Two hundred and twenty-five species of reared western Palaearctic 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

MARK R. SHAW¹
National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF, U.K.
markshaw@xenarcha.com

KLAUS HORSTMANN²
Biocentrum, Universität Würzburg, D-97070, Germany

ASHLEIGH L. WHIFFIN
National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF, U.K.
a.whiffin@nms.ac.uk

Synopsis

Host and in some cases detailed rearing data are presented for 225 species of western Palaearctic 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, Bathypeletes, Benjaminia, Callidora, Campeletis, Campoplex, Campoplex linosyridellae sp. nov., Campoplex sexguttellae sp. nov., Charops, Clypeoplex, Cymodusa, Diadegma, Diadegma luffiae sp. nov., Dolophron, Dusona, Enytus, Eriborus, Gonotyphus, Hyposoter, Lathroplex, Lathrostizus, Leptomphagus, Leptocampoplex, Macrus, Melanoplex, Meloboris, Nemeritis, Nepiesta, Olesicampe, Photomcathe, Porizone, Rhimphoctona, Scirtetes, Sinophorus, Tranosema, Tranosemella, Venteria.

Introduction

The National Museums of Scotland (NMS) contains a large collection of western Palaearctic 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

¹ Honorary Research Associate; author for correspondence.
² Deceased.
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 Orthesia ?gothica (meaning certainly Orthesia, perhaps gothica) or ?Orthesia gothica (meaning it might be something other even than Orthesia). 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 (Satyrinae): *Arcthusana arathusa* ([Denis & Schiffermüller]) (1 ♂) (Spain; E. Garcia-Barros), *Hipparcia senele* (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); Zygadenidae: *Zygaena carnoliaca* (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 esseni* 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.

**Bathypelectes** Foerster, 1869

The brown cocoons of *Bathypelectes* 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 *Maniola* species, no other hosts, but it seems probably *Callidora*, but none is able to jump literally inches at a time in the manner of *Bathypelectes*.

**Bathypelectes 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.

**Bathypelectes balteatus** (Thomson, 1887)


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

Bathyplectes rostratus (Thomson, 1887)
Curculionidae (Coleoptera): Hyphra 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.

Campoplexis Foerster, 1869
In general the host is killed before it is fully grown and the parasitoid spins a discrete cocoon outside the host remains.

*Campoplexis annulata* (Gravenhorst, 1829)
Noctuidae: Apamea scopolacina (Esper) (1 ♀) (England; M. R. Shaw), Cerapteryx graminis (Linnaeus) (4 ♀, 1 ♂) (England; M. R. Shaw), Cucullia chamomilla ([Denis & Schiffermüller]) (2 ♀, 1 ♂) (England, Scotland; A. P. Foster, R. Levertont); Nymphalidae (Satyrinae): Lasionomma 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 milleriadactyla (Bruand) (1 ♀) (Ireland; C. Hart), Stenoptilia perodactyla (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.

*Campoplexis crassicornis* (Tschek, 1871)
Crambidae: Udea ferrugalis (Hübner) (1 ♀, 2 ♂) (Malta; J. L. Gregory).

Campoplexis ensator (Gravenhorst, 1829)

*Campoplexis latrator* (Gravenhorst, 1829)
Gelechiidae: Anacampsis blattariella (Hübner) on Betula (1 ♀) (England; A. N. B. Simpson);
Noctuidae: *Amphipyra* sp. on *Craetaegus* (1 ♂) (England; M. R. Shaw), *Orthosia incerta* (Hufnagel) (1 ♂) (Scotland; R. Leverton), *Orthosia* sp. on *Quercus* (1 ♀) (Scotland; M. R. Shaw), *Xanthia cirrata* (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.

*Campeletis punctata* (Bridgman, 1886)
Noctuidae: *Abrostola triplasia* (Linnaeus) on *Urtica* (2 ♂) (England; A. Cronin, M. Noble), *Diachrysia ?ehryrsis* (Linnaeus) on *Urtica* (2 ♀, 2 ♂) (England, Scotland; T. H. Ford, G. M. Haggett), *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.

*Campeletis rapax* (Gravenhorst, 1829)

*Campeletis thomsoni* (Roman, 1915)
This species is here recorded from Britain for the first time. 8 ♀, 4 ♂, England: West Sussex, Midhurst Common, ex *Agrochola haematomera* Duponchel on *Erica cinerea*, vi/vii.1993, (G. M. Haggett); 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.

*Campeletis 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.vi.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. vii.2000 (C. Hart); 1 ♂, England: Devon, Colaton Raleigh Common, same host, coll. 4.vii.2009, emergence date not recorded (B. P. Hentswood). 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.

*Campeletis varians* (Thomson, 1887)
Geometridae: *Camptogramma bileata* (Linnaeus) (17 ♂, 9 ♂ from a prolonged survey at one site) (Austria; J. 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; F. 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 millieriactyla* (Braud) (2 ♀, 1 ♂) (Ireland; C. Hart), *Cnemidophorus rhododactyla* ([Denis & Schiffermüller]) (1 ♀) (England; C. Hart). Plurivoltine. Some cocoons have overwintered but the long series from Austria reared from *Camptogramma bileata* collected as early as March may suggest that it can also overwinter in some of its hosts.

*Campeletis 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).
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). Evidently 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 *Euptethia 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 alcimiella* (Scopoli) on Quercus robur (7 ♀, 4 ♂ [+ 3 ♀ from this host]) (England, Scotland; M. R. Shaw), *Caloptilia robustella* Jäch 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 lewenhoekella* (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 Euptethia pimpinellata (Hübner), an alternative possibility indicated on the data label, which we discount] on *Pasinaca 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.vii.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 angusta* (Curtis) on moss (1 ♂) (England; R. J. Heckford), *Eudonia mercurella* (Linnaeus) (1 ♀) (England; R. J. Heckford). A further 6 ♀, 1 ♂, reared from moss containing Brotrothra 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: *Phycites maritima* (Tengström) on Senecio jacobaea (6 ♀, 10 ♂) (England; S. D. Beavan, R. J. Heckford, M. R. Shaw); Tortricidae: *Cydia nebritana* (Treitschke) on Colutea 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 gentianaena (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. Shao). 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, Midlelyard Coppice, ex Ypsolopha dentella (Fabricius) (Ypsolophidae) on Lonicera, coll. and em. 1980 (A. N. B. Simpson); 1 ♂, England: Cheshire, Abbots Moss, Ypsolopa parenthesella (Linnaeus) on Betula, coll. 8.vi.1976, em. 3.vii.1976 (M. R. Shaw); 1 ♂, England: London, Hampstead Heath, ex Ypsolopa sp. on Quercus, coll. 5.vi.1983, em. 6.vii.1983 (R. A. Softly). Also 1 ♂, Ypsolopa parenthesella 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 pyrhhulipennella 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 cystella (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. cystella, 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. pyrhhulipennella.

*Campoplex linosyridellae* Horstmann, sp. nov.

(Figs 1, 4)

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


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. Postpetiolaris 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 Alnus (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),
Glyphapterigidae: Acroplea autumniella Curtis on Solanum dulcamare (3♂) (England; H. C. J. Godfray);
Gracillariidae: Caloptilia elongella (Linnaeus) on Ailanthus (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 apiella ([Denis & Schiffermüller]) on Frangula albus (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 albicipitella (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: Incurvari a praetella ([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 spherocephala (2♀) (Portugal; M. F. V. Corley).
Emergence was in v from hosts collected in iv.

Campoplex multicinctus Gravenhorst, 1829
Tortricidae: Aethes beatrice (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 psamnae (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 deviella (Zeller) on Suaeda maritima (1♀) (England; M. J. Sterling), Coleophora
folicularis (Vallo) (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
peribanderi Toll on Cirsium arvense (13♀, 1♂) (England; M. F. V. Corley, R. J. Heckford,
J. R. Langmaid, I. Sims), Coleophora prunifoliæ 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 (Schräkel) (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 osolletella (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, 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. psamnae but
probably belongs to a different species.
**Campoplex punctipleuris** Horstmann, 1980
Coleophoridae: *Coleophora serratella* (Linnaeus) on *Betula, Sorbus aria* (2♀, 1♂ including 3 ♀, 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. Hardwoch, 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: *Apheleia paleana* (Hübner) (2♀, 1♂) (England; J. M. Chalmers-Hunt, J. R. Langmaid), *Apheleia unitana* (Hübner) on *Rumex acetosa* (1♀) (England; R. J. Heckford), *Apheleia sp.* on *Heracleum* (1♀) (England; R. J. Heckford), *Cnephasia asseciana* ([Denis & Schiffermüller]) (1♀) (England; R. L. E. Ford), *Cydia* sp. on *Vicia sativa* (1♂) (England; S. Koptur). Additionally from indet. tortricids on *Caltha* and *Centaurae* (Scotland; respectively K. P. Bland, and R. P. Knill-Jones) and uncertain ‘Microlepidoptera’ on *Lavandula 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 *Apheleia* 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), *Prochoreutes myllerana* (Fabricius) on *Scutellaria galericulata* (5♀) (England; J. L. Gregory, R. J. Heckford, M. R. Shaw, A. N. B. Simpson), *Prochoreutes 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 altstromeriana* (Clerck) (1♀, 1♂) (England; L. T. Ford), *Agonopterix cilieella* (Stainton) on *Angelica sylvestris* (1♀) (Ireland; J. R. Langmaid), *Agonopterix heracliana* (Linnaeus) on *Conium maculatum,* *Chaeropyllum* (2♂) (England, Isle of Man; J. M. Chalmers-Hunt, E. G. Pelham-Clinton), *Depressaria chaerophylli* Zeller (1♀) (England; A. N. B. Simpson); Elachistidae: *Elachista argentella* (Clerck) (1♂) (England; I. Sims), *Elachista poae* Stainton on *Glyceria plicata* (3♀, 1♂) (England; I. Sims); Epermeniidae: *Epermenia chaerophyllella* (Goeze) on *Heracleum spondylium* (1♀) (Scotland; M. R. Shaw); Gelechiidae: *Scrobipalpa acuminatella* (Sircom) on *Cirsium palustre* (1♀) (England; J. R. Langmaid); *Glyphaetegridae: Acrolepia autummitella* Curtis on *Solanum dulcamara* (3♀, 3♂) (England; H. G. C. Godfrey, M. R. Shaw), *Glyphaetegridae: Aspilapterix fraschellae* (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: Apisca to* (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: *Rhyncicion buitiana* ([Denis & Schiffermüller]) on *Pinus radiata* (2♂) (England; R. J. Heckford). Univoltine, hibernating in the host larva.

**Campoplex raschiellae** Horstmann, 1980
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 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 in 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.


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 petiolar. 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 punctuation. 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. Precoxal 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. Metapleurae 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. Hind wing 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
Depressariidae: *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.
(England; J. R. Langmaid), Scrobipalpa tussilaginis (Frey) on Tussilago farfara (1 ♀) (England; R. J. Heckford), Teleiodes notatula (Hübner) on Salix aurita (1 ♀) (England; M. J. Sterling), Telephila schmidtii (Hedyan) on Clinopodium vulgare (1 ♀) (Portugal; M. F. V. Corley); Glyphipterigidae: Acrolepia autumnitalia Curtis on Solanum dulcamara (1 ♀) (England; H. C. J. Godfray); Gracillariidae: Asplapteryx tringipennella (Zeller) on Plantago lanceolata (2 ♀, 1 ♂) (Scotland; K. P. Bland), Caloptilia ?robustella Jäckh (1 ♂) (England; A. N. B. Simpson); Tortricidae: ?Euocosma tripoliana (Barrett) ex seedhead of Aster tripolium (3 ♂) (England; A. N. B. Simpson), Isorctias rectificasciana (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), Xerocnephus rigana (Sodoffsky) on low Clematis (2 ♀, 1 ♂) (France; M. R. Shaw); Nymphalidae: Vanessa atalanta (Linnaeusus) (2 ♀, 1 ♂) (England; Spain; G. Hallett, C. Stefanescu); Pterophoridae: Platypitilla gonodactyla ([Denis & Schiffermüller]) on Tussilago (6 ♀, 6 ♂) (England; M. R. Shaw), ?Pterophorus pentadactylus (Linnaeusus) (1 ♂) (England; T. H. Ford), Yponomeutidae: Paraswammerdamia nebulosa (Goeze) on Crataegus (1 ♂, 1 ♂) (England; M. R. Shaw), Pseudoswammerdamia combinella (Hübner) on Prunus spinosa (1 ♀) (England; A. N. B. Simpson), Swammerdamia pyrella (Villars) on Crataegus (1 ♀) (Scotland; K. P. Bland). Additionally a series of 8 ♀, 7 ♂ ex Adaina microacryla (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 udmanniana (Linnaeusus) on Rubus fruticosus (2 ♀, 2 ♂) (England; J. L. Gregory, I. S. Sim, 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 haworthana (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).

**Casinaria** 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: Zygama aligra Boisduval (5 ♀, 4 ♂) (Morocco; A. Hofmann & P. Strauss, J.-G. Weiss), Zygama chirazica Reiss (1 ♀) (Iran; T. Hagen), Zygama escalarii Pourade (9 ♀, 6 ♂) (Iran; A. Hofmann), Zygama filipendulae (Linnaeusus) (19 ♀, 19 ♂) (England, France, Germany, Italy, Spain, Sweden, Turkey; A. A. Allen, C. Eliasson, Grenninger, N. Hall, A. Hofmann, D. R. Lees, E. Öckinger, A. Rouch, M. A & W. G. Tremewan), Zygama haematina Kollar (4 ♀) (Iran; P. Kautt, A. Hofmann), Zygama lonicerae (Scheven) (6 ♀, 4 ♂) (England, France, Sweden; E. Briolat, C. Eliasson, B. H. Guldberg, B. P. Henwood, E. Öckinger), Zygama naumannii Hille & Keil (1 ♀) (Iran; A. Hofmann), Zygama nevadensis Rambur (1 ♂) (Greece; A. Hofmann), Zygama punctum Ochsenheimer (2 ♀, 1 ♂) (Greece; A. Hofmann), Zygama rhadamanthus (Esper) (1 ♀) (Spain; A. Hofmann), Zygama sarpedon (Hübner) (4 ♀) (Spain; A. Hofmann), Zygama seitzi Reiss (7 ♀, 3 ♂) (Iran; A. Hofmann), Zygama tamara Christoph (1 ♀) (Iran; A. Hofmann), Zygama transalpina (Esper) (1 ♀) (Italy; W. G. Tremewan), Zygama
trifoli (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 marocanus 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 cerophas* (Gravenhorst, 1829)
This species is here recorded from Britain for the first time. Apparently widespread. Gelechiidae: *Scrobipalpa acuminatella* (Siccom) on *Cirsium palustre* (2 ♂) (England; K. P. Bland, M. S. Parsons); Ypsolophidae: *Ypsolopha parenthesella* (Linnaeus) on *Acer campestre* (below *Quercus*), *Betula*, *Myrica* (2 ♀, 4 ♂) (England, Scotland; M. R. Shaw, A. N. B. Simpson). At least partly univoltine, 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
Crambid: *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: *Scythis crassiuscula* (Herrich-Schäffer) on *Helianthemum* (1 ♀) (England; R. J. Heckford). The specimen emerged from its cocoon in the year of formation.

Diacagma Foerster, 1869
Most species kill the host as a cocooned prepupa, but some species parasitizing 'Macrolepidoptera' kill the host before it is fully grown.

Diacagma aculeatum (Bridgman, 1889)
Hesperiidae: *Muschampia proto lycaonius* (Wagner) (1 ♂) (Israel: D. Benyamin); 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 bipunctadactyla* (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. bipunctadactyla*) 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*).

*Diacagma angitiaeform* 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, Taynuilt, 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.

*Diacagma 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: *Adeina microdactyla* (Hübner) (4 ♀, 8 ♂) (England, Ireland; C. Hart, M. R. Shaw), *Hellinsia carphodactyla* (Hübner) on *Inula conyza* (7 ♀, 5 ♂ [+ 1 ♀ from ?this host])
This species is here recorded from Britain for the first time. 1 
Colletts Green, ex *Diadegma brevipetiolatum* which to overwinter.

plurivoltinism but also (unless emergence had been forced) that it may use a different host in
collected at the end of viii and the adult parasitoids appeared in ix/x, suggesting not only
year of cocoon formation, while all those from
*Diadegma berberatae* Holotype
host on *Diadegma brevivalve* (Hübner) (M. F. V. Corley
Oxfordshire, Faringdon, ex same host on *Diadegma brevipetiolatum*). Univoltine, overwintering in the host larva.

This species is here recorded from Britain for the first time. 1
Tilshead, ex *Diadegma brevivalve* (Hübner) (M. F. V. Corley
Oxfordshire, Faringdon, ex same host on *Diadegma brevipetiolatum*). Univoltine, overwintering in the host larva.

**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 okebladella* (Bjerkan) on Quercus robur (6 ♀) (England, Scotland,
Finland; K. P. Bland, E. Connor, K. Aartinen). 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) (Elachisidae) (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: *Acrrobasis 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
Crateagus, 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 *Paremplea 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,
Collets Green, ex Coleophora lineolea (Haworth) (Coleophoridae) on Stachys lanata, coll.
(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.
killed as a prepupa and a discrete cocoon is formed (contrast the behaviour of X, 4 21.iv.1991, em. 23.v.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) (Zettleriidae), 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: Ephesia betulae (Hübner) (1 ♀, 2 ♂) (Scotland; K. P. Bland), Ephesia kuehniella Zeller in flour mill (5 ♀, 6 ♂) (England; R. C. Fisher), associated with Achroia griseola (Fabricius) or Galleria mellonella (Linnaeus) (2 ♀, 2 ♂) (Scotland; G. M. Foster), A. grisella (2 ♀) (England; R. E. Evans), Epischnia asters (Stainton) 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 saxifraga (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. Knill-Jones, E. C. Pelham-Clinton). In addition, specimens from various laboratory cultures in some of the above pyralid hosts (R. C. Fisher, G. N. Foster, D. J. Read), and the material from cross-culture experiments with Diadegma fabricianae 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: Pancalia schaearellae (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 crassicone** (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 littoralis (Curtis) (1 ♀) (Wales; H. Bantock), indet. noctuid on grasses (1 ♀, 5 ♂) (England; H. Abbaspour). 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 demarrella (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 blandardella (Fabricius) on Malus (1 ♀) (England; E. C. Pelham-Clinton), Phyllonorycter corylifoliella (Hübner) on Crataegus monogyna (1 ♀) (England; M. R. Shaw), Phyllonorycter oxyacantha (Frey) on Crataegus (2 ♀, 1 ♂ including 1 ♀ paratype) (England; R. R. Askew, J. 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

Diadegma elishae (Bridgman, 1884)

Diadegma ericinella 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: Pecicopia malvellata (Hübner) in seeds of Malea (1 ♀, 1 ♂) (England; J. M. Chalmers-Hunt, R. P. Knill-Jones), Platysia 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 pasiana (Hübner) in heads of Chrysanthemum leucanthemum (1 ♂) (England; A. N. B. Simpson), Cnephasia stepheniana (Doubleday) on Cirsium arvense (1 ♀) (England; M. F. V. Corley), Cnephasia sp. on Conopodium majus (2 ♀) (England; M. F. V. Corley), Cychlis molicularana 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: Tebeina micals (Mann) on Pulicaria dysenterica (1 ♀) (England; R. J. Heckford); Gracillariidae: Asپlaperix tringipennella (Zeller) on Plantago lanceolata (3 ♀, 3 ♂) (England, Scotland; K. P. Bland, E. C. Pelham-Clinton); Lyonetiidae: Bedelia somnulentella (Zeller) on Galystegia septim, C. soldanella, Corydalis 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 Cheirolophus semprevirens (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,
**Entomologist’s Gazette** (2016) Vol. 67

Prochoereta sp. on Scutellaria galericulata (1♀) (England; M. R. Shaw); Crambidae: Pleurotypha
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 Heliodiniidae: Heliodines
roesella (Linnaeus) on Atriplex (France, Sweden; N. Ryholm, 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 fenestrale** (Holmgren, 1860)
Choreutidae: Tebenna hjerkanndrella (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 Rhytidodaphus squarrosus (3♀,
1♂) (Scotland; R. J. Heckford), Caryocolum blandelleoides Karsholt on Cerastium fontanum (1♂)
(Scotland; J. R. Langmaid), Caryocolum fraternella (Douglas) on Stellaria graminea (2♂)
(England; M. F. V. Corley), Mirificarma lentinigosella (Zeller) on Genista tinctoria (1♂)
(England; M. S. Parsons), Monochroa conspersella (Herrich-Schäffer) on Lysimachia vulgaris (1♀)
(England; J. R. Langmaid), Scrobipalpa cintomov Povolný in Rumex crispus stems (1♂)
(Scotland; K. P. Bland), Scrobipalpa martellina (Duponchel) on Antennaria dioica (1♂) (Ireland;
R. J. Heckford), Syncopacma cinctella (Clerck) (1♀) (England; J. M. Chalmers-Hunt),
Syncopacma larseniella Gozmann (2♂) (England; D. J. L. Agassiz), Syncopacma taeniocella
(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. G. Pelham-Clinton), Telephila schmidtiellus (Heyden) on Origanum (1♀)
(Wales; A. N. B. Simpson), Glyphipterigidae: Digiayalena pulicariae (Klimesch) on Pulicaria
dyssenteria (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
porcretella (Linnaeus) on Hesperis matronalis (3♀) (Isle of Man; F. D. Bennett), Plutella
xyllostella (Linnaeus) on Brassica, Cakile maritima, Descurainia sophia, Sinapis arvensis (21♀,
15♂) (England, Scotland, Jersey, France; E. S. Bradfield, G. B. Corbet, L. T. Ford, J. L. Gregory,
G. M. Haggart, R. J. Heckford, R. P. Knill-Jones, J. W. McHardy, K. Saul, M. R. Shaw); Pyralidae:
Epishania bankesellae Richardson on Inula crithmoides (1♀, 2♂) (England; S. D. Bevan, R. J.
Heckford); Tortricidae: Neophasia meticrana (Treitschke) on Heracleum (1♀) (England; R. J.
Heckford), Neophasia pasiuanana (Hübner) (1♂) (England; S. N. A. Jacobs), Eana penziana
(Thunberg) on Helianthemum canus (1♂) (Ireland; R. J. Heckford); Yponomeutidae: Parastesia
merdamerita nebulilla (Goze) 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, Whitstable,
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 Apyomyelis 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 viii, specimens have emerged in iv and vii respectively. Apparent
plurivoltinism might instead suggest slow or uneven development of the host.
Diadegma holopygum (Thomson, 1887)
Choreutidae: Milliaria dolosalis (Heydenreich) on Aristolochia clematitis, A. pistolochia (1 ♂, 7 ♀) (France; M. R. Shaw); Coleophoridae: Coleophora fuscocuprella Herrick-Schäffer on Corylus avellana (1 ♀) (Sweden; B. Jørgensen), Coleophora gryphiennella (Hübner) on Rosa pimpinellifolia (1 ♀) (Scotland; K. P. Bland), Coleophora violacea (Haworth) on Betula (1 ♀ [+ 2 ♂, 1 ♀, doubly 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), Calyptus auruguttella (Stephens) on Hypericum perforatum (2 ♀) (England; M. R. Shaw), Calyptites phasianipennella (Hübner) on Rumex acetosa, R. acetasola (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: Lyoneta clerella (Linnaeus) on Malus domestica (1 ♂, 1 ♀ [+ 1 ♂, doubly determined from same host on Crataegus) (Scotland; M. R. Shaw); Moprhididae: 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. Ashew); 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 hygrobiom (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: Linnaecia phragmitetella Stainton on Typha latifolia head (14 ♀, 5 ♂ [+ 1 ♀ from ?this host, on Typha angustifolia]) (England, Wales; A. Beaumont, R. J. Heckford, M. R. Shaw, I. Yukomanoeo); 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 Dahlica inconspicuella (Stainton), coll. iv.1991 (A. N. B. Simpson); 1 ♀, England: Hampshire, Portsmouth, ex Dahlica triquetrella (Hübner), coll. 1.iv.2009, em. iv.2009 (J. R. Langmaid); 2 ♀, England: Hampshire, Portsmouth, ex Lufia ferchauffella (Stainton) coll. 24.i.ii.2002, em. iv.2002 (J. R. Langmaid); 1 ♀, Scotland: Aberdeen, Gight, ex Narcara duplicella (Goezea) coll. vi.1997 (M. R. Young). Also, Dahlica lichenella (Linnaeus) (2 ♀) (Netherlands; J. Voogd), Dahlica triquetrella (1 ♀) (Sweden; N. Ryholm), Proutia betulina (Zeller) (1 ♀, 1 ♂) (Belgium, Netherlands; W. O. De Prins, J. Voogd), Psyche casta (Pallas) (3 ♀, 1 ♂) (Austria, Sweden; N. Ryholm). 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 vii and viii the following year. Presumably univoltine.

Diadegma laricinellum (Strobl, 1904)

Diadegma latungulum (Thomson, 1887)
Entomologist's Gazette (2016) Vol. 67

Entomologist's Gazette

France; (Pallas) (10

Psychidae: Diadegma ledicola

Epilobium montanum

Horstmann, 1969

Diadegma lithocolletis

Netherlands; (2

P. A. Sokoloff

M. R. Shaw

M. R. Shaw

Limnaecia phragmitella

Cosmopterigidae: ?

Diadegma litorale

Horstmann, 1969

Elachistidae: Perittia herrichiiella (Herrich-Schäffer) on Lonicera xylosteum (2

Diadegma chrysostictos

M. R. Shaw, Perittia obscurepunctella (Stainton) on Lonicera (1

Diadegma luffiae

Horstmann, sp. nov.

(Figs 3, 6, 7)

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.


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, parti-
ly 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. Prescuetellar 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. Costae shortened or
lacking. Area basalis with superficial carinae, 1.5–2 times as long as wide, narrowly trapezoid
or pointed. Area superomedia 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 yellow ventrally 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 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 plurivotine species, overwintering in the host larva.
However, the potentially interesting notes on life history and voltinism given by Parkinson
(2015, as D. narvaeae) probably refer to this species.

**Diadegma maculatum** (Gravenhorst, 1829)
Noctuidae: *Nyctobrya muralis* (Forster) (1 ♀) (Netherlands; J. 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*
Bucculatricidae: *Diadegma pusio*Britain for the first time. E. C. Pelham-Clinton, Jorgensen), Although the specimen is not reared, the opportunity is taken here to record this species from *Diadegma neomajale* 32.5.1 and 33.2.2. was later corrected (Horstmann, 2012) as a justified emendation in accordance with ICZN Arts although the population on which his studies were based seem likely to be plurivoltine, overwintering in the host larva, but see Parkinson (2015); Also 2 K. P. Bland 4.v.1980 (England; K. P. Bland, J. L. Gregory, R. Palmer). Probably univoltine, overwintering in the host larva.

*Diadegma nanus* (Gravenhorst, 1829)
Coleophoridae: *Coleophora junicioella* Stanton on *Calluna vulgaris* (4 ?) (England, Scotland; K. P. Bland, J. L. Gregory, R. Palmer). This species is here recorded from Britain for the first time. The hosts are all small species of *Psyche* and most hosts were collected from *Quercus* trunks. 1 ?, England: Hampshire, Rowland's Castle, ex *Dahlia lichenella* (Linnaeus), coll. 16.i.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 *Narcyia duplicella* (Goeze), coll. iii.1979, em. v–vi.1979 (F. R. Langmaid); 1 ?, 1 ?, England: Hampshire, Havant Thicket, ex *Narcyia 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 ‘narcyiae’ 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 absinthisii* Gärtner on *Artemisia absinthium* (1 ?) (Sweden; B. Jörgensen), *Bucculatrix humelliella* 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 (Goze) on Rhamnus catharticus (2 ♀) (England; P. H. Sterling), Bucculatrix lacinialata Benander on Artemisia laciniana (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 rufatrum** (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, M. R. Shaw) Plurivoltine, the rearing data suggest that it probably overwinters in overwintering larvae of its hosts, but it appears not to be known how.

*Diadegma ruficeps* (Holmgren, 1860)

**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. Fogg). 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 Münich).

**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 taenipennella Herrich-Schäffer on fuscus articulatus (1 ♀) (England; P. A. Sokoloff); Glyphterigidae: Glyphterix schoenicolella Boyd (1 ♂) (England; J. L. Gregory), Glyphterix simplicicella (Stephens) on Dactylis 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).
**Diadeagma stigmataellae** Horstmann, 1980

**Diadeagma trochanteratum** (Thomson, 1887)
Gelechiidae: *Scrobipalpa instabillae* (Douglas) on *Atriplex portulacoides*, *Lycium barbarum*, *Salicornia sp.* (4 ♀, 1 ♂) (England; J. R. Langmaid, M. S. Parsons), *Scrobipalpa mitentella* (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 succellae* (Richardson) on *Suaeda vera* (1 ♀) (England; B. Goodey), *Scrobipalpa sp.* on *Atriplex*, *Suaeda maritima* (1 ♀, 1 ♂) (England; S. D. Bearean, J. L. Gregory); Plutellidae: *Platella xylostella* (Linnaeus) on *Cakile maritima* (1 ♂) (England; K. Saul). This is a saltmarsh species; *Platella 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).

**Diadeagma truncatum** (Thomson, 1887)

**Dolophron pedellum** (Holmgren, 1860)

**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: *Hermione grisealis* ([Denis & Schiffermüller]) (2 ♀) (England; G. M. Haggett). 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 & Schiffermüller]) on *Seseli libanotis* (1 ♂) (England; J. R. Langmaid), *Eupithecia distinctaria* Herrich-Schäffer (2 ♀, 2 ♂) (Scotland; I. C. Christie), *Eupithecia pinnipinellata* (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 suffuscata* (Haworth) on...
Geometridae:

**Dusona aniceps** (Holmgren, 1860)
Geometridae: *Pelurga comitata* (Linnaeus) (1 ♀, 2 ♂) (England; M. R. Britton, G. M. Haggett). At least partly plurivoltine, overwintering in its cocoon.

**Dusona angustata** (Thomson, 1887)
Geometridae: *Gabera 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* (♀) (England; R. I. Lorimer), *Eupithecia dodoneata* (Guenée) on *Corylus* (♀, ♂) (England; M. R. Britton), *Eupithecia pulchellata* (Boisduval) on *Ribes, Crataegus* (♀) (England; M. R. Britton, M. R. Shaw). In addition, 2 ♀ ex *Eupithecia tantillaria* Boisdoual 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 anversa** (Foerster, 1868)
Geometridae: *Chesias legatella* ([Denis & Schiffermüller]) on *Cytisus* (♂) (Scotland; M. R. Shaw). Overwinters in its cocoon and is clearly univoltine.

**Dusona bellipes** Holmgren, 1872
Geometridae: sp. indet. on *Viburnum lantana* (♂) (France; M. R. Shaw). Clearly univoltine, overwintering in its cocoon.

**Dusona blanda** (Foerster, 1868)
Geometridae: *Chloroclysta miata* (Linnaeus) on *Betula* (♀) (Scotland; T. H. Ford), *Chloroclysta siterata* (Hufnagel) (♂) (Scotland; M. R. Shaw), *Eulithis prunata* (Linnaeus) on *Ribes uva-crispum* (♂) (England; M. R. Shaw), ?*Ecliptopera silaceata* ([Denis & Schiffermüller]) on *Epipolium* (♀) (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: *Hielothis viriplaca* (Hufnagel) on *Ononis* (10 ♀, 4 ♂ [+ 1 ♂ from ?this host]) (England, France; G. M. Haggett, M. R. Shaw), *Pyrrhia umbra* (Hufnagel) (♂) (Scotland; R. I. Lorimer). 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)

**Dusona carpathica** (Szépligeti, 1916)

**Dusona circumcinctus** (Foerster, 1868)
Geometridae: *Cabera exanthemata* (Scopoli) on *Salix* (♀, 2 ♂) (England; M. Dobson, M. R. Shaw), *Cabera pusaria* (Linnaeus) (♂) (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. Haggett), 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)

**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: Theria cognata (Thunberg) (2 ♂) (Scotland; R. I. Lorimer), Theria 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 haworthiata Doubleday (2 ♂ [+ 1 ♂ probably from this host on Clematis vitalba]) (England; G. M. Haggett, B. P. Henwood). Voltinism and overwintering mode unclear.

**Dusona leptogaster** (Holmgren, 1860)
Geometridae: Alsophila asescularia ([Denis & Schiffermüller]) on Betula (1 ♀) (Scotland; M. R.
Entomologist’s Gazette (2016) Vol. 67

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

**Dusona obliterata** (Holmgren, 1872)
Notodontidae: *Pterostoma palpina* (Clerck) (1 ♂) (England; B. T. Parsons). Overwinters in its cocoon; voltinism unclear.

**Dusona perditor** (Foerster, 1868)

**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: *Eranis 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: *Agriopis 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: *Ptilodon capucina* (Linnaeus) on *Tilia cordata* (1 ♂) (Scotland; K. P. Bland). Overwinters in its cocoon, probably univoltine.

**Dusona pulchripes** (Holmgren, 1872)

**Dusona recta** (Thomson, 1887)

**Dusona rugifer** (Foerster, 1868)
Noctuidae: *Orthosia* sp. on *Myrica* (1 ♂) (Scotland; M. R. Shaw). Univoltine, overwintering in its cocoon.
Entomologist's Gazette (2016) Vol. 67

**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)

**Dusona terebrator** (Foerster, 1868)
Noctuidae: *Caradrina morpheus* (Hufnagel) (1 ♀, 1 ♂) (England; G. M. Haggett), *Charanya 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: *Enytus apostata* ([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 aposata** (Gravenhorst, 1829)
Choreutidae: *Choreutes pariana* (Clerck) on *Malus* (2 ♀) (England, Scotland; R. J. Heckford, M. R. Shaw); Depressariidae: *Agonopterix* sp. on *Sarrothamnus scoparius* (1 ♀, 1 ♂) (England; J. R. Langmaid); Geometridae: *Hydriomena ruberata* (Freyer) on *Salix aurita* (1 ♀) (Scotland; R. Leverton); Gracillariidae: *Cephalonia albida* (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: *Acròlia subsequens* (Herrich-Schäffer) on *Euphorbia portlandica* (2 ♀) (Jersey; R. J. Heckford), *Epiphysa 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 during 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])
*Enytus crataegellae* (Thomson, 1887)


*Enytus neopostata* (Horchmann, 1968)


*Enytus styriacus* (Horchmann, 1980)


**Eriborus braccatus** (Gmelin, 1790)
Noctuidae: Hypena rostralis (Linnaeus) on Humulus (2 ♀, 2 ♂) (England; J. M. Chalmers-Hunt, M. S. Parsons, M. Townsend), Hypena tobesalis 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 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 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 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 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 hosts overwinter as adults and it is not clear how the winter is passed.

**Eriborus terebrans** (Gravenhorst, 1829)
Crambidae: Ostrinia palustralis (Hübner) on Rumex (1 ♀) (Poland; C. Bystrouski). 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 Juniperus 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 *Hyposoter* (Lampe, 1984). When the host is parasitised in autumn as a final instar larva, in which the parasitoid larva overwinters.

**Hyposoter albonotatus** (Bridgman, 1889)
Noctuidae: Hypena proboscidalis (Linnaeus) on Urtica (8 ♀, 5 ♂) (England, Scotland; J. L. Gregory, B. C. Grobler, M. R. Shaw), Hypena tobesalis Treitschke on Urtica (1 ♀) (Italy; M. R. Shaw). Plurivoltine, overwintering in the host larva.

**Hyposoter barrettii** (Bridgman, 1881)
Pterophoridae: Capperia brittaniodactyla (Gregson) on Teucrium scorodonia (4 ♀, 5 ♂) (England; C. Hart, R. J. Heckford, J. R. Langmaid, C. W. Plant, P. A. Sokoloff), Merrifeldia baliadactyla (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), Odontopa bidentata (Clerck) (1 ♀) (Scotland; R. I. Lorimer), Pennithera firmata (Hübner) on Pinus sylvestris (1 ♀) (Scotland; M. R. Shaw), Thera britannica (Turner) on Abies grandis, Picea omorika, Pseudotsuga menziesii, Tsuga heterophylla (4 ♀, 2 ♂) (England; G. M. Hagey, 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. Leventon, M. R. Shaw), Thera obeliscata (Hübner) on Pinus sylvestris, Pseudotsuga menziesii (5 ♀) (England; G. M. Haggert, 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 ripicapraria ((Denis & Schiffermüller) or T. primaria on 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), Xyloccampa areola (Esper) on Lonicer (1 ♀) (Wales; J. N. Greatorex-Davies); Tortricidae: Cnephasia asseclana ((Denis & Schiffermüller) on Mentha (1 ♀) (England; M. R. Shaw), ?Endothenia gentianaeana (Hübner) ex seedheads of Centaurea nigra or Dipsacus (1 ♂) (England; E. S. Bradford). Plurivoltine, presumably overwintering within the host larva.

**Hyposoter carbonarius** (Ratzburg, 1844)
Erebidae (Lyanthritiinae): Dicallomera fascelina (Linnaeus) on Calluna, Salix repens (14 ♀, 13 ♂) (England, Scotland, Netherlands; G. R. Else, N. Hall, S. B. Hanapi, R. Leventon, 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) (Scotland; 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 Sariot). 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, Lonicer, 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. Softly), 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; J. D. Ferguson, G. M. Haggert, M. R. Shaw), Biston stratarius (Hufnagel) on Prunus spinosa (1 ♀) (England; M. R. Shaw), ?Erannis defoliaria (Clerck) (1 ♀) (Scotland; R. Leventon), Eupithecia abbreviata Stephens on Quercus (1 ♂) (England; M. R. Britton), Odontopera bidentata (Clerck) on Thuja plicata (1 ♀) (England; P. E. Hatcher), Idea sp. on Melica (1 ♀) (England; E. C. Pelham-Clinton); Noctuidae: Polia tricolor (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 grisola (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: Acosmia caliginosa (Hübner) on Serratula tinctoria (1 ♀) (England; P. Waring), Acrornica rumicis (Linnaeus) (3 ♀, 3 ♂) (England, France; Heron, M. R. Shaw), Agrochola haematidea Duponchel on *Erica cinerea*
(3 ♂) (England; G. M. Haggett), ?Agrochola litera (Linnaeus) (4 ♀) (Hungary; M. R. Shaw), Ammonoia caciconacula (Denis & Schiffermüller) (1 ♂) (France; M. R. Shaw), Anarta myrtili (Linnaeus) (1 ♂) (England; T. H. Ford), Apamea ?crenata (Hufnagel) (1 ♂) (England; G. M. Haggett), ?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. Eliassen, 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), ?Dicerca sp. on Artemisia herba-alba (2 ♀, 1 ♂) (Spain; G. E. King), Eugenomeris glareosa (Esper) (1 ♂, 1 ♀) (England; G. M. Haggett), Hadena bicruris (Hufnagel) on Melandrium (2 ♂) (Turkey; M. R. Shaw), Hadena irregularis (Hufnagel) on Silene oites (2 ♀, 3 ♂) (France, Sweden; N. Ryholm, M. R. Shaw), Heliothis peligera (Denis & Schiffermüller) on Antirrhinum majus (3 ♀) (Greece, Spain; G. E. King, J. Voogd), Heliothis viriplaca (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 orbis (Hufnagel) (3 ♂, 7 ♂) (England; G. M. Haggett, M. S. Parsons, A. Rose, 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. Haggett), Talpophila matura (Hufnagel) (5 ♀, 1 ♂ + 1 ♀ from this host) (England, Austria; J. Connell, G. M. Haggett, 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 Psychotria heterophylla (1 ♀) (France; A. Longiera), 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 eboinus** (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 tripolinus (Verity) (1 ♀) (Portugal; M. Albrecht); Pieridae: Anthocharis cardamines (Linnaeus) (1 ♂) (Spain; C. Stefanescu), Euchloe ausonia (Hübner) on Isatis lactiflora, Sinapis arvensis (1 ♀, 1 ♂) (Israel; D. Benyamini), Euchloe belenia (Esper) on Erucastrum hispanicum, E. rostrata, Sisymbrium irio (2 ♀, 1 ♂) (Israel; D. Benyamini), Euchloe carameri 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. Obregon, 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* but direct evidence is lacking.
**Hyposoter ebenitor** Aubert, 1972

Pieridae: *Euchloe ausonia* (Hübner) on *Hirschfeldia incana, Sisymbrium irio* (1 ♂, 1 ♀) (Israel; D. Benyamini), *Euchloe eleemina* (Esper) on *Erucaria hispanica, Sisymbrium irio* (1 ♂, 1 ♀) (Israel; D. Benyamini), *Euchloe crameri* Butler on *Mortancia moricandoides* (1 ♀) (Spain; A. González Megías), *Euchloe tagis* (Hübner) on *Erucha vesicaria, Iberis ciliata* (2 ♀, 1 ♂) (Spain; A. González Megías, R. Obregón), *Pontia chloridice* (Hübner) on *Clome orthopodioidea* (2 ♀) (Cyprus; P. J. C. Russel), *Pontia daplidice* (Linnaeus) on *Erucha vesicaria, Erucaria, Reseda alba* (9 ♀, 6 ♂ [+ 2 ♂ from ?this host]) (Iran, Israel; Spain; M. Albrecth, 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 togaulalis* (Hübner) on *Quercus pubescens* (1 ♀) (France; M. R. Shaw). Adult emergence has been recorded in June of the same year.

**Hyposoter horticola** (Gravenhorst, 1829)

Nymphalidae: *Melita coa coa* (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* Nickeri (2 ♀, 2 ♂) (France; J. E. Pateman). Univoltine, overwintering in the host larva. Nouhuys & Ehrnsten (2004) and Nouhuys & Haarst (2008) published fascinating information on the life history of *H. horticola* in Finland as a parasitoid of *M. coa coa*, 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 tephradactylus* (Hübner) (Pterophoridae), coll. 16.v.1993, emergence date not given and cocoons absent (G. Hart).

**Hyposoter longus** (Thomson, 1887)

Erebidae (Lymantriinae): *Orgyia antiqua* (Linnaeus) on *Betula, Crataegus* (2 ♀, 2 ♂) (England, Scotland; I. D. Ferguson, 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, Garloch Moss, *ex Cabera exanthemata* (Scopoli) (Geometridae), coll. 1.ix.1985, coccin. 9.ix.1985, em. 29.ix.1985 (R. P. Knill-Jones).

**Hyposoter notatus** (Gravenhorst, 1829)

Lycaenidae: *Arcia agestis* ([Denis & Schiffermüller]) on *Helianthemum* (2 ♀, 2 ♂) (England; R. Menendez), *Arcia 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), *Arcia montensis* Verity (1 ♂) (France; J. T. Franchisch), *Agrodiaetus sp. on Onobrychis ebenezides* (2 ♀) (Greece; T. Franchisch), *Cupido oris* (Meigen) (1 ♀, 1 ♂) (Spain; J. E. Pateman), *Cupido carsoelli* (Stempfier) (1 ♂) (Spain; M. G. Muñoz Sariot), *Lysandra albicans* (Herrich-Schäffer) (2 ♀, 1 ♂) (Spain; M. G. Muñoz Sariot), *Lysandra bellargus* (Rottemberg) (5 ♀) (England, France; CEH survey, T. Franchisch), *Plebejus pylon* hespericus (Rambur) (1 ♀) (Spain; F. Gil-T), *Plebejus argus* (Linnaeus) (1 ♀) (France; T. Franchisch), *Polyommatus abdon* E. & U. Aistleitner (1 ♀) (Spain; M. G. Muñoz Sariot), *Polyommatus icarus* (Rottemberg) (7 ♀, 4 ♂) (England, Scotland, France, Italy, Spain; K. P. Bland, R. Menendez, M. G. Muñoz Sariot, J. E. Pateman, M. R. Shaw, P. Summers), *Pseudophilotes baton* (Bergrässträsser) (1 ♀) (Spain; M. G. Muñoz Sariot). 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)

**Hyposoter rhodocerae** (Thomson, 1887)

**Hyposoter trimaculatus** (Brischke, 1880)
Tenthredinidae (Hymenoptera): *Eura americana* (Linnaeus) on *Salix alba* (♀), *Salix fragilis* (♀), *Salix phyllicifolia* (♀) (Scotland; A. D. Liston), Nemátidae sp. indet. in stem galls 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 clypeatus** (Brischke, 1880)
Tenthredinidae (Hymenoptera): *Eura proxima* (Serville) galls on *Salix alba*, *S. fragilis* (♀) (England; S. B. Hanapi), Nemátidae 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): *Lilioceris 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

---

*Note: The above text is a partial transcription of the original content. For a complete and accurate representation, please refer to the original source.*
Park, ex under bark of 
Sims (England; vii.1991 (Perkins, and KH) in BMNH, but none is reared (G. R. Broad, pers. comm.). This species is here recorded from Britian for the first time. *Nemeritis fallax* (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.).

*Melanoplex bucculentus* (Gravenhorst, 1829) ENTOMOLOGIST’S GAZETTE (2016) Vol. 67

Althorpe, ex under bark of Frangula bark] (England; R. J. Heckford; Tineidae: ?Nemapogon cloaella (Haworth) in Dahlidina concentrica, under bark of Pinus sylvestris (3 ♀) (England, Scotland; R. J. Heckford, A. N. B. Simpson, I. Sims), Triaxomer 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 argentmaculella (Stainton) on Lepraria (England, Guernsey; S. D. Beatson, 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) Psychedae: Dahlia inconspicuella (Stainton) on Salix posts (2 ♀) (England; J. M. Chalmers-Hunt, A. N. B. Simpson), Dahlia lichenella (Linnaeus) on Betula trunk (2 ♀) (Scotland; K. P. Bland), Dahlia triquetrella (Hübner) (2 ♀, 1 ♂) (Netherlands; J. Voogd). Overwinters in the host case; probably univoltine.


*Melanoplex bucculentus* (Gravenhorst, 1829) Noctuidae: Cucullia verbasci (Linnaeus) on Verbascum (5 ♂) (England; M. R. Shaw), Eugeniorisma 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 (Haworth) (1 ♀, 3 ♂) (England; G. M. Haggett, R. Levertin), 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.

*Melanoplex 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, KH) in BMNH, but none is reared (G. R. Broad, pers. comm.).

*Nemeritis fallax* (Gravenhorst, 1829) This species is here recorded from Britian for the first time. 1 ♀, England: Berkshire, Silwood Park, ex Opilo 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 Förster, 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 (Ratzburg, 1848)
Tenthredinidae (Hymenoptera): *Strongylogaster multifasciata* (Geoffroy) on *Pteridium aquilinum* (12 ♀, 7 ♂) (Wales; P. Baker). Univoltine, overwintering in the host cocoon.

Phobocampe Förster, 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 glyptica* (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*

**Phobocampe brumatae** Horstmann, 2009

Geometridae: *Cyclophora linearia* (Hübner) on *Fagus* (1 ♂, doubtfully determined) (France; M. R. Shaw), *Hydromena fucata* (Thunberg) on *Corylus* (1 ♂, doubtfully determined) (England; M. R. Shaw), *Operophthera 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): *Caliteara 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: *Nyteola retaviana* (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. Haggett & R. Leverton, M. R. Shaw), *Pseudoips prasinana* (Linnaeus) on *Castanea* (1 ♀ [+ 1 ♂, doubtfully determined]) (England; J. M. Chalmers-Hunt, M. R. Shaw); Notodontidae: *Notodontia 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. Stivell, 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)


**Phobocampe croecipes** (Marshall, 1876)

Notodontidae: *Philodon capucina* (Linnaeus) (1 ♀, 2 ♂) (Scotland; T. H. Ford, G. S. Graham-Smith), Overwinters in its cocoon; probably univoltine.
This species is here recorded from Britain for the first time. *Phobocampe variabilis* (Gravenhorst, 1829) (Erebidae: Lymantriinae) (Italy; *M. R. Shaw*). Emergence was in the year of cocoon formation.

*Phobocampe horstmanni* Šedivý, 2004


*Phobocampe lymnaiae* Gupta, 1983

This species is here recorded from Britain for the first time. 1 ♀, England: Gloucestershire, Eastleach, ex *Orgyia 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 *Hellenisca teptredactyla* (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) (Lycenaenidae) (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 elinguaria* (Scopoli) 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*, *Oporophthera brunata* (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*), *Oporophthera 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. Leerton, 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*: *Limenitis 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 uncinincta* (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,
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)


Porizon transfuga (Gravenhorst, 1829)

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

Rhimphectona melanura (Holmgren, 1860)

Cerambycidae (Coleoptera): Actinopus septentrionis (Thomson) (1 ♂) (Poland; J. Hilsiczkański).

Scirtetes robustus (Woldstedt, 1874)

Noctuidae: Agrochola macilenta (Hübner) on Quercus (1 ♀, 1 ♂) (England; R. A. Softly), Amphipyra pyramidea (Linnaeus) on Lonicera (1 ♀) (England; G. M. Haggert), Cosmia trapezina (Linnaeus) on Quercus (5 ♀) (England; M. R. Shaw), Orthisica cerasi (Fabricius) on Corylus, Eucalyptus, Prunus spinosa (3 ♀, 5 ♂) (England, Wales; J. S. Hopton, P. Roper, M. R. Shaw), Orthisica cruda ([Denis & Schiffermuller]) on Quercus (1 ♀) (England; M. Townsend), Orthisica gothica (Linnaeus) on Prunus spinosa (1 ♂) (England; M. R. Shaw), Orthisica gracilis ([Denis & Schiffermuller]) on Filipendula ulmaria, Myrica gale, Spiraea (12 ♀, 8 ♂) (England, Scotland; J. L. Gregory, M. R. Shaw, M. R. Young), Orthisica incerta Huñagel 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)


Sinophorus fuscicarps (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)

Sinophorus pleuralis (Thomson, 1887)
Crambidae: Lexoestege comptalis (Freyer) on Artemisia herba-alba (2 ♀) (Spain; G. E. King);
Depressariidae: Agonopterix arenella ([Denis & Schiffermüller]) on Curtisium (1 ♀) (England; R.
J. Heckford), Agonopterix cf. nanastella (Stainton) on Carlista corymbosa (1 ♂, 2 ♀) (Portugal; M.
F. V. Corley), Agonopterix sp. on Carduus nutans (3 ♀) (England; E. C. Pelham-Clinton),
Agonopterix sp. on Centaurea spherocephala (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. Haggert), Pyrausta aurata (Scopoli) on Mentha (6 ♀, 2 ♂) (England; B.
P. Henwood, J. L. Gregory); Geometridae: Gymnoscelis ruffisciata (Haworth) on Erica tetralix (2
♀) (England; M. R. Shaw), Hydriomena furcata (Thunberg) (1 ♀) (England; T. H. Ford),
Operophtera brunata (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 adevenella (Zincken) on Crataegus (2 ♀)
(England; M. R. Shaw). Also 2 ♀, 1 ♂ reared from Pinus shoots with Rhacionia buhiana
([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. brunata) 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

*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 ♀,
19 ♀, 9 ♂, Scotland: Inverness-shire, Loch Garten, ex Rhopobota naevana (Hübner) (Tortricidae) on
Scotland, overwintering in its cocoon.

Tranosema nigridentis (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 (Trentschke) on Rheum rhabarbarum, Urtica (2 ♀) (England, Scotland; G. Foster, J. B. Whitfield), Cnephasia incertana (Trentschke) 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.

*Transanemella 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.).

**Transanemella coxalis** (Brischke, 1880)


**Transanemella praecox** (Linnaeus, 1758)

Choreutidae: Anthophila fabriciana (Linnaeus) (1 ♀) (Wales; M. R. Shaw); Gracillariidae: Caloptilia 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 Röselstam) on Quercus (1 ♀) (England; G. A. Wilson), Ancylis myrtillana (Trentschke) on Vaccinium myrtillus (1 ♀) (Scotland; P. W. Brown), Ancylis paludana Barrett (1 ♀) (England; J. M. Chalmers-Hunt), Aphiella paleana (Hübner) (1 ♀) (England; N. L. Birkett), Aphiella 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, Scotland; J. L. Gregory), Archips rosana (Linnaeus) on Ligusticum (1 ♀) (Scotland; T. E. D. Poore), Argyroloce arbutilae (Linnaeus) on Acrostaphyllos uva-ursi (1 ♀) (Scotland; R. J. Heckford), Caecocinorma prunuba (Hübner) on Hedera (2 ♀, 3 ♀ [+ 1 ♀ from this host]) (England, Isle of Man; F. D. Bennett, M. Toomsend), Cnephasia longana (Haworth) on Senecio jacobaea (1 ♀) (Wales; A. N. B. Simpson), Epinotia cruciana (Linnaeus) or Philemonides lunana (Thunberg) on Salix repens (1 ♀) (Scotland; R. P. Knill-jones), Epinotia immundana (Fischer von Röselstam) on Betula (1 ♀) (England; J. L. Gregory), Epinotia 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. Stoff); 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 polydnaviruses 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 polydnavirus 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 linoysridellae, Campoplex sexguttellae and Diadegma luffiae and to Katherine Child (Oxford University Museum of Natural History) for guiding AW’s photography.

References


