England; *M. R. Shaw*), ?*Pterophorus pentadactylus* (Linnaeus) (1 ♀) (England; *T. H. Ford*); Yponomeutidae: *Paraswammerdamia nebulella* (Goeze) on *Crataegus* (1 ♀, 1 ♂) (England; *M. R. Shaw*), *Pseudoswammerdamia combinella* (Hübner) on *Prunus spinosa* (1 ♀) (England; *A. N. B. Simpson*), *Swammerdamia pyrella* (Villers) on *Crataegus* (1 ♀) (Scotland; *K. P. Bland*). Additionally a series of 8 ♀, 7 ♂ ex *Adaina microdactyla* (Hübner) (Pterophoridae) in *Eupatorium cannabinum* stems, coll. iv. em. v/vi (England; *M. R. Shaw*) is doubtfully determined as this species. Plurivoltine, overwintering in its cocoon.

Campoplex tussilaginis Horstmann, 2013

Holotype ♀ and 16 ♀, 5 ♂ (all but 1 ♂ are paratypes) ex *Scrobipalpa tussilaginis* (Stainton) (Gelechiidae) on *Tussilago farfara* (England; *R. J. Heckford*, *B. P. Henwood*, *J. R. Langmaid*, *E. C. Pelham-Clinton*). In addition 1 ♀, doubtfully determined, from *Scrobipalpa instabilella* (Douglas) (England; *E. S. Bradford*). Plurivoltine, overwintering in its cocoon.

Campoplex unicingulatus (Schmiedeknecht, 1909)

Tortricidae: *Epinotia demarniana* (Fischer von Röslerstamm) (3 ♀) (England; *E. S. Bradford*), *Epinotia immundana* (Fischer von Röslerstamm) on *Alnus glutinosa* (5 ♀, 2 ♂ [+ 2 ♀ from ?this host]) (England, Scotland; *E. S. Bradford*, *M. R. Shaw*, *A. N. B. Simpson*), *Notocelia uddmanniana* (Linnaeus) on *Rubus fruticosus* (2 ♀, 2 ♂) (England; *J. L. Gregory*, *I. Sims*, *I. F. Smith*, *P. A. Sokoloff*). Emergence has always been in the year of collection. It probably overwinters in an overwintering host larva, but voltinism is unclear.

****Campoplex volubilis*** (Holmgren, 1860)

This species is here recorded from Britain for the first time. 1 ♀, Scotland: Stirlingshire, Flanders Moss, ex *Glyphipterix hazorthana* (Stephens) (Glyphipterigidae), in *Eriophorum* seed head, coll. 17.iv.1988, em. 19.v.1988 (*K. P. Bland*); 1 ♂, Scotland: Inverness-shire, Tulloch Moor, same host and situation, coll. 2.v.1981, em. 17.v.1981 (*R. P. Knill-Jones*).

Casitaria Holmgren, 1859

This genus was not examined by KH and, although there is much reared material in NMS, we are too unsure of our determinations to give rearing records.

Charops cantator (DeGeer, 1778)

Zygaenidae: *Zygaena algira* Boisduval (5 ♀, 4 ♂) (Morocco; *A. Hofmann* & *P. Strauss*, *J.-C. Weiss*), *Zygaena chirazica* Reiss (1 ♀) (Iran; *T. Hagen*), *Zygaena escaleraei* Poujade (9 ♀, 6 ♂) (Iran; *A. Hofmann*), *Zygaena filipendulae* (Linnaeus) (19 ♀, 19 ♂) (England, France, Germany, Italy, Spain, Sweden, Turkey; *A. A. Allen*, *C. Eliasson*, *Gremminger*, *N. Hall*, *A. Hofmann*, *D. R. Lees*, *E. Öckinger*, *A. Rouch*, *M. A* & *W. G. Tremewan*), *Zygaena haematina* Kollar (4 ♀) (Iran; *P. Kautt*, *A. Hofmann*), *Zygaena lonicerae* (Scheven) (6 ♀, 4 ♂) (England, France, Sweden; *E. Briolat*, *C. Eliasson*, *B. H. Guldberg*, *B. P. Henwood*, *E. Öckinger*), *Zygaena naumanni* Hille & Keil (1 ♀) (Iran; *A. Hofmann*), *Zygaena nevadensis* Rambur (1 ♂) (Greece; *A. Hofmann*), *Zygaena punctum* Ochsenheimer (2 ♀, 1 ♂) (Greece; *A. Hofmann*), *Zygaena rhadamanthus* (Esper) (1 ♂) (Spain; *A. Hofmann*), *Zygaena sarpedon* (Hübner) (4 ♀) (Spain; *A. Hofmann*), *Zygaena seitzi* Reiss (7 ♀, 3 ♂) (Iran; *A. Hofmann*), *Zygaena tamara* Christoph (1 ♀) (Iran; *A. Hofmann*), *Zygaena transalpina* (Esper) (1 ♀) (Italy; *W. G. Tremewan*), *Zygaena*

trifolii (Esper) (9 ♀, 3 ♂) (England, France, Portugal; *E. Briolat, M. F. V. Corley, E. Drouet, A. Rouch, W. G. Tremewan, D. A. Young*), There is also a series of 1 ♀, 6 ♂ from *Rhagades pruni* ([Denis & Schiffermüller]) (France, Germany; *E. Drouet, A. Hofmann*) that differ consistently in sculpture and may represent a different species. Univoltine, overwintering in the host larva. The cocoon is made inside that of the host.

Charops maroccanus Horstmann, 2008

Holotype ♀ ex *Zygaena excelsa* Rothschild (Zygaenidae) (Morocco; *A. Hofmann*). Owing to a transcription error onto the data label the host was given as *Zygaena tamara* Christoph in the original description (Horstmann, 2008) but the error was later corrected (Horstmann, 2009).

****Clypeoplex cerophagus*** (Gravenhorst, 1829)

This species is here recorded from Britain for the first time. Apparently widespread. Gelechiidae: *Scrobipalpa acuminatella* (Sircom) on *Cirsium palustre* (2 ♂) (England; *K. P. Bland, M. S. Parsons*); Ypsolophidae: *Ypsolopha parenthesesella* (Linnaeus) on *Acer campestre* (below *Quercus*), *Betula, Myrica* (2 ♀, 4 ♂) (England, Scotland; *M. R. Shaw, A. N. B. Simpson*). At least partly plurivoltine, probably overwintering in the host larva. Emergence is from the host cocoon. There are also English specimens (det. J. F. Perkins) in BMNH, but they are not reared (G. R. Broad, pers. comm.).

Cymodusa antennator Holmgren, 1860

Crambidae: *Scoparia basistrigalis* Knaggs on *Mnium hornum* (1 ♀, 1 ♂) (England; *R. J. Heckford*), ?*Scoparia* sp. (1 ♂) (England; *R. J. Heckford*). Probably univoltine, overwintering in the host larva.

Cymodusa exilis Holmgren, 1860

Scythrididae: *Scythris crassiuscula* (Herrich-Schäffer) on *Helianthemum* (1 ♀) (England; *R. J. Heckford*). The specimen emerged from its cocoon in the year of formation.

Diadegma Foerster, 1869

Most species kill the host as a cocooned prepupa, but some species parasitizing 'Macrolepidoptera' kill the host before it is fully grown.

Diadegma aculeatum (Bridgman, 1889)

Hesperiidae: *Muschampia proto lycaonius* (Wagner) (1 ♂) (Israel: *D. Benyamini*); Lycaenidae: *Cupido minimus* (Fuessly) (6 ♀, 4 ♂) (England; *J. R. Langmaid, J. Muggleton, J. E. Pateman, M. R. Shaw, P. Tebutt*), ex *Anthyllis vulneraria* with *Cupido minimus* (24 ♀, 9 ♂) (England; *J. R. Langmaid*), ex *Anthyllis vulneraria* with *Cupido minimus* and *Aproaerema anthyllidella* (Hübner) (Gelechiidae) (4 ♀, 8 ♂) (England; *J. R. Langmaid*); Pterophoridae: *Stenoptilia bipunctidactyla* (Scopoli) on *Scabiosa columbaria* (1 ♀) (England; *C. Hart*); Pyralidae: *Phycitodes saxicola* (Vaughan) (1 ♀ [+ 1 ♀, 1 ♂ from ?this host on *Inula crithmoides*]) (England, Wales: *L. T. Ford, A. N. B. Simpson*). Plurivoltine. All specimens associated with *C. minimus* have emerged in the year of collection so, although this butterfly overwinters as a post-feeding but mobile larva, *D. aculeatum* appears to use it (and *S. bipunctidactyla*) as its summer host(s), overwintering as a cocoon after parasitising, for example, *P. saxicola*. Interestingly, the specimen reared by J. Muggleton was apparently from a host collected as an egg (cf. *Hyposoter horticola*).

****Diadegma angitiaeforma*** Horstmann, 1969

This species is here recorded from Britain for the first time. 1 ♀, 3 ♂, England: Hampshire, Havant Thicket, ex *Coleophora glaucicolella* Wood (Coleophoridae) on *Luzula multiflora*, coll. 10.vi.1978, em. vii.1978 (*J. R. Langmaid*); 2 ♀, 1 ♂, Scotland: Argyll, Taynult, Loch Tromlee, ex *Coleophora* sp. on *Luzula multiflora* coll. 13.vi.1978, em. vii.1978 (*J. R. Langmaid*). It seems likely to be univoltine and to overwinter in the host larva.

****Diadegma angulator*** (Aubert, 1963)

This species is here recorded from Britain for the first time. Widespread. Coleophoridae: *Coleophora limoniella* (Stainton) in *Limonium vulgare* stem (1 ♀) (England; *R. L. E. Ford*); Pterophoridae: *Adaina microdactyla* (Hübner) (4 ♀, 8 ♂) (England, Ireland; *C. Hart, M. R. Shaw*), *Hellinsia carphodactyla* (Hübner) on *Inula conyza* (7 ♀, 5 ♂ [+ 1 ♀ from ?this host])

(England; *J. M. Chalmers-Hunt, C. Hart, R. J. Heckford, S. M. Palmer, M. S. Parsons, A. N. B. Simpson*). Evidently plurivoltine. Adults resulting from *H. carphodactyla* have always emerged in the year of cocoon formation, but the other two hosts both overwinter in dead stems, from which the host and parasitoid both emerge the following year.

Diadegma ?annulicrus (Thomson, 1887)

Coleophoridae: *Coleophora spinella* (Schrank) (1 ♀) (England; *J. Robbins*). This specimen had been labelled (without the question mark) by KH some years ago, and was present in a box of *Diadegma* (*Neoangitia*) species that he regarded as undescribed, and to which MS names had recently been affixed, that was returned to NMS after his death. Probably univoltine, overwintering in the host, but the data are unclear. It is also unclear whether or not KH continued to support his earlier determination.

Diadegma anurum (Thomson, 1887)

Tischeriidae: *Tischeria ekebladella* (Bjerkander) on *Quercus robur* (6 ♀) (England, Scotland, Finland; *K. P. Bland, E. Connor, R. Kaartinen*). Univoltine; the host overwinters fully fed in its mine, and the parasitoid makes its cocoon therein too, but it is not clear whether this is before or after the winter. From more extensive material reared from the same host, Shaw & Horstmann (1997) deduced that *D. anurum* is thelytokous.

Diadegma argentellae Horstmann, 2004

Holotype ♀ ex *Elachista argentella* (Clerck) (Elachistidae) (Scotland; *K. P. Bland*). This species was noted by Shaw & Horstmann (1997) as '*Diadegma* species 3'. Probably univoltine, overwintering in the host larva.

Diadegma armillatum (Gravenhorst, 1829)

Choreutidae: *Choreutis pariana* (Clerck) on *Malus* (1 ♀, 1 ♂) (Scotland; *J. L. Gregory, M. R. Shaw*); Lycaenidae: *Celastrina argiolus* (Linnaeus) (2 ♀) (England; *J. E. Pateman*); Pyralidae: *Acrobasis marmorea* (Haworth) (1 ♀) (England; *H. N. Michaelis*); Yponomeutidae: *Swammerdamia caesiella* (Hübner) on *Betula* (2 ♀, 3 ♂) (England; *J. R. Langmaid, M. R. Shaw*), *Yponomeuta cagnagella* (Hübner) on *Euonymus* (3 ♀, 5 ♂) (England; *D. K. Clements, S. J. Edwards*), *Yponomeuta evonymella* (Linnaeus) on *Prunus padus* (18 ♀, 6 ♂) (England, Scotland; *A. Buckham, G. N. Foster, N. Hall, R. P. Knill-Jones, S. C. Little, R. T. McAndrew, M. R. Shaw, A. N. B. Simpson, I. Sims, P. A. Sokoloff, D. W. Yalden*), *Yponomeuta malinellus* (Zeller) (2 ♀, 2 ♂) on *Malus* (England; *R. T. McAndrew*), *Yponomeuta padella* (Linnaeus) on *Crataegus*, *Prunus spinosa* (6 ♀, 5 ♂) (England, Ireland; *J. L. Gregory, J. R. Langmaid, S. M. Palmer, D. A. Sheppard, P. Sokoloff*), *Yponomeuta* sp. on *Malus* (6 ♀) (England; *A. J. Halstead, D. A. Sheppard*). Plurivoltine. All specimens from *Yponomeuta* and *Celastrina* emerged in the year of cocoon formation, while all those from *Swammerdamia* overwintered in their cocoons. See also remark under *D. monospilum*.

Diadegma berberatae Horstmann, 2013

Holotype ♀ and 1 ♀, 1 ♂ paratypes ex *Pareulype berberata* ([Denis & Schiffermüller]) (Geometridae) on *Berberis vulgaris* (England; *J. Greerson & P. Waring*). The hosts were collected at the end of viii and the adult parasitoids appeared in ix/x, suggesting not only plurivoltinism but also (unless emergence had been forced) that it may use a different host in which to overwinter.

****Diadegma brevipetiolatum*** Horstmann, 1969

This species is here recorded from Britain for the first time. 1 ♀, England: Worcestershire, Colletts Green, ex *Coleophora lineolea* (Haworth) (Coleophoridae) on *Stachys lanata*, coll. vi.1978, em. vii.1978 (*A. N. B. Simpson*); 3 ♀, 3 ♂, England: Hampshire, Eastney, ex same host on *Ballota nigra*, coll. 29.v.1983, em. ix.1983 (*D. H. Sterling*); 2 ♀, 1 ♂, England: Oxfordshire, Faringdon, ex same host on *Stachys sylvatica*, coll. vi.1985, em. 14–20.viii.1985 (*M. F. V. Corley*). Univoltine, overwintering in the host larva.

****Diadegma brevivalve*** (Thomson, 1887)

This species is here recorded from Britain for the first time. 4 ♀, 5 ♂, England: Wiltshire, Tilshead, ex *Epermenia insecurella* (Stainton) (Epermeniidae) on *Thesium humifusum*, coll.

21.iv.1991, em. 23.v.1991 (2 ♀, 1 ♂) (*P. H. Sterling*); and coll. 28.vii.1991, em. viii.1991 (2 ♀, 4 ♂) (*J. R. Langmaid*). Plurivoltine, but it is unclear how the winter is passed. The host is killed as a prepupa and a discrete cocoon is formed (contrast the behaviour of *Campoplex crassus* (q.v.) and *Diadegma scotiae* (q.v.), which are both also specialist parasitoids of Epermeniidae).

****Diadegma callisto*** Horstmann, 1993

This species is here recorded from Britain for the first time. 1 ♀, Scotland: Angus, Glen Doll, ex *Callisto coffeella* (Zetterstedt) (Gracillariidae), coll. iv.2002, em. 2002 (*M. R. Young*).

Diadegma chrysostictos (Gmelin, 1790)

Gelechiidae: *Scrobipalpa ocellatella* (Boyd) (2 ♀) (England; *J. M. Chalmers-Hunt*); Oecophoridae: *Endrosis* or *Hofmannophila* sp. on spiders web (1 ♀) (England; *E. C. Pelham-Clinton*); Pyralidae: *Ephestia elutella* (Hübner) (1 ♀, 2 ♂) (Scotland; *K. P. Bland*), ?*Ephestia kuehniella* Zeller in flour mill (5 ♀, 6 ♂) (England; *R. C. Fisher*), associated with *Achroia grisella* (Fabricius) or *Galleria mellonella* (Linnaeus) (2 ♀, 2 ♂) (Scotland; *G. M. Foster*), *A. grisella* (2 ♀) (England; *R. E. Evans*), *Epischnia asteris* Staudinger on *Inula crithmoides* (3 ♂, doubtfully determined) (England; *J. R. Langmaid*); Tineidae: ex barn owl (*Tyto alba*) pellets + faeces + straw with *Monopis laevigella* ([Denis & Schiffermüller]) (9 ♀, 6 ♂) (England; *M. R. Shaw*); Yponomeutidae: *Kessleria saxifragae* (Stainton) on *Saxifraga azoides*, *S. oppositifolia* (2 ♀, 11 ♂ [+ 2 ♂, doubtfully determined]) (Scotland, Ireland; *K. P. Bland*, *A. M. Emmet*, *R. J. Heckford*, *J. R. Langmaid*, *R. P. Knull-Jones*, *E. C. Pelham-Clinton*). In addition, specimens from various laboratory cultures in some of the above pyralid hosts (*R. C. Fischer*, *G. N. Foster*, *D. J. Read*), and the material from cross-culture experiments with *Diadegma fabriciana* Horstmann & Shaw involving both *E. kuehniella* and *Anthophila fabriciana* (Linnaeus) (Choreutidae) as detailed by Horstman & Shaw (1984). This species is continuously brooded in its indoor hosts, and clearly plurivoltine otherwise, with hosts in owl pellets providing one means to overwinter.

Diadegma combinatum (Holmgren, 1860)

Cosmopterigidae: *Panocalia schwarzwella* (Fabricius) on *Viola tricolor* (1 ♀, 1 ♂) (England, Scotland; *R. J. Heckford*); Tortricidae: *Olethreutes palustrana* (Lienig & Zeller) on *Dicranum scoparium* (1 ♀ [+ 1 ♀ from ?this host]) (England, Scotland; *R. J. Heckford*). All have emerged in the year of collection: presumably plurivoltine, but overwintering mode unclear.

Diadegma compunctellae Horstmann, 2013

Holotype ♀ and 2 ♀, 1 ♂ paratypes ex *Swammerdamia compunctella* Herrich-Schäffer (Yponomeutidae) on *Sorbus aucuparia* (Scotland; *R. J. Heckford*). All have emerged in the year of cocoon formation, but it seems likely to be univoltine, overwintering in the host larva.

Diadegma crassicorne (Gravenhorst, 1826)

Noctuidae: *Eremobia ochroleuca* ([Denis & Schiffermüller]) on grasses (1 ♀, 2 ♂) (England; *M. R. Britton*, *R. I. Lorimer*), *Mythimna ?impura* (Hübner) (2 ♂) (England; *D. A. Sheppard*), *Mythimna litoralis* (Curtis) (1 ♀) (Wales; *H. Bantock*), indet. noctuid on grasses (1 ♀, 5 ♂) (England; *H. Abbasipour*). In addition, a specimen labelled as ex Gelechiidae: *Scrobipalpa clintoni* Povolný in *Rumex crispus* stems (1 ♂) (Scotland; *J. M. Chalmers-Hunt*), but this is without either cocoon or host remains and seems likely to have been a substrate rearing in which the true host was overlooked. All individuals emerged in the year of host collection, but its voltinism and means of overwintering are unclear.

Diadegma crassum (Bridgman, 1889)

Bucculatricidae: *Bucculatrix bechsteinella* (Bechstein & Scharfenberg) on *Crataegus* (2 ♀) (England; *P. H. Sterling*), *Bucculatrix cidarella* Zeller on *Alnus glutinosa* (6 ♀, 5 ♂ [+ 1 ♀ from ?this host]) (England; *J. L. Gregory*, *J. R. Langmaid*), *Bucculatrix demaryella* (Duponchel) on *Castanea sativa* (6 ♀) (England; *J. M. Chalmers-Hunt*), *Bucculatrix frangulella* (Goeze) on *Frangula alnus*, *Rhamnus catharticus* (5 ♀) (England, Netherlands; *D. J. Gibbs*, *P. J. Johnson*, *M. R. Shaw*), *Bucculatrix thoracella* (Thunberg) on *Tilia* (1 ♂) (England; *R. J. Heckford*), *Bucculatrix ulmella* Zeller on *Quercus robur* (4 ♀, 3 ♂) (England; *R. Dickson*), *Bucculatrix* sp. collected as cocoons below *Castanea* (3 ♀) (France; *M. R. Shaw*). Overwinters in the host cocoon and appears to be largely (but not completely) univoltine.

Diadegma crataegi Horstmann, 1980

Gracillariidae: *Parornix anglicella* (Stainton) on *Crataegus monogyna* (3 ♀) (England, Netherlands; M. R. Shaw), *Parornix betulae* (Stainton) on *Betula* (1 ♀) (Scotland; K. P. Bland), *Parornix torquillella* (Zeller) on *Prunus spinosa* (1 ♀, 1 ♂) (England, Scotland; K. P. Bland, R. J. Heckford), *Parornix* sp. on *Prunus* or *Crataegus* (1 ♀, 1 ♂) (England; M. R. Shaw), *Phyllonorycter blancardella* (Fabricius) on *Malus* (1 ♀) (England; E. C. Pelham-Clinton), *Phyllonorycter corylifoliella* (Hübner) on *Crataegus monogyna* (1 ♀) (England; M. R. Shaw), *Phyllonorycter oxyacanthae* (Frey) on *Crataegus* (2 ♀, 1 ♂ including 1 ♀ paratype) (England; R. R. Askew, I. V. S. Fernando, J. M. Ruse), *Phyllonorycter* sp. on *Quercus* (1 ♀ paratype) (England; G. Bryan), *Phyllonorycter* sp. on *Betula*, *Malus sylvestris* (2 ♂) (England; R. R. Askew & J. M. Ruse, G. Bryan). Plurivoltine, overwintering in its cocoon.

Diadegma duplicatum Horstmann, 1980

Gracillariidae: *Caloptilia stigmatella* (Fabricius) on *Populus tremula*, *Salix aurita*, *S. caprea*, *S. cinerea*, *S. repens*, *S. viminalis* (13 ♀, 7 ♂) (England, Scotland; K. P. Bland, J. M. Chalmers-Hunt, R. J. Heckford, M. R. Honey, R. I. Lorimer, M. S. Parsons, M. R. Shaw, A. N. B. Simpson). All individuals have emerged in the year of collection. Possibly univoltine, but overwintering mode is unclear.

Diadegma elishae (Bridgman, 1884)

Gracillariidae: *Parornix scoticella* (Stainton) on *Sorbus aria*, *S. aucuparia* (2 ♀, 1 ♂) (England, Scotland; E. C. Pelham-Clinton, I. Sims), *Parornix torquillella* (Zeller) on *Prunus spinosa* (2 ♀, 1 ♂) (England, Scotland; K. P. Bland, E. C. Pelham-Clinton), *Parornix* sp. on *Prunus spinosa* (1 ♂ [+ 1 ♀ from ?this host on *Crataegus* or *Prunus*]) (England; M. R. Shaw). Plurivoltine, overwintering in its cocoon.

Diadegma ericinellae Horstmann, 2013

Holotype ♀ and 4 ♀, 3 ♂ paratypes ex *Aristotelia ericinella* (Zeller) (Gelechiidae) on *Calluna* or *Erica* (England; M. R. Shaw, P. A. Sokoloff). Also 1 ♀, doubtfully determined, from ?this host (England; J. L. Gregory) not included in the type series. All specimens emerged in the year of collection. It seems likely to be univoltine.

Diadegma erucator (Zetterstedt, 1838)

Crambidae: *Ostrinia nubilalis* (Hübner) in stem of *Arctium lappa* (1 ♀) (England; P. A. Sokoloff); Gelechiidae: *Pexicopia malvella* (Hübner) in seeds of *Malva* (1 ♀, 1 ♂) (England; J. M. Chalmers-Hunt, R. P. Knull-Jones), *Platyedra subcinerea* (Haworth) on *Malva* (1 ♀, 2 ♂) (England; J. M. Chalmers-Hunt, P. H. Sterling); Pyralidae: *Myelois circumvoluta* (Geoffroy) (2 ♀, 1 ♂) (England; E. S. Bradford, N. Hall), *Myelois cribrella* Hübner in stem of *Arctium lappa* (1 ♀, 1 ♂) (England; A. M. Emmet); Tortricidae: *Cnephasia asseclana* ([Denis & Schiffermüller]) on *Stachys silvatica* (1 ♀) (Scotland; M. R. Shaw), *Cnephasia pasiuana* (Hübner) in heads of *Chrysanthemum leucanthemum* (1 ♂) (England; A. N. B. Simpson), *Cnephasia stephensiana* (Doubleday) on *Cirsium arvense* (1 ♀) (England; M. F. V. Corley), *Cnephasia* sp. on *Conopodium majus* (2 ♀) (England; M. F. V. Corley), *Cochylis molliculana* Zeller on *Picris echioides* (1 ♀) (England; J. R. Langmaid), *Eana incanana* (Stephens) on flowers/seeds of *Endymion non-scriptus* (1 ♀) (England; G. Smith). Plurivoltine; the overwintering hosts were in the stems of *Arctium* and *Cirsium*.

Diadegma exareolator Aubert, 1964

Choreutidae: *Tebenna micalis* (Mann) on *Pulicaria dysenterica* (1 ♀) (England; R. J. Heckford); Gracillariidae: *Aspilapterix tringipennella* (Zeller) on *Plantago lanceolata* (3 ♀, 3 ♂) (England, Scotland; K. P. Bland, E. C. Pelham-Clinton); Lyonetiidae: *Bedellia somnulentella* (Zeller) on *Calystegia sepium*, *C. soldanella*, *Convolvulus arvensis* (23 ♀, 6 ♂) (England, France, Malta; R. J. Dickson, J. L. Gregory, R. J. Heckford, M. R. Shaw, A. N. B. Simpson); indet. Lepidoptera mining *Cheilolophus sempervirens* (1 ♀) (Portugal; M. F. V. Corley). Plurivoltine, overwintering in the host larva.

Diadegma fabricianae Horstmann & Shaw, 1984

Choreutidae: *Anthophila fabriciana* (Linnaeus) on *Urtica* (in part the result of a prolonged survey, MRS unpublished), *Parietaria* (96 ♀, 36 ♂) (England, Scotland, Wales; S. D. Beavan,

K. P. Bland, M. R. Britton, N. Hall, R. I. Lorimer, R. Maidstone, M. R. Shaw, R. A. Softly, *Prochoreutis* sp. on *Scutellaria galericulata* (1 ♀) (England; *M. R. Shaw*); Crambidae: *Pleuroptya ruralis* (Scopoli) on *Urtica* (7 ♀, 1 ♂) (England, France, Spain; *T. H. Ford, C. Hallet, S. Jancek, G. E. King, M. R. Shaw*); *Udea lutealis* (Hübner) on *Tussilago* (6 ♀, 6 ♂ [+ 1 ♀ from ?this host, cocoon on *Parietaria*]) (Scotland; *M. R. Shaw*). A series of 4 ♀, 5 ♂ from Heliodinidae: *Heliodines roesella* (Linnaeus) on *Atriplex* (France, Sweden; *N. Ryrholm, M. R. Shaw*) is only doubtfully determined as this species. In addition, there is a series of males cultured in *A. fabriciana* (cf. Horstmann & Shaw, 1984). Although this species is not quite as host specialised as at first supposed (Horstmann & Shaw, 1984), it seems to have recruited wider hosts mainly from a nettle-feeding base. Plurivoltine, overwintering in the host larva.

Diadegma fenestrata (Holmgren, 1860)

Choreutidae: *Tebenna bjerkanndrella* (Thunberg) on *Inula* (1 ♀) (Sweden; *B. Jørgensen*), *Tebenna micalis* (Mann) on *Pulicaria dysenterica*, under *Onopordon* (3 ♀, 1 ♂) (England, Spain; *S. D. Bevan, R. J. Heckford, G. E. King*); Crambidae: *Udea lutealis* (Hübner) on *Plantago lanceolata*, *Tussilago* (2 ♀) (Scotland; *J. Clayton, M. R. Shaw*); Depressariidae: *Agonopterix bipunctosa* (Curtis) on *Serratula tinctoria* (1 ♀) (England; *R. J. Heckford*), *Depressaria pulcherrimella* Stainton on *Pimpinella saxifraga*, *Sesili libanotis* (1 ♀, 2 ♂) (England; *R. J. Heckford*); Gelechiidae: *Bryotropha terrella* ([Denis & Schiffermüller]) on *Rhytidadelphus squarrosus* (3 ♀, 1 ♂) (England; *R. J. Heckford*), *Caryocolum blandelloides* Karsholt on *Cerastium fontanum* (1 ♂) (Scotland; *J. R. Langmaid*), *Caryocolum fraternella* (Douglas) on *Stellaria graminea* (2 ♂) (England; *M. F. V. Corley*), *Mirificarma lentiginosella* (Zeller) on *Genista tinctoria* (1 ♂) (England; *M. S. Parsons*), *Monochroa conspersella* (Herrich-Schäffer) on *Lysimachia vulgaris* (1 ♀) (England; *J. R. Langmaid*), *Scrobipalpa clintoni* Povolný in *Rumex crispus* stems (1 ♀) (Scotland; *K. P. Bland*), *Scrobipalpa murinella* (Duponchel) on *Antennaria dioica* (1 ♂) (Ireland; *R. J. Heckford*), *Syncopacma cinctella* (Clerck) (1 ♀) (England; *J. M. Chalmers-Hunt*), *Syncopacma larseniella* Gozmány (2 ♂) (England; *D. J. L. Agassiz*), *Syncopacma taeniolella* (Zeller) on *Lotus corniculatus* (2 ♀) (England; *R. J. Heckford, J. R. Langmaid*), *Syncopacma* sp. on *Lotus corniculatus* (1 ♀, 1 ♂) (Wales; *J. R. Langmaid*), ?*Syncopacma* sp. on *Lotus uliginosus* (1 ♂) (England; *E. C. Pelham-Clinton*), *Telephila schmidtiiellus* (Heyden) on *Origanum* (1 ♀) (Wales; *A. N. B. Simpson*); Glyphipterigidae: *Digitivalva pulicariae* (Klimesch) on *Pulicaria dysenterica* (6 ♀, 7 ♂) (Scotland; *M. R. Shaw, M. R. Young*); Plutellidae: *Eidophasia messingiella* (Fischer von Röslerstamm) on *Cardaria draba* (9 ♀, 2 ♂) (England; *L. T. Ford*); *Plutella porrectella* (Linnaeus) on *Hesperis matronalis* (3 ♀) (Isle of Man; *F. D. Bennett*), *Plutella xylostella* (Linnaeus) on *Brassica*, *Cakile maritima*, *Descurainia sophia*, *Sinapis arvensis* (21 ♀, 15 ♂) (England, Scotland, Jersey, France; *E. S. Bradford, G. B. Corbet, L. T. Ford, J. L. Gregory, G. M. Haggitt, R. J. Heckford, R. P. Knill-Jones, J. W. McHardy, K. Saul, M. R. Shaw*); Pyralidae: *Epischmia banksiella* Richardson on *Inula crithmoides* (1 ♀, 2 ♂) (England; *S. D. Bevan, R. J. Heckford*); Tortricidae: *Cnephasia incertana* (Treitschke) on *Heracleum* (1 ♂) (England; *R. J. Heckford*), *Cnephasia pasiuana* (Hübner) (1 ♂) (England; *S. N. A. Jacobs*), *Eana penziana* (Thunberg) on *Helianthemum canus* (1 ♂) (Ireland; *R. J. Heckford*); Yponomeutidae: *Paraswammerdamia nebulella* (Goeze) on *Crataegus* (1 ♀, 1 ♂) (England; *M. R. Shaw*); Scythrididae: *Scythris picaepennis* (Haworth) on *Lotus corniculatus* (1 ♂) (England; *R. J. Heckford*), *Scythris* sp. on *Helianthemum hirtum* (1 ♂) (Spain; *G. E. King*). Plurivoltine, overwintering in the host larva.

****Diadegma flexum*** Horstmann, 1973

This species is here recorded from Britain for the first time. 1 ♀, England: Kent, Whitestable, Ellenden Wood, ex *Coleophora sylvaticella* Wood (Coleophoridae), em. vi.1972 (*J. M. Chalmers-Hunt*).

Diadegma fungicola Horstmann, 2008

Holotype ♀ and 4 ♂ including 3 ♂ paratypes, ex *Apomyelois bistriatella* (Hulst) (Pyralidae) in fruiting *Daldinia concentrica* on burnt *Ulex* and 1 ♂ from the same host on *Daldinia vernicosa* on burnt *Ulex europaeus* (England; *S. D. Bevan, R. J. Heckford, D. H. Sterling*). From fungus collected in iv and vii, specimens have emerged in iv and viii respectively. Apparent plurivoltinism might instead suggest slow or uneven development of the host.

Diadegma holopygum (Thomson, 1887)

Choreutidae: *Millieria dolosalis* (Heydenreich) on *Aristolochia clematitis*, *A. pistlochica* (10 ♀, 7 ♂) (France; M. R. Shaw); Coleophoridae: *Coleophora fuscocuprella* Herrich-Schäffer on *Corylus avellana* (1 ♀) (Sweden; B. Jørgensen), *Coleophora gryphipennella* (Hübner) on *Rosa pimpinellifolia* (1 ♀) (Scotland; K. P. Bland), *Coleophora violacea* (Haworth) on *Betula* (1 ♀ [+ 2 ♀, 1 ♂, doubtfully determined]) (England; J. R. Langmaid, P. H. Sterling); Gracillariidae: *Aspilapterix tringipennella* (Zeller) on *Plantago lanceolata* (2 ♀, 3 ♂) (England; H. C. J. Godfrey, J. L. Gregory), *Calybites auroguttella* (Stephens) on *Hypericum perforatum* (2 ♀) (England; M. R. Shaw), *Calybites phasianipennella* (Hübner) on *Rumex acetosa*, *R. acetosella* (15 ♀, 10 ♂ [+ 1 ♀, 1 ♂ from ?this host]) (England, France; L. T. Ford, H. C. J. Godfrey, O. T. Lewis, M. R. Shaw, J. Waage), *Parectopa ononidis* (Zeller) (1 ♀) (England; J. M. Chalmers-Hunt); Lyonetiidae: *Lyonetia clerkella* (Linnaeus) on *Malus domestica* (1 ♀, 1 ♂ [+ 1 ♂, doubtfully determined from same host on *Crataegus*]) (Scotland; M. R. Shaw); Momphidae: *Mompha locupletella* ([Denis & Schiffermüller]) on *Epilobium montanum*, *E. obscurum* (3 ♀, 2 ♂) (England; J. L. Gregory, R. J. Heckford, D. H. Sterling); Tischeriidae: *Tischeria* sp. on *Rosa* (1 ♀, 1 ♂) (France; R. R. Askeew); Yponomeutidae: *Swammerdamia pyrella* (Villers) on *Crataegus* (1 ♀) (England; M. R. Young). In addition, *Coleophora juncicolella* Stainton on *Calluna* (2 ♀, doubtfully determined) (Scotland; K. P. Bland). Plurivoltine, overwintering in the host larva.

Diadegma hygrobium (Thomson, 1887)

Coleophoridae: *Coleophora atriplicis* Meyrick or *C. salinella* Stainton on *Suaeda maritima* (1 ♀) (England; A. N. B. Simpson), *Coleophora deviella* (Zeller) on *Suaeda maritima* (1 ♂) (England; J. R. Langmaid); Cosmopterigidae: *Limnaecia phragmitella* Stainton in *Typha latifolium* head (14 ♀, 5 ♂ [+ 1 ♂ from ?this host, on *Typha angustifolia*]) (England, Wales; A. Beaumont, R. J. Heckford, M. R. Shaw, I. Yukomanovic); Yponomeutidae: *Yponomeuta malinellus* (Zeller) on *Malus* (3 ♀, 1 ♂) (England; I. Sims). The data suggest that this species may be univoltine and able to overwinter both in its cocoon and within a host larva.

***Diadegma incompletum** Horstmann, 1973

This parasitoid of small species of Psychidae is here recorded from Britain for the first time, where it appears to be widespread. 1 ♂, England: Worcestershire, Wyre Forest, ex *Dahlia inconspicua* (Stainton), coll. iv.1991 (A. N. B. Simpson); 1 ♀, England: Hampshire, Portsmouth, ex *Dahlia triquetrella* (Hübner), coll. 1.iv.2009, em. iv.2009 (J. R. Langmaid); 2 ♀, England: Hampshire, Portsmouth, ex *Luffia ferchaultella* (Stainton) coll. 24.iii.2002, em. iv.2002 (J. R. Langmaid); 1 ♀, Scotland: Aberdeen, Gight, ex *Narycia duplicella* (Goeze) coll. vi.1997 (M. R. Young). Also, *Dahlia lichenella* (Linnaeus) (2 ♀) (Netherlands; J. Voogd), *Dahlia triquetrella* (1 ♀) (Sweden; N. Ryrholm), *Proutia betulina* (Zeller) (1 ♀, 1 ♂) (Belgium, Netherlands; W. O. De Prins, J. Voogd), *Psyche casta* (Pallas) (3 ♀, 1 ♂) (Austria, Sweden; N. Ryrholm). It probably overwinters in the host, but its voltinism is unclear.

Diadegma insectator (Schrank, 1781)

Coleophoridae: *Coleophora* sp. on *Chenopodium* (2 ♀, 1 ♂) (England; J. R. Langmaid). Cases were collected in ix and the parasitoids emerged unobserved between vi and viii the following year. Presumably univoltine.

Diadegma laricinellum (Strobl, 1904)

Coleophoridae: *Coleophora laricella* (Hübner) on *Larix decidua* (1 ♀, 1 ♂) (England, Scotland; S. D. Bevan, K. P. Bland). Univoltine, overwintering in its host larva.

Diadegma latungulum (Thomson, 1887)

Momphidae: *Mompha conturbatella* (Hübner) on *Epilobium angustifolium* (6 ♀, 4 ♂) (England; J. R. Langmaid, M. R. Shaw, P. A. Sokoloff), *Mompha epilobiella* ([Denis & Schiffermüller]) on *Epilobium hirsutum* (37 ♀, 22 ♂) (England, France; S. D. Bevan, E. S. Bradford, D. Gibbs, R. J. Heckford, M. Hull, P. J. Johnson, J. R. Langmaid, E. C. Pelham-Clinton, M. R. Shaw, A. N. B. Simpson, P. A. Sokoloff), *Mompha langiella* (Hübner) on *Circaea lutetiana* (3 ♂) (England; S. D. Bevan, R. Edmunds), *Mompha locupletella* ([Denis & Schiffermüller]) on *Epilobium montanum*, *E. tetragonum* (4 ♀, 4 ♂) (England, Ireland; J. L. Gregory, R. J. Heckford, J. R. Langmaid), *Mompha nodicolella* Fuchs on *Epilobium angustifolium* (8 ♀, 1 ♂) (England; A. M.

Emmet), *Mompha ochraceella* (Curtis) on *Epilobium hirsutum* (3 ♀, 1 ♂) (England; *F. Goodliffe*, *A. N. B. Simpson*, *P. A. Sokoloff*), *Mompha propinquella* (Stainton) on *Epilobium tetragonum* (2 ♀, 3 ♂) (England; *R. J. Heckford*, *A. N. B. Simpson*), *Mompha subbistrigella* (Haworth) on *Epilobium montanum* (2 ♀, 2 ♂) (England; *A. N. B. Simpson*, *D. H. Sterling*). Plurivoltine, overwintering in its host larva.

Diadegma ledicola Horstmann, 1969

Psychidae: *Diplodoma laichartingella* (Goeze) (1 ♀) (England; *A. N. B. Simpson*), *Psyche casta* (Pallas) (10 ♀, 11 ♂ [+ 1 ♂ from ?this host and 2 ♂, doubtfully determined]) (England, France; *R. J. Barnett*, *J. L. Gregory*, *R. J. Heckford*, *J. R. Langmaid*, *G. Nobes*, *W. Rait-Smith*, *M. R. Shaw*, *I. Sims*, *P. A. Sokoloff*). Probably univoltine, overwintering in its host larva.

Diadegma lithocolletis Horstmann, 1969

Elachistidae: *Perittia herrichiella* (Herrich-Schäffer) on *Lonicera xylosteum* (2 ♀, 1 ♂) (France; *M. R. Shaw*), *Perittia obscurepunctella* (Stainton) on *Lonicera* (1 ♂) (England; *I. Sims*); Gracillariidae: *Acrocerope imperialella* (Zeller) (1 ♀) (England; *J. M. Chalmers-Hunt*), *Phyllonorycter emberizaepenella* (Bouché) on *Lonicera periclymenum* (7 ♀, 9 ♂) (Scotland, Netherlands; *K. P. Bland*, *G. Bryan*, *M. F. V. Corley*, *M. R. Young*). At least partly plurivoltine, overwintering in its cocoon.

Diadegma litorale (Holmgren, 1856)

Cosmopterigidae: ?*Limnaecia phragmitella* Stainton in *Typha* heads (1 ♀, 4 ♂) (England; *J. L. Gregory*). These emerged in March. A pair collected in copula in October (England; *A. J. Halstead*) at first sight suggests that it overwinters in the host larva and is plurivoltine with an unknown summer host.

****Diadegma luffiae*** Horstmann, *sp. nov.*

(Figs 3, 6, 7)

Close to *Diadegma chrysostictos* (Gmelin), sharing with that species a smooth speculum, ovipositor sheath 1.1–1.2 times as long as hind tibia, and hind tibia medial-dorsally yellow-red, but in *D. chrysostictos* metasomal tergite 6 has a distinct almost triangular apical excision, and 2m-cu is at the middle of the areolet.

Holotype ♀: [England] 'Hambledon, Bucks. Oaken Wood, *Luffia ferchaultella*, *Quercus* trunks coll. 14.7.95. em 3.9.1995 *I. Sims*' (in National Museums of Scotland, Edinburgh).

Paratypes: (20 ♀, 29 ♂). 3 ♀, 3 ♂, same as holotype but em. 21.viii.1995 (*I. Sims*); 3 ♀, 3 ♂, same as holotype but em. 29.viii.1995 (*I. Sims*); 1 ♀, 1 ♂, same as holotype but em. 3.ix.1995 (*I. Sims*); 2 ♀, 2 ♂, England, Kent, Dungeness, same host, coll. 24.v.1990, em. 1990 (*R. J. Heckford*); 5 ♂, England, Berkshire, Lower Earley, same host, coll. 12.vi.2003 (*I. Sims*); 3 ♂, France, Normandy, same host, coll. viii.2012 (*D. Parkinson*); 1 ♂, England, Hampshire, Portsmouth, same host, coll. 24.iii.2002, em. iv.2004 (*J. R. Langmaid*); 2 ♀, 1 ♂, England, Cornwall, Marazion, *Luffia lapidella* (Goeze) coll. 26.vi.2001, em. by 10.vii.2001 (*I. Sims*); 2 ♂, England, Cornwall, Marazion, same host, coll. 26.vi.2001, em. 20.vii.2001 (1 ♂) and 1.viii.2001 (1 ♂) (*I. Sims*); 1 ♀, 5 ♂, England, Cheshire, Wirral, Burton, same host, coll. 2.viii.1978, em. 1978 (*M. Hull*); 1 ♀, 1 ♂, England, Cheshire, Wirral, Denhall Lane, same host, coll. 30.vii.1978, em. 1978 (*I. D. Wallace*); 1 ♀, England, Cornwall, Rosspanel, same host, coll. 18.ix.2004, em. x.2004 (*J. L. Gregory*); 3 ♀, 1 ♂, Guernsey, ?same host, (?em.) 8.vii.1970 (1 ♀), 8.viii.1970 (1 ♂) and 23.viii.1970 (2 ♀); 1 ♂, England, Surrey, Reigate Heath, *Bacotia claustralla* (Bruand), coll. 30.v.2007 (*K. P. Bland*); 1 ♀, England, Gloucestershire, Flaxley, *Luffia* sp., coll. 30.vii.2002 (*D. Gibbs*); 1 ♀, Italy, Tuscany, indet. psychid, coll. 19–31.vii.1987, em. 1988 (*M. R. Shaw*); 1 ♀, Wales, Skomer Island, indet. psychid, coll. viii.2004, em. ix.2004 (*G. Martin*). Paratypes in NMS, BMNH London, and Horstmann coll. in ZSM München. The Guernsey specimens were already in BMNH. Also 1 ♀, England, Cornwall, Kynance Cove, ex *L. ferchaultella*, coll. 6.v.2011 (*B. P. Henwood*), excluded from paratypes as it was not seen by KH.

Description of female

Length of body 4.13 mm, of fore wing 3.45 mm. Head dorsally 1.75 times wider than long and 1.3 times wider than mesosoma, temples 0.55 times as long as eye, (virtual) tangents meeting on center of mesoscutum. OOL 0.85 times diameter of ocellus. Face 0.9 times as wide as frons. Malar space 0.5 times width of mandibular base. Mandibular base wide, upper tooth a very

little longer than lower one. Genal carina low, meeting the hypostomal carina distinctly away from mandibular base. Clypeus slightly convex, finely granulate, with fine rather dense punctures, apical margin straight or slightly convex. Face and frons matt, granulate, partly with very fine punctures. Vertex and temples with finer granulation, and fine scattered to rather dense punctures. Flagellum with 27 segments, narrowly filiform, somewhat narrowed distally, widest segments as long as wide. First, second, third, fourth, middle and preapical flagellomeres respectively 4.25, 3.25, 3.1, 2.6, 1.4 and 1.1 times as long as wide.

Mesosoma 1.6 times longer than high. Propleuron medially and ventrally granulate and with fine striation, dorsally granulate and with very fine punctures. Epomia distinct. Mesoscutum granulate, matt, at the position of notauli and in front of the prescutellar groove very finely rugose. Prescutellar groove smooth, scutellum carinate in the anterior 0.2, granulate and with fine scattered punctures. Speculum smooth, impression with fine striae and granulation in rows, mesopleuron granulate, with fine scattered punctures, partly somewhat shining. Metapleuron with fine granulation and fine scattered to fairly dense punctures. Epicnemial and postpectal carinae low, normally developed.

Fore wing with distal part of R1 (beyond Rs) as long as width of pterostigma, areolet stalked, 2m-cu at the distal 0.6–0.7, cu-a strongly postfurcal, postnervulus broken distinctly above the middle. Hind wing with nervellus vertical, not broken. Hind leg with femur 4.7 times as long as wide, claws short, with very fine teeth basally.

Anterior lateral fields of propodeum granulate, the other fields roughly granulate and with fine rugose punctures, covered with conspicuous whitish dense hairs. Costulae shortened or lacking. Area basalis with superficial carinae, 1.5–2 times as long as wide, narrowly trapezoid or pointed. Area superomedial 1.1–1.3 times as long as wide, caudally with parallel sides or slightly convergent, open posteriorly. Petiolus with distinct glymma. Postpetiolus dorsally and laterally rounded, just wider than long. Second tergite of metasoma 0.8 times as long as first and 1.2 times longer than wide, thyridium oval, distance from tergite base about its diameter. Tergite 6 apically only slightly and roundly excised, tergite 7 with apical triangular excision. Ovipositor sheath 1.4 times as long as hind tibia, ovipositor slender and gradually bent upwards in apical half, with a triangular preapical dorsal notch.

Colour. Black. Palps, mandible (teeth red-brown), tegula, tips of fore coxa, fore and mid trochanters and all trochantelli yellowish. Scape ventro-apically and pedicellus with yellowish patterns. Fore and mid femora, tibiae and tarsi yellow-red, the femora somewhat darkened at base. Mid tibia slightly darkened. Hind leg with femur pale red-brownish, darkened at base and apex, tibia basally yellow, subbasally and apically blackish, medio-dorsally yellow-red, medio-ventrally red-brownish, tarsus dark brown, at base narrowly darkened. Pterostigma yellow-brown. Metasoma variable, in dark females sides of tergite 2 widely and of tergite 3 narrowly red-brown, in pale females tergites 2 and 3 caudally with wide red-brown bands, the following tergites dorsally and laterally with red-brown patterns, in addition apical tergites with yellowish hind margins.

Male. Flagellum with 29 segments, distinctly narrowed apically, preapical segment 1.3 times as long as wide. Scape yellow ventrally. Fore and mid coxae widely yellow at apex. Fore and mid femora red-brown, not darkened. Hind femur III red-brown, at base and apex with small blackish spots. Otherwise as in the female except for sexual differences.

The rearing data would suggest that this is a plurivoltine species, overwintering in the host larva. However, the potentially interesting notes on life history and voltinism given by Parkinson (2015, as *D. naryciae*) probably refer to this species.

Diadegma maculatum (Gravenhorst, 1829)

Noctuidae: *Nyctobrya muralis* (Forster) (1 ♀) (Netherlands; *f. Voogd*).

****Diadegma monospilum*** (Thomson, 1887)

This species, which was only recently separated from *D. armillatum* by Horstmann (2006), is here recorded from Britain for the first time, where it is widespread and common. Depressariidae: *Agonopterix anglicella* (Hübner) or *A. ciliella* (Stainton) (1 ♀) (Scotland; *M. R. Young*), *Agonopterix arenella* ([Denis & Schiffermüller]) on *Arctium*, *Centaurea nigra*, *Cirsium*

arvensis (1 ♀, 3 ♂) (England, Wales; S. D. Beavan, M. F. V. Corley, J. L. Gregory, R. J. Heckford), *Agonopterix assimilella* (Treitschke) on *Sarothamnus* (2 ♀, 2 ♂) (England, Scotland; K. P. Bland, J. Clifton), *Agonopterix astrantiae* (Heinemann) on *Sanicula europaea* (2 ♀, 4 ♂) (England, Wales; H. N. Michaelis, E. C. Pelham-Clinton, A. N. B. Simpson), *Agonopterix atomella* ([Denis & Schiffermüller]) on *Genista tinctoria* (1 ♀, 1 ♂) (England; M. F. V. Corley, E. C. Pelham-Clinton), *Agonopterix carduella* (Hübner) on *Centaurea nigra*, *Cirsium vulgare* (3 ♀, 2 ♂) (England, Scotland, Wales; S. D. Beavan, J. R. Langmaid, M. R. Young); *Agonopterix heracliana* (Linnaeus) on *Conopodium* (1 ♂) (Scotland; K. P. Bland), *Agonopterix nervosa* (Haworth) on *Ulex* (2 ♂ [+ 1 ♀ from ?this host]) (England, Scotland; R. J. Heckford, J. R. Langmaid), *Agonopterix pallorella* (Zeller) on *Centaurea scabiosa* (2 ♀) (England; J. M. Chalmers-Hunt, E. C. Pelham-Clinton), *Agonopterix rotundella* (Douglas) on *Daucus* (4 ♀, 1 ♂) (England, Wales; J. M. Chalmers-Hunt, A. N. B. Simpson, I. F. Smith); *Agonopterix scopariella* (Heinemann) (1 ♂) (England; J. M. Chalmers-Hunt), *Agonopterix subpropinquella* (Stainton) on *Centaurea nigra* (2 ♀) (England, Wales; R. J. Heckford, A. N. B. Simpson), *Agonopterix ulicetella* (Stainton) on *Ulex* (1 ♀, 1 ♂) (England; A. N. B. Simpson), *Agonopterix yeatiana* (Fabricius) on *Oenanthe crocata* (1 ♀) (Scotland; M. R. Young); Gelechiidae: *Bryotropha terrella* ([Denis & Schiffermüller]) on *Calligon cuspidatum* (1 ♀) (England; R. J. Heckford), *Bryotropha affinis* (Haworth) or *B. domestica* (Haworth) in moss (3 ♂, doubtfully determined) (England; R. J. Heckford, J. R. Langmaid), *Caryocolum tricolorella* (Haworth) on *Stellaria holostea* (6 ♀, 2 ♂) (England; S. D. Beavan, J. L. Gregory, R. J. Heckford, B. P. Henwood, A. N. B. Simpson), *Neofaculta ericetella* (Geyer) on *Calluna* (1 ♀) (Scotland; S. D. Beavan); Momphidae: *Mompha epilobiella* ([Denis & Schiffermüller]) on *Epilobium hirsutum* (1 ♀) (France; M. R. Shaw); Scythrididae: *Scythris grandipennis* (Haworth) on *Ulex europaeus*, *U. gallii*, *U. minor* (4 ♀, 7 ♂ [+ 1 ♀ from ?this host]) (England; J. L. Gregory, R. J. Heckford, J. R. Langmaid, E. C. Pelham-Clinton, A. N. B. Simpson). Plurivoltine, overwintering in the host larva.

Diadegma nanus (Gravenhorst, 1829)

Coleophoridae: *Coleophora juncicolella* Stainton on *Calluna vulgaris* (4 ♀) (England, Scotland; K. P. Bland, J. L. Gregory, R. Palmer). Probably univoltine, overwintering in the host larva.

****Diadegma naryciae*** Horstmann, 2008

This species is here recorded from Britain for the first time. The hosts are all small species of Psychidae, and most hosts were collected from *Quercus* trunks. 1 ♀, England: Hampshire, Rowland's Castle, ex *Dahlica lichenella* (Linnaeus), coll. 16.ii.2002, em. 1.iii.2002 (*I. Sims*); 1 ♀, England: Buckinghamshire, Hambleden, ex *Luffia ferchaultella* (Stainton), coll. 14.vii.1995, em. 3.ix.1995 (*I. Sims*); 1 ♀, England: Buckinghamshire, Henley-on-Thames, same host, coll. 27.vii.1995, em. 21.xii.1995 (*I. Sims*); 1 ♀, England: Yorkshire, Baildon, same host, em. viii.2012 (*D. Parkinson*); 2 ♀, 3 ♂, England: Hampshire, Havant Thicket, from either *L. ferchaultella* or *Narycia duplicella* (Goeze), coll. iii.1979, em. v–vi.1979 (*J. R. Langmaid*); 1 ♀, 1 ♂, England: Hampshire, Havant Thicket, ex *Narycia duplicella*, coll. 8.iv.2001, em. v.2001 (*I. Sims*); 1 ♂, England: Yorkshire, Laund House, same host, coll. 19.iii.2011, em. 4.iv.2011 (*D. Parkinson*); 1 ♂, Scotland: East Lothian, Garleton Hills, same host, coll. 24.ii.1980, em. 4.v.1980 (*K. P. Bland*); 1 ♀, England: Berkshire, Lower Earley, same host, 18.v.2004 (*I. Sims*). Also 2 ♀ (paratypes), Netherlands: Ede, same host, em. 6–8.v.2006 (*J. Voogd*). The data suggest that it is plurivoltine, overwintering in the host larva, but see Parkinson (2015); although the population on which his studies were based seem likely to be *D. luffiae* sp. nov. the same phenomenon might apply to both species. Horstmann's original spelling '*naryciae*' was later corrected (Horstmann, 2012) as a justified emendation in accordance with ICZN Arts 32.5.1 and 33.2.2.

****Diadegma neomajale*** Horstmann, 1969

Although the specimen is not reared, the opportunity is taken here to record this species from Britain for the first time. 1 ♀, England: Berkshire, Silwood Park, 22.vi.2002 (*G. R. Broad*).

Diadegma pusio (Holmgren, 1860)

Bucculatricidae: *Bucculatrix absinthii* Gärtner on *Artemisia absinthium* (1 ♀) (Sweden; B. Jørgensen), *Bucculatrix humiliella* Herrich-Schäfer on *Achillea millefolium* (5 ♀, 2 ♂) (Scotland; E. C. Pelham-Clinton, A. N. B. Simpson, M. J. Sterling), *Bucculatrix cristatella* (Zeller) on *Achillea*

millefolium (1 ♂) (England; *I. Sims*), *Bucculatrix demaryella* (Duponchel) on *Castanea sativa* (2 ♀, 1 ♂) (England; *J. M. Chalmers-Hunt*), *Bucculatrix frangutella* (Goeze) on *Rhamnus catharticus* (1 ♀) (England; *P. H. Sterling*), *Bucculatrix laciniatella* Benander on *Artemisia laciniata* (2 ♀, 1 ♂) (Sweden; *B. Jørgensen*), *Bucculatrix nigricomella* Zeller on *Leucanthemum vulgare* (1 ♀, 3 ♂) (England, Scotland; *K. P. Bland*, *E. S. Bradford*, *E. C. Pelham-Clinton*, *I. Sims*), *Bucculatrix ulmella* Zeller on *Quercus robur* (2 ♀) (England; *K. P. Bland*, *R. Dickson*). Plurivoltine, overwintering in its cocoon within that of the host.

Diadegma rufatum (Bridgman, 1884)

Choreutidae: *Prochoreutis myllerana* (Fabricius) on *Scutellaria galericulata* (5 ♀, 7 ♂) (England, Scotland; *K. P. Bland*, *A. P. Foster*, *R. J. Heckford*, *R. P. Knill-Jones*, *E. C. Pelham-Clinton*, *M. R. Shaw*), *Prochoreutis sehestediana* (Fabricius) on *Scutellaria galericulata*, *S. minor* (8 ♀, 10 ♂) (England, Scotland; *R. J. Heckford*, *J. R. Langmaid*, *M. R. Shaw*), *Prochoreutis* sp. on *Scutellaria galericulata* (17 ♀, 11 ♂ [+ 1 ♀ from ?this host]) (England, Scotland; *K. P. Bland*, *L. T. Ford*, *D. A. Proctor*, *M. R. Young*). Plurivoltine; the rearing data suggest that it probably overwinters in overwintering larvae of its hosts, but it appears not to be known how *Prochoreutis* species overwinter.

****Diadegma ruficeps*** (Holmgren, 1860)

This species is here recorded from Britain for the first time. 4 ♀, Scotland: Rum, Allt Slugan a' Choilich, ex *Argyresthia sorbiella* (Treitschke) (Argyresthiidae) on *Sorbus aucuparia*, coll. 12.v.2012, em. 1-6.vi.2012 (*R. J. Heckford*); 1 ♀, Scotland: Inverness-shire, Fasnakyle, ex *Teleiodes proximella* (Hübner) (Gelechiidae) on *Betula*, coll. 29.vii.1978, em. vi.1979 (*J. M. Chalmers-Hunt*); 3 ♀, England: Lancashire, Warton Crag, Carnforth, ex *Teleiodes sequax* (Haworth) on *Helianthemum*, coll. 17.v.1998, em. 4.v.1999 (*M. R. Shaw*). In addition, 1 ♂, doubtfully determined, England: Norfolk, Cawston, ex *Teleiodes wagae* (Nowicki) coll.viii.1991, em. iii.1992 (*M. J. Sterling*), and 1 ♀, doubtfully determined, Ireland: Clare, Ballyvaghan, ex *Coleophora pappiferella* Hofmann (Coleophoridae) on *Antennaria dioica*, coll. 25.vi.1970, em. 10.vi.1971 (*E. C. Pelham-Clinton*). Univoltine, overwintering in its cocoon.

Diadegma scotiae (Bridgman, 1889)

Epermeniidae: *Phaulernis fulviguttella* (Zeller) on *Angelica sylvestris* (1 ♀, 2 ♂) (Scotland; *K. P. Bland*, *R. P. Knill-Jones*). No host remains are with the female, but the two males (from a different site) are accompanied by cocoons spun within the ruptured host pupa, from which the adult emerged the following year. Univoltine. It is rather remarkable that *Campoplex crassus* (q.v.), also a parasitoid of this epermeniid, seems to form its cocoon within the similarly ruptured pupa of the host.

Diadegma semiclausum (Hellén, 1949)

Plutellidae: *Plutella porrectella* (Linnaeus) on *Hesperis matronalis* (6 ♀, 4 ♂) (Isle of Man; *F. D. Bennett*), *Plutella xylostella* (Linnaeus) on *Brassica oleracea*, *Cakile maritima* (9 ♀, 10 ♂) (England, Isle of Man, Scotland; *F. D. Bennett*, *K. P. Bland*, *E. S. Bradford*, *G. B. Corbet*, *J. L. Gregory*, *R. J. Heckford*, *K. Saul*, *J. Waage*), *Plutella* sp. (1 ♂) (Italy; *M. R. Shaw*); Yponomeutidae: *Prays fraxinella* (Bjerkander) in *Fraxinus* buds (1 ♀, 5 ♂) (England; *A. Foggo*). Plurivoltine. Well known from its summer hosts; in Britain *Prays fraxinella* is probably an important host in which it necessarily passes the winter as a larva. In the Mediterranean region (where it may originate), as well as *Plutella*, it parasitises *Prays citri* (Millière) on *Citrus* and *P. oleae* (Bernard) on *Olea* (material in coll. Horstmann, now in ZSM München).

Diadegma sordipes (Thomson, 1887)

Coleophoridae: *Coleophora alticolella* Zeller on *Juncus* (3 ♀, 3 ♂ [+ 1 ♀, 2 ♂ from ?this host]) (Scotland, Switzerland; *K. P. Bland*, *M. F. V. Corley*, *K.-H. Lampe*), *Coleophora sylvaticella* Wood on *Luzula sylvatica* (1 ♀) (England; *J. R. Langmaid*), *Coleophora taeniipennella* Herrich-Schäffer on *Juncus articulatus* (1 ♀) (England; *P. A. Sokoloff*); Glyphipterigidae: *Glyphipterix schoenicolella* Boyd (1 ♂) (England; *J. L. Gregory*), *Glyphipterix simplicella* (Stephens) on *Dactylus glomerata* (17 ♀, 23 ♂ [+ 2 ♀, 2 ♂ from ?this host]) (England, Scotland; *R. R. Askew*, *K. P. Bland*, *J. E. Morgan*, *E. C. Pelham-Clinton*, *M. R. Shaw*). Univoltine, as a parasitoid of *C. alticolella* and *C. glaucicolella* Wood overwintering in the fully-grown host larva which is attacked when young (Lampe, 1984).

Diadegma stigmatellae Horstmann, 1980

Gracillariidae: *Caloptilia alchimiella* (Scopoli) on *Quercus robur* (2 ♀) (Scotland; M. R. Shaw), *Caloptilia betulicola* Hering (1 ♀) (England; M. R. Shaw), *Caloptilia cuculipennella* (Hübner) on *Ligustrum vulgare* (8 ♀, 12 ♂) (England; E. C. Pelham-Clinton, M. R. Shaw), *Caloptilia falconipennella* (Hübner) on *Alnus glutinosa* (3 ♀) (England; D. O'Keefe, I. Sims, C. Watson), *Caloptilia robustella* Jäckh on *Quercus robur* (1 ♀) (England; M. R. Shaw), *Caloptilia stigmatella* (Fabricius) on *Populus alba*, *P. nigra*, *P. tremula*, *Salix cinerea* (13 ♀, 9 ♂) (England; M. S. Parsons, M. R. Shaw, R. A. Softly), *Caloptilia* sp. on *Quercus* (2 ♀) (England; J. Robbins, M. R. Shaw), *Gracillaria syringella* (Fabricius) (2 ♀) (England; J. M. Chalmers-Hunt), *Parornix anglicella* (Stainton) on *Crataegus monogyna* (7 ♀, 4 ♂) (England, Scotland; K. P. Bland, J. L. Gregory, M. R. Shaw), *Parornix finitimella* (Zeller) on *Prunus spinosa* (1 ♂) (England; A. M. Emmet), *Parornix torquillella* (Zeller) on *Prunus spinosa* (17 ♀, 21 ♂) (England; Scotland, Wales; A. M. Emmet, R. J. Heckford, M. R. Shaw, A. N. B. Simpson), *Parornix* sp. on *Prunus spinosa* (11 ♀, 3 ♂) (England, Scotland; R. R. Askew, K. P. Bland, R. P. Knill-Jones, M. R. Shaw, R. A. Softly). Plurivoltine. All have emerged from their cocoons in the year of host collection and none of the hosts listed above overwinters as a larva; it would be interesting to test whether this common species can overwinter as an adult (see discussion).

Diadegma trochanteratum (Thomson, 1887)

Gelechiidae: *Scrobipalpa instabilella* (Douglas) on *Atriplex portulacoides*, *Lycium barbarum*, *Salicornia* sp. (4 ♀, 1 ♂) (England; J. R. Langmaid, M. S. Parsons), ?*Scrobipalpa nitentella* (Fuchs) on *Atriplex prostrata* (5 ♀, 1 ♂) (Ireland; J. R. Langmaid), *Scrobipalpa ocellatella* (Boyd) (1 ♀) (England; M. S. Parsons), *Scrobipalpa ?salicorniae* (Hering) on *Suaeda maritima* (1 ♀) (England; R. J. Heckford), *Scrobipalpa suaedella* (Richardson) on *Suaeda vera* (1 ♀) (England; B. Goodey), *Scrobipalpa* sp. on *Atriplex*, *Suaeda maritima* (1 ♀, 1 ♂) (England; S. D. Beavan, J. L. Gregory); Plutellidae: *Plutella xylostella* (Linnaeus) on *Cakile maritima* (1 ♂) (England; K. Saul). This is a saltmarsh species; *Plutella xylostella* appears to be parasitised only on its saltmarsh foodplant *Cakile maritima*. Probably plurivoltine; it may overwinter in *Coleophora deviella* Zeller, from which it has been reared in north German saltmarshes (Horstmann, 1970).

Diadegma truncatum (Thomson, 1887)

Argyresthiidae: *Argyresthia pygmaeella* ([Denis & Schiffmüller]) (1 ♀) (Wales; A. N. B. Simpson); Gelechiidae: *Metzneria littorella* (Douglas) on *Plantago coronopus* (2 ♀, 1 ♂) (England; P. H. Sterling), *Metzneria* sp. in *Centaurea* heads (1 ♂, doubtfully determined) (England; A. N. B. Simpson). Plurivoltine, overwintering in the host larva.

Dolophron pedellum (Holmgren, 1860)

Tenthredinidae (Hymenoptera): *Heterarthrus vagans* (Fallén) on *Alnus cordata*, *A. glutinosa*, *A. incana* (32 ♀, 28 ♂) (England, Wales, Scotland, Isle of Man; R. R. Askew, F. D. Bennett, A. J. Halstead, S. B. Hanapi, J. Harold, B. T. Parsons, M. R. Shaw, S. Thomas). Plurivoltine, overwintering in the host's disc within which it spins its own cocoon.

Dusona Cameron, 1901

Much of the host (and national status) data for *Dusona* species in the NMS collection was included by Horstmann (2011), although not as explicitly as is given below. Particular care should therefore be taken not to interpret the two listings as fully independent. The host is almost invariably killed as a prepupa; in a few species as a pupa.

Dusona admontina (Speiser, 1908)

Erebidae: *Herminea grisealis* ([Denis & Schiffmüller]) (2 ♀) (England; G. M. Haggatt). In both cases adult emergence was from the host pupa, in which the winter was passed.

Dusona aemula (Foerster, 1868)

Geometridae: *Eupithecia absinthiata* (Clerck) on *Senecio jacobaea* (1 ♀) (England; W. A. Watson), *Eupithecia centaureata* ([Denis & Schiffmüller]) on *Seseli libanotis* (1 ♂) (England; J. R. Langmaid), *Eupithecia distinctaria* Herrich-Schäffer (2 ♀, 2 ♂) (Scotland; I. C. Christie), *Eupithecia pimpinellata* (Hübner) on *Pimpinella* (1 ♂) (England; M. R. Britton), *Eupithecia venosata* (Fabricius) on *Silene uniflora* (4 ♀, 2 ♂) (Scotland; M. R. Shaw), *Eupithecia* sp. on *Centaurea nigra* (1 ♂) (England; R. J. Heckford), ?*Gymnoscelis rufifasciata* (Haworth) on

Tripleurospermum inodorum (1 ♀) (England; *R. A. Softly*). In addition, 1 ♀, 1 ♂ determined as 'var.' ex *Eupithecia ultimana* Boisduval on *Tamarix* (England; *M. R. Young*). At least partly plurivoltine, overwintering in its cocoon.

Dusona anceps (Holmgren, 1860)

Geometridae: *Pelurga comitata* (Linnaeus) (1 ♀, 2 ♂) (England; *M. R. Britton*, *G. M. Haggett*). This is a univoltine species that overwinters in its cocoon.

Dusona angustata (Thomson, 1887)

Geometridae: *Cabera pusaria* (Linnaeus) on *Betula*, *Corylus* (6 ♀, 3 ♂) (England; *J. L. Gregory*, *M. J. Leech*, *M. R. Shaw*). At least largely univoltine; the seven specimens reared by MRS overwintered in their cocoons, but the one reared by MJL has data indicating emergence in the year of collection (as does another, from an undetermined arboreal geometrid collected in France (*M. R. Shaw*)).

Dusona angustifrons (Foerster, 1868)

Geometridae: *Electrophaes corylata* (Thunberg) on *Betula* (1 ♀) (England; *R. I. Lorimer*), *Eupithecia dodoneata* Guenée on *Crataegus*, *Quercus ilex* (3 ♀) (England; *M. R. Britton*), *Eupithecia pulchellata* Stephens (1 ♂) (Norway; *M. Lindeborg*), *Eupithecia ?nanata* (Hübner) on *Calluna* or *Erica* (2 ♀, 2 ♂) (England; *M. R. Shaw*). In addition, 2 ♀ ex *Eupithecia tantillaria* Boisduval on *Abies*, *Tsuga heterophylla* (England; *G. M. Haggett*, *P. E. Hatcher*) are determined as 'var.'. Most adults have emerged in the year of cocoon formation, but some in the following year. It is probably at least largely plurivoltine.

Dusona aversa (Foerster, 1868)

Geometridae: *Chesias legatella* ([Denis & Schiffermüller]) on *Cytisus* (2 ♂) (Scotland; *M. R. Shaw*). Overwinters in its cocoon and is clearly univoltine.

Dusona bellipes Holmgren, 1872

Geometridae: sp. indet. on ?*Viburnum lantana* (1 ♂) (France; *M. R. Shaw*). Clearly univoltine, overwintering in its cocoon.

Dusona blanda (Foerster, 1868)

Geometridae: *Chloroclysta miata* (Linnaeus) on *Betula* (2 ♂) (Scotland; *T. H. Ford*), *Chloroclysta siterata* (Hufnagel) (1 ♂) (Scotland; *M. R. Shaw*), *Eulithis prunata* (Linnaeus) on *Ribes uva-crispum* (1 ♂) (England; *M. R. Shaw*), ?*Ecliptopera silaceata* ([Denis & Schiffermüller]) on *Epilobium* (1 ♀) (England; *M. R. Shaw*). This species would appear to be largely univoltine, overwintering in its cocoon, but the individual from *E. prunata* emerged in the year of cocoon formation.

Dusona bucculenta (Holmgren, 1860)

Noctuidae: *Heliothis viriplaca* (Hufnagel) on *Ononis* (10 ♀, 4 ♂ [+ 1 ♂ from ?this host]) (England, France; *G. M. Haggett*, *M. R. Shaw*), *Pyrrhia umbra* (Hufnagel) (1 ♂) (Scotland; *R. Leverton*). At least partly plurivoltine: English and French specimens have emerged in the year of cocoon formation, but the Scottish specimen emerged in vii from a cocoon formed in viii of the previous year.

Dusona carinifrons (Hinz, 1990)

Geometridae: *Biston betularia* (Linnaeus) (1 ♀ [+ 1 unsexable from ?this host]) (England; *R. I. Lorimer*, *M. R. Shaw*). Univoltine, overwintering in its cocoon.

Dusona carpathica (Szépligeti, 1916)

Geometridae: *Eupithecia satyrata* (Hübner) on *Cirsium palustre* (2 ♂) (England; *G. M. Haggett*), *Eupithecia venosata* (Fabricius) (1 ♂) (Scotland; *R. I. Lorimer*), *Eupithecia* sp. (1 ♀) (Scotland; *K. P. Bland*), ?*Eupithecia* sp. (1 ♀) (England; *M. R. Shaw*). Univoltine, overwintering in its cocoon.

Dusona circumcinctus (Foerster, 1868)

Geometridae: *Cabera exanthemata* (Scopoli) on *Salix* (3 ♀, 2 ♂) (England; *A. Dobson*, *M. R. Shaw*), *Cabera pusaria* (Linnaeus) (1 ♂) (Germany; *R. Hinz*). Like its hosts, partly plurivoltine; some specimens have emerged in the year of host collection but others from the same host have overwintered in their cocoons.

Dusona confusa (Foerster, 1868)

Geometridae: *Selenia dentaria* (Fabricius) (2 ♀, 1 ♂) (England; *J. L. Gregory, M. R. Shaw*), ?*Selenia* sp. on *Prunus spinosa* (1 ♀) (England; *M. R. Shaw*). There is also a ♂ specimen labelled as from *Ptilodon capucina* (Linnaeus) (Notodontidae) on *Betula* (England), but re-examination of the host remains have shown them to be incompatible with that (in fact they may belong to *Selenia* or a near genus). Horstmann (2011) included *Ptilodon capucina* as a host of *Dusona confusa* on the basis of this specimen, and we take this opportunity to correct that. Overwinters in its cocoon. The rearing data suggest it may be plurivoltine.

Dusona disclusa (Foerster, 1868)

Geometridae: *Eupithecia absinthiata* (Clerck) on *Senecio* (1 ♂) (England; *G. M. Haggitt*), *Eupithecia succenturiata* (Linnaeus) (1 ♀) (Germany; *R. Hinz*), *Eupithecia venosata* (Fabricius) on *Silene uniflora* (3 ♂, doubtfully determined) (Scotland; *E. W. Classey, R. I. Lorimer*). The English and German specimens emerged the year following cocoon formation, with dates suggesting univoltinism, but the doubtfully determined Scottish ones apparently in the same year.

Dusona dubitor Hinz, 1977

Geometridae: *Hylaea fasciaria* (Linnaeus) on *Pinus contorta* (1 ♂) (Scotland; *R. I. Lorimer*). Overwinters in its cocoon, but possibly plurivoltine.

Dusona erythrogaster (Foerster, 1868)

Geometridae: *Theria primaria* (Haworth) on *Crataegus, Prunus* (6 ♀, 10 ♂) (England; *M. R. Shaw*). Univoltine, overwintering in its cocoon.

Dusona falcator (Fabricius, 1775)

Notodontidae: *Phalera bucephala* (Linnaeus) on *Salix* (1 ♀, 1 ♂) (England; *J. L. Gregory, B. T. Parsons*). Univoltine, overwintering in its cocoon.

Dusona flagellator (Fabricius, 1793)

Geometridae: *Chiasmia clathrata* (Linnaeus) (2 ♂) (France; *M. R. Shaw*). Probably plurivoltine; emergence was in the year of host collection.

Dusona habermehli (Kriechbaumer, 1898)

Geometridae: *Minoa murinata* (Scopoli) on *Euphorbia* (2 ♀, 1 ♂) (France; *M. R. Shaw*). Probably plurivoltine; emergence was in the year of host collection.

Dusona humilis (Foerster, 1868)

Geometridae: *Thera cognata* (Thunberg) (2 ♂) on *Juniperus communis* (Scotland; *R. I. Lorimer*), *Thera juniperata* (Linnaeus) on *Juniperus communis* (4 ♀, 6 ♂) (Scotland; *M. R. Shaw*). Univoltine, overwintering in its cocoon.

Dusona incompleta (Bridgman, 1889)

Geometridae: *Colostygia multistrigaria* (Haworth) on *Galium* (1 ♂) (France; *M. R. Shaw*). Emergence was in the year of cocoon formation; presumably plurivoltine.

Dusona inermis (Foerster, 1868)

Geometridae: *Macaria liturata* (Clerck) on *Cedrus, Larix* (1 ♀, 2 ♂) (England; *J. L. Gregory, P. Hatcher*). Plurivoltine; overwinters in the cocoon.

Dusona infesta (Foerster, 1868)

Notodontidae: *Ptilodon capucina* (Linnaeus) (1 ♀, 1 ♂) (Scotland; *K. P. Bland*). Overwinters in the cocoon; voltinism unclear.

Dusona juvenilis (Foerster, 1868)

Geometridae: *Eupithecia hazorthiata* Doubleday (2 ♂ [+ 1 ♂ probably from this host on *Clematis vitalba*]) (England; *G. M. Haggitt, B. P. Henwood*). Voltinism and overwintering mode unclear.

Dusona leptogaster (Holmgren, 1860)

Geometridae: *Alsophila aescularia* ([Denis & Schiffermüller]) on *Betula* (1 ♀) (Scotland; *M. R.*

Shaw); indet. green geometrid on *Betula* (1 ♀) (England; *M. R. Shaw*). Both specimens emerged from the host pupa in which they had overwintered. Univoltine.

Dusona limnobia (Thomson, 1887)

Geometridae: *Xanthorhoe biriviata* (Borkhausen) on *Impatiens* (1 ♂) (France; *M. R. Shaw*). Overwinters in its cocoon; voltinism unclear.

Dusona montana (Roman, 1929)

Drepanidae: *Polyploca ridens* (Fabricius) (1 ♂) (England; *G. M. Haggett & R. Leverton*). Emergence was in the year of host collection; presumably plurivoltine.

Dusona obliterated (Holmgren, 1872)

Notodontidae: *Pterostoma palpina* (Clerck) (1 ♂) (England; *B. T. Parsons*). Overwinters in its cocoon; voltinism unclear.

Dusona perditor (Foerster, 1868)

Nolidae: *Pseudoips prasinana* (Linnaeus) on *Fagus* (1 ♂) (France; *M. R. Shaw*). Emergence was in the year of host collection; presumably plurivoltine.

Dusona petiolor (Fabricius, 1804)

Geometridae: ?*Ematurga atomaria* (Linnaeus) (1 ♀) (Scotland; *R. P. Knill-Jones*), *Philereme transversata* (Hufnagel) on *Rhamnus catharticus* (1 ♂) (England; *M. R. Shaw*), *Philereme vetulata* ([Denis & Schiffermüller]) on *Rhamnus catharticus* (6 ♀, 3 ♂) (England; *M. R. Shaw*), *Rheumaptera hastiata* (Linnaeus) on *Myrica* (3 ♀, 1 ♂) (England, Scotland; *R. Leverton & M. R. Young, M. R. Shaw*). Univoltine, overwintering in its cocoon.

Dusona pineticola (Holmgren, 1872)

Geometridae: *Odontopera bidentata* (Clerck) on *Betula* (1 ♂) (England; *M. R. Shaw*). Overwinters in its cocoon, probably univoltine.

Dusona polita (Foerster, 1868)

Geometridae: *Erannis defoliaria* (Clerck) (1 ♂) (England; *W. A. Watson*); Noctuidae: *Orthosia cruda* ([Denis & Schiffermüller]) on *Quercus suber* (1 ♂) (France; *T. H. Ford*). Neither is accompanied by host remains. Univoltine, overwintering in its cocoon.

Dusona prominula (Foerster, 1868)

Geometridae: *Agriopsis marginaria* (Fabricius) on *Betula* (1 ♀, 1 ♂) (England; *M. R. Shaw*), *Orthosia cerasi* (Fabricius) (1 ♀) (England; *E. S. Bradford*). The latter is not accompanied by host remains. Overwinters in its cocoon; univoltine.

Dusona pugillator (Linnaeus, 1758)

Notodontidae: *Prilodon capucina* (Linnaeus) on *Tilia cordata* (1 ♂) (Scotland; *K. P. Bland*). Overwinters in its cocoon; probably univoltine.

Dusona pulchripes (Holmgren, 1872)

Geometridae: ?*Bupalus piniaria* (Linnaeus) (1 ♀) (England; *M. R. Britton*), *Colotois pennaria* (Linnaeus) on *Pinus sylvestris* (1 ♂) (England; *M. R. Shaw*), *Macaria liturata* (Clerck) on *Abies cephalonica*, *Larix* (2 ♀) (England; *P. E. Hatcher*), *Thera britannica* (Turner) on *Abies grandis*, *Picea abies*, *Pseudotsuga* (1 ♀, 3 ♂) (England; *G. M. Haggett, P. E. Hatcher*), *Thera firmata* (Hübner) on *Pinus sylvestris* (1 ♀, 2 ♂) (England; *G. M. Haggett, M. R. Shaw*), *Thera juniperata* (Linnaeus) on *Juniperus* (1 ♀, 1 ♂) (France; *M. R. Shaw*); Noctuidae: ?*Cosmia trapezina* (Linnaeus) (1 ♀) on *Picea abies* (England; *P. E. Hatcher*). The last is not accompanied by host remains. Plurivoltine, overwintering in its cocoon.

Dusona recta (Thomson, 1887)

Geometridae: sp. indet. on *Betula* (1 ♀) (England; *M. R. Britton*). Univoltine, overwintering in its cocoon.

Dusona rugifer (Foerster, 1868)

Noctuidae: ?*Orthosia* sp. on *Myrica* (1 ♂) (Scotland; *M. R. Shaw*). Univoltine, overwintering in its cocoon.

Dusona signator (Brauns, 1895)

Geometridae: *Ascotis selenaria* ([Denis & Schiffermüller]) (1 ♀, doubtfully determined) (Hungary; *M. R. Shaw*). The adult emerged in the year of host collection; presumably plurivoltine.

Dusona sobolicida (Foerster, 1868)

Geometridae: *Ematurga atomaria* (Linnaeus) on *Calluna* (1 ♀, 5 ♂) (England, Scotland; *T. H. Ford*, *M. R. Shaw*). Partly plurivoltine, like the host. Some have emerged in the year of host collection, but most have spent about 10 months in their cocoons.

Dusona stragifex (Foerster, 1868)

Geometridae: *Lycia lapponaria* (Boisduval) (2 ♂) (Scotland; *M. R. Shaw*). Univoltine, overwinters in its cocoon.

Dusona terebrator (Foerster, 1868)

Noctuidae: *Caradrina morpheus* (Hufnagel) (1 ♀, 1 ♂) (England; *G. M. Haggett*), *Charanyca trigrammica* (Hufnagel) (1 ♀, 1 ♂) (England; *G. M. Haggett*, *P. Waring*). All have overwintered in their cocoons, but the wider data (non-reared material) suggest it is plurivoltine.

Dusona thomsoni Hinz, 1966

Geometridae: *Lomaspilis marginata* (Linnaeus) on *Populus*, *Salix* (5 ♀, 5 ♂) (England; *C. Carter*, *G. Nobes*, *M. R. Shaw*). Predominantly univoltine, overwintering in the cocoon, but a few individuals (?kept indoors) have emerged in the year of collection.

Dusona xenocampta (Foerster, 1868)

Geometridae: *Cleora cinctaria* ([Denis & Schiffermüller]) on *Euphorbia* (1 ♀, 1 ♂) (France; *M. R. Shaw*). Presumably univoltine; overwinters in its cocoon.

Enytus Cameron, 1906

The host is usually killed as a cocooned prepupa, but often earlier when relatively large species are attacked.

Enytus apostata (Gravenhorst, 1829)

Choreutidae: *Choreutis pariana* (Clerck) on *Malus* (2 ♀) (England, Scotland; *R. J. Heckford*, *M. R. Shaw*); Depressariidae: *Agonopterix* sp. on *Sarothamnus scoparius* (1 ♀, 1 ♂) (England; *J. R. Langmaid*); Geometridae: *Hydriomena ruberata* (Freyer) on *Salix aurita* (1 ♀) (Scotland; *R. Leverton*); Gracillariidae: *Caloptilia elongella* (Linnaeus) on *Alnus* (1 ♂) (*K. P. Bland*); Incurvariidae: *Incurvaria pectinea* Haworth in leaf litter (cocoon partly within host pupal remains) (1 ♀, 2 ♂) (England, Scotland; *K. P. Bland*, *R. J. Heckford*); Lycaenidae: *Celastrina argiolus* (Linnaeus) on *Ilex* (2 ♀) (England, Ireland; *C. Aldwell*, *J. A. Thomas*); Noctuidae: *Cucullia verbasci* (Linnaeus) on *Buddleja* (1 ♀) (England; *A. H. Dobson*); Nymphalidae: *Vanessa atalanta* (Linnaeus) on *Urtica* (1 ♀) (Scotland; *T. H. Ford*), *Vanessa cardui* (Linnaeus) (1 ♂, doubtfully determined) (U.K.; *T. Webb*); Pyralidae: *Cryptoblabes bistriga* (Haworth) on *Quercus robur* (1 ♀) (England; *R. J. Heckford*), *Phycita roborella* ([Denis & Schiffermüller]) on *Quercus* (1 ♀) (England; *I. Sims*); Tortricidae: *Acrolita subsequana* (Herrich-Schäffer) on *Euphorbia portlandica* (2 ♀) (Jersey; *R. J. Heckford*), *Epiphyas postvittana* (Walker) on *Ligustrum* (4 ♀, 1 ♂) (England; *M. R. Shaw*); Yponomeutidae: *Swammerdamia pyrella* (Villers) (1 ♂) (England; *J. L. Gregory*), *Zellaria hepariella* Stainton on *Fraxinus* (1 ♂) (England; *A. N. B. Simpson*). There is also a series of 5 ♀, 8 ♂ reared from an unknown host in *Ulex* flowers (Scotland; *M. R. Shaw*). The data suggest plurivoltinism, but the overwintering mode is unclear; *I. pectinea* cases collected in early spring might well have harboured the parasitoid through the winter, but whether as an immature larva or cocoon is not known. Alternatively it is conceivable that, like a non-British congener (see discussion), the winter is passed as an adult.

***Enytus appositor** (Aubert, 1970)

This species is here recorded from Britain for the first time, where it is a widespread and common specialist of Gracillariidae: *Aspilapteryx tringipennella* (Zeller) (1 ♂) (Scotland; *K. P. Bland*), *Callisto denticulella* (Thunberg) on *Malus* (2 ♀, 1 ♂) (England, Wales; *E. C. Pelham-Clinton*, *M. R. Shaw*), *Callisto* sp. or *Parornix* sp. on *Malus domestica* (2 ♀) (England; *D. H. Sterling*), *Caloptilia alchimiella* (Scopoli) on *Quercus robur* (3 ♀, 1 ♂ [+ 2 ♀ from ?this host])

(Scotland; *K. P. Bland, M. R. Shaw*), *Caloptilia betulicola* Hering on *Betula* (36 ♀, 14 ♂) (England, Scotland; *K. P. Bland, J. M. Chalmers-Hunt, R. J. Heckford, E. C. Pelham-Clinton, M. R. Shaw, P. A. Sokoloff*), *Caloptilia elongella* (Linnaeus) on *Alnus glutinosa*, *A. incana* (13 ♀, 17 ♂) (England, Scotland, Switzerland, Turkey; *K. P. Bland, J. M. Chalmers-Hunt, M. R. Shaw, A. N. B. Simpson, D. H., P. H. & M. J. Sterling, S. E. Whitebread*), *Caloptilia falconipennella* (Hübner) on *Alnus* (1 ♀) (England; *I. Sims*), *Caloptilia stigmatella* (Fabricius) on *Salix aurita* (1 ♀ [+ 1 ♀ from ?this host]) (England; *J. L. Gregory, M. R. Shaw*), *Caloptilia* sp. on *Alnus glutinosa*, *Betula* (2 ♀, 2 ♂) (Scotland; *K. P. Bland, E. C. Pelham-Clinton, M. R. Young*), *Parornix anglicella* (Stainton) on *Crataegus monogyna* (7 ♀, 6 ♂) (England; *M. R. Shaw, R. A. Softly*), *Parornix betulae* (Stainton) on *Betula* (13 ♀, 5 ♂) (England; *J. R. Langmaid, M. R. Shaw*), *Parornix devoniella* (Stainton) on *Corylus avellana* (7 ♀, 3 ♂) (England, Scotland; *M. R. Shaw*), *Parornix finitimella* (Zeller) on *Prunus spinosa* (2 ♂) (England; *A. N. B. Simpson*), *Parornix scoticella* (Stainton) on *Malus domestica*, *Sorbus aucuparia* (1 ♀, 2 ♂) (England, Wales; *M. R. Shaw, A. N. B. Simpson*), *Parornix torquillella* (Zeller) on *Prunus spinosa* (3 ♂) (England, Scotland; *R. J. Heckford, M. R. Shaw*), *Phyllonorycter coryli* (Nicelli) (Gracillariidae) on *Corylus avellana* (1 ♀) (Scotland; *E. C. Pelham-Clinton*), *Phyllonorycter nicellii* (Stainton) on *Corylus* (2 ♀) (England; *I. Sims*), *Phyllonorycter oxyacanthae* (Frey) on *Crataegus* (2 ♀) (England; *M. R. Shaw*), *Phyllonorycter tenerella* (Joannis) on *Carpinus* (1 ♂) (England; *J. M. Ruse*), *Phyllonorycter ulmifoliella* (Hübner) on *Betula* (1 ♀) (Scotland; *K. P. Bland*). There are also several specimens from unidentified gracillariids on various trees. Plurivoltine, overwintering in the cocoon of its hosts (probably as a cocoon). Additionally, there is a non-reared specimen (det. KH) from Wales in BMNH (G. R. Broad, pers. comm.).

****Enytus crataegellae*** (Thomson, 1887)

This species is here recorded from Britain for the first time. 3 ♀, 1 ♂, England: Surrey, Addington, ex *Scythropia crataegella* (Linnaeus) (Scythropiidae) on *Cotoneaster*, coll. 6.vi.1997, em. 1997 (*M. S. Parsons*); 1 ♀, England: Nottinghamshire, Beeston, Long Eaton, same host on *Cotoneaster*, coll. 2.v.2003 (*J. L. Gregory & D. Whitehead*); 1 ♀, 1 ♂, England: Oxfordshire, Botley, same host on *Cotoneaster horizontalis*, coll. 27.vii.1989, em. viii.1989 (*M. F. V. Corley*); 1 ♀, 2 ♂, England: Berkshire, Ascot, Silwood Park, same host on *Cotoneaster*, coll. 24.iv.2003, em. 12–21.vi.2003 (*M. R. Shaw*); 2 ♀, 1 ♂, England: Kent, West Wickham, same host on *Cotoneaster horizontalis*, coll. 13.v.1988, em. 5 and 8.vi.1988 (*E. C. Pelham-Clinton*); 3 ♀, 4 ♂, England: Essex, Chigwell Row, same host on *Cotoneaster*, coll. 10–13.v.2013, em. by 10.vi.2013 (*I. Sims*); 1 ♀, 1 ♂, England: Surrey, Wisley Garden, same host on *Crataegus*, em. vi–vii.1986 (*A. J. Halsead*). Univoltine, no doubt overwintering in its host larva.

Enytus neoapostata (Horstmann, 1968)

Depressariidae: *Agonopterix arenella* ([Denis & Schiffermüller]) on *Arctium lappa* (1 ♂) (Scotland; *M. R. Shaw*), *Agonopterix assimilella* (Treitschke) on *Sarothamnus* (11 ♀, 8 ♂) (England, Scotland; *K. P. Bland, R. Dickson, J. L. Gregory, C. W. Mackworth-Praed, I. Sims, G. Smith, I. F. Smith, C. Streets*), *Agonopterix propinquella* (Treitschke) on 'thistle' (2 ♀, 1 ♂) (Denmark; *B. Jørgensen*), *Agonopterix scopariella* (Heinemann) on *Sarothamnus* (2 ♀, 1 ♂) (England; *P. A. Sokoloff*), *Agonopterix subpropinquella* (Stainton) (1 ♀, 1 ♂) (England; *M. R. Young*), *Agonopterix* sp. on *Sarothamnus scoparius* (5 ♀, 1 ♂) (England; *J. R. Langmaid*); Gelechiidae: *Mirificarma mulinella* (Zeller) (1 ♀) (Scotland; *K. P. Bland*). Plurivoltine, overwintering in its host larva.

****Enytus styriacus*** (Horstmann, 1980)

This species is here recorded from Britain for the first time. 1 ♂, Scotland: Inverness-shire, Aviemore, ex *Rhopobota ustomaculana* (Curtis) (Tortricidae) on *Vaccinium vitis-idaea*, coll. 12.iv.1959, em. 25.v.1959 (*E. C. Pelham-Clinton*); 1 ♂, Scotland: Aberdeenshire, Morrone Birkwood, same host and plant, coll. 14.vi.2000, em. vi–vii.2000 (*R. J. Heckford*); 1 ♂, Scotland: Inverness-shire, Ballintean, same host and plant, coll. 14.v.2013, em. 22.vi.2013 (*S. D. Beavan*); 4 ♀, 2 ♂, Scotland: Morayshire, Grantown-on-Spey, Kylintra Wood, coll. 9–14.iv.2014, em. 22–29.v.2014 (*S. D. Beavan, R. J. Heckford*); 2 ♀, Scotland: Inverness-shire, Coylum Bridge or Tulloch Moor, ex indet. Tortricidae on *Vaccinium vitis-idaea*, coll. 2–3.v.1981, em. vi.1981 (*R. P. Knill-Jones*); 1 ♀, Scotland: Inverness-shire, Loch Garten, ex

indet. Lepidoptera on *Vaccinium vitis-idaea*, v–vi. 1981 (M. R. Young); 1 ♀, 1 ♂, Scotland: Aberdeenshire, Muir of Dinnet NNR, ex indet. Lepidoptera on *Vaccinium vitis-idaea*, vi. 1981 (M. R. Young). Univoltine, presumably overwintering in its host larva.

Eriborus braccatus (Gmelin, 1790)

Noctuidae: *Hypena rostralis* (Linnaeus) on *Humulus* (2 ♀, 2 ♂) (England; J. M. Chalmers-Hunt, M. S. Parsons, M. Townsend), *Hypena* ?*obesalis* Treitschke on *Urtica* (2 ♀) (Italy; M. R. Shaw). Probably univoltine; the adults all emerged in the year of cocoon formation. The indicated hosts overwinter as adults and it is not clear how the winter is passed. It may be significant that there are no specimens in NMS reared from the commonly collected and plurivoltine *Hypena proboscidalis* (Linnaeus) which overwinters as a larva.

Eriborus terebrans (Gravenhorst, 1829)

Crambidae: *Ostrinia palustralis* (Hübner) on *Rumex* (1 ♀) (Poland; C. Bystrowski). The adult emerged in iv from material (possibly a cocoon) collected in iii.

Gonotypus melanostoma Thomson, 1887

Coleophoridae: *Coleophora alticolella* Zeller (3 ♀, 2 ♂) (Germany; K.-H. Lampe), *Coleophora maritimella* Newman on *Juncus maritimus* (3 ♀, 2 ♂) (England; R. J. Heckford). Univoltine. The host is parasitised in autumn as a final instar larva, in which the parasitoid larva overwinters (Lampe, 1984).

Hyposoter Foerster, 1869

This genus is close to *Phobocampe*; like that genus, it kills the host before full growth and exhibits some interesting cocoon characteristics. Several *Hyposoter* species (e.g. *barrettii*, *carbonarius*, *caudator*, *dolosus*, *ebeninus*, *ebenitor*, *fitchii*, *horticola*, *leucomerus*, *notatus*, *placidus* and *rhodocerae* of the species detailed below) pupate in their own cocoon within the host larval skin, and the resulting mummy-like structure forms in an exposed situation with rapid adult emergence. It is probably no accident that the hosts concerned are all more or less hairy, spiny or aposematic and no doubt the parasitoid gains some protection from this. A similar cocoon habit is seen in *Phobocampe pulchella*, but most other species of *Phobocampe* (all except *bicingulata*, *coniferellae*, *crassiuscula*, *flavicincta* and *variabilis* of the others listed below) form short-ovoid cocoons that are not stuck down to the substrate but rather break free as a result of the violent jerking movements of the larva within, fall to the ground, and continue twitching in response to light and heat stimuli until a safer place is reached in which to pass the winter (in the relevant generation). The exceptions form more elongate cocoons (like those of typical *Hyposoter*), but (except in *P. bicingulata*) they are scarcely stuck down to the substrate (a habit seen also in *Hyposoter tricolor*) and generally do not overwinter.

Hyposoter albonotatus (Bridgman, 1889)

Noctuidae: *Hypena proboscidalis* (Linnaeus) on *Urtica* (8 ♀, 5 ♂) (England, Scotland; J. L. Gregory, B. C. Grobler, M. R. Shaw), *Hypena* ?*obesalis* Treitschke on *Urtica* (1 ♀) (Italy; M. R. Shaw). Plurivoltine, overwintering in the host larva.

Hyposoter barrettii (Bridgman, 1881)

Pterophoridae: *Capperia brittiodactyla* (Gregson) on *Teucrium scorodonia* (4 ♀, 5 ♂) (England; C. Hart, R. J. Heckford, J. R. Langmaid, C. W. Plant, P. A. Sokoloff), *Merrifieldia baliiodactyla* (Zeller) (2 ♀) on *Origanum vulgare* (England; M. S. Parsons, P. H. Sterling), *Pterophorus pentadactylus* (Linnaeus) (1 ♀) (England; K. Saul), Pterophoridae indet. on *Carlina corymbosa* (1 ♀) (Spain; G. E. King). Probably plurivoltine, overwintering in the host larva.

Hyposoter brischkei (Bridgman, 1882)

Geometridae: *Alsophila aescularia* ([Denis & Schiffermüller]) on *Crataegus* or *Prunus* (1 ♀, 1 ♂) (England; M. R. Shaw), *Eulithis populata* (Linnaeus) (1 ♂) (England; T. H. Ford), *Odontopera bidentata* (Clerck) (1 ♀) (Scotland; R. I. Lorimer), *Pennithera firmata* (Hübner) on *Pinus sylvestris* (1 ♀) (England; M. R. Shaw), *Thera britannica* (Turner) on *Abies grandis*, *Picea omorika*, *Pseudotsuga menziesii*, *Tsuga heterophylla* (4 ♀, 2 ♂) (England; G. M. Haggatt, P. E. Hatcher), *Thera cognata* (Thunberg) (2 ♀) (Ireland, Scotland; J. M. Chalmers-Hunt, M. R. Shaw), *Thera juniperata* (Linnaeus) on *Juniperus* (11 ♀, 7 ♂ [+ 1 ♀, 1 ♂ from ?this host])

(Scotland; K. P. Bland, T. H. Ford, R. Leverton, M. R. Shaw), *Thera obeliscata* (Hübner) on *Pinus sylvestris*, *Pseudotsuga menziesii* (5 ♀) (England; G. M. Haggett, M. R. Shaw), *Theria primaria* (Haworth) on *Crataegus*, *Prunus spinosa* (24 ♀, 24 ♂, from large scale rearings of this host) (England, Netherlands; M. R. Shaw), *Theria rupicaprararia* ([Denis & Schiffermüller]) or *T. primaria* on *Crataegus*, *Prunus* (2 ♀, 4 ♂) (Netherlands; M. R. Shaw), ?*Xanthorhoe biriviata* (Borkhausen) on *Impatiens capensis* (1 ♀) (England; B. R. Baker); Noctuidae: *Allophyes oxyacanthae* (Linnaeus) (1 ♀, doubtfully determined) (England; M. R. Shaw), *Diarsia brunnea* ([Denis & Schiffermüller]) (1 ♀) (Scotland; R. I. Lorimer), *Xestia ?baja* ([Denis & Schiffermüller]) (1 ♂) (Scotland; R. I. Lorimer), *Xestia ?xanthographa* ([Denis & Schiffermüller]) (1 ♀, 1 ♂ [+ 1 ♂, doubtfully determined]) (England; M. R. Britton, D. A. Sheppard), *Xylocampa areola* (Esper) on *Lonicera* (1 ♀) (Wales; J. N. Greatorex-Davies); Tortricidae: *Cnephasia asseclana* ([Denis & Schiffermüller]) on *Mentha* (1 ♀) (England; M. R. Shaw), ?*Endothenia gentianaeanana* (Hübner) ex seedheads of *Centaurea nigra* or *Dipsacus* (1 ♂) (England; E. S. Bradford). Plurivoltine, presumably overwintering within the host larva.

Hyposoter carbonarius (Ratzeburg, 1844)

Erebidae (Lymantriinae): *Dicallomera fascelina* (Linnaeus) on *Calluna*, *Salix repens* (14 ♀, 13 ♂) (England, Scotland, Netherlands; G. R. Else, N. Hall, S. B. Hanapi, R. Leverton, T. E. D. Poore, M. R. Shaw, P. Summers, J. Voogd, W. A. Watson, D. A. Young), *Orgyia antiqua* (Linnaeus) (2 ♀) (England; D. Hoare, J. M. Nelson), *Orgyia antiquoides* (Hübner) on *Calluna* (1 ♀, and several pseudohyperparasitised cocoons) (Netherlands; J. Voogd). Plurivoltine, overwintering as a larva in *D. fascelina*. The cocoon, in addition to being formed within the host skin, is constructed with an extra (empty) white silken chamber protruding beneath the host remains, presumably as a decoy to foil pseudohyperparasitoids (although the cocoons do nevertheless typically suffer heavy mortality from them).

Hyposoter caudator Horstmann, 2008

Lycaenidae: *Agriades pyrenaicus* (Boisduval) (1 ♀, 1 ♂, including 1 ♀ paratype) (Spain; M. G. Muñoz Sario). Emergence was in the year of cocoon formation; likely to be univoltine. Males are not always distinguishable from *H. notatus*.

Hyposoter clausus (Brischke, 1880)

Geometridae: *Alcis repandata* (Linnaeus) on *Sorbus aucuparia*, *Lonicera*, *Vaccinium* (3 ♀, 2 ♂) (England; M. R. Britton, N. Hall, M. R. Shaw), *Agriopis aurantiaria* (Hübner) on *Quercus*, *Corylus* (1 ♀, 2 ♂ [+ 1 ♀, 2 ♂ from ?this host on *Betula*, *Prunus*]) (England, Scotland; M. R. Shaw, R. A. Sofly), *Agriopis leucophaearia* ([Denis & Schiffermüller]) on *Quercus* (1 ♀, 1 ♂) (England; M. R. Shaw), *Agriopis marginaria* (Fabricius) on *Corylus*, *Prunus* (5 ♀, 3 ♂ [+ 4 ♀, 7 ♂ from ?this host (or *A. aurantiaria*) on *Quercus*, *Ulmus*]) (England, Scotland; I. D. Fergusson, G. M. Haggett, M. R. Shaw), *Biston stratarius* (Hufnagel) on *Prunus spinosa* (1 ♀) (England; M. R. Shaw), ?*Erannis defoliaria* (Clerck) (1 ♂) (Scotland; R. Leverton), *Eupithecia abbreviata* Stephens on *Quercus* (1 ♂) (England; M. R. Britton), *Odontopera bidentata* (Clerck) on *Thuja plicata* (1 ♂) (England; P. E. Hatcher), *Idaea* sp. on *Melica* (1 ♀) (England; E. C. Pelham-Clinton); Noctuidae: *Polia tricoma* (Hufnagel) on *Betula* (1 ♂) (England; W. A. Watson). Plurivoltine; some have overwintered in larvae of *A. repandata* (M. R. Shaw).

****Hyposoter coxator*** (Thomson, 1887)

This species is here recorded from Britain for the first time. 1 ♂, England: Norfolk, Acle, Upton Fen, ex *Eilema griseola* (Hübner) (Erebidae: Arctiinae), coll. 3.vi.2012, em. vii.2012 (M. R. Young). There are also English specimens (det. KH, and A. C. Galsworthy) in BMNH, but they are not reared (G. R. Broad, pers. comm.).

Hyposoter didymator (Thunberg, 1824)

Geometridae: *Epione vespertaria* (Linnaeus) (1 ♀, 1 ♂) (Scotland; T. Prescott), indet. sp. on *Calluna* (1 ♀) (England; M. R. Shaw); Lasiocampidae: *Lasiocampa trifolii* ([Denis & Schiffermüller]) (2 ♀, 1 ♂) (Austria, Hungary, Netherlands; J. Connell, M. R. Shaw), *Macrothylacia rubi* (Linnaeus) (1 ♀) (Scotland; M. R. Shaw); Noctuidae: *Acosmetia caliginosa* (Hübner) on *Serratula tinctoria* (1 ♀) (England; P. Waring), *Acronicta rumicis* (Linnaeus) (3 ♀, 3 ♂) (England, France; Heron, M. R. Shaw), *Agrochola haematidea* Duponchel on *Erica cinerea*

(3 ♂) (England; *G. M. Haggert*), ?*Agrochola litura* (Linnaeus) (4 ♀) (Hungary; *M. R. Shaw*), *Ammoconia caecimacula* ([Denis & Schiffermüller]) (1 ♂) (France; *M. R. Shaw*), *Anarta myrtilli* (Linnaeus) (1 ♂) (England; *T. H. Ford*), *Apamea ?renata* (Hufnagel) (1 ♂) (England; *G. M. Haggert*), ?*Aporophila nigra* (Haworth) (1 ♀, 1 ♂) (England; *M. R. Shaw*), *Autographa gamma* (Linnaeus) (1 ♀, 1 ♂) (France; *M. R. Shaw*), ?*Cerapteryx graminis* (Linnaeus) (1 ♀) (England; *M. R. Shaw*), *Cucullia asteris* ([Denis & Schiffermüller]) on *Aster*, *Solidago virgaurea* (2 ♀, 6 ♂) (England, Sweden; *E. C. Pelham-Clinton*, *C. Eliasson*, *B. Warrington*), *Cucullia blatteriae* (Esper) (3 ♀) (France; *M. R. Shaw*), *Cucullia verbasci* (Linnaeus) on *Verbascum thapsus* (18 ♀, 2 ♂) (England, France; *E. Drouet*, *C. W. Plant*, *M. R. Shaw*), ?*Dicestra* sp. on *Artemisia herba-alba* (2 ♀, 1 ♂) (Spain; *G. E. King*), *Eugnomerisma glareosa* (Esper) (1 ♀, 1 ♂) (England; *G. M. Haggert*), *Hadena bicruris* (Hufnagel) on *Melandrium* (2 ♀) (Turkey; *M. R. Shaw*), *Hadena irregularis* (Hufnagel) on *Silene otites* (2 ♀, 3 ♂) (France, Sweden; *N. Ryrholm*, *M. R. Shaw*), *Heliothis peltigera* ([Denis & Schiffermüller]) on *Antirrhinum majus* (3 ♀) (Greece, Spain; *G. E. King*, *J. Voogd*), *Heliothis viroplaca* (Hufnagel) (1 ♀) (France; *M. R. Shaw*), ?*Helicoverpa armigera* (Hübner) (1 ♀) (Cyprus; *P. J. C. Russell*), *Lycophotia porphyrea* ([Denis & Schiffermüller]) on *Calluna* (1 ♀, 1 ♂) (England, Scotland; *T. H. Ford*, *M. R. Shaw*), *Mythimna ferrago* (Fabricius) (1 ♀) (France; *M. R. Shaw*), *Noctua orbona* (Hufnagel) (3 ♀, 7 ♂) (England; *G. M. Haggert*, *M. S. Parsons*, *A. Rouse*, *D. H.*, *P. H.* & *M. J. Sterling*, *S. Ward*), *Noctua pronuba* (Linnaeus) (3 ♀) (England; *M. R. Shaw*), *Orthosia gothica* (Linnaeus) (1 ♀, 1 ♂) (Scotland; *R. I. Lorimer*, *M. R. Shaw*), *Polia tricoma* (Hufnagel) (1 ♀ [+ 1 ♂ from ?this host, on *Betula*]) (England; *W. A. Watson*), *Stilbia anomala* (Haworth) (1 ♂) (England; *G. M. Haggert*), *Talpophila matura* (Hufnagel) (5 ♀, 1 ♂ [+ 1 ♀ from ?this host]) (England, Austria; *J. Connell*, *G. M. Haggert*, *R. Leverton*, *M. R. Shaw*), *Xestia agathina* (Duponchel) (1 ♀) (Scotland; *R. I. Lorimer*), ?*Xestia agathina* (Duponchel) on *Calluna* (1 ♀) (Scotland; *M. R. Shaw*), *Xestia castanea* (Esper) on *Calluna* or *Erica* (1 ♂) (England; *M. R. Shaw*), *Xestia xanthographa* ([Denis & Schiffermüller]) (1 ♀) (England; *M. R. Shaw*); Notodontidae: *Cerura vinula* (Linnaeus) on *Salix* (2 ♀, 1 ♂) (Scotland; *R. I. Lorimer*, *E. A. M. MacAlpine*); Nymphalidae: ?*Vanessa cardui* (Linnaeus) (1 ♀) (Spain; *G. E. King*); Papilionidae: *Papilio alexanor* Esper on *Ptychotis heterophylla* (1 ♀) (France; *A. Longieras*); Pieridae: *Anthocharis cardamines* (Linnaeus) on *Cardamine pratensis* (4 ♀) (England; *A. Duggan*). Plurivoltine. Several of the above hosts offer the opportunity to overwinter in a host larva, which is its presumed mode.

Hyposoter dolosus (Gravenhorst, 1829)

Erebidae (Arctiinae): *Arctia caja* (Linnaeus) (3 ♀) (England, Scotland; *M. R. Shaw*, *P. Waring*), *Coscinia striata* (Linnaeus) (1 ♀) (France; *M. R. Shaw*), *Cymbalophora pudica* (Esper) (3 ♀, 1 ♂) (Spain; *G. E. King*), *Spilosoma lutea* (Hufnagel) (1 ♂) (England; *T. H. Ford*), indet. Arctiinae (1 ♀, 1 ♂) (Poland; *C. Bystrowski*). Plurivoltine, presumably overwintering in its host. The specimens reared from *C. pudica* in Spain belong to the colour morph var. *nigripes* Aubert (with unknown taxonomic status).

Hyposoter ebeninus (Gravenhorst, 1829)

Hesperiidae: *Carcharodus alceae* (Esper) on *Alcea rosea*, *Althaea*, *Malva neglecta*, *M. sylvestris* (10 ♀, 9 ♂) (France, Greece, Iran, Spain, 'Yugoslavia'; *M. Albrecht*, *A. Blazquez*, *J. L. Gregory*, *J. Hernández-Roldán*, *P. & B. Kan*, *J. E. Pateman*, *P. J. C. Russell*, *M. R. Shaw*, *C. Stefanescu*), *Carcharodus flocciferus* (Zeller) (1 ♀) (Spain; *J. Hernández-Roldán*), *Carcharodus tripolimus* (Verity) (1 ♀) (Portugal; *M. Albrecht*); Pieridae: *Anthocharis cardamines* (Linnaeus) (1 ♂) (Spain; *C. Stefanescu*), *Euchloe ausonia* (Hübner) on *Isatis lusitanica*, *Sinapis arvensis* (1 ♀, 1 ♂) (Israel; *D. Benyamini*), *Euchloe belemia* (Esper) on *Erucaria hispanica*, *E. rostrata*, *Sisymbrium irio* (2 ♀, 1 ♂) (Israel; *D. Benyamini*), *Euchloe crameri* Butler (1 ♀) (Spain; *C. Stefanescu*), *Euchloe insularis* Staudinger (1 ♂) (Sardinia; *P. J. C. Russell*), *Euchloe simplonia* (Freyer) (4 ♀, 1 ♂) (France, Spain; *T. Lafranchis*, *C. Stefanescu*), *Pieris brassicae* (Linnaeus) on *Capparis spinosa* (14 ♀, 3 ♂) (Austria, Greece, Spain; *J. Connell*, *T. Lafranchis*, *R. Obrégon*, *C. Stefanescu*), *Pieris napi* (Linnaeus) on *Brassica nigra* (1 ♀) (Spain; *C. Stefanescu*), *Pieris rapae* (Linnaeus) on *Sisymbrium irio* (1 ♀, 1 ♂) (Israel, Italy; *D. Benyamini*, *M. R. Shaw*). Plurivoltine; emergence has always been in the year of cocoon formation. It might overwinter in *Carcharodus* species, but direct evidence is lacking.

Hyposoter ebenitor Aubert, 1972

Pieridae: *Euchloe ausonia* (Hübner) on *Hirschfeldia incana*, *Sisymbrium irio* (1 ♀, 1 ♂) (Israel; D. Benyamini), *Euchloe belemia* (Esper) on *Erucaria hispanica*, *Sisymbrium irio* (1 ♀, 1 ♂) (Israel; D. Benyamini), *Euchloe crameri* Butler on *Moricandia moricandoides* (1 ♂) (Spain; A. González Megías), *Euchloe tagis* (Hübner) on *Eruca vesicaria*, *Iberis ciliata* (2 ♀, 1 ♂) (Spain; A. González Megías, R. Obregón), *Pontia chloridice* (Hübner) on *Cleome ornithopodoidea* (2 ♂) (Cyprus; P. J. C. Russell), *Pontia daplidice* (Linnaeus) on *Eruca vesicaria*, *Erucaria*, *Reseda alba* (9 ♀, 6 ♂ [+ 2 ♂ from ?this host]) (Iran, Israel, Spain; M. Albrecht, D. Benyamini, A. González Megías, G. E. King), *Zegris eupheme* (Esper) on *Erucaria* (1 ♂) (Israel; D. Benyamini). Emergence has always been soon after cocoon formation; voltinism and overwintering mode unclear.

Hyposoter fitchii (Bridgman, 1881)

Nolidae: *Meganola togatalalis* (Hübner) on *Quercus pubescens* (1 ♀) (France; M. R. Shaw). Host collection and adult emergence were in June of the same year.

Hyposoter horticola (Gravenhorst, 1829)

Nymphalidae: *Melitaea athalia* (Rottemburg) (1 ♀) (Poland; M. R. Shaw), *Melitaea cinxia* (Linnaeus) on *Plantago lanceolata* (15 ♀, 23 ♂) (Finland, France, Spain; C. J. Luckens, M. Kuussaari, M. Nieminen, M. R. Shaw, M. Singer, C. Stefanescu), *Mellicta aurelia* Nickerl (2 ♀, 2 ♂) (France; J. E. Pateman). Univoltine, overwintering in the host larva. Nouhuys & Ehrnsten (2004) and Nouhuys & Kaartinen (2008) published fascinating information on the life history of *H. horticola* in Finland as a parasitoid of *M. cinxia*, which is parasitized just before it leaves its egg by females that have located and monitored the egg batch over time.

***Hyposoter leucomerus** (Thomson, 1887)

This species is here recorded from Britain for the first time. 1 ♀, 1 ♂, England: Kent, Thornden Wood, ex *Hellinsia tephrodactylus* (Hübner) (Pterophoridae), coll. 16.v.1993, emergence date not given and cocoons absent (C. Hart).

Hyposoter longulus (Thomson, 1887)

Erebidae (Lymantriinae): *Orgyia antiqua* (Linnaeus) on *Betula*, *Crataegus* (2 ♀, 2 ♂) (England, Scotland; I. D. Fergusson, R. Leverton, B. T. Parsons, M. R. Shaw); Noctuidae: *Acronicta psi* (Linnaeus) on *Betula*, *Rosa*, *Sorbus aucuparia* (3 ♀, 2 ♂ [+ 2 ♀ from ?this host]) (England, Scotland; E. C. Pelham-Clinton, M. R. Shaw), *Cucullia verbasci* (Linnaeus) (2 ♀, 3 ♂) (England; M. R. Shaw). All have emerged in the year of cocoon formation. Probably plurivoltine, but its means of overwintering is unclear.

***Hyposoter neglectus** (Holmgren, 1860)

This species is here recorded from Britain for the first time. 1 ♀ Scotland: Glasgow, Gartloch Moss, ex *Cabera exanthemata* (Scopoli) (Geometridae), coll. 1.ix.1985, coc. 9.ix.1985, em. 29.ix.1985 (R. P. Knill-Jones).

Hyposoter notatus (Gravenhorst, 1829)

Lycaenidae: *Aricia agestis* ([Denis & Schiffermüller]) on *Helianthemum* (2 ♀, 2 ♂) (England; R. Menendez), *Aricia artaxerxes* (Fabricius) on *Helianthemum* (56 ♀, 78 ♂ [the result of a sustained survey (Shaw, 1996)]) (England, Scotland; K. P. Bland, J. E. Pateman, M. R. Shaw, P. Summers), *Aricia montensis* Verity (1 ♂) (France; T. Lafranchis), *Agrodiaetus* sp. on *Onobrychus ebenoides* (2 ♀) (Greece; T. Lafranchis), *Cupido osiris* (Meigen) (1 ♀, 1 ♂) (Spain; J. E. Pateman), *Cupido carswelli* (Stempffer) (1 ♂) (Spain; M. G. Muñoz Sarios), *Lysandra albicans* (Herrich-Schäffer) (2 ♀, 1 ♂) (Spain; M. G. Muñoz Sarios), *Lysandra bellargus* (Rottemburg) (5 ♀) (England, France; CEH survey, T. Lafranchis), *Plebejus pylaon hespericus* (Rambur) (1 ♀) (Spain; F. Gil-T), *Plebejus argus* (Linnaeus) (1 ♀) (France; T. Lafranchis), *Polyommatus abdon* E. & U. Aistleitner (1 ♀) (Spain; M. G. Muñoz Sarios), *Polyommatus icarus* (Rottemburg) (7 ♀, 4 ♂) (England, Scotland, France, Italy, Spain; K. P. Bland, R. Menendez, M. G. Muñoz Sarios, J. E. Pateman, M. R. Shaw, P. Summers), *Pseudophilotes baton* (Bergsträsser) (1 ♀) (Spain; M. G. Muñoz Sarios). Partly plurivoltine, presumably overwintering in the host larva. Males of this species and *H. caudator* are difficult to separate, and some males reared without females have not been listed.

Hyposoter orbator (Gravenhorst, 1829)

Noctuidae: *Minucia lunaris* ([Denis & Schiffermüller]) (1 ♂) (France; *T. H. Ford*).

Hyposoter placidus (Desvignes, 1856)

Lycaenidae: *Lycaena dispar* (Haworth) (8 ♀, 14 ♂) (England [semi-captive stock], France, Netherlands; *P. W. Cribb, L. Martin, C. N. Nicholls, P. J. C. Russell, M. R. Webb*), *Lycaena helle* ([Denis & Schiffermüller]) (1 ♀) (Belgium; *M. R. Shaw*), *Lycaena hippothoe* (Linnaeus) (2 ♀, 1 ♂) (Andorra, Spain; *T. Lafranchis, M. G. Muñoz Sariot*), *Lycaena phlaeas* (Linnaeus) on *Rumex crispus* (7 ♀, 7 ♂) (England, Spain; *M. F. V. Corley, J. L. Gregory, L. Martin, R. Menendez, G. Nobes, D. Parkinson, J. E. Pateman, J. H. Payne, C. Stefanescu, P. Tebbutt*). Plurivoltine, overwintering in the host larva.

Hyposoter rhodocerae (Rondani, 1877)

Pieridae: *Gonepteryx cleopatra* (Linnaeus) on *Rhamnus alaternus* (3 ♀ [+ 2 ♀ from ?this host]) (Spain, France; *P. & B. Kan, C. Stefanescu*), *Gonepteryx rhamni* (Linnaeus) on *Frangula alnus*, *Rhamnus* (7 ♀, 6 ♂) (England, France; *R. R. Askew, G. R. Ayres, K. E. J. Bailey, J. L. Gregory, B. T. Parsons, J. E. Pateman, M. R. Shaw*), *Gonepteryx* sp. on *Rhamnus alaternus* (6 ♀) (Spain; *J. Jubany, C. Stefanescu*). Possibly plurivoltine in S. Europe but, unless it has an as yet unknown late summer host, univoltine in Britain. Adults always emerge soon after cocoon formation and its overwintering mode is unclear.

****Hyposoter ruficrus*** (Thomson, 1887)

This species is here recorded from Britain for the first time. 1 ♀, England: Sussex, Plaistow, King's Park Wood, ex *Pyronia tithonus* (Linnaeus) (Nymphalidae: Satyrinae), coll. 20.v.1978, coc. 20.vii.1978, em. 10.viii.1978 (*M. R. Shaw*); 1 ♀, England: Surrey, Bookham Common, ex same host on *Deschampsia cespitosa*, coll. 20.vi.1993, em. 4.viii.1993 (*K. J. Willmott*); 1 ♀, England: Lancashire, Gait Barrows NNR, ex *Maniola jurtina* (Linnaeus) (Nymphalidae: Satyrinae), coll. 15.v.2008, em. 24.vii.2008 (*M. R. Shaw*). Presumably univoltine, overwintering in the host larva.

Hyposoter tricolor (Ratzeburg, 1844)

Noctuidae: *Abraxas grossulariata* (Linnaeus) (20 ♀, 18 ♂) (England, Scotland; *R. R. Askew, E. B. Basden, K. P. Bland, W. P. L. Cameron, A. R. Cronin, D. Davidson, T. C. Dunn, N. Hall, D. J. Jackson, R. Leverton, P. J. C. Russell, M. R. Shaw*). Univoltine, overwintering in the host larva.

****Lathroplex clypearis*** Thomson, 1887

This species is here recorded from Britain for the first time. 1 ♀, England: Cheshire, Dunham Park, ex *Ctesias* sp. (Coleoptera: Dermestidae), 1977 (*C. Johnson*). There are no data to suggest voltinism or the means of overwintering.

Lathrostizus clypeatus (Brischke, 1880)

Tenthredinidae (Hymenoptera): *Euura amerinae* (Linnaeus) on *Salix pentandra* (3 ♀, 5 ♂) (Scotland; *A. D. Liston*), Nematinae sp. indet. in ?stem gall on *Salix phyllicifolia* (1 ♂) (Scotland; *K. P. Bland*). Emergence in vi from stem galls collected in i suggests that it is univoltine and overwinters within the gall, though in what state is unclear.

Lathrostizus lugens (Gravenhorst, 1829)

Tenthredinidae (Hymenoptera): *Euura proxima* (Serville) galls on *Salix alba*, *S. fragilis* (2 ♀) (England; *S. B. Hanapi*), Nematinae sp. indet. leaf galls on *Salix* (5 ♀) (England; *F. D. Bennett, R. E. Evans, B. T. Parsons*). Plurivoltine, passing the winter as a larva in the overwintering host prepupa in its cocoon (Carleton, 1939).

Lemophagus errabundus (Gravenhorst, 1829)

Chrysomelidae (Coleoptera): *Liliocercis lilii* (Scopoli) (1 ♂) (England; *A. Salisbury*). The adult emerged in iv from a host collected in vi the previous year, having overwintered in the host cocoon.

****Leptocampoplex cremastoides*** (Holmgren, 1860)

This common and widespread species is here recorded from Britain for the first time, following previous misidentification. Oecophoridae: *Esperia sulphurella* (Fabricius) under dead bark of

Alnus, *Prunus*, *Quercus*, *Salix*, *Ulex* (16 ♀ [+ 1 ♀ from ?this host, under *Frangula* bark]) (England; K. P. Bland, R. E. Evans, T. H. Ford, R. J. Heckford, J. R. Langmaid, M. R. Shaw), *Schiffermuelleria grandis* (Desvignes) under dead *Hedera* bark (1 ♀ [+ 1 ♀ from ?this host]) (England; R. J. Heckford); Tineidae: ?*Nemapogon cloacella* (Haworth) in *Dahldinia concentrica*, under bark of *Pinus sylvestris* (3 ♀) (England, Scotland; R. J. Heckford, A. N. B. Simpson, I. Sims), *Triaxomera parasitella* (Hübner) in dead *Carpinus* (1 ♀) (England; J. R. Langmaid), ?Tineidae sp. in lichen on rocks (1 ♀) (England; E. C. Pelham-Clinton), also 2 ♀ (very small and doubtfully determined) from *Infurcitinea argentimaculella* (Stainton) on *Lepraria* (England, Guernsey; S. D. Beavan, J. R. Langmaid). Specimens from woody substrates appear to represent the overwintering generation of a plurivoltine species, as field caught material peaks at about vi and ix. All 31 specimens reared from listed and unknown (not listed) hosts in wood and fungi are female, suggesting thelytoky. There are also non-reared specimens from England and Scotland (det. J. F. Perkins, KH, and G. R. Broad) in BMNH (G. R. Broad, pers. comm.).

Macrus parvulus (Gravenhorst, 1829)

Psychidae: *Dahlica inconspicuellla* (Stainton) on *Salix* posts (2 ♀) (England; J. M. Chalmers-Hunt, A. N. B. Simpson), *Dahlica lichenella* (Linnaeus) on *Betula* trunk (2 ♂) (Scotland; K. P. Bland), *Dahlica triquetrella* (Hübner) (2 ♀, 1 ♂) (Netherlands; J. Voogd). Overwinters in the host case; probably univoltine.

****Melanoplex bucculentus*** (Holmgren, 1860)

Although the specimen in NMS is not reared we are taking the opportunity to record this species from Britain for the first time. 1 ♂, England: Huntingdonshire, Monks Wood, TL 202805, Malaise trap, 4.iii–5.iv.2005 (G. R. Broad). A further male, also determined by KH, with identical data but from a different trap at TL 199798 is in BMNH (G. R. Broad, pers. comm.).

Meloboris alternans (Gravenhorst, 1829)

Elachistidae: *Elachista cerusella* (Hübner) mining *Phalaris*, *Phragmites* (10 ♀, 11 ♂) (England, Scotland; K. P. Bland, A. M. Emmet, P. J. Johnson, R. P. Knill-Jones, J. R. Langmaid, M. R. Shaw). Plurivoltine, like its host, overwintering in the host larva. The cocoon is formed in the mine

Meloboris collector (Thunberg, 1824)

Noctuidae: *Cucullia verbasci* (Linnaeus) on *Verbascum* (5 ♂) (England; M. R. Shaw), *Eugnorisma glareosa* (Esper) (2 ♀) (England; M. R. Shaw), *Diataraxia oleracea* (Linnaeus) (1 ♀) (Isle of Man; T. H. Ford), *Noctua orbana* (Hufnagel) (6 ♀, 1 ♂) (England; G. M. Haggett), *Omphaloscelis lunosa* (Harworth) (1 ♀, 3 ♂) (England; G. M. Haggett, R. Leverton), *Orthosia incerta* (Hufnagel) (1 ♂ [+ 1 ♀ from ?this host]) (England, Scotland; R. A. Softly, M. R. Shaw), *Xestia agathina* (Duponchel) on *Calluna* (2 ♀) (England; M. R. Shaw), *Xestia castanea* (Esper) on *Calluna*, *Erica* (12 ♀, 7 ♂) (England; T. H. Ford, M. R. Shaw). Plurivoltine, overwintering in the host larva. The host is killed in an early instar.

****Meloboris proxima*** (Perkins, 1942)

This species is here recorded from Britain for the first time. 1 ♂, Scotland: Edinburgh, Grange, ex *Orthosia gothica* (Linnaeus) (Noctuidae) on *Rubus idaeus* 19.vi.1991, coc. 30.vi.1991, em. vii.1991 (M. R. Shaw). Also, Noctuidae: *Conistra vaccinii* (Linnaeus) on *Quercus* (1 ♀) (Austria; J. Connell). In both cases emergence took place soon after cocoon formation. Presumed to be plurivoltine, but if so the host of the overwintering generation is unknown. The host is killed while still quite small. There are additional English and Irish specimens (det. J. F. Perkins, and KH) in BMNH, but none is reared (G. R. Broad, pers. comm.).

****Nemeritis fallax*** (Gravenhorst, 1829)

This species is here recorded from Britain for the first time. 1 ♀, England: Berkshire, Silwood Park, ex *Opilio mollis* (Linnaeus) (det. R. M. Lyskowski from host remains) (Coleoptera: Cleridae) in dead *Fagus*, coll. as cocoon 21.iv.1999, em. 11.vii.1999 (M. R. Shaw). It seems likely to be univoltine, either overwintering in its host or as a cocoon. In addition there are English and Irish specimens (det. KH) in BMNH, but they are not reared (G. R. Broad, pers. comm.).

Nemeritis macrocentra (Gravenhorst, 1829)

Malachiidae (Coleoptera): ?*Malachius bipustulatus* (Linnaeus) (det. R. M. Lyskowski from host remains) in dead *Corylus* (1 ♂) (England; *M. R. Shaw*). The cocoon was collected in iv and the adult emerged in v.

****Nepiesta subclavata*** Thomson, 1887

Although the specimen is not reared, the opportunity is taken here to record this species from Britain for the first time. 1 ♀, England: Norfolk, Santon Downham (TL 818883), 29.vi–9.vii.1984 (*J. Field*).

Olesicampe Foerster, 1869

Although there is a moderate amount of reared material in NMS, this genus was not reviewed in depth by KH and here we give data for only three species. The host is killed in its cocoon.

****Olesicampe canaliculata*** (Gravenhorst, 1829)

This species is here recorded from Britain for the first time. 3 ♀, Isle of Man: Laxley, ex *Pristiphora appendiculata* (Hartig) (Hymenoptera: Tenthredinidae) on *Ribes rubrum*, coll. 4.vii.2001, em. 26.vii.2001 (1 ♀), and same data but coll. as cocoon on *R. uva-crispa* 22.viii.2001, em. 29.viii.2001 (1 ♀), and same data but plant not indicated, coll. as larva 9.viii.2001, em. 28.viii.2001 (1 ♀) (all *F. D. Bennett*). The adults emerged in the year of cocoon formation. Presumably plurivoltine but the rearing data do not suggest how the winter is passed.

Olesicampe clandestina (Holmgren, 1860)

Cimbicidae (Hymenoptera): *Cimbex femoratus* (Linnaeus) on *Betula* (1 gregarious brood of 48 ♂) (England; *M. R. Shaw*). Univoltine; the host was killed as a prepupa in its cocoon, from which the adult parasitoids emerged the following year (from their individual cocoons within). This is one of very few gregarious koinobiont endoparasitoid ichneumonids known in the European fauna (Shaw, 1999), though this mode of development is widespread in Braconidae.

Olesicampe transiens (Ratzeburg, 1848)

Tenthredinidae (Hymenoptera): *Strongylogaster multifasciata* (Geoffroy) on *Pteridium aquilinum* (12 ♀, 7 ♂) (Wales; *P. Baker*). Univoltine, overwintering in the host cocoon.

Phobocampe Foerster, 1869

For remarks on cocoon characteristics see commentary under *Hyposoter*. While many *Phobocampe* species form short-ovoid cocoons that are not attached firmly to the substrate, it is not, unfortunately, a universal characteristic of the genus as currently understood. It should also be pointed out that this is taxonomically a difficult genus, and the rather diffuse and overlapping host ranges and uncertain identifications expressed for some species below might suggest either that we are unable to recognise the limits of certain species, or that speciation and host range evolution is still in a state of flux (cf. Shaw & Horstmann, 1997). Several species are known to overwinter as adults in the cocoon and the habit may be more prevalent still.

Phobocampe alticollis (Thomson, 1887)

Limacodidae: *Apoda limacodes* (Hufnagel) on *Quercus* (1 ♀, 3 ♂) (England, Netherlands; *M. Boddington*, *M. R. Britton*, *J. Voogd*), *Heterogenea asella* ([Denis & Schiffermüller]) on *Quercus robur* (2 ♀, 1 ♂) (England; *R. J. Heckford*). The hosts were all collected in late summer and the parasitoid always overwintered in its cocoon to emerge in iv. Even if specialized to Limacodidae, it may be plurivoltine as the slow-growing larvae of *A. limacodes* can also be killed in a middle instar.

Phobocampe bicingulata (Gravenhorst, 1829)

Erebidae: *Euclidia glyphica* (Linnaeus) (1 ♂) (France; *M. R. Shaw*); Geometridae: *Anticlea derivata* ([Denis & Schiffermüller]) on *Rosa* (1 ♀) (Scotland; *M. R. Shaw*); Noctuidae: ?*Apamea remissa* (Hübner) (2 ♀) (England; *M. R. Shaw*), *Apamea* ?*crenata* Hufnagel (1 ♂) (England; *D. A. Sheppard*), *Autographa gamma* (Linnaeus) (2 ♀) (France; *M. R. Shaw*), *Conistra ligula* (Esper) on *Ribes uva-crispum* (1 ♂, doubtfully determined) (England; *M. R. Shaw*), *Conistra* sp. on *Prunus spinosa* (1 ♂) (England; *M. R. Shaw*), *Cucullia verbasci* (Linnaeus) on *Verbascum* (10 ♀, 1 ♂) (England, France; *M. R. Shaw*), *Lacanobia oleracea*

(Linnaeus) on *Melilotus officinalis* (1 ♂) (France; M. R. Shaw), *Mythimna impura* (Hübner) (1 ♀) (England; D. A. Sheppard), *Noctua pronuba* (Linnaeus) (1 ♂) (Scotland; S. Ward), *Orthosia cerasi* (Fabricius) (1 ♀) (Scotland; M. R. Shaw), *Orthosia gothica* (Linnaeus) on *Prunus* (1 ♀, 2 ♂) (England; J. L. Gregory, M. R. Shaw), *Orthosia gracilis* ([Denis & Schiffermüller]) on *Myrica* (1 ♂) (Scotland; M. R. Shaw), *Orthosia munda* ([Denis & Schiffermüller]) on *Prunus spinosa* (1 ♂) (England; M. R. Shaw), *Panolis flammea* ([Denis & Schiffermüller]) on *Pinus nigra* (2 ♀, 1 ♂) (Austria, England; J. Connell, M. A. Kirby, M. R. Shaw), *Thalpothila matura* (Hufnagel) (1 ♀) (England; G. M. Haggatt), *Xestia xanthographa* ([Denis & Schiffermüller]) (2 ♀) (England; D. A. Sheppard). Plurivoltine, overwintering in the host larva.

Phobocampe brumatae Horstmann, 2009

Geometridae: *Cyclophora linearia* (Hübner) on *Fagus* (1 ♂, doubtfully determined) (France; M. R. Shaw), *Hydriomena furcata* (Thunberg) on *Corylus* (1 ♂, doubtfully determined) (England; M. R. Shaw), *Operophtera brumata* (Linnaeus) on *Corylus*, *Crataegus*, *Fraxinus*, *Lonicera*, *Myrica*, *Prunus*, *Quercus*, *Salix* (6 ♀, 6 ♂ [+ 1 ♂, doubtfully determined]) including **holotype** ♀ and 5 ♀, 4 ♂ paratypes) (England, Scotland, France; T. H. Ford, M. R. Shaw, R. A. Softly); Erebidae (Lymantriinae): *Calliteara pudibunda* (Linnaeus) on *Quercus*, *Fagus* (4 ♀, 2 ♂) (France; M. R. Shaw); Noctuidae: *Cosmia trapezina* (Linnaeus) (1 ♂) (England; M. Lightowler), *Dryobotodes eremita* (Fabricius) on *Quercus* (1 ♀ paratype) (France; M. R. Shaw), *Moma alpium* (Osbeck) on *Quercus* (1 ♂, doubtfully determined) (France; M. R. Shaw); Nolidae: *Nycteola revayana* (Scopoli) on *Quercus* (3 ♀, 3 ♂ including 1 ♀, 2 ♂ paratypes [+ 1 ♂ from ?this host, + 1 ♀, doubtfully determined]) (England, France; I. D. Ferguson, J. L. Gregory, G. M. Haggatt & R. Leverton, M. R. Shaw), *Pseudoips prasinana* (Linnaeus) on *Castanea* (1 ♀ [+ 1 ♀, doubtfully determined]) (England; J. M. Chalmers-Hunt, M. R. Shaw); Notodontidae: *Notodonta ziczac* (Linnaeus) on *Salix caprea* (1 ♀, doubtfully determined) (England; B. T. Parsons). Largely plurivoltine, overwintering in its cocoon.

Phobocampe confusa (Thomson, 1887)

Nymphalidae: *Aglais io* (Linnaeus) on *Urtica* (29 ♀, 15 ♂) (England, Scotland; H. A. Ellis, T. H. Ford, J. Gifford, M. A. Grimes, F. Kinnear, B. T. Parsons, J. H. Payne, M. R. Shaw, D. J. Smith), *Aglais urticae* (Linnaeus) on *Urtica* (31 ♀, 20 ♂ [+ 3 ♂ reared in culture from parent ex *A. io*]) (England, Scotland, Sweden; M. Brooks, C. Eliasson, T. H. Ford, J. Gifford, M. A. Grimes, C. Hallet, F. Kinnear, J. R. Miller, B. T. Parsons, J. H. Payne, M. R. Shaw, L. Sivell, A. Walker), *Araschnia levana* (Linnaeus) (2 ♀) (Croatia; P. J. C. Russell), *Nymphalis polychloros* (Linnaeus) (1 ♀) (Greece; P. J. C. Russell), *Polygonia c-album* (Linnaeus) on *Ribes nigrum*, *Urtica* (2 unemerged cocoons) (England; P. Tebbutt, D. Whitehead). Partly plurivoltine, overwintering as a pharate adult in the cocoon. It is usual for a proportion of even first generation cocoons to overwinter, and a proportion of late summer cocoons to emerge even after suitable hosts cease to be available. Gregarious *Aglais* species are parasitised as first or second instar larvae through their web; high proportions of individuals in particular nests can be parasitised. The host is killed in its final or penultimate instar.

Phobocampe coniferella (Roman, 1914)

Geometridae: *Eupithecia tantillaria* Boisduval on *Abies grandis*, *Tsuga heterophylla* (2 ♀) (England; P. E. Hatcher). Overwinters in the cocoon; probably univoltine.

Phobocampe crassiuscula (Gravenhorst, 1829)

Geometridae: *Agriopsis* sp. on *Rubus fruticosus* (1 ♀) (England; R. A. Softly), *Apocheima pilosaria* ([Denis & Schiffermüller]) on *Alnus*, *Crataegus* (2 ♀, 2 ♂ [+ 1 ♀ from ?this host on *Quercus*]) (England; I. D. Ferguson, R. Fry, G. King, M. R. Shaw, R. A. Softly), *Biston strataria* (Hufnagel) (1 ♀) (England; M. R. Shaw), *Erannis defoliaria* (Clerck) on *Quercus*, *Ulmus glabra* (3 ♀, 2 ♂) (England; I. D. Ferguson, J. L. Gregory, G. M. Haggatt, R. I. Lorimer, M. R. Shaw), *Opisthograptis luteolata* (Linnaeus) on *Crataegus*, *Sorbus aucuparia* (6 ♀, 3 ♂) (England; T. H. Ford, G. M. Haggatt, B. P. Henwood, M. R. Shaw). Plurivoltine, overwintering in its cocoon.

Phobocampe croceipes (Marshall, 1876)

Notodontidae: *Ptilodon capucina* (Linnaeus) (1 ♀, 2 ♂) (Scotland; T. H. Ford, G. S. Graham-Smith). Overwinters in its cocoon; probably univoltine.

Phobocampe flavicincta (Thomson, 1887)

Noctuidae: *Hypena* sp. on *Urtica* (1 ♀) (Italy; *M. R. Shaw*). Emergence was in the year of cocoon formation.

****Phobocampe horstmanni*** Šedivý, 2004

This species is here recorded from Britain for the first time. 1 ♀, England: Berkshire, Ascot, Silwood Park, ex *Agriopsis marginaria* (Fabricius) (Geometridae) coll. 11.vi.1994, em. 7.iv.1995 (*M. R. Shaw*); 1 ♀, Scotland: Inverness-shire, Inch Marshes, ex ?Geometridae sp. on *Betula*, coll. (as cocoon) 23.vi.2006, em. 13.vii.2006 (*M. R. Shaw*). Also 1 ♂, doubtfully determined, England: Devon, Colyton, ex *Lomaspilis marginata* (Linnaeus) on *Salix*, coll. 9.ix.1978, coc. 27.ix.1978, em. 19.iv.1979 (*M. R. Shaw*). Overwinters in its cocoon, but voltinism may be variable.

****Phobocampe lymantriae*** Gupta, 1983

This species is here recorded from Britain for the first time. 1 ♂, England: Gloucestershire, Eastleach, ex *Orygia antiqua* (Linnaeus) (Erebidae: Lymantriinae) on *Salix*, coll. 15.viii.2009, coc. ix.2009, em. 7.iv.2010 (*M. R. Shaw*). Overwinters in its cocoon; plurivoltine. Gupta (1983) records that emergence is in the year of cocoon formation when it parasitises *Lymantria dispar* (Linnaeus) (Erebidae: Lymantriinae) in the Palaearctic region, but did not discuss a host for the overwintering generation.

****Phobocampe pulchella*** (Thomson, 1887)

This species is here recorded from Britain for the first time. 1 ♀, England: Kent, Thornden Wood, ex *Hellinsia tephradactyla* (Hübner) coll. 4.vi.1982 (*E. S. Bradford*); 1 ♂, England: Devon, Lyn Valley, ex same host on *Solidago virgaurea*, coll. 1.vi.2010, em. vii.2010 (*R. J. Heckford*); 1 ♂, Scotland: Wester Ross, Allt Mor, ex same host on *Solidago virgaurea*, coll. 21.v.2010, em. 8.vii.2010 (*R. J. Heckford*).

Phobocampe quercus Horstmann, 2008

Holotype ♀ and 1 ♀, 1 ♂ paratypes ex *Favonius quercus* (Linnaeus) (Lycaenidae) (England, Spain; *J. Dantart, G. Nobes*). Perhaps plurivoltine, as emergence was in the year of cocoon formation.

****Phobocampe tempestiva*** (Holmgren, 1860)

This species, which appears to be both widespread and abundant, is here recorded from Britain for the first time. Geometridae: *Biston betularia* (Linnaeus) on *Betula*, *Quercus* (3 ♀, 3 ♂ [+ 1 ♀ from ?this host on *Fagus*]) (England; *R. I. Lorimer, P. J. Merrett, M. R. Shaw, R. A. Softly*), *Cabera exanthemata* (Scopoli) on *Salix* (2 ♂ [+ 1 ♀ from ?this host]) (England; *J. L. Gregory, M. R. Shaw*), *Crocallis elinguaris* (Linnaeus) on *Quercus* (1 ♂) (England; *P. Waring*), *Cyclophora albipunctata* (Hufnagel) on *Betula* (1 ♂) (England; *M. R. Shaw*), *Epirrita* sp. on *Vaccinium* (1 ♀) (Scotland; *M. R. Shaw*), *Hydriomena furcata* (Thunberg) on *Vaccinium* (3 ♂) (Scotland; *M. R. Shaw*); *Lomaspilis marginata* (Linnaeus) on *Salix* (1 ♂) (England; *M. R. Shaw*), *Lycia hirtaria* (Clerck) on *Salix aurita* (1 ♂) (England; *B. T. Parsons*), *Operophtera brumata* (Linnaeus) on *Betula*, *Calluna*, *Fraxinus*, *Myrica*, *Prunus padus*, *P. spinosa* (28 ♀, 29 ♂) (England, Scotland; *T. H. Ford, J. Kerslake, R. I. Lorimer, M. R. Shaw, R. A. Softly*), *Operophtera fagata* (Scharfenberg) on *Betula* (4 ♀, 4 ♂) (Scotland; *M. R. Shaw*), *Serraca punctinalis* (Scopoli) on *Carpinus/Fagus/Quercus* (1 ♀) (France; *M. R. Shaw*), *Thera juniperata* (Linnaeus) on *Juniperus* (8 ♀, 4 ♂) (Scotland; *R. Leverton, M. R. Shaw*), *Theria primaria* (Haworth) on *Prunus spinosa* (1 ♂) (England; *M. R. Shaw*); Noctuidae: *Cosmia trapezina* (Linnaeus) on *Quercus* (1 ♀) (France; *T. H. Ford*); Nymphalidae: *Limnitis camilla* (Linnaeus) (1 ♀) (England; *K. E. J. Bailey*). Univoltine, overwintering in its cocoon, but a few specimens have emerged in the year of cocoon formation.

Phobocampe uncinata (Gravenhorst, 1829)

Erebidae (Lymantriinae): *Lymantria dispar* (Linnaeus) (2 ♀ [+ 14 ♂ reared in culture from them]) (France; *M. R. Shaw*). Univoltine, overwintering as an adult in its cocoon (Gupta, 1983).

****Phobocampe variabilis*** Šedivý, 2004

This species is here recorded from Britain for the first time. 2 ♀, England: Cumbria, Beetham,

ex *Thera obeliscata* (Hübner) (Geometridae), on *Pinus sylvestris*, coll. 29.iv.1989, coc. v.1989, em. 12–15.vi.1989 (*M. R. Shaw*). The identification of *P. variabilis* is based on the description, the types being unavailable. Probably plurivoltine, like its host, within the larva of which it presumably overwinters.

****Porizon humuli*** (Horstmann, 1987)

This species is here recorded from Britain for the first time. 3 ♀, 2 ♂, England: Essex, Bures, ex *Cosmopterix zieglerella* (Hübner) (Cosmopterigidae), em. 1980 (*A. M. Emmet*); 1 ♀, 3 ♂, England: Essex, ex same host on *Humulus*, em. vi.1986 (*A. N. B. Simpson*); 5 ♀, 12 ♂, England: Cambridgeshire, Little Chesterford, ex same host on *Humulus*, coll. 31.viii.1985, em. v.1986 (*J. R. Langmaid*); 1 ♂, England: Suffolk, Thorpeness, ex same host on *Humulus*, coll. 2.ix.1985, em. v.1986 (*J. R. Langmaid*). Univoltine; overwinters in the host cocoon, but whether in the host prepupa or in its own cocoon is not clear from the label data.

Porizon moderator (Linnaeus, 1758)

Tortricidae: *Cydia strobilella* (Linnaeus) in *Picea abies* cones (4 ♀, 2 ♂) (England, Scotland; *K. P. Bland*, *J. A. Owen*, *E. C. Pelham-Clinton*, *G. Smith*). Univoltine, overwintering as a larva in the host larva (Brockerhoff & Kenis, 1996).

Porizon transfuga (Gravenhorst, 1829)

Gracillariidae: *Caloptilia syringella* (Fabricius) on *Fraxinus*, *Ligustrum ovalifolium*, *L. vulgare*, *Syringa* (25 ♀, 26 ♂) (England, Scotland, Isle of Man; *S. D. Beavan*, *F. D. Bennett*, *K. P. Bland*, *R. I. Lorimer*, *M. R. Shaw*, *R. A. Softly*, *P. A. Sokoloff*); Yponomeutidae: *Prays fraxinella* (Bjerkander) (1 ♀) (England; *C. W. Plant*). Plurivoltine, overwintering in its cocoon which is constructed within the more or less intact pupa of its host.

Rhimphoctona melanura (Holmgren, 1860)

Cerambycidae (Coleoptera): *Acmaeops septentrionis* (Thomson) (1 ♂) (Poland; *J. Hilszczański*).

Scirtetes robustus (Woldstedt, 1874)

Noctuidae: *Agrochola macilentia* (Hübner) on *Quercus* (1 ♀, 1 ♂) (England; *R. A. Softly*), *Amphipyra pyramidea* (Linnaeus) on *Lonicera* (1 ♀) (England; *G. M. Haggatt*), *Cosmia trapezina* (Linnaeus) on *Quercus* (5 ♀) (England; *M. R. Shaw*), *Orthosia cerasi* (Fabricius) on *Corylus*, *Eucalyptus*, *Prunus spinosa* (3 ♀, 5 ♂) (England, Wales; *J. S. Hopton*, *P. Roper*, *M. R. Shaw*), *Orthosia cruda* ([Denis & Schiffermuller]) on *Quercus* (1 ♀) (England; *M. Townsend*), *Orthosia gothica* (Linnaeus) on *Prunus spinosa* (1 ♂) (England; *M. R. Shaw*), *Orthosia gracilis* ([Denis & Schiffermuller]) on *Filipendula ulmaria*, *Myrica gale*, *Spiraea* (12 ♀, 8 ♂) (England, Scotland; *J. L. Gregory*, *M. R. Shaw*, *M. R. Young*), *Orthosia incerta* Hufnagel on *Crataegus*, *Ulmus* (1 ♀, 1 ♂) (England; *M. R. Shaw*, *R. A. Softly*). Also 1 ♂ reared in culture in *O. gothica* from ♀ parent ex *C. trapezina* (*M. R. Shaw*). Univoltine, overwintering as a fully formed adult in its cocoon. The latter is short-ovoid and brown with a paler broad stripe centrally. It is constructed suspended on a weak thread which is easily broken by the strong jerking movements of the larva within, which continue until the cocoon has lodged in a safe site at ground level to overwinter. (Many species of *Phobocampe* exhibit similar behaviour.) The host is killed before it is fully grown.

Sinophorus Foerster, 1869

This genus was not intensively studied by KH, and we can give firm data for only a few species.

Sinophorus albidus (Gmelin, 1790)

Geometridae: *Hydriomena furcata* (Thunberg) on *Salix caprea* (1 ♀) (England; *M. R. Shaw*). Univoltine, overwintering in its cocoon.

Sinophorus fuscicarpus (Thomson, 1887)

Crambidae: *Mecyna asinalis* (Hübner) on *Rubia peregrina* (1 ♀) (France; *M. R. Shaw*). Emerged in the year of cocoon formation; presumably plurivoltine, like the host, in which it presumably overwinters as a larva.

Sinophorus juniperinus (Holmgren, 1856)

Noctuidae: *Apamea unanimitis* (Hübner) on *Phalaris* (1 ♀, 1 ♂) (England; *M. R. Shaw*). Univoltine, overwintering in its cocoon.

Sinophorus pleuralis (Thomson, 1887)

Crambidae: *Loxostege comptalis* (Freyer) on *Artemisia herba-alba* (2 ♀) (Spain; G. E. King); Depressariidae: *Agonopterix arenella* ([Denis & Schiffermüller]) on *Cirsium* (1 ♀) (England; R. J. Heckford), *Agonopterix* cf. *nanatella* (Stainton) on *Carlina corymbosa* (1 ♀, 2 ♂) (Portugal; M. F. V. Corley), *Agonopterix* sp. on *Carduus nutans* (3 ♀) (England; E. C. Pelham-Clinton), *Agonopterix* sp. on *Centaurea sphaerocephala* (1 ♀) (Portugal; M. F. V. Corley). The British specimens all emerged in the year of cocoon formation, but in Spain it appears to be plurivoltine, overwintering in its cocoon.

Sinophorus turionum (Ratzeburg, 1844)

Crambidae: *Anania hortulata* (Linnaeus) (1 ♀) (England; W. Wakely), *Nascia cilialis* (Hübner) (1 ♂) (England; G. M. Haggett), *Pyrausta aurata* (Scopoli) on *Mentha* (6 ♀, 2 ♂) (England; B. P. Henwood, J. L. Gregory); Geometridae: *Gymnoscelis rufifasciata* (Haworth) on *Erica tetralix* (2 ♀) (England; M. R. Shaw), ?*Hydriomena furcata* (Thunberg) (1 ♀) (England; T. H. Ford), *Operophtera brumata* (Linnaeus) on *Crataegus*, *Hippophae*, *Prunus padus* (4 ♀, 2 ♂) (Scotland; M. R. Shaw); Nymphalidae: *Vanessa atalanta* (Linnaeus) (1 ♀, doubtfully determined) (England; J. E. Pateman); Pyralidae: *Acrobasis advenella* (Zincken) on *Crataegus* (2 ♀) (England; M. R. Shaw). Also 2 ♀, 1 ♂ reared from *Pinus* shoots with *Rhyacionia buoliana* ([Denis & Schiffermüller]) (Tortricidae) (England; N. Hall, R. J. Heckford) but the host was queried, perhaps through fear of confusion with *Dioryctria* spp. (Pyralidae). In addition there are long series from two of the above hosts (*H. furcata* and *O. brumata*) which were determined by KH only as *Sinophorus* sp. (at an earlier date, without re-examination). Overwinters in its cocoon; mostly plurivoltine but partly univoltine (particularly northern populations).

****Tranosema carbonellum*** (Thomson, 1887)

Although the material is not reared, the opportunity is taken here to record this species from Britain for the first time. 1 ♀, 3 ♂, England: Derbyshire, Glossop, *Vaccinium* moorland, 24.iv.1975 (M. R. Shaw); 2 ♀, 2 ♂, Scotland: Glasgow, 28.iii.1982 (2 ♂) and 19.iv.1983 (2 ♀) (R. P. Knill-Jones). There are also non-reared specimens (det. J. F. Perkins, and G. R. Broad) from both England and Scotland in BMNH (G. R. Broad, pers. comm.).

****Tranosema hyperboreum*** (Thomson, 1887)

This species is here recorded from Britain for the first time. 1 ♂, England: Wiltshire, Manton Copse, ex *Eana incanana* (Stephens) (Tortricidae) in flowers of *Endymion non-scriptus*, em. 18.iii.1998 (G. Smith). The date of collection is not recorded, but presumably the winter period was passed in the cocoon. Apparently univoltine; as recorded by Aubert (1964), R. Hinz reared this species from *Platyptilia nemoralis* Zeller (Pterophoridae), and the labelling of relevant specimens (in coll. Horstmann, ZSM München) show that the host larvae were collected in May, with the parasitoid adults emerging in March the following year.

****Tranosema intermedium*** (Szépligeti, 1916)

This species is here recorded from Britain for the first time. 1 ♀, England: Cornwall, Kieve Mill, ex ?*Endothenia ustulana* (Haworth) (Tortricidae) on *Ajuga reptans*, coll. 13.v.1997, em. 29.vi.1997 (R. J. Heckford).

****Tranosema latiusculum*** (Thomson, 1887)

This species is here recorded from Britain for the first time. 1 ♀, England: Cornwall, Polmassick, ex ?*Caloptilia elongella* (Linnaeus) (Gracillariidae), 8.vii.1995 (J. L. Gregory); 13 ♀, 9 ♂, Scotland: Inverness-shire, Loch Garten, ex *Rhopobota naevana* (Hübner) (Tortricidae) on *Vaccinium myrtillus*, coll. 19.vii.1988, em. v.1989 (M. R. Shaw). Univoltine, at least in Scotland, overwintering in its cocoon.

Tranosema nigridens (Thomson, 1887)

Tortricidae: *Epinotia abbreviana* (Fabricius) on *Ulmus* (1 ♀) (England; R. A. Softly). The host was collected in v and the adult emerged in vi of the same year.

Tranosema rostrale (Brischke, 1880)

Tortricidae: ?*Acleris schalleriana* (Linnaeus) on *Viburnum lantana* (1 ♀) (England; M. F. V. Corley), ?*Acleris sparsana* ([Denis & Schiffermüller]) on *Acer pseudoplatanus* (2 ♀) (Isle of Man;

S. L. Thrower), *Archips podana* (Scopoli) on *Lonicera* (1 ♂) (England; *B. Fox*), ?*Archips rosana* or *Orthotaenia undulana* ([Denis & Schiffermüller]) (1 ♀, 2 ♂) (England; *J. R. Langmaid*), *Clepsis spectrana* (Treitschke) on *Rheum rhabarbarum*, *Urtica* (2 ♀) (England, Scotland; *G. Foster*, *J. B. Whitfield*), *Cnephasia incertana* (Treitschke) on *Heracleum* (1 ♂) (England; *R. J. Heckford*), *Pandemis cerasana* (Hübner) on *Lonicera periclymenum* (1 ♀) (England; *B. Fox*), *Pandemis corylana* (Fabricius) on *Lonicera periclymenum* (1 ♀) (England; *B. Fox*), *Pandemis heparana* ([Denis & Schiffermüller]) on *Crataegus/Prunus* (2 ♂) (England; *M. R. Shaw*), *Syndemis musculana* (Hübner) on *Calystegia sepium* (1 ♀) (England; *M. F. V. Corley*); Ypsolophidae: ?*Ypsolopha dentella* (Fabricius) on *Lonicera* × *tellmanniana* (1 ♀) (England; *M. F. V. Corley*). In addition there are many specimens from undetermined tortricid hosts on a wide range of plants. Plurivoltine, overwintering in its cocoon.

****Tranosemella citrofrontalis*** (Hedwig, 1939)

This species is here recorded from Britain for the first time. 2 ♀, Wales: Anglesey, Llangristiolus, ex *Anthophila fabriciana* (Linnaeus) (Choreutidae) on *Urtica*, coll. 29.vii.1981, em. viii.1981 (*M. R. Shaw*); 1 ♂, Wales: Pembrokeshire, Little Haven, ex same host, on *Urtica*, coll. 11.viii.1977, em. 5.ix.1977 (*M. R. Shaw*); 1 ♂, England: Cumbria, Haverthwaite, ex same host, coll. 25.viii.2009 (*A. Rice*); 1 ♀, 1 ♂, England: Norfolk, Walsingham, ex same host, on *Urtica dioica*, coll. 8.viii.1988, em. viii.1988 (*M. R. Shaw*); 1 ♀, England: Norfolk, Thetford Forest, ex same host, on *Urtica dioica*, coll. 3.viii.1988, em. 19.viii.1988 (*M. R. Shaw*). These rearings resulted from a prolonged and extensive investigation of parasitism of *A. fabriciana* (*M. R. Shaw*, in prep.); 1 ♂, Scotland: Fife, Dumbarnie Links, 18.viii.2014 (*G. B. Corbet*). We have also seen 1 ♂, Scotland: Aberdeenshire, Peterhead, ex indet. 'Microlepidoptera', coll. 5.vi.1994 (*M. Innes*), returned to the collector. The known host is plurivoltine and overwinters as a larva, suggesting that the parasitoid might behave in the same way. In addition there is a non-reared English specimen (det. *G. R. Broad*) in BMNH (*G. R. Broad*, pers. comm.).

Tranosemella coxalis (Brischke, 1880)

Geometridae: *Hydria undulata* (Linnaeus) on *Salix* ?*atrocineria* (4 ♀, 1 ♂) (England; *M. R. Shaw*, *B. Statham*). Univoltine, overwintering in its cocoon.

Tranosemella praerogator (Linnaeus, 1758)

Choreutidae: *Anthophila fabriciana* (Linnaeus) (1 ♀) (Wales; *M. R. Shaw*); Gracillariidae: ?*Chaloptilia betulicola* (Hering) (1 ♀) (England; *J. L. Gregory*); Tortricidae: *Acleris ferrugana* ([Denis & Schiffermüller]) on *Quercus ilex* (1 ♀ [+ 1 ♀ from ?this host]) (England; *J. R. Langmaid*, *A. N. B. Simpson*), *Acleris hyemana* (Haworth) (1 ♂) (England; *J. L. Gregory*), *Acleris kochiella* (Goeze) on *Ulmus* (2 ♀, 1 ♂) (England; *J. M. Chalmers-Hunt*, *R. J. Heckford*, *J. R. Langmaid*), *Acleris schalleriana* (Linnaeus) on *Viburnum opulus* (2 ♀) (England, Scotland; *E. C. Pelham-Clinton*), *Acleris umbrana* (Hübner) on *Prunus spinosa* (1 ♀ [+ 1 ♀ from ?this host]) (England; *R. J. Heckford*), *Adoxophyes orana* (Fischer von Röslerstamm) on *Quercus* (1 ♀) (England; *G. A. Wilson*), *Ancylys myrtilana* (Treitschke) on *Vaccinium myrtillus* (1 ♀) (Scotland; *P. W. Brown*), *Ancylys paludana* Barrett (1 ♂) (England; *J. M. Chalmers-Hunt*), *Aphelia paleana* (Hübner) (1 ♀) (England; *N. L. Birkett*), *Aphelia viburnana* ([Denis & Schiffermüller]) on *Angelica sylvestris*, *Myrica gale* (1 ♂ [+ 1 ♀ from ?this host]) (England, Scotland; *S. D. Beavan*, *R. J. Heckford*), *Archips podana* (Scopoli) on *Lonicera periclymenum* (1 ♂ [+ 1 ♀ from ?this host]) (England; *B. Fox*, *J. L. Gregory*), *Archips rosana* (Linnaeus) on *Ligustrum* (1 ♀) (Scotland; *T. E. D. Poore*), *Argyroplote arbutella* (Linnaeus) on *Acrostaphylos uva-ursi* (1 ♂) (Scotland; *R. J. Heckford*), *Cacoecimorpha pronubana* (Hübner) on *Hedera* (2 ♀, 3 ♂ [+ 1 ♂ from ?this host]) (England, Isle of Man; *F. D. Bennett*, *M. Townsend*), *Cnephasia longana* (Haworth) on *Senecio jacobaea* (1 ♂) (Wales; *A. N. B. Simpson*), *Epinotia cruciana* (Linnaeus) or *Philedonides lunana* (Thunberg) on *Salix repens* (1 ♂) (Scotland; *R. P. Knill-Jones*), *Epinotia immundana* (Fischer von Röslerstamm) on *Betula* (1 ♀) (England; *J. L. Gregory*), *Epiphyas postvittana* (Walker) on *Berberis*, *Ligustrum*, *Prunus laurocerasus*, *Smyrnium olusatrum*, *Urtica* (4 ♀ [+ 2 ♂ from ?this host, + 1 ♀, doubtfully determined]) (England; *S. D. Beavan*, *M. F. V. Corley*, *J. L. Gregory*, *R. J. Heckford*, *M. R. Shaw*, *S. Swift*), ?*Lozotaenia forsterana* (Fabricius) on *Hedera helix* (1 ♀) (England; *R. J. Heckford*), *Notocelia roborana* ([Denis & Schiffermüller]) (1 ♀) (Scotland; *K. P. Bland*), *Pandemis cerasana* (Hübner) on *Lonicera periclymenum* (1 ♀)

(England; *B. Fox*), *Sparganothis pilleriana* ([Denis & Schiffermüller]) on *Teucrium* (1 ♂) (Wales; *A. N. B. Simpson*). Plurivoltine, probably overwintering as a larva within that of its host.

Venturia canescens (Gravenhorst, 1829)

Pyralidae: *Ephestia kuehniella* Zeller (7 ♀) (England; *P. Gent*), *Ephestia* sp. (4 ♀) (England; *M. A. Kirby*). The material was all from industrial flour mills, where the species was essentially continually brooded. This is a well-known laboratory animal, with an extensive literature (sometimes under *Nemeritis*).

Discussion

For many of the campoplegine species listed here with host data there were no previously published rearing data, and the general situation for most others is that the host data abstracted from various literature sources (e.g. as in Yu *et al.*, 2012) is untrustworthy (Shaw, 1994). As well as expressing rearing data in the quantitative way that enables realised host ranges to be better understood, not least by potentially marginalising freak events and errors (Shaw, 1994), here we also attempt to summarise the phenology of the parasitoids listed. We hope that the information given will enable future rearings of these taxa to be seen in an appropriate and helpful context, but some important uncertainties are raised, especially with regard to the overwintering strategy of several common species that always emerge from the cocoon in the year of its formation but for which no host in which it could plausibly overwinter is known. This might be explained by Baltensweiler's (1958) observation that '*Horogenes exareolatus* (Ratzeburg)' (a Holarctic boreo-alpine campoplegine now correctly known as *Enytus montanus* Provancher) overwinters as an adult in soil, if this habit is more widespread in the subfamily. For temperate species the winter is a critical barrier, and all too often insufficient attention is given to its importance in trying to understand the host associations of parasitoids. It would be illuminating (and probably not very difficult) to attempt to overwinter easily found species such as *Diadegma duplicatum*, *D. stigmatellae* and *Hyposoter rhodocerae* as adults by feeding them on diluted honey and offering them a range of opportunities.

The quantity of reared material in NMS, and also the quantitative expression of the rearing data, reveal patterns in host ranges between related species (e.g. within a genus) that are becoming familiar in many groups of koinobionts; that is, some species with very broad host ranges are often closely related to species that appear to be much more host-specialised. This has been discussed, in the context of a speciation hypothesis that gives rise to nascent specialists, for several groups (Shaw, 1994; 2002; Shaw & Horstmann, 1997; Stigenberg & Shaw, 2013) and the hypothesis has received some support from molecular studies (Zaldivar-Riveron *et al.*, 2008). It is unnecessary to rehearse these arguments here, but it is important to appreciate that even for apparently rather polyphagous parasitoids the host range will be drawn from the limited set of species that the parasitoid encounters in its searching niche (for example, on broadleaf trees and bushes, in the field layer, or through attraction to more particular substrates). In addition, Campopleginae are one of the groups of Ichneumonoidea that inject polydnnaviruses along with their eggs, which is known to help to overcome host resistance, and variation (and perhaps evolutionary progress) in the effectiveness of a parasitoid's polydnnavirus towards different hosts is another of the several attributes that might influence its realised host range.

Finally, it is worth stressing the huge importance of large collections rich in reared material from diverse sources, such as that in NMS, in allowing informative patterns to become clear. It is greatly to be hoped that this kind of collection-building will continue to be supported by the care and generosity of entomologists whose main interests lie elsewhere.

Acknowledgements

The immense contribution to the NMS collection made by the many lepidopterists and others (named in the text) who have donated reared parasitoids to MRS has been paramount. We are grateful too to Stefan Schmidt who was so diligent in ensuring that appropriate material was returned to NMS following KH's death, to Gavin Broad for providing data for specimens in BMNH of the species recorded here as new to Britain and encouraging us to include them alongside the data from NMS, as well as for his helpful comments on the MS, to Mattias Riedel who kindly translated into English KH's draft descriptions in German of *Campoplex linosyridellae*, *Campoplex sexguttellae* and *Diadegma luffiae* and to Katherine Child (Oxford University Museum of Natural History) for guiding AW's photography.

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