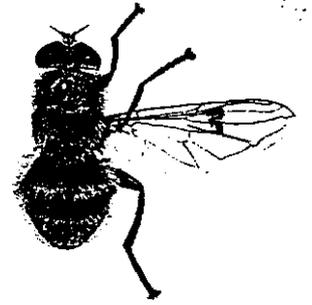


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Diptera: Syrphidae

NOTES ON THE STATUS OF HOVERFLIES IN CARMARTHENSHIRE

- I K MORGAN

Introduction

This account attempts to summarize the known status of the 145 or so species recorded in Carmarthenshire, vc44. Recording mostly began in 1984, prompted by the appearance of *British Hoverflies* (Stubbs & Falk, 1983), with the main effort being made in the years 1985-88; very little work has been carried out in the post-1990 period. This paper is substantially based on an earlier, unpublished internal report on the hoverflies of Carmarthenshire (Morgan, 1990).

Prior to this, apparently very little recording of hoverflies had taken place in the county which had not been blessed with the attentions of dipterists, unlike neighbouring Pembrokeshire or Gower in Glamorgan. Nevertheless, one of the earliest British records of the striking bee-mimic *Eriozona syrphoides* was from Caeo Forest (22/74) in Carmarthenshire (Cull, 1971).

Perhaps one advantage of this lack of recording effort was that the current investigation of the county's hoverfly fauna was almost pioneering in nature, with one not really knowing what to expect. Indeed, the area was '*terra incognita*' as far as the syrphid fauna was concerned and it is satisfying to find that the county holds rare or scarce species such as *Callicera aenea*, *Rhingia rostrata*, *Brachypalpus laphriformis* and *Xylota xanthocnema*, all these occurring amongst the venerable oaks at Dinefwr Park and Castle Woods near Llandeilo (22/62), with the last two also at a couple of other localities. The known British range of certain species such as *Brachyopa insensilis*, *Eristalis rupium* and *Chrysotoxum arcuatum* was also extended to include Carmarthenshire as a result of this work.

As already suggested, Carmarthenshire has been for many invertebrate groups rather neglected by the entomologist. Recent recording, co-ordinated by the Dyfed Invertebrate

Group (established in 1986), or as part of the many worthwhile schemes run by the Biological National Records Centre at Monks Wood, have shown that a varied fauna exists in the county, favoured by the survival of good habitats for wildlife such as old woodland or unimproved, diversely vegetated grazings, as well as the county's geographical position. Carmarthenshire is well-placed to hold elements of both the northern or southern and upland or coastal faunas, with the northern and western syrphids *Xylota coeruleiventris* and *Eristalis rupium* present, and additionally species such as *Chrysotoxum cautum*, which is more characteristic of the warmer counties of southern England. It is a sunshine-lover too in Carmarthenshire, being found on the southern coastal periphery with its more clement climate and increased summer levels of insolation. The northern element, with the aforementioned *X. coeruleiventris* or *E. rupium*, have been mostly noted in upland, northern Carmarthenshire, but the Coalfield (which occupies the south-east) is essentially semi-upland in character vegetationally and this is reflected by the presence of *Chrysotoxum arcuatum* on acidic grassland near the coast such as at Llannon (22/40) and the occurrence of *Platycheirus perpallidus* on the oligotrophic lake of Llyn Llech Owain (22/51).

Another factor that favours the presence of a rich and varied hoverfly fauna is the continued presence of much semi-mature woodland and - especially on the flanks of the eastern uplands as well as on the coalfield - flower-rich agriculturally-unimproved grassland. These grasslands have a diverse assemblage of plants including the late summer blooms of devil's bit scabious *Succisa pratensis* which, as well as providing larval sustenance for that well-known inhabitant of such sites, the marsh fritillary *Euphydryas aurinia*, is home for *Arctophila superabiens*, which remains a widespread, if extremely localised, species in south-west Wales.

The main aim of this summary is to bring together all that is presently known of the hoverflies of Carmarthenshire. It is really no more than the title suggests, an annotated list, with brief comments on distribution, sparse observations on aspects of the ecology of the species and other relevant fragments of information. Compilations of such works always emphasize how much is *not* known, not only about the detailed distribution of hoverflies but also about the hoverfly species themselves, whether as adults or larvae. It is easy to forget that the flying adults are but transient stages of the life cycle, and that much can usefully be done regarding larval requirements to allow a more complete and meaningful formulation of an opinion on the appropriate habitats needed by each syrphid species. In this field, the *Colour Guide to Hoverfly Larvae* (Rotheray, 1993) is essential reading.

On a more general level, there are still species yet to be recorded in the county, some of which are probably just overlooked - *Melangyna* spp. for example. Others, such as *Megasyrphus annulipes* (noted in Ceredigion, vc46) and the rare *Parasyrphus nigratarsis* (found in Ceredigion, Pembrokeshire and, very recently, in Glamorgan), are candidates, as are others, discussed before, the main Species List which follows. Thus, ten or probably more species could be added to the County List of 143 hoverflies (1996); the total could be anticipated to be in the order of about 150 species. The recent realisation (eg Stubbs, 1996) that there are more British species in the genera *Platycheirus*, *Sphaerophoria* and *Orthonevra* should also result in additions to the county list.

Although most of the recording of hoverflies in the county has been carried out by the author, Messrs A P Fowles, G W Hopkins and, particularly, P M Pavett have all provided valuable records. The visit, in 1986, of a party of dipterists led by Alan Stubbs to Carmarthenshire for their annual main field trip, provided many useful (and several new) county records; the previous summer Steve Falk visited briefly and also made some

worthwhile contributions. Steve has also kindly determined difficult specimens in the genus *Cheilosia*. The Nature Conservancy Council's (NCC) Welsh Peatland Invertebrate Survey (WPIS) team (Peter Holmes, Dave Boyce & Dave Reid) yielded many useful records in 1989. To all these people my sincere thanks are due. I am also grateful to Mark Pavett for commenting on the draft of this paper.

Note: Voucher specimens have been retained of all the scarcer species recorded in the county; these will eventually be placed in the collections of the National Museum of Wales, Cardiff. The writer has seen and confirmed the specimens of certain rarities not recorded by himself.

Hoverfly Habitats in Carmarthenshire

The Watsonian vice-county of Carmarthenshire (vc44) covers some 900 square miles (c. 2330 sq km) of land, including over 35 miles (56 km) or so of coastline. The boundaries of the vice-county are virtually identical to those of the administrative county. The River Tywi is the major water body, flowing from the hard, upstanding core of the Cambrian Mountains south-westwards across the whole length of the county; other rivers such as the Loughor, the two Gwendraeths and the Tâf are also of appreciable size. Upland areas are found in the north (eg Mynydd Llanybydder, Mynydd Llanllwni) and particularly in the east of the county, with extensions of the Cambrian Mountains massif and the Brecon Beacons; the highest point being reached at Bannau Sir Gaer (2460 ft., >750m) - the loftiest point in the whole of south-west Wales. Many upland areas are now extensively coniferized -with plantations replacing some of the sub-montane ericaceous grasslands or *Nardus-Molinia* pastures of these parts, but the distinctive assemblage of syrphids that can occupy such woodlands has not been adequately investigated, as has been done in the Hafren Forest of mid-Wales (Entwhistle, 1983). *Eriozona syrphoides* is known to be present and *Didea fasciata* shows an affinity for plantings with *Pinus*, but other conifer candidates, including *Megasyrphus annulipes* and possibly *Scaeva selenitica*, remain to be found. One advantage of these forests is that the indigenous calcifuge upland flora is allowed to develop in the wider rides and firebreaks and not subject to the chronic pressures of overgrazing that afflicts the Welsh uplands

The remaining unforested upland expanses of Carmarthenshire are not sufficiently high, or are lacking in some other ecological characteristic, to have, as in Scotland, true montane hoverflies such as *Melanostoma dubium* or *Cheilosia sahlbergi*. Rather, the hoverfly assemblages of such parts is one of acidic pastures generally or of deciduous woodland, the detailed composition of this fauna depending, for example, on the variety of structure of the vegetation that is present or on the availability of flushes or wet areas.

Many of the steep valley slopes throughout the county are clad with native woodland dominated by oak *Quercus* sp. but also with ash *Fraxinus excelsior*, wych elm *Ulmus glabra* and more rarely, small-leaved lime *Tilia cordata* in base-enriched flushed areas. Wetter parts in valley bottoms or elsewhere hold alder *Alnus glutinosa* - willow *Salix cinerea* carr, which is invariably secondary in origin. The limestone belt is dominated by ash-hazel woodland, with wych elm in damper hollows. Beech *Fagus sylvatica* is not native but old mature trees occur on the county's estates and this tree is capable of reproducing itself very successfully, even in semi-upland woodlands. English elm *Ulmus procera* is concentrated markedly on the coastal alluvium where it forms part of a rather unusual assemblage of trees which are scarce in most of Wales, such as crack and white willows *Salix fragilis* and *S. alba* and

various poplars including the true black poplar *Populus nigra* var. *betulifolia*. In fact, Carmarthenshire is considered to be "a fairly well-wooded county" (Lister & Whitbread, 1988) with about 13% of its land surface covered by woodland (the national average is 9%); but only about 3% or so is clothed with ancient woodland ie woodland on primaeval sites.

Many of the woodlands - especially those on valley sides of steep gradients - are neglected coppice which was, in the past, cut for a variety of uses on a rotational basis. The size of timber in these woods is not great and there is a marked paucity of large dead trees, which is now recognized to be of critical importance for a distinct suite of invertebrates, certain hoverflies included. These old coppice woods suffer too from a lack of light in the summer months and the syrphidologist may find the interior of these woods dark, rather gloomy, and with few hoverflies, with the insects concentrating at the wood-edges or in open clearings. Springtime though, can be quite lively with a range of vernal species taking advantage of early flowers, both at ground level or higher in the canopy, as with *Criorhina ranunculi* at willow *Salix* spp. or blackthorn *Prunus spinosa* blossom. Many rather common hoverflies can be found in woodland - species such as *Xylota segnis*, *Syrphus ribesii* or *vitripennis*, and members of the genus *Pipiza* or *Baccha* sp. At the very few sites where sufficient dead wood is found, a more exclusive fauna can be noted. Of the good deadwood sites in Carmarthenshire, the most outstanding - by far - is Dinefwr Park and Castle Woods, which provides appropriate conditions for rarities such as *Xylota xanthocnema*, *Brachypalpus laphriformis*, *Callicera aenea* and the sap-feeder *Brachyopa insensilis*.

Much of the county is underlain by Lower Palaeozoic Ordovician and Silurian strata, mostly quite acidic sandstones and shales though with some rare moderately calcareous beds. Sometimes on these part-calcareous rocks and notably on damper parts of the Carboniferous Limestone outcrop lush growths of ramsons *Allium ursinum* support the local, grey and low-flying *Portevinia maculata* whose larvae develop in this plant. Below (ie older than) the narrow Carboniferous limestone outcrop is found the Old Red Sandstone of Devonian age -red iron-stained strata laid down in arid, desert-like conditions some 400 million years ago. These rocks, which form the noble corrie cliffs at Llyn-y-Fan Fach with their assemblages of Arctic-alpine plants, stretch across the county, normally giving rise to heavily agriculturalised land, to the sea cliffs at the mouth of the 'Three Rivers' - Tywi, Tâf and Gwendraeth, which in contrast to the inland cliffs, provides the correct ecological niches for frost-sensitive Lusitanian plants and certain invertebrates.

Younger and above the limestone lies a parallel ridge of rock-types which give rise to a starkly contrasting vegetation. These rocks - the very acid quartz conglomerates, orthoquartzites and shales of the Namurian - have produced a characteristic topography of upstanding rocks with ericaceous heath, and linear hollows on the shales with bog vegetation. South-eastwards of, and encircled by the joint limestone-quartzite ridge, rests the Coalfield, lying in a vast bean-shaped basin structure which extends eastwards through South Wales.

There is a substantial concentration of damp unimproved meadows on the Coalfield - on the flanks of hillsides where the coal-embracing shales have weathered to form a rather poor, nutrient deficient and often wet soil. Unimproved meadows are the glory of these parts and hold a range of hoverfly species, perhaps typified by the bee mimic *Arctophila superabiens* and, in its respective wasp disguise, *Sericomyia silentis*.

At the coast itself, and unlike our neighbours, cliffs are in limited quantity in Carmarthenshire with only the already mentioned cliffs at the mouth of the 'Three Rivers' and also those west of Pendine. Dry, slumped Pleistocene deposits in the latter area hold populations of the quite rare *Eumerus sabulonum*. In contrast, Carmarthenshire's share of duneland is impressive - the wide expanses of Laugharne, Tywyn and Pembrey Burrows, exceptionally rich botanically and with a diverse morphology of wet slacks, dry ridges and scrub; the hinterland of Pembrey-Tywyn Burrows is now clothed by the substantial Pembrey Forest, which is also a rich picking-ground for the entomologist.

Alluvial deposits occur along the coast and along the major rivers, sometimes with marshland comprising reeds *Phragmites communis* and reed-mace *Typha latifolia* or other emergents. Reed-mace has its associated fauna of the genus *Parhelophilus* and *Anasimyia contracta*, whilst the local and scarce *Lejogaster splendida* and the commoner *Tropidia scita* have also been noted in such areas. In the south-east, there are numerous small reedbeds or other marshes in the Llanelli-Kidwelly area, and parts of this same coastal belt will benefit shortly from the major wetland creation east of the Wildfowl and Wetlands Trust Centre at Penclacwydd, Llanelli.

Finally, many parts of the county are mantled by deposits of boulder-clay, laid down during the last glaciation. These deposits not only mask and obscure the underlying strata and modify the land forms, but the clays contribute to impeded drainage, forming bogs or damp grassland to the benefit of both hoverflies and wildlife in general; some of the few unimproved meadows on the lowland outcrops of the Old Red Sandstone for example, are where the presence of clays has rendered intensive agricultural improvement not worthwhile.

SPECIES LIKELY TO OCCUR IN CARMARTHENSHIRE

The following hoverflies have either been recorded in adjacent counties (S & A Coker, AP Fowles, PM Pavett pers. comm.) or by virtue of their ecological requirements are deemed likely to occur in our county. These are just suggestions - it is possible that other species may also be found. This list does not include recent segregates of the genera *Platycheirus* and *Sphaerophoria*.

Platycheirus ambiguus (vc41,46); *P. discimanus*; *P. scambus* (vc46); *P. sticticus*; *Chrysotoxum elegans* (cliffs in vc41,45); *Megasyrphus annulipes* (conifer woods in vc46); *Melangyna compositarum* & *M. triangulifera* (vc41); *Parasyrphus nigratarsis* (damp wood-edge in vc45, and recently, in vc41) *Scaeva selenitica* (mid-Wales record); *Sphaerophoria rueppellii* (the saltmarshes of the county have been checked, so far to no avail); *Cheilosia cynocephala* (vc46); *Xanthogramma citrofasciatum* (vc41); *Cheilosia nebulosa* (wet heaths with *Salix*, vc41,45); *Orthonevra geniculata* (again Pembs. wet heaths) *Neoascia geniculata* (*Glyceria* ponds). *Volucella inflata* (vc41); *Heringia heringi* (a possibility associated with *Ulmus procea* in the Kidwelly-Bynea coastal belt of the SE); *Triglyphus primus* (urban wasteground with *Artemisia vulgaris*); *Xylota abiens* (wet woodland).

In the following systematic list an asterisk (*) indicates that the first known county record was by the author; otherwise the name of the recorder is given with the date of the first record.

A SYSTEMATIC LIST OF THE HOVERFLIES OF CARMARTHENSHIRE

Tribe: *BACCHINI*

Genus: *BACCHA*

Baccha sp.

Opinion is split whether two species of *Baccha* - *elongata* and *obscuripennis* - or a solitary, but variable, species occurs in the British Isles. Thus, the present recorder has, in Carmarthenshire, simple 'lumped' the two together as *Baccha* sp. *Baccha* sp. is a widespread hoverfly of part shaded woodland edges, clearings and scrub, though usually in small numbers (1%1985).

Genus: *MELANOSTOMA*

Melanostoma mellinum (L.,1758)

A common and widespread grassland species (*.1985).

Melanostoma scalare (Fabricius, 1794)

Like *mellinum*, a common and ubiquitous species, though preferring woodland or scrubby situations (*,1985).

Genus: *PLATYCHEIRUS*

Platycheirus cyaneus (Muller, 1776)(=albimanus, Fabricius, 1781)

An ubiquitous species, particularly in woodland or scrub habitats, often emerging early and, together with *Eristalis pertinax*, one of the 'heralds of spring' (*,1984).

Platycheirus augustatus (Zetterstedt, 1843)

Overlooked because of its diminutive size, this species is doubtless under-recorded in the county; damp grassland habitats provide the few records but as Coker (1989, unpub.) has demonstrated in adjacent Pembrokeshire, it is likely to be widespread (AES, 1986).

Platycheirus clypeatus agg.

Widespread on damp meadows, marshes and the like (*,1986). Work is required to ascertain the incidence and distribution of the newly-described segregates.

Platycheirus fulviventris (Macquart, 1827-8)

This noticeable platycheirid (it has extensive orange markings) has been recorded from a handful of coastal situations - ditches and marshes with the flote-grasses *Glyceria fluitans* and *G. maxima*; such sites include Laugharne Burrows, Ffrwd Fen and the Llwynhendy district SE of Llanelli (*,1986).

Platycheirus immarginatus (Zetterstedt, 1849)

Saline marshes and ditches around the estuaries of the 'Three Rivers' (Tâf, Tywi and Gwendraeth) and the Burry Inlet (at Penrhyngwyn 21/518975 and Llangennech 22/573023) provide a home for this local hoverfly, which is similarly patterned to the preceding species (AES, 1986).

Platycheirus manicatus (Meigen, 1822)

A local, though probably widespread, species of unimproved and usually mesotrophic grassland or dry wasteground (11,1986).

Platycheirus peltatus agg.

Another probably under-recorded species of flowery grassland and wood edge (*,1985). See *P. clypeatus* for comment on segregates.

Platycheirus perpallidus (Verrall, 1822)

This very scarce hoverfly of northern and western Britain was abundant (including gravid females) around beds of bottle sedge *Carex rostrata* at the western side of Llyn Llech Owain 22/567151 on 19 July 1989. It is also known from Crymlyn Bog in Glamorgan, where it was recorded in 1979 by A E Stubbs.

Platycheirus scutatus (Meigen, 1822)

The broad scatter of records indicate that more thorough recording will show it to be a widespread species of woodland in the county (*,1985).

Platycheirus tarsalis (Schummel, 1836)

A probably local species of wood edge and scrub, with only a few records to date (*,1985).

Platycheirus occultus Goeldlin de Tiefenau, Maibach & Speight, 1990

This species was taken by Peter Kirby at Dyfatty Marsh, Burry Port on 22 Sept. 1993.

Genus: *PYROPHAENA**Pyrophaena granditarsa* (Forster, 1771)

As with the following species, a common inhabitant of wet pastures, marshes and ditches (*, 1984).

Pyrophaena rosarum (Fabricius, 1787) - see above (*, 1985).

Genus: *XANTHANDRUS**Xanthandrus comtus* (Harris, 1780)

There is but one record of this rare species in Carmarthenshire - at Dinefwr Castle Woods 22/609219, Llandeilo on 3 August 1987 (G W Hopkins). On the continent, larvae are said (Chapman, 1906) to prey on tortricid moths on buckthorn *Rhamnus cartharticus* and alder buckthorn *Frangula alnus*. Possibly therefore, *Xanthandrus* should be searched for in localities where these rather scarce shrubs grow, particularly perhaps, on the limestone outcrop eg Carmel Woods, 22/51.

Tribe: *PARAGINI*Genus: *PARAGUS**Paragus haemorrhous* Meigen, 1822

There are several records from coastal sandy grasslands, wasteground wood edge and slumped sea-cliffs (*, 1985).

Tribe: *SYRPHINI*Genus: *CHRYSOTOXUM**Chrysotoxum arcuatum* (Linnaeus, 1758)

This essentially northern species has been recorded at half a dozen or so widely-separated localities in the county, with the occurrences in the south-east of Carmarthenshire

representing some of the more southerly British records. Acidic purple moor-grass *Molinia caerulea* pastures, ericaceous heath and clearings in a conifer plantation (with a calcifuge flora) comprise the habitats in which it has been noted (*, 1986).

Chrysotoxum bicinctum (Linnaeus, 1758)

A widespread species, though usually in small numbers; easily the most common member of its genus (*, 1985).

Chrysotoxum cautum (Harris, 1776)

There are many records, exclusively coastal, for this very effective wasp mimic, it particularly liking the edges of mixed scrub which grows on established areas of the coastal burrows (*, 1984).

Chrysotoxum festivum (Linnaeus, 1758)

Again, although most records of this species are coastal, a couple of inland sightings suggest that this hoverfly may occur sparingly away from the coast; its preferred habitat in the county is similar to the preceding species. The two inland records referred to flower-rich grassland and wood-edge situations (*, 1984).

Genus: *DASYSYRPHUS*

Dasysyrphus albostriatus (Fallen, 1817)

There are only a few, mostly coastal, records of this hoverfly in Carmarthenshire, though whether this reflects genuine scarcity or simply a lack of disciplined recording, is uncertain (*, 1985).

Dasysyrphus lunulatus (Meigen, 1822)

D. lunulatus is represented by three (woodland/scrub) records in the county, all on the coast (*, 1985).

Dasysyrphus tricinctus (Fallen, 1817)

The distinctive markings make this hoverfly easy to recognize, so the paucity of records suggests an actual, rather than a perceived rarity in the county (*, 1986).

Dasysyrphus venustus (Meigen, 1822)

The commonest and certainly the most widespread member of its genus in Carmarthenshire, woodland edge or scrub is preferred (*, 1984).

Genus: *DIDEA*

Didea fasciata Macquart, 1834

Noted from five dispersed localities, all associated with conifer plantations (*Pinus* and *Picea*); specimens have been observed on flowers of rowan *Sorbus aucuparia* and wild parsnip *Pastinacea sativa* (*, 1986).

Genus: *EPISTROPHE*

Epistrophe eligans (Harris, 1780)

As other observers have commented, this is a species that typifies warm weather from the end of April into May, favouring sunny woodland clearings or margins, scrub and gardens. Although most records refer to the south of the county, it will probably be found to be widespread (*, 1984).

Epistrophe grossulariae (Meigen, 1822)

There is a scatter of records for this perhaps uncommon wood-edge hoverfly (*, 1985).

Epistrophe nitidicollis (Meigen, 1822)

Only twice has this species been taken in the county - near Myrtle Hill 22/509060 *July 1986, and in Pembrey Forest, August 1989.

Genus: *EPISYRPHUS**Episyrphus balteatus* (Degeer, 1776)

A truly common and widespread species in the county, numbers being abundantly swelled by immigration. Sightings of individuals very early in the spring possibly indicate an ability to successfully over-winter (*, 1984).

Genus: *ERIOZONA**Eriozona syrphoides* (Fallen, 1817)

One of the first British records of this striking bumble-bee mimic was from Carmarthenshire -at Caeo Forest 22/64 (Cull, 1971). Since then, it has only been caught once, by GW Hopkins on an umbel flower next to a small isolated spruce *Picea* sp. plantation near Penyrheolddu 22/662148, in the Aman Valley on 18 July 1988; *Eriozona* doubtless occurs elsewhere in the county but it is exasperatingly elusive!

Genus: *LEUCOZONA**Leucozona glaucia* (Linnaeus, 1758)

A common and well-distributed species of wood edge, hedgerows and the like, particularly noticeable in late summer (*, 1985).

Leucozona laternaria (Muller, 1776)

Easily the rarest *Leucozona* in Carmarthenshire, with relatively few records from the edge of old woodland; there was a slight increase of sightings during the hot summer of 1989 (*, 1985).

Leucozona lucorum (Linnaeus, 1758)

A frequently encountered springtime species, with a few specimens of a second brood observed in August and early September (*, 1985).

Genus: *MELANGYNA**Melangyna labiatarum* (Verrall, 1901)

The genus *Melangyna* has suffered a lack of critical attention in Carmarthenshire, thus exaggerating the scarcity of all the species. *Melangyna labiatarum* was recorded at Rhydcymerau 22/575385 on 5 September 1986 by A P Fowles.

Melangyna lasiophthalma (Zetterstedt, 1843)

Recorded at a variety of woodland or scrub sites throughout the county; sometimes noted very early in the spring on flower such as lesser celandines *Ranunculus ficaria* (*,1986).

Melangyna cincta (Fallen, 1817)

Noted at several, well-wooded localities where beech *Fagus sylvatica* grows; the larvae of this species are said to be predatory on beech aphids (Rotheray, 1986).

Melangyna guttata (Fallen, 1817)

A single record of a male caught on a wild rose *Rosa* sp. flower at Ffrwd Fen Nature Reserve, Pembrey 22/419029 on 13 June 1989.

Melangyna umbellatarum (Fabricius, 1794)

Only noted at Abergorlech 22/58-34- on 17 August 1989 (S & A Coker), and at Dyfatty Marsh, Burry Port 22/457009 on 22 Sept. 1993 (P Kirby).

Genus: *MELISCAEVA**Meliscaeva auricollis* (Meigen, 1822)

The scatter of records suggests a wide distribution for this woodland species, but occurrences are few; once more a lack of critical recording and indolence in the field is suspected (*, 1986).

Meliscaeva cinctella (Zetterstedt, 1843)

Unlike the preceding species, there is an adequate number of well-dispersed records for this hoverfly of wood-edge, scrub and meadows (*, 1985).

Genus: *METASYRPHUS**Metasyrphus corollae* (Fabricius, 1794)

Careful examination of the genus *Metasyrphus* - all of which are (again!) under-recorded in the county - will probably show this species to be widespread in a broad spectrum of habitats (*, 1985).

Metasyrphus latifasciatus (Macquart, 1829)

Again grossly under-recorded: 1989 was a good year for this species (*, 1987).

Metasyrphus luniger (Meigen, 1822)

Another badly recorded species, which probably occurs throughout the county.

Genus: *PARASYRPHUS**Parasyrphus punctulatus* (Verrall, 1873)

A scatter of springtime records for woodland and scrub-covered coastal burrows; doubtless under-recorded.

Genus: *SCAEVA**Scaeva pyrastris* (Linnaeus, 1758)

A substantial number of widely spread records exist for this distinctive immigrant, usually noted during or after warm weather in flowery habitats (*, 1985).

Genus: *SPHAEROPHORIA*

Sphaerophoria interrupta (Fabricius, 1805) (= *menthastri* (Linnaeus, 1758))

As with *S. philanthus* (see below) records refer to acidic, heathy grassland inland or stabilised dune grassland on the coast (*, 1985).

Sphaerophoria philanthus (Meigen, 1822)

see above (*, 1985).

Sphaerophoria scripta (Linnaeus, 1758)

Common on the coast in dry, open grassland situations (including urban wasteground), but also with two inland records (*, 1984).

Genus: *SYRPHUS*

Syrphus ribesii (Linnaeus, 1758)

Like its relative *Syrphus vitripennis*, a common and widespread species (*, 1985).

Syrphus torvus Osten-Sacken, 1875

Less often recorded than *ribesii* or *vitripennis*, *torvus* may well prove to be equally widespread, if less numerous. It is noticeable, in early spring, at woodland flowers (*, 1986).

Syrphus vitripennis Meigen, 1822

as for *ribesii* (*, 1985).

Genus: *XANTHOGRAMMA*

Xanthogramma pedissequum (Harris, 1776)

A beautiful black and lemon-marked hoverfly, which although mostly - but not exclusively - recorded in the south-east of the county, is probably widespread on dry, often broken, short grassland (*, 1984).

MILESIINAE

Tribe: *CALLICERINI*

Genus: *CALLICERA*

Callicera aurata (Rossi, 1790) (= *aenea* Fabricius, 1777)

The single record of this handsome and capricious species, is the capture of an individual on pond-edge flowers, at Dinefwr Castle Woods 22/612216, (14 August 1986, G W Hopkins). Dinefwr Castle Woods and Deer Park are noted for the abundance of dead wood, lending support to the hypothesis that *Callicera* breeds in old timber.

Tribe: *CHEILOSINI*

Genus: *CHEILOSIA*

Cheilosia albipila Meigen, 1838

An early spring species of wet pastures and fens which is, as an adult, overlooked. Larvae were found, by A E Stubbs, in stems of marsh thistle *Cirsium palustre* at half-a-dozen well-distributed localities in July 1986. Adults have been subsequently recorded at the following localities: E of Cencoed-uchaf 22/485032, 30 Mar. & 29 April 1990; 'Gweunydd Cochion', S of Tumble 22/540100, 8 May 1990; Ffrwd Fen 22/420028, April 1991 (JR Ellis); S of Llwyn-teg 22/552077, 2 May 1994 and on a heathy ride in the Crychan Forest 22/839405 21 May 1994. Most of the above sites comprise rough pasture with calcifuge vegetation.

Cheilosia albitarsis Meigen, 1822

A common and widespread species of grassland, wasteground and wood-edge, where flowers of buttercup *Ranunculus* sp. are much frequented (*, 1984).

Cheilosia antiqua Meigen, 1822

Said to be associated (in the larval state) with primroses *Primula vulgaris*, this species has been noted at three localities; all, incidentally, with the afore-mentioned plant (*, 1986).

Cheilosia bergenstammi Becker, 1894

Common on dune grassland and wasteground at the coast and with a handful of records from inland localities; the larval food-plant is ragwort *Senecio* sp. (*, 1986).

Cheilosia chrysocoma (Meigen, 1822)

Two individuals of this beautiful orange-haired species were noted in courtship flight by a steep laneside bank with dandelion flowers *Taraxacum* sp., common dog violet *Viola riviniana* and bluebells *Scilla non-scripta*, SE of Cencoed-uchaf 22/486030 on 1 May 1994. The lane separated an area of rank acidic pasture from deciduous woodland.

Cheilosia fraterna (Meigen, 1830)

Recorded on the wet coastal dune slacks and at a few inland damp pastures; additional inland reports can be expected in appropriate habitats (*, 1986).

Cheilosia grossa (Fallen, 1817)

Only one record - a larva in marsh thistle stem at Berthlwyd Farm 22/368186, Llanllwch (8 July 1986, A E Stubbs).

Cheilosia honesta Rondani, 1868

Recorded from just three woodland localities - Pembrey Forest, Stradey Woods and near Llandeilo (*, 1985).

Cheilosia illustrata (Harris, 1780)

A distinctive and widespread woodland *Cheilosia* (*, 1984).

Cheilosia impressa Loew, 1840

The larvae are believed to develop in hemlock water-dropwort *Oenanthe croccata* (Stubbs & Falk, 1983), and this species has only been noted at five sites - Pembrey Burrows 22/418002, *16 August 1985; Carmel Woods, Aug. 1986 (APF); Cors Goch Llanllwch, Aug. 1987 (GWH); Pont-cych 22/276358, 17 Aug. 1990; and N of Horeb 22/495064, 20 Aug. 1990.

Cheilosia longula (Zetterstedt, 1838)

Only recorded from Pembrey Forest 22/395028 on 30 July 1985 (spec. det. S J Falk), a locality rich in fungi including *Boletus* which is reputed to be favoured by *longula* larvae.

Cheilosia pagans (Meigen, 1822)

A common species (especially in spring) in grassland situations (*, 1985).

Cheilosia proxima (Zetterstedt, 1843)

There are but three records of this species - at Ffrwd Fen 22/419028, 5 July 1985 and Pembrey Forest, 8 Aug. 1986. Also N. of Tir Morfa-fawr 21/533987, 20.5.92 (all det. SJF).

Cheilosia scutellata (Fallen, 1817)

A woodland species, whose larvae are reputed to breed in various fungi, noted from four woods in the county: Coedydd-y-Garn 22/516145* 5 July 1985; Stradey Woods 22/488017, 13 June 1986; Abergorlech 22/58-34-, 17 Aug. 1989 (A & S Coker); and N of Horeb 22/495064, 20 Aug. 1990.

Cheilosia variabilis (Panzer, 1798)

Certainly common in woodland and hedgerows in the south of the county, its status elsewhere deserves investigation (*, 1985).

Cheilosia vernalis (Fallen, 1817)

Probably best considered as a reasonably common species of open, flowery ground (*, 1986).

Cheilosia vulpina (Meigen, 1822)

Noted at three woodland sites: Stradey Woods, Coedydd-y-Garn and Dinefwr Castle Woods (*, 1985).

Genus: *FERDINANDEA**Ferdinandea cuprea* (Scopoli, 1763)

A not often recorded, unobtrusive hoverfly of mature woodland, probably occurring at low densities throughout Carmarthenshire.

Genus: *PORTEVINIA**Portevinia maculata* (Fallen, 1817)

This species is common (during its short flight period) on the Carboniferous Limestone outcrop and flushed valley slopes where the larval food-plant ramsons *Allium ursinum* is to be found (*, 1986). It is also found in woodland below the limestone outlier at Carreg Cennen 22/642186, and on older, base-rich strata at Coed Penrhiwiau 22/661236, Penygraig, Cynwyl Elfed 22/385269 and alongside the Afon Gwydderig (nr Llandovery) 22/805345.

Genus: *RHINGIA**Rhingia campestris* Meigen, 1822

A common and very widespread species, variable in size and in depth of coloration; woodland is the most favoured habitat though other floriferous sites are regularly frequented (*, 1984).

Rhingia rostrata (Linnaeus, 1758)

This rarity has been recorded on four consecutive years at Dinefwr Castle Woods, Llandeilo;

details are given below:

- ii 8.8.1986, 22/610218 & 22/619222, maximum of five individuals, G W Hopkins.
- ii 27.8.1987, 22/609217 & 22/609221, few individuals in 'north Castle Woods', GWH.
- iii -.8.1988 Llandyfeisant churchyard 22/622223 one on *Centaurea nigra*, GWH.
- iv 3.9.1989, 22/613218 'one', P M Pavett.
- v a gravid female was also seen at Dinefwr Castle Woods (at 22/6182190) on 23 June 1994, IKM.

Tribe: *CHRYSOGASTRINI*

Genus: *BRACHYOPA*

Brachyopa insensilis Collin, 1939

This rare hoverfly was first caught on a prolific beech sap-run at Dinefwr Deer Park 22/613224 on 7 June 1988, though it had also been seen (but not recognized!) some three weeks previous. Two adults - which were very reluctant to fly - were observed. If sufficiently disturbed, they would fly around the trunk briefly and return onto it, moving inwards towards the sap-run until the damp, black zone of sap was reached. They would continually 'test' the sap with their front tarsi and palps, though they would never settle on the very wet sap itself.

The species was again noted, at the same beech tree, on 15 June 1989; a specimen taken from this site was determined by S J Falk as *insensilis*.

Genus: *CHRYSOGASTER*

Chrysogaster cemiteriorum (Linnaeus, 1758 = *chalybeata* Meigen, 1822)

The habitat requirements as given by Stubbs & Falk (1983), are appropriate for this species in vc44 - 'lush meadows and fens, usually near scrub or wood margins... and showing fondness for umbel flowers', such as *Oenanthe crocata*. It is rather a local species in the county.

Chrysogaster hirtella Loew, 1843

Quite common in marshland situations and wet pastures, widespread through perhaps more frequent at the coast or along the Tywi valley where suitable habitat is more regularly found (*, 1984).

Chrysogaster macquarti Loew, 1843

A rare species in the county, only known from two localities - the wet, mossy slacks on Laugharne Burrows 22/282076 (*7 July 1986, A E Stubbs and 18 July 1988, S J Falk) and Machynys Ponds 21/511979 (25 June 1989, A P Fowles).

Chrysogaster sostitialis (Fallen, 1817)

A common species of damp woodland, with a widespread distribution (*, 1985).

Chrysogaster virescens Loew, 1854

Only recorded by A E Stubbs on the flushed grazings of Pant Nant-fforchog 22/962190 on the northern flanks of Mynydd Du (9 July 1986).

Genus: *LEJOGASTER*

Lejogaster metallina Fabricius, 1777

A common and widespread species of wet meadows, marshes and pond-edge situations (*, 1985)

Lejogaster splendida (Meigen, 1822)

Known from a few coastal localities:

- i swept from lush vegetation around the eastern part of Machynys Ponds 21/511979, 7 August 1985 (S J Falk) and later dates.
- ii ditches and marshes at Llwynhendy 21/544986, 15 July 1989.
- iii wet slacks at Tywyn Burrows 22/36-05-, 27 May 1989.
- iv Glynea Pond, Bynea 21/554989, Sept. 1993, P Kirby.
- v Llangennech 22/5, Sept. 1993, P Kirby.

Genus: *NEOASCIA*

Neoascia meticolosa Scopoli, 1763

Known only from the coast at Bynea 21/554989 and inland at the Dinefwr Oxbows 22/606223 (*, 1986).

Neoascia obliqua Coe, 1940

There is just one county record - at the eastern end of Llandyfeisant Woods (at Dinefwr) 22/626221, On 19 May 1987.

Neoascia podagrica (Fabricius, 1775)

A common and widespread species of wet habitats including damp woodland (*, 1984).

Neoascia tenur (Harris, 1780)

Perhaps less common than *podagrica*, favouring marsh of pond edges (*, 1985).

Genus: *ORTHONEVRA*

Orthonevra nobilis (Fallen, 1817)

A scatter of records, from wet habitats including damp woodland edge, mostly in the south of the county (*, 1985).

Orthonevra splendens (Meigen, 1822)

Similarly distributed to the preceding species but more often found in damp woodland, as well as open wet habitats (*, 1985).

Genus: *SPHEGINA*

Sphegina clunipes (Fallen, 1816)

The genus *Sphegina*, which usually inhabits damp woodland, wood-edge or scrub is probably under-recorded, partly due to their smallish size and unassuming habits; *clunipes* seems to be, on the basis of little information, to be the most widespread (*, 1986, AES *et al*).

Sphagina elegans (Schummel 1843 = *S. kimakowiczi* Strobl, 1987)

Noted at Abergorlech 22/58-33- and the Sawdde Gorge 22/71-25- (1986. AES *et al*).

Sphagina verecunda Collin, 1937

Recorded at Abergorlech (AES, 1986) and Stradey Woods 22/49-01-.

Tribe: *ERISTALINI* Genus:

ANASIMYIA

Anasimyia contracta Claussen & Torp, 1980

Found at pond-side situations where reed-mace *Typha latifolia* grows, both on the coast and, more locally, inland (*, 1986).

Anasimyia lineata (Fabricius, 1787)

Recorded from pond or mire sites, again both on the coast and inland (*, 1984).

Anasimyia transfuga (Linnaeus, 1758)

The Machynys Ponds 21/512980, a lush coastal site, is the only locality from where authenticated specimens have been taken (S J Falk, 7 August 1985).

Tribe: *ERISTALINI*

Genus: *ERISTALINUS*

Eristalinus aeneus (Scopoli, 1763)

Two individuals were at bramble (*Rubus* sp.) blossom behind the pebble beach at Gilman Point, Pendine 22/226075 on 14 August 1986; this species, whose larvae feed on seaweed, may occur at other coastal locations, though searches have been unsuccessful.

Eristalinus sepulchralis (Linnaeus, 1758)

Recorded throughout the county in lush, enriched habitats such as cattle-grazed meadows, pond edges etc; records are more numerous on the coast and this species can sometimes be found around rocks etc at the high water mark - a habitat more often associated with *aeneus* (*, 1985).

Genus: *ERISTALIS*

Eristalis abusuvius Collin 1931

Although perhaps commonest on the coast, this species certainly occurs inland, where it is overlooked amongst *arbustorum* and *nemorum* (*, 1985)

Eristalis arbustorum (Linnaeus, 1758) (*, 1984).

Eristalis horticula (Degeer, 1776) (*, 1984).

Eristalis intricarius (Linnaeus, 1758) (*, 1984).

Eristalis interrupta (Poda, 1761) (= *nemorum* Linnaeus, 1768) (*, 1985).

Eristalis pertinax (Scopoli, 1763) (*, 1984).

All the above species are considered common and widespread in Carmarthenshire.

Eristalis rupium Fabricius, 1805

A P Fowles took this rare species on the acidic pastures at Rhydcymerau 22/575385, in the north of the county, on 5 September 1986. Careful searching will probably show this species to be very sparsely distributed in the N and NE of Carmarthenshire. Also noted (in 1989) at Cors Farlais 22/678349 by the NCC Welsh Peatland Invertebrate Survey team.

Eristalis tenax (Linnaeus, 1758)

Status as the five common eristalines listed above; it is rather scarce until past mid-summer (*, 1984).

Genus: *HELOPHILUS*

Helophilus hybridus Loew, 1846

Known from about ten sites on the coast, along the Tywi valley and on a few wet pastures inland (*, 1986).

Helophilus pendulus (Linnaeus, 1758)

An ubiquitous species (*, 1984).

Helophilus trivittatus (Fabricius, 1805)

The largest and most handsome *Helophilus*, known Carmarthenshire sites are predominantly coastal, though it has been noted on marsh marigold *Caltha palustris* flowers, in willow carr, at the edge of Cors Goch Llanllwch 22/370186. No less than ten were observed on flowers of hemlock water dropwort *Oenanthe crocata* at Penybryn 21/541985 in June 1986 (*, 1986).

Genus: *MYATHROPA*

Myathropa florea (Linnaeus, 1758)

A widespread species of woodland localities, usually seen in small numbers (*, 1985).

Genus: *PARHELOPHILUS*

Parhelophilus consimilis (Maim, 1863)

Only noted at Machynys Ponds 21/512980 by S J Falk in August 1985.

Parhelophilus frutetorum (Fabricius, 1775)

Recorded commonly at several Typha-ponds on the coast (*, 1985).

Parhelophilus versicolor (Fabricius, 1794)

Found on the Machynys-Bynea coastal belt (21/59) SE of Llanelli, and also besides the Dinefwr oxbows of the R. Tywi (*, 1985).

Tribe: *MERODONTINI*

Genus: *EUMERUS*

Eumerus ornatus Meigen, 1822

Caught at Parc Gitto, Llwynhendy 21/534997 on 2 August 1988.

Eumurus sabulorum (Fallen, 1817)

A male was caught on the slumped clay cliffs south of Underhill Farm 22/198076 Marros, flying low over bare ground with a sparse growth of common centuary *Centaureum erythaea*, English stonecrop *Sedum anglicum* and bird's foot trefoil *Lotus corniculatus*. It was also seen on the bare lower cliff slopes east of Ragwen Point 22/223072, (both 23 June 1989). At the latter site it was also seen on 15 June 1994.

Eumurus strigatus (Fallen, 1817)

The most widely-spread *Eumerus*, but still with all records on the coast - on dry sparse grassland (*, 1986).

Eumurus tuberculatus Rondani, 1857

Noted from the Llwynhendy district (SE of Llanelli, 21/59) where it can regularly be observed flying low in summer, over garden borders with herbaceous and bulbous plants. Also noted inland at Llandybie 22/619151, again in a garden (GWH), (*, 1987).

Genus: *MERODON*

Merodon equestris (Fabricius, 1794)

Principally a species of woodland areas where the larvae are believed to utilize bluebell *Scilla non-scriptus* bulbs; it also occurs in gardens, frequenting areas with daffodils *Narcissus* spp. and day lilies *Hemerocallis* spp. (*, 1984).

Tribe: *PIPIZINI*

Genus: *NEMOCNEMODON*

Nemocnemodon latitarsis (Egger, 1865)

There is a single record of this easily-overlooked syrphid, from Allt Rhyd-y-Groes NNR 22/762486, (6 August 1987, A P Fowles).

[An indeterminable female *Nemocnemodon* was taken by A & S Coker at Abergorlech 22/58-34- on 17 August 1989, keys for females of this genus are now available (Stubbs, 1996)].

Genus: *PIPIZA*

Pipiza austriaca Meigen, 1822

Probably widespread in deciduous woodland, where the adults can be sparsely distributed and noted resting on foliage (*, 1985).

Pipiza fenestrata Meigen, 1822

Only noted at Stradey Woods 22/489017 (6 May 1987) and Dinefwr Castle Woods

22/609222 (27 July 1988).

Pipiza noctiluca (Linnaeus, 1758)

Perhaps somewhat overlooked, but known from woodland sites in the south-east of the county (SJF, 1985).

Genus: *PIPIZELLA*

Pipizella viduata (= *varipes*) (Meigen, 1822)

Found principally along the coast but also inland, on dry grassland habitats. At such sites, it can be watched, flying low, over the ground like a small solitary bee (*, 1985).

Genus: *TRICHOPSOMYIA*

Trichopsomyia flavitarsis (Meigen, 1822)

A species of fen pastures, wet dune slacks and moist acidic grassland generally; records being mostly concentrated in the south of the county (*, 1985).

Tribe: *SERICOMYIINI*

Genus: *ARCTOPHILA*

Arctophila superabiens (Muller, 1776) = *fulva* (Harris, 1780)

Widely distributed, in small numbers, on unimproved pasture and wood-edge habitats throughout the county, but with only a few records in the west - probably due to a smaller recording effort rather than a true absence (*, 1985).

Genus: *SERICOMYIA*

Sericomyia lappona (Linnaeus, 1776)

Three records only: Rhydcymerau 22/57-38- on an area of unimproved pasture and scrub; A P Fowles, 30 June 1987; at Cors Farlais 22/678349, by the NCC Welsh Peatland Invertebrate Survey Team 1989, and many were seen on flushed slopes at Bryn Mawr 22/675503 in mid June 1996.

Sericomyia silentis (Harris, 1776)

A widespread, common and easily-recognized wasp-mimic, found on unimproved meadows and at woodland fringes throughout the county (*, 1985).

Tribe: *VOLUCELLINI*

Genus: *VOLUCELLA*

Volucella bombylans (Linnaeus, 1758)

A persuasive bee-mimic that is found throughout the area under review, several colour morphs (pale-haired, red-haired tails and var. *plumata*) have been noted, of which the latter is easily the most numerous (*, 1985).

Volucella pellucens (Linnaeus, 1758)

A common and well-distributed hoverfly, favouring woods, hedgerows etc where it often frequents umbel flowers such as hemlock water-dropwort *Oenanthe crocata* on elder *Sambucus nigra* blossom (*, 1985).

Tribe: *XYLOTINI*

Genus: *BRACHYPALPOIDES*

Brachypalpoides lenta (Meigen, 1822)

An uncommon species of old woodland, only noted at four localities: Dinefwr Castle Woods 22/612217, 19 June 1986 (and other dates in the adjacent deer park) ; Garnant 22/688125 June 1986 (APF); south of New Mill 22/259128, 10 June 1989; and in alder carr, Cors Goch Llanllwch 22/363184, 19 May 1994. It has been seen on flowers of elder at the edge of Dinefwr Deer Park.

Genus: *BRACHYPALPUS*

Brachypalpus laphriformis (Fallen, 1816)

One male was caught by P M Pavett on a large, fallen oak at Dinefwr Deer Park 22/612227 on 29 May 1989, and another male noted basking on nearby bracken on the same day, it has also been seen on subsequent dates at this locality. A female was observed (on 23 May 1991) ovipositing in bark crevices alongside a damaged area on an oak in Dinefwr Park. Also noted at Stradey Woods 22/490016, 6.5.1990 and 22/489014, 22.5.1992. This species was recorded in the NE of the county at the RSPB Gwenffrwd Reserve 22/751460 on 20 July 1991.

Genus: *CHALCOSYRPHUS*

Chalcosyrphus nemorum (Fabricius, 1805)

A local, perhaps overlooked species, so far found at four localities, where it may, typically, be seen moving jerkily across sunlit fallen tree trunks (*, 1986).

Genus: *CRIORHINA*

Criorhina asilica (Fallen, 1816)

One record only, of a singleton at Coed Penrhiwiau 22/661236 on 7 June 1990.

Criorhina berberina (Fabricius, 1805)

Recorded in just five 10 km squares, though regularly noted at two of these sites - Stradey Woods 22/490016 and Dinefwr Castle Woods 22/612217 etc, both localities have ample old timber. At Stradey, it has been observed at flowers of *Rhododendron ponticum*, but usually it is noted resting on leaves (*, 1985).

Criorhina floccosa (Meigen, 1822)

The four sites where this species has been taken comprise a mature seaside hedgerow near Llansteffan (22/349099, 4 June 1986); on a flowering willow *Salix cinerea* at the edge of

Cors Goch, Llanllwch (22/370186, 30 May 1986) and at the flowers of rowan *Sorbus aucuparia* on the coalfield at Garnant (22/687125, 11 June 1986). It was subsequently recorded at the other end of Cors Goch Llanllwch - alder carr at 22/363184 on 19 May 1994 and on *Oenanthe croccata* at Dinefwr Deer Park 22/62 in June 1995.

Criorhina ranunculi (Panzer, 1804)

Noted on a trio of dates in April 1988 - at Stradey Woods (22/489016, 3 April); Furnace (22/504016, 17 April) and south of Llandovery (22/805346, 7 April); all specimens were quite high at flowers of willow *Salix cinerea*. It was subsequently seen (again at willow) at Stradey Woods (22/483022; 18 Mar. 1990) and at Capel Dyddgen quarry (22/477128, 28 Mar. 1991).

Genus: SYRITTA

Syritta pipiens (Linnaeus, 1758)

A common and widespread species of grassland, marshes and wood-edge (*, 1984).

Genus: TROPIDIA

Tropidia scita Meigen, 1822

Found frequently in lush coastal marshes and fens, and also - rather unusually - in quite dry woodland at Stradey Woods 22/489017 (*, 1984).

Genus: XYLOTA

Xylota coeruleiventris Zetterstedt, 1838

Recorded mostly in north of the county, in the Rhydymymerau 22/57-38- - Abergorlech 22/58-33- districts, and also at Allt Rhyd-y-Groes NNR 22/762486. There is one record reported from the south - at Stradey Woods 22/40 (PMP, 1989). A female was observed feeding on *Rosa* pollen at Abergorlech on 28 June 1988 (APF, 1987).

Xylota florum (Fabricius, 1805)

In contrast to *coeruleiventris*, the few records refer to the south-east of Carmarthenshire. Like its relative, *florum* typically occurs in woodland or scrub (*, 1986).

Xylota segnis (Linnaeus, 1758)

By far the most common *Xylota*, often seen patrolling wooded areas or hedgerows, resting aculeate-like on sun-dappled leaves (*, 1986).

Xylota sylvarum (Linnaeus, 1758)

An attractive and rather widespread wood edge species, in small numbers, throughout the county.

Xylota xanthocnema Collin, 1939

The first county record of this rather rare species was made on 17 June 1988 when PM Pavett caught one basking on a shed roof at the edge of Dinefwr Deer Park 22/608225. It has been subsequently recorded at the RSPB Gwenffrwd Reserve, Rhandirmwyn 22/751460, 20 July 1991 (S Coker) and an egg-bound female was seen at the edge of the Dyfed Wildlife Trust's Dinefwr Castle Woods reserve 22/617217 on 23 June 1994.

Sub-family: MICRODONTINAE

Genus: MICRODON

Microdon mutabilis (Linnaeus, 1758)

Found on the wet, mossy slacks of Tywyn Burrows 22/36-05, (6 July 1986, A E Stubbs; and again on 27 May 1989); also in similar habitat at Laugharne Burrows (22/279074). Inland, two were netted on the moist, sedgy pastures of Rhos Pwll-y-Gawnen 22/289298 on 15 June 1987.

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A local hoverfly and a rare aphid tended by an endangered ant on cottongrass:

Pipizella sp. and *Paraschizaphis eriophori* tended by *Formica candida* on *Eriophorum augustifolium* - G W Hopkins

Cors Goch, Llanllwch (vc44, 22/363185) is the most southerly raised mire in Britain and home to several interesting invertebrates, including the small red damselfly *Ceriagrion tenellum* and bog bush cricket *Metrioptera brachyptera*, but undoubtedly the most noteworthy species known to be present is the bog ant *Formica candida* (formerly *transcaucasica*). Fowles (1992) gives an account of its discovery. This is the only one of two known sites for the species outside of the Dorset/Hampshire region, with the UK possibly holding 25-49% of the world population of what is possibly a species of global conservation concern (HMSO 1995). Its other Welsh station is on Rhossili Down, Glamorgan (21/425902) where Clive Hurford, Menna Jones and Ian Morgan recently rediscovered this species, confirming an old, disputed record of 1906 (I K Morgan, pers comm).

Workers from the University of Bath mentioned that the bog ants tend aphids on low growing plants and a visit was made to the site on the 17 July 1995 to investigate this further. Ants tend aphids to collect the excreted plant sap (honeydew), which is a potentially valuable source of carbohydrates, and in exchange the aphids avoid being attacked by the ants and the ants also deter other predators and parasites. There is no mention of the bog ant tending aphids in Donisthorpe (1927) or Falk (1991).

The site includes areas of willow *Salix cinerea* and birch *Betula* sp. scrub, both of which are host to aphids that are normally attended. The visit was a little late in the season for tree-feeding aphids to be particularly abundant and no aphids were found on the willows, but the birch aphid *Symydobius oblongus*, which feeds from the twigs and stems, was found reasonably frequently. However, only a single colony was tended by the bog ant with other ant species tending the other colonies.

In over an hour of additional searching, only one further colony of aphids were found to be tended by bog ants, with very few aphids actually being found in total. The aphids were on the lower regions of the stems of cottongrass *Eriophorum angustifolium*, including the portion below ground level, and the ants had built a column of twigs and soil around the aphids. Among the aphids was a single, large hoverfly larva.

The aphids were a dark metallic green colour and were identified as *Paraschiazphis eriophori* F P Muller, a species only known from Germany and Britain (Heie 1986) and which only uses *Eriophorum angustifolium* and probably *E. vaginatum* as a host. The only known British sites are in Dyfed, collected by the Welsh Peatland Invertebrate Survey (Wood-Baker 1991), and Malham Tarn, Yorkshire (Stroyan 1979). Stroyan (1984) says that members of the genus are "usually attended by ants when the colonies are accessible to them, and often sheltered under basal tents of detritus or in sheathing leaf bases". Muller (1974) originally described the aphid (as a sub-species) and says that it was attended by *Myrmica scabrinodis* and *Lasius alienus* in *Sphagnum* bogs; in Britain these ants are 'common' and 'local' respectively (Fowles 1996) and do not show any particular affinities with wet habitats (Donisthorpe 1927).

The hoverfly larva was identified as a *Pipizella* sp., with the species uncertain. Three members of the genus are known in Britain, all of which apparently feed as larvae on root aphids (Stubbs and Falk 1983). The most well studied member of the genus is *P. varipes*, the larvae of which have been found feeding on various species of aphid on various host plants, with these aphids also being tended by ants *Lasius niger* (Dixon 1959).

It would be interesting to establish the importance of aphid tending to the ants - presumably since so few aphids were actually tended and nobody has mentioned the behaviour before, the ants can survive in the absence of aphids. It is likely that the ants are more important to the aphids than the aphids to the ants, but further observations are necessary to establish how important. Further survey work would be worthwhile at Cors Goch and other sites to try and find the aphids in the absence of ants. Finally, although the aphids are of immediate importance to the hoverfly larva as food, it is likely that other aphids would be suitable as prey, with aphids likely to occur at higher densities in other habitats. It is unclear how the hoverfly avoids being attacked by the ants.

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Erratum

In DIG Newsl. 29:8, I cited the first Carms. record of *Porcellio spinicomis* as Llandeilo Church in 1986, whereas actually the first vc44 record was that made by Arthur Chater at Dryslwyn Castle in December 1985.