

**DYFED
INVERTEBRATE
GROUP**



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Five years (and twenty issues) on and the Dyfed Invertebrate Group is still going strong - or is it? Perhaps now is an apposite time to take stock of our achievements and consider the direction of the Group in the future. There is no doubt that the formation of DIG has had a profound success in stimulating (both locally and nationally) an awareness of the need to conserve our native invertebrates. This is clearly manifested in the subsequent establishment of a further eight Invertebrate Groups (or similar Societies) elsewhere in England and Wales. The very act of setting-up such a group immediately focuses attention on invertebrates and gives conservation organisations a point of reference on which to direct queries regarding the status and management of countless species for which they previously had little knowledge. But what are the concrete signs of success - how can we measure whether or not the efforts so far have been worthwhile? For most Groups, DIG included, the most tangible results are to be found in the pages of their Newsletters - for DIG this currently amounts to 378 pages and some 184 articles on the ecology, distribution and conservation of invertebrates in the three vice-counties. The Newsletter has only been possible in its present format due to the invaluable assistance of the Nature Conservancy Council's Dyfed-Powys Regional Office and I am sure that all readers of the Newsletter will share in my grateful appreciation of this support and applaud the foresight NCC has shown in backing what was previously a seriously-neglected field of nature conservation in the Region. We can only hope that a Powys Invertebrate Group will eventually come into being but, in the meantime, hope that our colleagues 'across the border' benefit from the knowledge imparted on what is essentially a shared fauna. The absence of any suitable publication for articles on Welsh invertebrates since the lamented demise of 'Nature in Wales' led to a stagnation of understanding on even the most basic aspects of invertebrate studies and the last five years has seen a renaissance in their claim to be given an equal voice in conservation matters. This has come about through hard lobbying and the quality of the articles in the Newsletter - ignorance is no longer a justification for neglect! I am undoubtedly biased but I feel this recognition is fully justified and needs to be strengthened even further. With their dependence on a long-term continuity of appropriate conditions within a particular site, invertebrates offer by far the best means of assessing the overall conservation value of our semi-natural habitats and greater resources need to be assigned to enable us to interpret the information they can give on site-quality. A bold start has been made within the Dyfed Invertebrate Group to address this gap in conservation knowledge and we are hopeful that the Countryside Council for Wales will also recognise the scientific (and financial) value of the, largely-unpaid, research which is disseminated through the Newsletter.

Assessing the impact of DIG on conservation awareness is a difficult task but perhaps some of the statistics can speak for themselves. Currently, some ninety copies of the Newsletters are distributed to sixty-five individuals and organisations, including forty-three local naturalists. Copies are received by the Nature Conservancy Council, Dyfed Wildlife Trust, National Rivers Authority, Pembrokeshire National Park, Natural History Museum (London), National Museum of Wales and the Biological Records Centre (Monks Wood). In addition, there are statutory deposits to the British Library and the National Library of Wales; the Newsletter is abstracted for the Zoological Record; and a subscription is taken out by the

international Science library of Senckenbergische Bibliothek in Germany. This broad audience has read county faunal reviews on groups as diverse as, for example, ladybirds, centipedes, fleas and snails, many of which have been contributed by national specialists. Site documentation has been another strong feature and so far ten Dyfed sites have been described from the viewpoint of invertebrate conservation and a further fifteen have been visited during our summer field meetings, the majority of which are Sites of Special Scientific Interest. Important accounts dealing with the status and/or life history of the harvestman Sabacon viscayanum, the dragonflies Coenagrion mercuriale and Gomphus vulgatissimus, the ladybird Halysia 16-guttata or the wood ant Formica rufa, for example, have added to the national understanding of these species. In all, a total of thirty-nine different authors have been involved in these and other articles, such as the studies of deadwood beetle faunas, the influence of fire on the invertebrates of Cors Fochno, and the curious inhabitants of birds' nests. Nor must we forget that this issue sees the fifth in our series of annual reports on invertebrate recording in Dyfed, enhancing knowledge of a wide range of groups, many of which have a particular significance for nature conservation.

It is not so easy to evaluate the extent to which this information is being used by the nature conservation organisations. I am aware that many DIG members are now asked for advice on matters of invertebrate conservation but no attempt has been made to collate these requests or assess their success. Certainly the explosion of information in recent years (and for those of us who can cast our minds back to pre-DIG days this is very marked) puts us in a strong position to proffer advice - but I'm not convinced that we are making full use of this potential. There is a definite need for members to become more involved in spreading the word and exploiting opportunities to ensure that conservation management takes account of invertebrate faunas. After all, habitat management should aim to achieve the best results for wildlife in general and, without due attention paid to the requirements of invertebrates, management is ignoring a major and fundamental aspect of the ecology of any particular site. There is also an obvious need for more local naturalists to become involved in studies which can contribute directly to the science and application of nature conservation. The wealth of recording already undertaken provides a valuable foundation but such casual observations do not readily lend themselves to wider interpretation and analysis. Site or habitat based investigations of particular elements of the fauna can be richly rewarding and are not necessarily complicated or time-consuming. I would urge members to consider taking on such studies (eg. butterfly transects, pitfall-trapping, dragonfly exuviae counts, etc.) and there are plenty of people within the Dyfed Invertebrate Group to assist with the planning and interpretation of such work. This would inevitably lead to an increase in the range and authorship of articles presented in the Newsletter. I am only too aware that the 'burden' of writing falls too often on too few and we would all like to see more articles forthcoming from the 'silent majority'. Do not be daunted by what has gone before - help in presentation is always at hand if needed. To continue into the future we need an active membership - and that means You!

So, how do we measure-up for an end-of-term report: "Tries hard, shows initiative, but could do better"? Invertebrate conservation has a long way to go before it takes its rightful place alongside other wildlife concerns. We must continue to strive to achieve due recognition for invertebrates before habitats deteriorate further and the list of local extinctions grows even longer.

Membership of the Dyfed Invertebrate Group is diffusely spread across the length and breadth of the county and hence the Newsletter is an invaluable mode of communication. The annual field meetings, however, also provide an opportunity to share knowledge and experience and this year's meetings will be held as follows:

9 JUNE 1991 - Coedmore, Llechryd (VC46). This estate on the Teifi Gorge contains a mixture of habitats of great importance for nature conservation, managed under agreement by the Nature Conservancy Council as a National Nature Reserve. The valley woodlands are given Nature Conservation Review status and our visit will hopefully coincide with peak emergence for deadwood insects. Unimproved 'river-meadows' have a rich hoverfly fauna and the Teifi supports an excellent dragonfly fauna here. Meet at 11.00am at the beginning of the lane to Home Farm (SN196440), at the right-angled bend in the minor road to the south of the A484.

20 JULY 1991 - RSPB, Gwenffrwd (VC44). Oak-birch woodland, rocky outcrops, mire and pasture habitats. Meet at 11.00am at the Warden's house, Troedrhiwgelynen (22/749460).

4 AUG 1991 - Marloes (VC45). A two kilometre stretch of sheltered, south-facing cliffs supporting a rich maritime flora. Meet at 11.00am at the Marloes Mere NT carpark (fee for non-members) at 12/780082.

To mark the publication of the twentieth issue, an Index to invertebrate Orders covered by the Newsletter has been compiled. If you would like a copy, please send a stamped (22p) and self-addressed envelope (c.10" x 7") to the Editor, address above. Please note that subscriptions are now due for 1991 - send four 1st Class stamps to the Editor if you wish to receive future issues of the DIG Newsletter.

ORTHOPTERA

ORTHOPTERA IN CARMARTHENSHIRE, 1990 - I K MORGAN

The groundhoppers, Tetrix species, are small, rather dull-coloured, relatives of the more familiar grasshoppers. Unlike the latter, they are capable of overwintering as adults and consequently are noticeable in the early days of spring, when grasshoppers are absent. All three of the British species occur in Carmarthenshire, including the rather scarce T. subulata (found in freshwater marshes and riverine flood plains) and the rarer T. ceperoi (confined to bare, but mossy, coastal dune-slacks). The third species - Tetrix undulata - is probably widespread, if irregularly recorded. It typically frequents sparsely vegetated areas - forest tracks, railway lines, upland grazings, bare banks, wasteground or even gardens, and there were several records from such habitats in 1990.

In contrast, bush crickets inhabit more stable, densely vegetated habitats, with the most commonly-recorded species - the dark bush cricket Pholidoptera griseoptera - favouring brambly thickets and other rank herbage, from which the males' soft 'chirrup' call can be heard on warm summer and early autumn evenings (as well as - but less noticeably - by day). The distribution of this species in the vice-county is not yet completely understood for, as well as strong colonies which are widespread along the coast, possibly isolated populations are found in the Tywi valley, in the Cilsan area (22/58-21-) near Llandeilo, and a recently-discovered colony at Nantgaredig (22/47-21-). Also this year, a thriving colony was found in a small area of Filipendula-mire at the NW end of Coed Gwempa (22/433116), in the Gwendraeth-fach valley. Do these colonies represent remnants of a once more-widespread distribution in these major river valleys or (more probably) does Pholidoptera occur elsewhere (but unrecorded) in these areas?

With the bog bush cricket Metrioptera brachyptera, we can be more certain of its distribution in Carmarthenshire - it being limited to the extensive bog of Cors Goch Llanllwch (22/366185), where the adults can be beaten from the tall growths of heather and bog myrtle in late summer. The nocturnal oak bush cricket Meconema thalassinum is likely to be widespread, if rarely seen, in the county. Two males were attracted to a light trap put out for moths on the scrub-covered cliffs west of Lords Park, Llansteffan (22/332098) on 10 August and one was attracted to a house-light at Golden Grove (22/590197) in September (N R Mathew).

The single lesser earwig Labia minor, found in a long-established dung heap at Tir Morfa-fawr, Llwynhendy (21/533982) was a new county record. Although this dung heap had been regularly searched for this species before, it may be instructive to note the observation of Mourier (1986) that the species favours the lower, older parts of dung heaps where the warm temperatures required by Labia minor are found.

References

MOURIER, H (1986) Notes on the life history of Labia minor (L.) (Dermaptera), a potential predator of Louse fly eggs and larvae (Diptera, Musca domestica L.) Ent.Meddr.53:143-148

PEMBROKESHIRE ORTHOPTERA, 1990 - JB STEER

1990 produced an encouraging number of new 10km square records. Three adjacent squares (22/01, 22/02 & 12/91), which may have looked like a gap in distribution, for the common green grasshopper Omocestus viridulus, and also new from 12/94; three squares for the meadow grasshopper Chorthippus parallelus (22/01, 22/11 & 12/94); one for the field grasshopper C. brunneus (12/94); and one for the mottled grasshopper Myrmeleotettix maculatus, found by Peter Brown at an inland site near Treffgarne (12/959252). Bush-crickets continue to be considerably under-recorded. Only two records for the oak bush-cricket Meconema thalassinum were received but one at Pennar Cants (12/927032), contributed by Peter Brown, was a new 10km square record. Speckled bush-crickets Leptophyes punctatissima were also only recorded from two squares and work with bat-detectors would surely produce many new records for this species. Short-winged coneheads Conocephalus dorsalis were recorded from three squares and PB's sighting of one at Landshipping (22/011118) provides an additional 10km square record for the species, being further up the estuary of the Eastern Cleddau than previous records. P Kirby and SJ Lambert found the grey bush-cricket Platycleis albopunctata at Marloes Sands (12/7807) and it would be useful if it could be re-found in its other two recorded squares. The great green Tettigonia viridissima and dark Pholidoptera griseoptera bush-crickets are both easy to find due to their loud stridulation and again it would be useful to confirm their known coastal distribution. A lesser cockroach Ectobius panzeri was found at Broad Haven dunes (11/976946) by PB. This species is only known from three 10km squares in Pems., all of them coastal. Two new 10km records (22/11 & 12/72) were obtained for the common groundhopper Tetrix undulata, an easily overlooked species.

Pembrokeshire has more Orthopteran species than most Welsh vice-counties on account of its mild coastal climate. If naturalists were aware how easy most species are to identify by 'song' (much easier than learning bird songs!) surely the study of our Orthoptera would become more popular.

Thanks to Peter Brown, RD Hawkins, P Kirby, SJ Lambert and A & J Poole for submitting records.

GRASSHOPPERS AND BUSH-CRICKETS IN CEREDIGION, 1990 - A P FOWLES

Another year of consolidation with few noteworthy discoveries. Generally, Orthoptera seemed to be in some abundance this year but there was a noticeable slackening of recording effort and there were no records of speckled bush-crickets Leptophyes punctatissima or short-winged coneheads Conocephalus dorsalis. There were few sightings of the other bush-crickets either - Roesel's Metrioptera roeseli was seen in its usual haunts along the railway line at Ynyshir (22/673962) and the bog bush-cricket M. brachyptera was frequent on Ynys Edwin bogs (22/678961) in August and occasionally reported from Cors Fochno (22/635915). There were just a handful of records of oak bush-crickets Meconema thalassinum from the northern oakwoods and dark bush-crickets Pholidoptera griseoptera were only seen in their known meadow site at Coedmore (22/193436).

The most interesting aspect of Orthoptera recording this year has been Ieuan Williams' investigations into the historical status of the house cricket Acheta domestica in Ceredigion. In discussion with residents possessing a long memory he has found that several people recall the familiar friendly 'chirrup' in the past. These records indicate that the house cricket was reasonably common up to the late 1940's but the only record since then is from the RAF station at Blaenannerch (22/24) in 1966 (Ent. Gaz. (1973) 24:233-4). Indeed, one of the household colonies is claimed to have been destroyed with liberal applications of Keating's Powder! House crickets are now known to have been present in nine 10-km squares but I'm sure further reminiscences will continue to reveal additional distributional information.

I am grateful to Dave Boyce, Arthur Chater, Ian Francis, Dick Squires, John Steer and Ieuan Williams for their records of Ceredigion Orthoptera in 1990.

ODONATA

DRAGONFLIES IN CARMARTHENSHIRE, 1990 - I K MORGAN

The hairy dragonfly Brachytron pratense, principally a species of coastal marshes, has reportedly much-declined in recent years through habitat-loss and pollution of the clear water bodies that it requires, so it is encouraging to note the observation of Brachytron at three localities during 1990 - the Dyfed Wildlife Trust/Llanelli Naturalists reserve at Ffrwd Fen (22/419023); the Machynys Ponds (21/512980) and an enormous population at the Witchett Pool (and associated extensive ditches) on Laugharne Burrows (22/283076 etc.). A previously unknown site was a newly-widened and floristically-rich ditch SE of Llwynhendy (21/542987), where several were seen on 27 May. Brachytron is the earliest of the large 'hawker' dragonflies to appear, with numbers of flying adults 'peaking' in the second half of May and the first half of June, (though they can be seen as early as the first week of May); whereas the other large hawker of water bodies in south Carmarthenshire - the emperor Anax imperator - reaches maximum numbers a good month later. The migrant hawker Aeshna mixta, which is the third regular large dragonfly of these same ponds and ditches, does not appear until late summer, so that there is, in effect, a succession of large hawker-type dragonflies exploiting the insect food-resources of these aquatic localities. At the nearby Penclacwydd Wildfowl Centre (21/ 530994) Barry Stewart again noted breeding small blue-tailed damselflies Ischnura pumilio and black-tailed skimmers Orthetrum cancellatum, but the migrant hawker was a new species on the site. Aeshna mixta has been known as a Carmarthenshire breeding species since at least 1979, when O D Hughes noted (and photographed) teneral individuals at the upper Trebeddod Reservoir, Furnace (22/50-02-) on 30 August of that year.

Black darters Sympetrum danae (a rather scarce species in the vice-county) were observed by J R Ellis and the author on Cors Goch Llanllwch (22/366185) on 22 August, whilst about a month earlier, John Steer recorded the delicate small red damselfly Ceriagrion tenellum on the mossy hollows of this bog; it is only known from this site in Carmarthenshire. In fact, the small red damselfly is a rare species overall in Britain, being mostly confined to the western seaboard of Wales, the West Country and the southern English heaths; these British populations representing the northernmost extension of an essentially 'Mediterranean' species. It is just possible that the small red damselfly exists on other, as yet unknown, Sphagna-rich sites in Carmarthenshire; its red legs distinguish it from the much commoner large red damselfly Pyrrhosoma nymphula. Wet, Sphagnum-dominated sites are favoured, too, by the keeled skimmer Orthetrum coerulescens, particularly seepages and hillside flushes with syrupy-textured organic muds; a small colony was found on 26 July by Neil Mathew 'by the upper reaches of the Sawdde Fechan' (22/756215).

ODONATA RECORDING IN CEREDIGION IN 1990 - IS FRANCIS

Good weather for a second consecutive year brought 222 records of nineteen dragonfly species from Ceredigion. The highlight of the year was the rediscovery of Brachytron pratense at Cors Fochno (22/634922) on 31 May. Only a single male was confirmed but other sightings of probable individuals were made by Paul Burnham earlier in the month. However, there were no records of Orthetrum cancellatum or Coenagrion pulchellum from the Cors Fochno area, despite several visits. Further survey work is urgently needed to discover whether O. cancellatum or C. pulchellum still persist in the area and, if possible, to establish the size and distribution of the B. pratense population.

There were several other notable records during the year, including sightings of Anax imperator at Crug Garn Pond (22/517617), Llyn Fanod (22/604645), near Llanfihangel-y-creuddyn (22/693768), Llyn Frongoch (22/721756) and Rhos Llawr-cwrt (22/411499). The first locality is a new site, the second and third are also new 10-km square records; only at Llyn Frongoch and Rhos Llawr-cwrt has Anax been recorded previously. This set of sightings is in marked contrast to the last five years when very few records of the species were received. Although Orthetrum coerulescens has been recorded from Bryn Bras, near Ponterwyd, in the past, a new site at the northern edge of the SSSI (22/744800) was discovered on 1 August, when at least ten individuals were present. The northern flushes of Bryn Bras are very important botanically and the presence of this relatively scarce dragonfly adds greatly to their interest.

Amongst the damselflies, a new site for Ischnura pumilio was found at a newly-created pond at Cwmcaseg, near Llanilar (22/612770), though this was the only record of the year. This species seems very capable of colonising new ponds and ditches and efforts to check such sites are likely to be rewarded. However, peaty substrates appear to be shunned; the most promising localities are those on clay or silt, often with cloudy water and low vegetation cover, principally of such species as Glyceria fluitans, Agrostis stolonifera, Eleocharis palustris and Juncus effusus. Disturbance to the pond margins and dumping of rubble, soil or even rubbish are often characteristics of pumilio sites in Ceredigion. The only other uncommon species seen during the year was Ceriatagrion tenellum, recorded from Llangynfelin Common, Cors Fochno (22/633920) and Rhos Llawr-cwrt (22/411499), both of which are traditional sites.

I thank Dave Boyce, Arthur Chater, Adrian Fowles, Lin Gander, John Steer, Alan Stubbs, Ieuan Williams and David Woolley for providing records.

LEPIDOPTERA

CARMARTHENSHIRE BUTTERFLIES AND MOTHS, 1990 - IK MORGAN

Warm sunshine and gentle southerly winds "from south of the Azores" (BBC weather forecast) brought the first Spring sighting of a red admiral Vanessa atalanta and a painted lady Cynthia cardui at Pembrey Forest (22/395015) on 9 March. Immigration of red admirals and a few painted ladies continued throughout the unseasonably hot weather of late March (when temperatures reached 18°C on the 30th) and these migrant butterflies were accompanied by hummingbird hawkmoths Macroglossum stellatarum which were noted at a scattering of Dyfed localities. The warm weather also tempted early emergences of several resident species in mid-late March - peacocks Inachis io, small tortoiseshells Aglais urticae and speckled woods Pararge aegeria, with commas Polygonia c-album, orange-tips Anthocharis cardamines and holly blues Celastrina argiolus showing themselves in the first week of April. At this time, too, another characteristic herald of Spring - the brimstone Gonepteryx rhamni - was seen at more than half-a-dozen sites throughout eastern Carmarthenshire, from near Halfway (22/827328) near the Brecon border (B Stewart), on the limestone ridge, and other base-rich localities, to regularly-noted brimstone sites on the Coalfield. Other species had emerged by late April and early May with, for example, many records of green-veined whites Pieris napi and small coppers Lycaena phlaeas and, on 2 May, the enchanting sight of green hairstreaks Calophrys rubi feeding at flowers of green-winged orchids on stable dune grassland at Pembrey Burrows (21/4199).

A positive feature of the county's butterfly fauna is the continuing survival of colonies of marsh fritillaries Eurodryas aurinia, a species which "has declined very severely in recent years" throughout Europe (Warren 1990). The pasture colonies of Dyfed are important in a national context and there are currently c.30 colonies known in Carmarthenshire. A modest colony is established on certain pastures at Cencoed-uchaf farm (22/485032), where negotiations are underway to conserve this site by appropriate management; here the butterflies were first noted on 24 May, a typical emergence date. There were five 'new' colonies discovered in 1990: (1) Waun-wyllt, Horeb (22/498055) - a strong colony, with small pearl-bordered fritillaries Boloria selene, on 26 May; (2) a meadow next to the Afon Marlais (22/613176) at Derwydd, twenty adults seen with larval 'webs' also found later (NR Mathew), (3) two adults noted flying with small pearl-bordered fritillaries at Penrhiwiau plantation (22/665235)(NRM), (4) one noted, at the start of the flight season, at Cors Goch Llanllwch Nature Reserve (22/364185)(P Whitton), and (5) one seen at the edge of Llyn Pencarreg (22/536455) on 27 June (J Friese). Small pearl-bordered fritillaries were noted at a minimum of fifteen widespread localities during the season, including several new stations; this is another characteristic species of flower-rich grassland in south-west Wales.

In contrast, the pearl-bordered fritillary Boloria euphrosyne is a species that is probably extinct in most parts of the county, although until the first part of this century it was considered common (Morgan 1989a). Its larvae utilise "young violets that have recently sprung up in bare ground, or which are growing in a warm, sheltered micro-climate" (Thomas & Snazell 1989)

and the decline in various forms of woodland management, resulting in heavily-shaded woods, must have adversely affected this species. It was fascinating to hear of half-a-dozen or so probable pearl-bordered fritillaries in a glade at a small wooded 'cwm' near Cynwyl Elfed (by the old waterworks, 22/385258 (JF)), for this is exactly where BL Thomas noted the species in 1951-2. This site will be checked next season to validate this interesting record. Other 'possibles' were noted in Carmel Woods (22/61) in May (NRM) and there was a definite observation of a singleton, which sunned itself in an open area near the Gwaith Go-bach Pond at Dinefwr Castle Woods (22/619220) on 29 May, by C Smith.

In contrast to the 1989 season, when there was only one sighting of silver-washed fritillaries Argynnis paphia, it is gratifying to record that this species was noted at no less than seventeen different localities during July to September. Observations included a female watched ovipositing in bark crevices on the shaded north side of Corsican pines, 1-3 metres above the ground, in Pembrey Forest (22/392023) on 18 July. Dark-green fritillaries Argynnis aglaja were seen at Laugharne Burrows (22/301072) on 10 June, and a characteristically fast-flying individual was cruising over the upper reaches of the Sawdde-fechan (22/756215) on 26 July (NRM).

It was feared that the hot, dry summer of 1989, which desiccated swathes of kidney vetch at Pembrey Burrows, would lead to a severe decline in numbers of small blues Cupido minimus (whose larvae feed on that plant), but casual observations happily showed that fair numbers of both generations were present at this site in 1990. However, a mystery surrounds the disappearance of small blues and marbled whites Melanargia galathea from two inland colonies - Capel Dyddgen quarry (22/467127) and Carreg Eidon (22/493137) - where they were present in the mid-1970's. Two seasons' searching has failed to reveal either species at these two localities. One can only postulate that increased grazing pressure by rabbits has mostly removed the kidney vetch from these sites (though it just survives at Carreg Eidon), as well as the rank grasses favoured by Melanargia, though the grayling Hipparchia semele, which favours open conditions, is still frequent. As compensation, two new localities were discovered for marbled whites - six individuals at Derwydd station (22/621178) on waste ground, 20 July (NRM) and c.30 on rank grassland at Cae Tir-mawr (22/648205) on 25 July.

Holly blues and commas both had good years, with the latter wandering widely in search of pre-hibernation sustenance in late summer away from their scrub or woodland wintering/breeding sites. The brown argus Aricia agestis, which has been overlooked at its coastal stations in the last couple of years, was noted in mid-September by Jayne Kelsall in the Pembrey Forest area (at 22/398023 and 22/414019). Storksills Erodium spp., the larval foodplants, abound in the disturbed sandy trackways here. Apart from the early Spring influx, it was a poor year for migrants with no clouded yellows Colias croceus reported and just a small August influx of painted ladies.

There were several records of purple hairstreaks Quercusia quercus at various scattered localities, including individuals coming down to the water's edge along the Afon Sawdde (22/728245) at Pontarllechau, and the nearby Sawdde-fechan had 'considerable numbers...amongst the oaks' (NRM). A highlight of the season was a single white-letter hairstreak Strymonidia w-album caught by the streamside in the base-rich 'cwm' at Coed Penrhiwiau (22/660237) on 24 July. Here its caterpillars must feed on the strong growths of wych elm and, since this tree still thrives in many other base-flushed dingles, one can be optimistic that the white-letter hairstreak survives undetected elsewhere in the county's woodlands. Another elusive species is the brown hairstreak Thecla betulae, one of which was closely watched by Rob Colley on the old railway track at Dryslwyn (22/552199) on 22 August. This species is probably widespread in small numbers throughout much of Carmarthenshire, certainly its larval foodplant (blackthorn) grows commonly in the wood-edge situations that the butterfly often favours.

Less moth-trapping was carried out, both by the author and the other principal recorder, Barry Stewart, in 1990. Nevertheless, many noteworthy records were made and recording has helped to emphasise the entomological importance of one site, the Techon marsh at Llwynhendy, in a local/regional context. Next season it is hoped to target various habitats and assistance is always welcomed from committed naturalists. Highlights of the 1990 season are summarised below.

The second consecutive mild winter and warm, early Spring prompted many early records of various common moths, with some species being about a month earlier than normal. Several sites were quite regularly light-trapped in 1990, one of which was Cwm-mawr (22/483023), part of the Stradey Estate, which yielded a pale pinion Lithophane socia, a local moth of broadleaved woodland, on 9 April. Another was caught in Pembrey Forest (22/391026) two days later (BS). Other interesting records at this site were a marbled white-spot Lythacodia pygarga (which feeds on Molinia) and a waved carpet Hydrelia sylvata on 11 June. One night the trap was moved a short distance and placed under a mature beech tree, resulting in the capture of a clay triple-lines Cyclophora linearia on 31 May, possibly new to Dyfed. Another site on the Stradey estate that was trapped on a few occasions was the wet deciduous woodland, dominated by birch, near Cencoed-uchaf (22/485035), here noteworthy moths included the grey birch Aethalura punctulata, small engrailed Ectropis crepuscularia and the white pinion-spotted Lomographa bimaculata (all on 17 May), whilst the nearby 'rhos' pasture at 22/485032 yielded a devon carpet Lampropteryx otregiata amongst a range of typical wet, acidic, heathy pasture species.

A night's trapping on 28 July proved profitable for IKM and BS at Cwm Clydach (22/444074) when a scorched carpet Ligdia adusta (which feeds on spindle) and a white-line snout Schrankia taenialis (a rare species in Wales) were both caught. The latter moth was caught a few days later at St Ishmaels (22/363080, BS) and other scorched carpets were caught at Penybedd Wood (22/417018) and Pembrey Forest (22/391026) in early August. A few nights earlier, on 24 July, clouded magpies Abraxas sylvata were captured abundantly at Coed Penrhiwiau (22/660237). Perhaps the best woodland moth, and one of the highlights of the season, was a diurnal capture on 12 June at Coed Gwempa (22/433116) when a red-tipped clearwing Synanthedon formicaeformis was flushed from an area of open Filipendula-fen amongst willow-carr. This constitutes only the second Welsh record (otherwise only known from an old Glamorgan record) for this scarce and fickle species which breeds in willow stems. Another highlight was the confirmation of a strong colony of the obscure wainscot Mythimna obsoleta at Techon marsh (21/540992), Llwynhendy, where it was caught on various dates from mid-May into July. The author believed he had taken this species at the same locality in mid-June 1988 but the specimen was incorrectly determined as a white-speck M. unipunctata (see Morgan 1989b). This 1988 specimen has subsequently been confirmed as M. obsoleta. The nearest known colony of obscure wainscots, a species characteristic of southern English fens, is in Gwent. Other local fenland species caught at this site are silky wainscot Chilodes maritimus, bulrush wainscot Nonagria typhae, round-winged muslin Thumatha senex, twin-spot wainscot Archanara gemnipunctata and Webb's wainscot A. sparganii (the latter being a 1989 record). All of these species are rare or very localised in Wales. The Techon marsh site comprises a large expanse of reeds with some marginal mixed herbaceous fen and Typha beds and, like the other remnant marshes in the Machynys-Llwynhendy-Bynea area, it is without any formal protection (several local sites have been, or will be, lost). A priority for conservation bodies must be to ensure that these coastal fens (which are hardly replicated elsewhere in Dyfed) are adequately safeguarded.

Scarce coastal species caught this year included a dog's tooth Lacanobia suasa at Kidwelly (22/409073) on 29 May (BS) and also at Pembrey Burrows (21/4199) on 12 June. A shore wainscot Mythimna littoralis, together with many Archer's darts Agrotis vestigialis, were other local species caught on the foredunes at Pembrey Burrows on 7 August. Not far to the west, on Tywyn Burrows (22/368038), small waved umbers Horisme vitalbata were beaten abundantly from traveller's joy (which grows on the stable dunes here) by BS on 1 Aug; it is a scarce and local moth in Wales. The related waved umber Menophra abruptaria was noted at Erw-las, Llwynhendy (21/537993) on 12 May; it feeds on privet and lilac, both of which are cultivated in gardens at this site.

BS again continued to light-trap at Ffrwd fen, Pembrey (22/420026) where the small rufous Coenobia rufa (a local marshland species associated with Juncus) was captured on several dates. A marbled green Cryphia muralis taken here must have wandered from the nearby rocky outcrop of Mynydd Penbre as it feeds on saxicolous lichens. A night's trapping on the extensive bog at Cors Goch Llanllwch (22/366185) was worthwhile in that both a heath rustic Xestia agathina (a heather-feeder) and a saltern ear Amphipoea fucosa were caught. Other wetland moths were the colourful scarlet tigers Callimorpha dominula freshly emerged at Llety-wen (22/626305) on 15 June and also at Pembrey Forest (22/405013) on 18 July and

below Pant Streimon (22/583412) on 26 June. Additional daytime records of interest were several small argent and sable moths Epirrhoe tristata noted on a heath bedstraw covered hillside north of Gwydre (22/790279) on 19 June and forester moths Adscita statices noted at Mynydd Llangynderyne (22/480129, NRM), Maes-llydan (22/512062) and SSW of Ty'r Mynydd (22/520078) on 26 May. The forester is a lovely metallic-green day-flyer of unimproved pastures which, like many noteworthy invertebrates, has declined as such flower-rich sites have been drained and agriculturally improved.

Again it was not a good year for migrants with no noteworthy species recorded except for the hummingbird hawkmoths observed at Cwmpengraig (22/348367) by SJ Adams on 30 March, one at Bwlchau, Carmel (22/596162) on 2 May (R Sharpe), two in August at Machynys (21/5198, JR Ellis) and near Maesyrcrugiau (22/4741, T Davis).

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THE 1990 BUTTERFLY SEASON IN PEMBROKESHIRE - RE ELLIOT

Only two of the skipper species were recorded in 1990. The small skipper Thymelicus sylvestris was recorded between 3 July & 14 August which is rather later than normal (i.e. mid June to late July). However, records for the large skipper Ochlodes venata from 3 June to 7 August agree almost exactly with the accepted flight period for the species. Amongst the Pieridae, only a single record was received (from K Tiers) of a brimstone Gonepteryx rhamni at Mathry (12/83) on 2 May. Large whites Pieris brassicae were recorded from 3 May right through to 12 October showing no perceptible break between generations. The small white P. rapae showed quite distinct flight periods for both generations, being recorded from 28 April to 22 May and again from 14 July to 26 September. The green-veined white P. napi also showed an inter-generation gap with records from 3 May to 4 June and then again from 2 July to 12 November. The last of the 'White' species, the orange-tip Anthocharis cardamines was recorded between 7 April and 26 May.

Although there were no sightings of adult brown hairstreaks Thecla betulae during the year, breeding has once again been confirmed on the Dyfed Wildlife Trust reserve at West Williamston. In March, eggs of this species were found on blackthorn bushes along the foreshore of the reserve. The site is very close to previous locations where eggs have been found. Like the small and green-veined whites mentioned earlier, the small copper Lvcaena phlaeas is another species in which the different generations can be detected. This year it was recorded from 4 - 31 May and again from 4 August to 12 October. This second period probably represents two overlapping generations. Only one record of the small, blue Cupido minimus was received, a sighting by Peter Wells at Skrinkle Haven (21/087977) during a holiday in late May. The silver-studded blue Plebejus argus has not been recorded from the county since the 1950's when it was last seen on the Castlemartin MOD Range. On 17 June, David Lang, Jack Donovan

and Stephen Evans recorded and photographed a colony of this species at Brownslade Burrows (11/898980) on the Castlemartin Range, close to the location given for the historical records. The photographs were subsequently confirmed by RLH Dennis. This species seems to be restricted to heathland which has been kept open and fresh in growth, often as a result of burning. Each summer many fires are started in the scrub on the MOD Range during live firing sessions, so these activities may be responsible for maintaining the right kind of habitat to suit the silver-studded blue. It seems likely that the reason the species has not been recorded in the intervening years is simply that no one has been looking for it in this locality. Jack Donovan also recorded a small colony of brown argus Aricia agestis "just south of South Hook fort (12/872055) where they were flying in the vicinity of a southward sloping bank". The common blue Polyommatus icarus was recorded almost continuously between 22 May & 12 October, with the two generations overlapping. All but one of the records for the holly blue Celastrina argiolus were from the first generation and occurred between 22 April & 26 May. The single record for the second generation came from John Steer who recorded it at Robeston Wathen on 22 July.

The red admiral Vanessa atalanta was first recorded on 31 March and again on 22 April. These were isolated sightings and are likely to have been individuals that managed to survive the winter. From 26 May there were continuous sightings right through until 20 October when the weather took a turn for the worse. A similar situation occurred with the small tortoiseshell Aglais urticae with three isolated sightings in March and April, followed by almost continuous recordings until 12 October. This includes one unfortunate individual recorded on 8 October as being eaten by a meadow pipit (Graham Rees). The painted lady Cynthia cardui was less regularly recorded than either of the two preceding species; first recorded between 18 & 25 March (R Elliot), it was not seen again until 14 June from which time it was recorded at intervals until 14 October. The peacock Inachis io was seen regularly from 23 February until 17 October and was probably the most abundant of all the nymphalid butterflies. The least abundant was the comma Polygonia c-album which was recorded only on three occasions - at Hundleton (12/1339) on 11 Sept; Pengelli Forest nature reserve (22/1339) on 22 Sept; and at Robeston Wathen (22/0816) on 26 Sept (J Steer).

Only three fritillary species were recorded in the county during 1990. The small pearl-bordered fritillary Boloria selene was recorded on 27 May at 12/7904 (J Steer), on the Castlemartin Range on 9 June (R Elliot) and on Dowrog Common nature reserve as part of the Butterfly Monitoring Scheme between 4 June & 17 July (It Evans/P Lynas). G Rees recorded the only sighting of the dark green fritillary Argynnis aglaja on 14 July at 12/8941. The third species, the marsh fritillary Eurodryas aurinia, was recorded on six occasions, four of them at Dowrog Common during the Butterfly Monitoring Scheme between 19 May and 12 June. The other two records for this species were on 30 May at 12/845124 (J Collier) and on 3 June at 22/2338 (J Steer).

Seven species of 'browns' were recorded during 1990. The table below gives the species together with the earliest and latest date when it was recorded.

	FIRST	LAST
Speckled wood <u>Pararge aegeria</u>	31 May	12 Oct
Small heath <u>Coenonympha pamphilus</u>	19 May	22 Aug
Wall <u>Lasiommata megera</u>	3 May	22 Sept
Ringlet <u>Aphantopus hyperantus</u>	23 June	22 Aug
Grayling <u>Hipparchia semele</u>	28 June	29 Aug
Gatekeeper <u>Pyronia tithonus</u>	3 July	29 Aug
Meadow brown <u>Maniola jurtina</u>	10 June	11 Sept

The fine weather in Spring and early summer seemed to promise an abundance of butterflies. In general this promise was not fulfilled and in particular the numbers of nymphalids was disappointingly low.

LEPIDOPTERA RECORDING IN CEREDIGION, 1990 - A P FOWLES

In Ceredigion, at least, there appears to have been nothing in the past to compare with the phenomenal explosion of holly blues Celastrina argiolus witnessed in 1990. In normal years there are usually a few sightings from the county's stronghold at Ynyshir (22/6896) and perhaps on isolated record from elsewhere. This year few local naturalists can have failed to meet with the species, probably for the first time in Ceredigion, and there were records from an astonishing twenty-one tetrads (compared with a previous all-time total of 29). Most sightings were typically of singletons, occurring between 31 March and 13 October but the vast majority were seen in the two periods 22 April-18 May and 16 July to 18 August.

If holly blues classify as the species of 1990 then the record of the year is undoubtedly the discovery of four large heaths Coenonympha tullia along the Forestry Commission track in the plantation of Coed Craigyrogof (22/721720) on 17 June. Whilst there is no suitable breeding habitat in the immediate vicinity, large heaths do not normally stray far from their colonies and it is suspected that one of the moorland bogs in the hills to the south of the Ystwyth must support a population. In 1974 three adults were captured in a moth-trap (an extraordinary occurrence in itself) at Yspyty Ystwyth (22/7370) so it is quite likely that this undiscovered colony lies somewhere in between the locations of these two records. Large heaths have traditionally been thought to be restricted to the raised mires of Cors Caron and Cors Fochno and the eventual discovery of the whereabouts of this new colony will be an important event for butterfly conservation in the county.

Large heaths certainly had a good year and the annual transect on Cors Fochno (22/6391) indicated that this was a similar season for the species to 1986, with an Index of Abundance calculated at 124.5. The butterflies were also on the wing early, being recorded from 22 May to 10 July. Another species that obviously did well was the common blue Polyommatus icarus. After several years in which the species had hardly been seen away from the coast, 1990 saw records from thirty-one inland localities - a substantial improvement on last year's position. It was a good year also for commas Polygonia c-album (reported from 26 tetrads), whilst green hairstreaks Callophrys rubi were widely recorded in the northern uplands and on the rhos pastures of central Ceredigion. Purple hairstreaks Quercusia quercus were rarely reported but indications are that they seemed to fare reasonably well.

Population fluctuations are the norm for marsh fritillaries Eurodryas aurinia and there seems to be little synchrony between colonies. The population at Rhos Llawr-cwrt NNR has been monitored annually since 1984 when the colony was at a peak before a catastrophic crash the following year. There has been a steady recovery during the intervening years and 1990 saw a return to peak levels. The Index of Abundance at Rhos Llawr-cwrt for the past six years is as follows - 281.8 (1984, incomplete count); 51 (1985); 44 (1986); 72.3 (1987); 28 (1988); 112 (1989); 423 (1990). Regular monitoring of other marsh fritillary colonies in Dyfed would be valuable to aid interpretation of these results in relation to climate and management. A new site for the species in Ceredigion was found at Troedyrhiw (22/661657), a series of rhos pastures in an area that holds several marsh fritillary colonies.

There was a slight improvement in the fortunes of silver-washed fritillaries Argynnis paphia this year with records from six tetrads in late July. Coed Allt-fedw (22/6672) obviously holds a good colony as several observers reported sightings of adults in good numbers here. Nearby, in the Llanafan Forest/Hafod Arch area (22/77), dark green fritillaries A. aglaja were seen regularly in some abundance. Inland sightings are usually of singletons dashing across the upland moors but these records suggest that breeding probably occurs in this area. Readers may recall that the 1988 review (DIG 12: 5) reported the occurrence of a possible inland colony of dark green fritillaries at Allt Gelligwenyn (22/564524) near Silian. It is sad to have to relate that this poor-fen and mire complex was drained and destroyed earlier this year. Despite the 'greening' of public awareness in recent years the battle to conserve valuable wildlife habitats still has to be won and demands our vigilance and renewed efforts.

On a more positive note, discussions have begun with the Forestry Commission to ensure sympathetic management of the tracks along the southern edge of the Llanafan Forest (22/6970). These tracks have not been improved to take heavy traffic and as such support

a rich verge flora and a diverse butterfly fauna. Several scarce species are present, including at least three discrete colonies of dingy skippers Erynnis tages. This is a very local butterfly in Ceredigion and the assured conservation of this site will be of great value. Dingy skippers were also seen this year in their more favoured habitat of coastal grassland at Carreg-y-ty (22/301534). Graylings Hipparchia semele also occur along the Llanafan Forest tracks and they were reported from a total of thirteen tetrads in 1990. In addition to their trackside colonies they were also seen on disused mine spoil, shingle heath, dry hillsides and coastal heath.

The programme to re-establish brimstones Gonepteryx rhamni at RSPB Ynyshir met with some difficulties this year and just five adults were released in mid-summer. Earlier in Spring an adult had been seen at Covert Du (22/677954) but there is now no way of knowing whether this is evidence of the lingering native colony or a survivor from last year's introductions. In contrast, we can say with a high degree of certainty that the single clouded yellow Colias croceus seen at Cwm Mwyro (22/776651) on 14 September was not home-bred. 1990 was not a year of pronounced migrant activity but it will be a while before 'global warming' allows clouded yellows to become resident in Dyfed!

Migrant moths were also distinctly scarce this year but there were at least four sightings of hummingbird hawkmoths Macroglossum stellatarum in March and April. A much scarcer visitor to the county is the convolvulus hawk Agrius convolvuli and a singleton found at RAE Aberporth (22/2451) on 7 September was only the eighth reported in Ceredigion.

Generally it was rather a quiet year for moth-recorders with few moments of excitement amongst the wealth of records of common species or well-documented nationally notables. No new species to the county list were reported and, in fact, there is one deletion to be acknowledged. In 'The Moths of Ceredigion' (Fowles 1988) I remarked that the specimen of the dentated pug Anticollix sparsata contained in the Salter Collection at the National Museum of Wales, and bearing a label stating that it had been taken at Craig-y-pistyll (22/718856) on 9 June 1926, was "perhaps the most extraordinary record on the county list". Recent examination of Dr Salter's Specimen Notebooks shows that this specimen was obtained by Salter from L H Newman, a renowned "livestock" supplier in southern England. Salter did collect moths at Craig-y-pistyll on this date and presumably labelled the specimen by mistake when he was dealing with the day's catch. Whilst on the subject of errata, it should be noted that reference to a specimen of the straw underwing Thalpophila matura in last year's review (DIG 16: 8) is erroneous as the recorder has now withdrawn the record.

Of the year's moth records, two stand out as being of particular merit. The Rothamsted trap at Plas Gogerddan (22/629837) continues to produce astonishing records considering its unpromising location. A barred hook-tip Drepana cultraria captured on 26 July was a welcome record of a local species but much more interesting were a single specimen of the ochreous pug Eupithecia indigata (4 June) and two of the olive Ipimorpha subtusa (26 July and 2 August). This is the first ochreous pug to be seen in Ceredigion since 1966 and there are only three previous records of the olive, which feeds on aspen, the last being in 1970, also at Plas Gogerddan. The three Rothamsted traps in the county produced their usual batch of scarce moths, chiefly species which are fairly widespread in west Wales but uncommon in Britain as a whole. These 'nationally notables' recorded in 1990 (several of them also being seen at localities other than the Rothamsted trapping stations) were - Devon carpet Lampropteryx otregiata, ruddy highflyer Hydriomena ruberata, dotted carpet Alcis jubata, goldenrod pug Eupithecia virgaureata, oak-tree pug E. dodoneata, red-necked footman Atolmis rubricollis, pale pinion Lithophane socia, double-line Mythimna turca and silver hook Eustrotia uncula. A silver hook captured at Ty Coed, Tregaron (22/687618) on 23 August was unusually late on the wing as the latest previous record in Ceredigion is 25 July.

The Ty Coed trap also caught 55 marsh oblique-banded moths Hyphenodes humidalis between 14 July and 25 August. This is a rarely recorded species in the county but it is probably overlooked on account of its small size and should be widespread on bogs and wet heaths where it is believed to feed on cross-leaved heath. Another bog species, the grey scalloped bar Dyscia fagaria, was also recorded at Ty Coed where it turns up more or less annually in small numbers from the adjacent Cors Caron. Of greater interest was the sighting of one on Cors Fochno (22/6391) on 22 May, the first record for this well-worked locality since 1954. Valuable

confirmation of another old record was obtained at Craig-y-pistyll where Ashworth's rustics Xestia ashworthii were trapped on 23 July (one) and 31 July (six). Larvae were found on this imposing inland cliff in 1932 and 1934 (see DIG 8: 14) but all other county records since then have been of single adults, presumably strays, in lowland situations. Ashworth's rustic is restricted in Britain to upland sites in North Wales where its larvae are polyphagous on herbs growing in rocky habitats.

The roll-call of notable moths seen in 1990 is completed with records of the double kidney Ipimorpha retusa at Taliesin Carr (22/653913) in August, scarlet tigers Callimorpha dominula at four sites (including larvae found in April feeding on hound's-tongue, nettle, and water forget-me-not), a glaucous shears Papestra biren at Salem (22/669843) on 18 June, and a crescent dart Agrotis trux, also at Salem, on 17 July. The crescent dart is a coastal species, feeding on a variety of low-growing plants, and had presumably been blown the eight kms inland to Salem. This is further suggested by the fact that a specimen of the heart and club Agrotis clavis, which is considered to occur chiefly on sand dunes in Wales, was also caught at Salem two days earlier. A more obvious wanderer was the beautiful yellow underwing Anarta myrtilli seen feeding on scurvy-grass flowers on the Dyfi saltmarsh (22/627936) on 1 May before flying north across the estuary. The beautiful yellow underwing inhabits tracts of mature heather and this individual had presumably come from Cors Fochno where the species is established.

These latter records indicate some of the difficulties of using moth-trap results in site assessment as you can never be absolutely sure that the species caught are actually breeding on site. The production of a reliable guide to caterpillar identification will be an invaluable aid to invertebrate conservation for those of us lacking the patience or skills to breed larvae through to adulthood. Fortunately the caterpillars of the rosy marsh moth Eugraphe subrosea pose no identification problems and this fact, coupled with their conspicuous feeding behaviour, has enabled accurate monitoring of the species to be carried out on the raised mire at Cors Fochno. One night in late May each year, a transect across the central dome is surveyed to judge the larval populations in the 'undamaged' mire compared to that which was burnt in February 1986. The full survey, which involves crawling across the bog on hands and knees for four hours in the middle of the night, has been running since 1988 and the results are as follows:

	<u>LARVAL DENSITY</u>		
	<u>1988</u>	<u>1989</u>	<u>1990</u>
Unburnt Mire	1:4.37m ²	1:4.77m ²	1:13.3m ²
Burnt Mire	0	1:60m ²	1:24m ²

Observations in 1986 and 1987 showed that the rosy marsh moth had been completely destroyed by the fire and its after-effects on the southern half of Cors Fochno. Re-colonisation did not take place until the fourth season after the fire and this year's survey indicates that habitat conditions are steadily improving. However, there was a marked decline in larval density on the undamaged mire, suggesting that 1990 was a relatively poor season for rosy marsh moths, at least for the late-instar larval stages.

This study is still in its infancy and we are learning new things about this rare moth each year. Despite the discomfort endured as temperatures fall to about 4°C before dawn, these annual surveys are extremely enjoyable and for the past two years we have been accompanied by singing quail throughout the night. As an avid nocturnophile I can thoroughly recommend the pleasures of fieldwork in the hours of darkness as there are always novel aspects of our wildlife to be experienced in the calm of the night. It would be of great interest if more of the county's moth recorders ventured away from their gardens and explored a little further into the Ceredigion countryside.

In the meantime all records are still most welcome and I am extremely grateful to A O Chater, P R Holmes, E N P and P O Mudie, I J L Tillotson and I Williams for the wealth of information they have supplied this year. Paul Burnham and David Woolley are to be especially thanked

for carrying on with the invaluable monitoring studies which provide a firm basis for the interpretation of Lepidoptera trends in Ceredigion. Additional records, which are also gratefully appreciated, were received from M E Baines, D C Boyce, R P Bray, I Callan, I S Francis, C Fuller, L Gander, P Heron, R Liford, S A Martin, H Roderick, I Savage, J B Steer and J Valentine. I would also like to thank Adrian Riley for supplying information annually from the Rothamsted Insect Survey light-traps.

COLEOPTERA

CARMARTHENSHIRE COLEOPTERA RECORDS, 1990 - I K MORGAN

Inspection of the eroding mudbanks of the saltmarsh at Pembrey (22/427001) in early April revealed the presence of several local beetles - the carabids Bembidion laterale and Pogonus chalceus and the rove beetle Bledius spectabilis. B. laterale and P. chalceus were also collected at Llangennech (22/571023) on 15 April together with Agonum nigrum. Other noteworthy coastal records were the notable staphylinid Stenus guynemeri on a wet, tufa cliff at Craig Ddu (22/326100) (18 April), Cassida vittata on saltmarsh (22/331098) at nearby Wharley Point (23 August), and two weevil records of note - Polydrusus pulchellus on Laugharne saltmarsh (23 April) and Ceutorhynchidius dawsoni on plants of buck's-horn plaintain at Dolwen Point, Pendine (22/233078) (27 September).

The DIG field meeting to Laugharne Burrows in June resulted in records of a number of scarce beetles. These are fully reported in DIG 18: 15-16, but note that the record of Cardiophorus asellus is erroneous. This specimen has recently been determined as the much scarcer Dicronychus equiseti, a species which is confined in Britain to a few duneland sites around the shores of the Bristol channel. A click beetle collected on Pembrey Burrows (21/41—99—) in early February 1989 has also been confirmed as D. equiseti. Other uncommon beetles noted during the season at Pembrey were Opatrum sabulosum, Chrysolina hyperici, Anomala dubia and, under a dead gull, Phaleria cadaverina.

Local beetles of wetland habitas included Mark Pavett's (PMP) discovery of Blethisa multipunctata and Chlaenius nigricornis at Techon marsh, Llwynhendy (21/540994) (21 April), and also (new to the vice-county) Chlaenius vestitus under a stone on the bare margin of one of the Machynys Ponds (21/511981) on 30 June. The fenland soldier beetle Silis ruficollis was noted at all of its known SE Carmarthenshire localities and also in the estuarine reedbed below Whitehill Down (22/293133), St Clears - perhaps its most westerly British locality. The other notable carabids were Acupalpus consputus in leaf litter under willow carr near Ddol-fawr (21/533989) in the coastal marshes at Llwynhendy (22 April) and Bembidion doris at the Bishop's Pond, Abergwili (22/450209) (18 May), whilst the uncommon boldly-marked weevil Grypus equiseti was found at the edge of the pond at the 'Banc-y-Lord', Kidwelly (22/391042) on 30 May. Mantura chrysanthemi, a notable chrysomelid, was swept from herbaceous vegetation in the nearby Pembrey Forest (22/387040), by Mark Pavett on the same date.

Fluvial habitats, too, provided their share of good records with the staphylinid Philonthus rubripennis found on the crumbling clay banks of the Afon Gwendraeth-fach (22/491153) on 25 May and the 'Red Data Book' click beetle Negastrius sabulicola on sandy shingle SW of Dinewr (22/603222) (on 4 May 1989); this attractively-marked (symmetrical yellow blotches on a blackish background) elaterid is confined to a handful of river sites in Britain.

The five-spot ladybird Coccinella quinquepunctata, another rather distinguished inhabitant of river shingle, was noted at its regular (and a couple of new) sites along the Afon Tywi; and also a strong colony was discovered on the Cothi near Abernaint farm (22/646357) and - perhaps more surprisingly - on a minor river in Cwm Cych, S of Llwynbedw (22/274365) where only a tiny expanse of shingle and associated open herbaceous vegetation (in a predominantly wooded area) supported a small population.

A modest collection of water beetles made in 1990 included three species new to the county

- the large Acilius sulcatus (which is apparently rare in Wales) in a small pond in Pembrev Forest (22/401011); Cercyon obsoletus, which landed on a pathway in Nant Dyfatty (22/455024), and Dryops ernesti found besides a calcareous trickle on Clogau-bach, Mynydd Du (22/719195)). Not far away, in a wet flush below Pont-clydach (22/735199), the scarce ground beetle Elaphrus uliginosus was recorded in late April, and Chrysolina brunsvicensis was found in similar habitat south of Pont-aber (22/738224) on 7 June. An extensive acidic pasture near Capel Gwynfe (22/721226) yielded the peatland soldier-beetle Cantharis paludosa in late May whilst flower-rich, neutral wood-edge grassland near Felindre (22/686306) had Dascillus cervinus and Chrysolina varians on 26 June.

The dung produced by agricultural stock on predominantly grassland habitats provides sustenance for many species of scarabaeids and attention was given to this group in 1990. Eight species were recorded for the first time in the county, including Qnthophagus coenobita (at Mooroutlets farm, 22/273139), Aphodius fasciatus on drier habitat on Cefn Sidan beach (22/390004) and A. granarius at 'Banc-y-Lord' (22/391042) (both of the latter records - PMP). The scarce rove beetle Gauropterus fulgidus was found in an established dung-heap at Tir Morfa-fawr (21/533983) and the histerid Peranus bipustulatus was in another dung-heap not far away near Techon (21/539995). The lovely 'bee chafer' Trichius fasciatus was noted, feeding at bramble blossom, in Pembrey Forest (22/407012) in late June.

Pediacus dermestoides and Tritoma bipustulata at Stradey Woods (22/48-01-), and Litargus connexus at Dinefwr Park (22/60-22-) were useful springtime records of deadwood species made by PMP, and the longhorn beetle Strangalia quadrifasciata was observed as it emerged from an old, decrepit hybrid poplar Populus x. canadensis at Penybryn farm, Bynea (21/541981) in mid-July. Eupuraea distincta is a notable species that was found in bracket-fungus at Coed Gwempa (22/436115) on 17 April; it has a south-westerly distribution in Britain. Judolia cerambyciformis, noted in woodland SW of Llandoverly (22/805345), Pyrochroa serraticornis - resting on an old ash tree near Abernaint farm, (22/646357); and the red weevil, Apoderus coryli at Allt-y-Fedw (22/721251) were other woodlanders of interest. Badister sodalis was found besides wet flushes in Stradey Woods (22/483024) and Cwm Clydach (22/444074), whilst Asaphidion curtum was discovered hiding under deeply-embedded stones in an ashwood at Capel Dyddgen (22/467125). The notable weevil Gymnetron veronicae was found in Stradey Woods in May and again, a few weeks later, at Machynys. Another noteworthy woodland beetle recorded in 1990 is the staphylinid Quedius aetolicus, two specimens of which were found in a red kite's nest in February (DIG 19: 19-20). This is a rare species nationally, chiefly associated with high-quality ancient woodland sites.

Found under rubble at the ruined Glynea farm (21/554991) in late March was the notable ground beetle Acupalpus dorsalis, whilst the large, all black, tenebrionid Blaps mucronata was accidentally introduced (in old damp clothing) by Barry Stewart to his new home in Water Street, Kidwelly (22/409073) (it was abundant at his previous lodging, Tir Morfa-fawr, (21/533983)). Finally, an unusual beetle found under stones on the limestone ridge near Crwbin (22/468128) on 4 April, was the tiny, pale orange Leptinus testaceus, a rarely-found (because of its habits) species, which lives a subterranean existence in mammal nests, bird burrows, or in caves where it feeds on bat excrement.

ACKNOWLEDGEMENTS

The following entomologists are thanked for their (often ample) help with identification of specimens and also for records of interest: K N A Alexander, D C Boyce, M L Cox, G N Foster, A P Fowles, M L Luff, H Mendel, P M Pavett and D Shirt.

COLEOPTERA RECORDING IN CEREDIGION DURING 1990 - DC BOYCE

With a current species list of 1390, the beetle fauna of Ceredigion is one of the best known of the Welsh vice-counties. 1990 has seen further steady progress being made with 90 notable or Red Data Book species recorded during the year. A majority of the beetle families are

now reasonably well-worked but major exceptions to this rule are the aleocharine staphylinids, cryptophagids, dermestids, nitidulids, cisids and scrautiids - volunteers please!

As usual the ground-beetles provided many records of interest. Although river shingle was not investigated as often as in previous years, the RDB Lionychus quadrillum was again found at Glanrafon on the Afon Rheidol (1 July) and this visit also produced a specimen of the small, yellow-brown Thalassophilus longicornis, found by J Cooter underneath a stone. The first county record for this species had been just two months earlier (6 May) on the banks of the Teifi at Henllan. Glanrafon is the most intensively worked shingle bank in the county and the finding of Thalassophilus, a chiefly subterranean beetle, demonstrates how elusive the shingle fauna can be. A shingle bar at Henllan also yielded Perileptus areolatus, excavated at a depth of c.10 cms from the bare shingle. The same visit also produced Clivina collaris (a more widespread riparian beetle that was also at Tyn-yr-helyg, Afon Ystwyth, on 1 July) from the riverbank and Badister sodalis was found amongst grass tussocks in a nearby meadow.

A good colony of Bembidion maritimum, only the second in the county, was found in the tidal reaches of the Afon Teifi at Rosehill on 19 August. Numerous individuals were found by turning stones embedded in the mud at the water's edge. B. iricolor is another carabid that appears to require wet habitats that experience some saline influence. A singleton was found at Cors Afon Ddu on 29 April in a brackish marsh on the southern fringe of the Dyfi estuary. Also primarily coastal in their distribution are B. saxatile and B. stephensi. The usual habitat of both species is wet flushes on soft rock coastal cliffs. There are extensive tracts of such habitat on the Ceredigion coast and consequently both are already well-known here. During 1990 they were found together on damp, boulder-clay cliffs at Aberaeron south beach on 23 February.

Amara lucida is nationally a local inhabitant of sand dunes. PM Miles (1983) had recorded this beetle at Ynyslas in 1975 and it was nice to re-find the species here on 18 March and 28 April. During visits to Ynyslas by DC Boyce and AP Fowles in March, considerable time was spent investigating the fauna of bare, sandy foredune slacks. This was amply rewarded with a number of unusual beetles found. Splashing water on sand around the margins of the slacks on 18 March brought large numbers of the rove-beetles Bledius fergussoni and B. fuscipes from their burrows and with them came smaller numbers of the ground-beetles Dyschirius impunctipennis and D. politus, both of which are specialist predators on Bledius. Sparse litter around one foredune slack explored during these visits yielded a few Bembidion pallidipenne and a single Acupalpus dorsalis. The handsome metallic green Elaphrus uliginosus is generally found on peaty flushes so it was a surprise to find two under stones at the edge of a well-vegetated slack at Ynyslas in March. A couple were found in more typical habitat on mesotrophic flushes at Llyn Gwngu on 4 May.

Agonum ericeti is a ground-beetle with two main distribution loci in VC46. One is the lowland raised mires of Cors Fochno and, to a lesser extent, Cors Caron and the second is the ombrotrophic blanket mire of the upland massif. At Cors Fochno the annual pitfall survey conducted by PM Burnham and APF resulted in the capture of 59 specimens during the summer. The uplands produced two new sites; watershed mire at Gors Lwyd on 19 May and eroded Calluna-Eriophorum vaginatum mire at Banc Cerrig-fendigaid on 4 May. Woodland surveys resulted in no outstanding carabid records but pitfall traps operated by JE Davis in Coed Rheidol NNR contained the notables Pterostichus aethiops and P. oblongopunctatus. The latter was also found in a pitfall trap located in blocky scree near the summit of Pumplumon. The final noteworthy ground-beetle record was of a Lebia chlorocephala running on a dry sunny bank in a disused quarry at Rhostie on 24 April.

Close inspection of boulder-clay cliffs at Creigiau Gwbert on 16 July revealed that small particles of the substrate were moving! More careful examination showed these to be the dumpy hydrophilid Georissus crenulatus, characteristically coated in mud, bumping over the wet slopes. Another coastal flush at Allt-wen had Laccobius atrocephalus on 15 April. Other noteworthy hydrophilids encountered during the year were Helochares punctatus in a Sphagnum-filled pool in wet heath at Rhos Gellie on 7 July, and Enochrus coarctatus in a Glyceria-choked ditch at Pentwd on 19 August. The only notable histerid of the year was Myrmetes piceus, which is one of a suite of myrmecophilous beetles inhabiting wood ant nests. Two were found by sifting litter from Formica rufa nests at Llangynfelyn on 29 April

- a sampling technique that necessitated braving the ample jaws and jets of formic acid of the agitated workers. The hydraenidae also produced a single notable species, Octhebius auriculatus, from flood debris at the edge of the saltmarsh at Ynysir on 11 November.

The carrion beetles are a well recorded group in VC46 with thirteen of the twenty-two British species known. Silpha tyrolensis and Aclypea opaca, however, were only known from one old record apiece. The discoveries of one S. tyrolensis (a northern and western species) on upland moorland at Ty Mawr, Ysbyty Cynfyn on 30 June, and a dead A. opaca at Banc y Warren on 25 March were therefore of great interest. Though the beetle fauna of Cors Fochno is now relatively well documented, one or two new species still turn up each year in the pitfall traps. During 1990 these included Stenichnus poweri (a scydmaenid usually associated with ants), a singleton of which was trapped in June.

The rove-beetles are much the largest family of British beetles. However, many of the species are small, have secretive habits, and are difficult to identify. This is reflected in the comparatively small number of notable species observed during the year in this family. Zyras laticollis is another beetle that has an obligate association with ants, though in its case it is with the shiny black ant Lasius fuliginosus. The ant itself is very localised in the county with only six known nests (AO Chater, pers. comm.). On 7 October three specimens of this glossy black rove beetle were found in moss around a newly-discovered fuliginosus nest located in an old tree stump in Coed Cnwch-yr-arian. River shingle is a rich habitat for staphylinids and six species of interest were found in this habitat in 1990. Deleaster dichrous, a handsome brick-red insect, is quite widespread on river banks in the county and a singleton was taken at Ty'n-yr-helyg in July. It is also known to be attracted to light and such was the case at Salem, where a moth-trap set up in willow carr on 11 July by PR Holmes attracted a single specimen. The discovery of a colony of Philonthus rubripennis, a black beetle with bright red elytra, on sandy shingle at Henllan on 6 May represented the first record of the species in the county. The tiny Carpelimus similis found during the same visit was similarly a first for Ceredigion. Damp sand at the edge of a shallow pool in the Banc y Warren quarries provided suitable habitat for Tachyusa scitula, a singleton being found under a stone on 25 March. A visit by J Cooter and AP Fowles to Glanrafon on 1 July resulted in records of Hydrosmectina subtilissima, Thinobius bicolor and T. newberyi. The latter is presently considered to be endemic to the British Isles and the only modern records are from this site and Ty'n-yr-helyg. J Cooter found two newberyi amongst grass roots under a small stone. Other noteworthy staphylinids recorded in 1990 were Gabrius keysianus in litter around a dune slack at Ynyslas on 17 March, Staphylinus dimidiaticornis in a water-trap operated by NR Thomas at Coedmore between 1 & 15 August, and Diglotta mersa which was very common in sandy estuarine deposits on the Dyfi saltmarsh on 18 March. The closely related family of Pselaphidae yielded two species of note this year, Brachygluta pandellei and Bryaxis curtisi. The former, a river shingle specialist, was at Ty'n-yr-helyg on 1 July and the latter amongst reed-litter in brackish marsh at Cors Afon Ddu on 29 April and in a pitfall-trap in Coed Nant Llolwyn in August.

The dung-beetles and chafers (Scarabaeidae) produced only one local species, Aphodius plagiatus. It was very common in litter around the edge of dune slacks at Ynyslas on 18 March. Though just over the border into Montgomeryshire, the sighting of three bee-chafers Trichius fasciatus at Dyfi Junction on 1 August must be mentioned. They were very active in the hot sunshine, flying from flowerhead to flowerhead of hogweed and hemp agrimony. The adjacent bank of the Dyfi estuary, in Montgomery and Ceredigion, has considerable amounts of driftwood cast up along the shoreline. Although deadwood of broadleaves, such as birch, is usually quoted as the larval food source, the utilisation of coastal driftwood by T. fasciatus has been noted previously in Dyfed (DIG 12: 13-15) and it is likely that Trichius is also breeding in driftwood here.

The rare dryopid Helichus substriatus was found sitting on a car at Rhyd-y-gwin on 23 August and was taken in more typical habitat, under a stone amongst Fontinalis moss in a fast-flowing stretch of the Teifi at Henllan, on 23 Sept. Trachys troglodytes is the only jewel-beetle (Buprestidae) currently known from VC46. The larvae make distinctive mines in the leaves of devil's-bit scabious and this feeding damage was detected during the DIG field meeting at Rhos Gellie on 7 July. Soldier-beetles (Cantharidae) are well-known in the county with 28 of the 41 British species recorded thus far. Notables seen this year were Cantharis figurata at Rhos Gellie, C. thoracica at Nant Cilmeddu, and Malthodes flavoguttatus at Henllan.

Monotoma angusticollis (Rhizophagidae) is a small, brown beetle of elongate form that is considered rare in Britain. It is another myrmecophilous species and was found commonly in the Formica rufa nests at Llangynfelyn on 23 April. Considerable patience was required to spot the beetles as they would remain motionless in nest debris sifted into a tray for quite a long time. Only two phalacrids are currently known in Ceredigion, both being reported in 1990. Olibrus liquidus was found again at its only known site at Banc y Warren on 25 March and O. affinis, a western coastal species usually found in the flowerheads of yellow composites, was seen at Creigiâu Ffos-las on 6 April.

The river shingle 5-spot ladybird Coccinella 5-punctata was present on the Afon Rheidol at Glanrafon and Glandwr, on the Ystwyth at Ty'n-yr-helyg, and on the Teifi at Henllan. A study of the overwintering behaviour of the orange ladybird Halyzia 16-guttata (DIG 17: 13-18) provided numerous records of the species in Coed Nant Llolwyn between January and May. Eight individuals were also attracted to light at the Plas Gogerddan Rothamsted moth-trap between 15 July and 17 October. Orchesia minor (Melandryidae) is a small, dark, elongate beetle that feeds on fungi on trees. The discovery of a specimen under the bark of a dead oak branch at Ynyshir on 11 November provided the first record of the species for VC46.

Almost all of the remaining notable records relate to leaf-beetles (Chrysomelidae) and weevils (Curculionidae). The wet rhos pastures of Ceredigion have a diverse chrysomelid fauna that includes a number of species considered to be scarce in Britain as a whole. Phyllobrotica quadrimaculata is known from a scattering of wetland sites in the county where skullcap Scutellaria galericulata is the usual foodplant. On 7 July a specimen was found at Rhos Gellie feeding on lesser skullcap S. minor - a less-commonly utilised foodplant. Another interesting host-plant record was of Chrysolina brunsvicensis shaken from stands of wavy St. John's-wort Hypericum undulatum at Rhos Cross Inn on 24 April. C. brunsvicensis is usually found on species of Hypericum growing in dry situations, as at Llanilar Station, Allt-y-cafn, and the banks of Trawscoed Pool, at which sites it was also recorded this year. Also at Rhos Cross Inn, in association with lady's smock, was the flea-beetle Phyllotreta flexuosa, a further record of this uncommon species coming from Henllan on 6 May. The visit to Henllan provided numerous records of interest, with chrysomelids being no exception. The handsome orange and black tortoise-beetle Cassida murraea was found on its foodplant, common fleabane, on the banks of the Teifi and on an adjacent shingle bar there was a good colony of Phyllotreta vittata feeding on yellow-cress Rorippa sp. Another very attractive tortoise-beetle, Cassida nobilis, was found at two sites in 1990. The ground colour of the beetle is yellowy-brown but on each elytron there is a striking metallic blue band. Two were found under stones on the shingle beach at Llanrhystud on 16 April and one was beaten from ruderal vegetation on sandy cliffs at The Patch, Gwbert, nine days later. A specimen of Chrysolina varians, another Hypericum-feeder, was collected from flood-litter near the railway embankment at Glandyfi Junction in October. The beautiful metallic green Cryptocephalus aureolus was found on yellow composite flowers at Ynyslas Dunes on 11 June and the shingle beach at Aberaeron had Mantura rustica on 11 February. Moving away from the coast, the related M. obtusata was found on Rumex acetosa growing on the disused mine workings at Cwmsymlog on 12 May. Lastly, Hydrothassa glabra was recorded at Rhostie quarry and Wstrws gravel pit and Lamprosoma concolor was taken in a water-trap sample (15-29 August) from Coedmore.

The weevil fauna of the county has continued to be investigated by AP Fowles, with a total of 205 species recorded so far. The collection of a piece of a dead ivy stem from Coed Nant Llolwyn led to the first anthribid record for Ceredigion when specimens of Choragus sheppardi began to emerge. The beetles first appeared on 30 April and over the next 4-5 days forty-three specimens (along with five Anobium punctatum) were bred out from less than twelve inches of stem. Nationally there are very few modern records of this species, which is probably restricted to dead ivy, but in part this may be because the beetles hop prodigiously at the slightest provocation and may be missed by standard beating techniques. Two other small weevil families, the Nemonychidae and Attelabidae, also produced single notable records, Cimberis attelaboidea and Rhynchites cupreus respectively. The former was beaten from Scot's pine on the edge of Cors Fochno on 9 June whilst the latter was beaten from rowan, its chief hostplant, on Foel Fawr on 19 May.

The remaining weevils of note all belong to the large family Curculionidae. Coeliodes

erythroleucos was also found during the visit to Foel Fawr by beating oak scrub and its close relative C. ruber, another oak-feeder, was found at Llangynfelyn on 29 April. Two of the three British species of Acalles were seen in the county this year, A. misellus at Henllan on 6 May and in Coed Nant Llolwyn on 15 & 16 May (where specimens were taken on consecutive nights on the same dead ash stump), and A. ptinoides from Glandyfi Junction on 29 April. As ever, the coast provided a prolific hunting ground for weevils. One of the more frequently encountered species is Sitona lineelus, which in 1990 was recorded from no less than nine different localities. Caenopsis waltoni is another frequently encountered weevil in dry places on the coast with 1990 records from the Gwbert Hotel cliffs, Wallog and Cwm Drwyi. The Patch, Gwbert, produced the scarce Ceutorhynchus mixtus, beaten from its foodplant, fumitory, on 25 April. C. atomus was taken at Llanilar Station on its usual foodplant thale cress whilst the attractive, violet-feeding, weevil Orobites cyaneus was at Glandyfi Junction, Wallog, and Clogfryn. The dumpy Trachyphloeus aristatus was also found at Clogfryn, underneath buck's-horn plantain on the cliff edge. Searching of the small saltmarsh on the east bank of the Ystwyth at Tanybwllch was also very productive with the scarce Polydrusus pulchellus being shaken from sea beet and a specimen of Gymnetron collinum, a rare weevil that is mainly found in southern England, was collected from amongst the roots of yellow toadflax at the back of the saltmarsh. The tiny Ceutorhynchidius dawsoni is most often found by searching the leaf rosettes of plantains on dry coastal cliffs. The species was noted this year on the cliffs north of Gwbert Hotel and at Penyrangor. A record of Alophus triguttatus came from the Rothamsted moth-trap run at RAE Aberporth on 10 June. Gronops lunatus has not previously been recorded in Ceredigion so the discovery of a population at Ynyslas Dunes on 18 March was most welcome. The beetles were found by splashing water on bare sand around patches of mouse-ear chickweed, the roots of which this weevil had presumably been buried amongst. The sand quarry at Banc y Warren is also a rich weevil site and Orthochaetes setiger, a species previously known only from Ynyslas, was found here on 25 March. Other unusual weevils from this important site were Otiorhynchus desertus and Grypus equiseti, the latter being recorded to the west of the pond at 22/199479 in giant horsetail Equisetum telmateia litter in addition to being found in the main body of the site. The area west of the pond also had Sitona cambricus occurring amongst its most frequently recorded hostplant, greater bird's-foot trefoil. S. cambricus was also present this year at Plas Cynfelin and Henllan. Again at Henllan, Ceutorhynchus angulosus was collected from its foodplant, hemp-nettle Galeopsis tetrahit, growing on the banks of the Teifi. This is quite a rare beetle nationally and there is only one previous county record, from the banks of the Teifi near Cardigan in 1983. On the floodplain of the Afon Rheidol at Glandwr a single Bagous tempestivus was sifted from Phalaris litter at the edge of a small backwater on 9 April. Lastly amongst the weevils of note is Anthonomus brunnipennis, which was found in association with its foodplant tormentil at Rhos Cwmsaeson, Rhos Gellie and Rhos Cross Inn. This beetle was also beaten from heather in a hedgerow at Joppa on 22 January.

Finally, there was a record of the RDB3 bark-beetle Platypus cylindrus (Platypodidae), probably the best saproxylic species yet found in the county. The larvae are generally found in the deadwood of mature oaks but this adult was captured by PR Holmes as it landed on his sweater whilst cycling between Salem and Penrhyncoch (22/68). The discovery of the breeding habitat for this scarce species would be of great interest.

ACKNOWLEDGEMENTS: Sincere thanks to KNA Alexander, AO Chater, J Cooter, ML Cox, AP Fowles, PR Holmes and JA Owen for contributing records and/or help with the determination of specimens.

REFERENCES:

MILES, PM (1983) - Terrestrial sand dune fauna at Ynyslas, Cardiganshire. Nature in Wales, New Series 2: 75-79.

ERRATA:

The following records published in the DIG Newsletter have subsequently been found to be based on erroneous identifications.

Bledius annae, reported in DIG 16: 16, should read B. fergussoni.

Anthicus instabilis listed for Ynyslas in DIG 18: 12, this record should be deleted.

Apion affine reported in DIG 16: 20, is A. marchicum.
Apion virens, DIG 18: 13, is A. marchicum.
Ceutorhynchus timidus, DIG 15: 6, is C. sulcicollis.
Pseudostyphlus pillumnus, DIG 16: 20 & DIG 18: 7 & 13, is Orthochaetes setiger.

SITES MENTIONED IN THE TEXT [Prefix grid ref. SN(22)]

Aberaeron shingle beach 463635	Llangynfelyn 652923
Aberaeron south beach 451624	Llanilar Station 625753
Allt-y-cafn 387393	Llanrhystud 523688
Allt-wen 573791	Llyn Gwngu 838729
Banc Cerrig-fendigaid 848740	Nant Cilmeddu 726715
Banc y Warren 202485	The Patch, Gwbert 164484
Clogfryn 445623	Penyrangor 580807
Coed Cnwch-yr-arian 699791	Pentwd 184472
Coed Nant Llolwyn 587769	Plas Cynfelin 603832
Coed Rheidol NNR 741778	Plas Gogerddan 630835
Coedmore 19-43-	Pumlumon 788870
Cors Afon Ddu 667942	RAE Aberporth 249520
Cors Fochno 63-91-	Rhos Cross Inn 619731
Creigiau Ffos-las 557750	Rhos Cwmsaeson 461585
Creigiau Gwbert 162492	Rhos Gellie 37-53-
Cwm Drwyi 425606	Rhostie Quarry 618730
Cwmsymlog 699837	Rhyd-y-gwin 584767
Dyfi Junction 697981	Rosehill 189455
Dyfi saltmarsh 614943	Salem 668845
Foel Fawr 687952	Tanybwllch saltmarsh 581805
Glandwr 605803	Trawscoed Pool 661725
Glandyfi Junction 696974	Ty Mawr, Ysbyty Cynfyn 768791
Glanrafon 614804	Ty'n-yr-helyg 595765
Gors Lwyd 857754	Wallog 589856
Gwbert Hotel cliffs 158501	Wstrws gravel pit 385501
Henllan 35-40-	Ynyshir 67-96-
Joppa 570663	Ynyslas Dunes 60-93-

DIPTERA

DIPTERA RECORDING IN CARMARTHENSHIRE, 1990 - I K MORGAN

Two individuals of Criorhina ranunculi, visiting willow blossom, and bee-flies Bombylius major probing the deep-throated flowers of primroses at Stradey Woods (22/483022) on 18 March, announced that a new recording season had arrived. Indeed, the end of that month witnessed unseasonably-high temperatures which prompted the emergence of many insects including the resplendent female Cheilosia albipila caught on a wet Molinia-pasture near Cencoed-uchaf (22/485032) on 30 March. Hitherto, the only records of this species in the County were those of larvae in thistle stems. The Cencoed-uchaf specimen was a gorgeously-coloured individual with a brassy thorax and dark purple-hued abdomen - all clothed in foxy-chestnut hairs - and with orangey legs.

A month later, Portevenia maculata was common around ramsons at Coed Penrhiwiau (22/661236), whilst at this site on 7 June Criorhina asilica (new to the vice-county, and apparently a second Welsh record) was caught whilst resting on foliage amongst some willows. This dingle holds much dead wood, which is said to be the breeding habitat of all members of the genus Criorhina. Another deadwood specialist is Brachypalpus laphriformis, found at its second vice-county locality (the other being Dinefwr Park), at Stradey Woods (22/490016), where an individual was observed patrolling, in early June, an oak stump with red heart rot.

Chrysotoxum festivum was caught in flower-rich mesotrophic grassland at Felindre (22/686306) on 26 June and Didea fasciata was at Blaenduad Wood (22/406336) in mid-August. This site,

like most of the other localities for this hoverfly in Carmarthenshire, is a conifer plantation. Platycheirus immarginatus, a saltmarsh specialist, was netted at Penrhynwyn (21/518975) on the northern shore of the Burry Estuary in late August - there are several records of this species in the county.

The provisional results of the Welsh Peatland Invertebrate Survey (WPIS) contain many interesting Diptera records, including Eristalis rupium and Sericomyia lappona from Cors Farlais (22/678349) (both second vice-county records). In last year's review, (DIG 16: 11) it was incorrectly reported that Anasimyia lunulata had been taken by WPIS at Ynys-uchaf (22/499148); the record in fact should refer to A. contracta; consequently A. lunulata has still not been recorded in VC44.

There are two new county records of asilids (or robberflies) in Carmarthenshire. A handsome purple-winged Dioctria oelandica was caught on bushes at the edge of a bracken clearing south-east of Llandovery (22/805345) on 30 May; the same day, more were observed at the edge of an upland oak-birch wood east of Llanerch-gocho (22/822316). Dioctria was also noted at this site on 19 June, when the second new county record, Leptarthrus brevirostris was captured; several pairs were seen, including a male courting a female sitting on a bracken frond. The male circled the female in a vertical plane, eventually approaching the female which responded by rapidly quivering her wings (perhaps dissipating a pheromonal attractant?), and by raising her abdomen. The male briefly hovered above the female before mating took place (unfortunately at this stage a sheep disturbed the pair and they flew off!). More individuals of Leptarthrus were later seen north of Gwydre (22/790279) in a wood-side, sheep-grazed pasture. Thereva lunulata, characteristically a species of rivers in upland northern Britain, was again seen (on 7 June) at Llanwrda (22/714307), frequenting ribbons of sandy deposits on the river shingle.

After a few seasons in which they had been scarce, the late summer witnessed ample numbers of the parasitic conopid flies at many localities - mostly Conops flavipes and C. quadrifasciatus - but also the scarcer C. ceriaeformis on flowers of hardheads near Penyrallt, Llanboidy (22/222223) on 24 August. Earlier in the season Sicus ferrugineus had been also common and it was instructive to watch an individual lurking near the entrance of an active nest of Bombus pascuorum (at 22/805345), no doubt waiting for an unfortunate bumble-bee on which an egg would be laid, in flight, by the conopid. Also suspiciously loitering around this bumble-bee nest was Volucella pellucens which is known to lay eggs in wasps' (but not bumble bees') nests. The Conopidae are an interesting family of solitary internal parasites, mostly of aculeate Hymenoptera, and ten conopid species are currently known from Carmarthenshire.

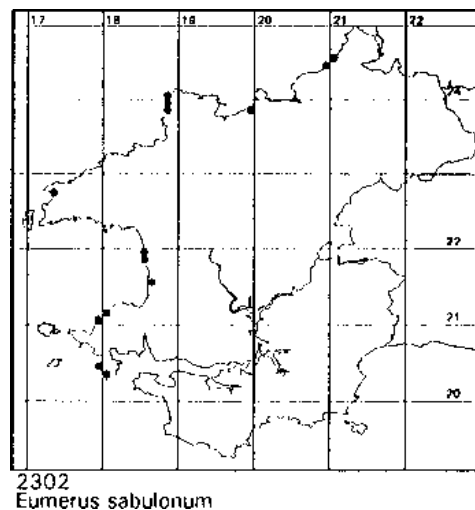
Hybomitra micans, an all black tabanid with some silver-grey hair-patches on the abdomen, was caught (new to the county) in a woodland-edge situation at Allt-y-Ferdre (22/812338) on 19 June. Other miscellaneous Diptera records of interest were the tachinid Gonia picea (det. DC Boyce), caught at Cencoed-uchaf on 30 March and a specimen of the bug-like male Allophora hemiptera (which is a parasite of various heteropterans) taken in an overgrown cemetery north of Allt-y-pistyll (22/115247) was confirmed; (it was actually captured on 27 July 1985).

HOVERFLY RECORDING IN PEMBROKESHIRE, 1990 - S & A COKER

Recording of Pembrokeshire hoverflies continued in the 1990 season with some of the earliest noteworthy records coming from the genus Cheilosia. At least twenty individuals of C. nebulosa were feeding at sallow catkins at Dowrog (12/773274) on 24 April, whilst C. chrysocoma, with its distinctive fox-coloured pubescence, was resting on a dandelion flower next to the car-park at Poppit Dunes (22/152483) on 28 April. Another similarly coloured hoverfly, Criorhina floccosa, was noted at the Old Mill grounds, Haverfordwest (12/952165) on 30 April, with another at Canaston Wood (22/078140) on 23 May. C. berberina was also netted at Canaston and three other sites during the year. Much later in the season, Arctophila fulva was noted at a scattering of sites in the vice-county in August. August also produced ample numbers of records of Didea fasciata, all from conifer plantations, an association which has also been noted in Carmarthenshire.

Back in Spring, Parasyrphus nigritarsis at the Old Mill, Haverfordwest and Poppit Dunes (22/154486) at the end of April were both notable occurrences, whilst the local Platycheirus ambiguus on blackthorn blossom at Dale Wood (12/817053), Freshwater East (21/017979) and Poppit Dunes is also worthy of mention. P. tarsalis was at Manorbier marsh (21/063977) on 13 April.

Records of hoverflies associated with wetland habitats included Tropidia scita at Broomhill Dunes (11/890999) and Goodwick Moor (12/945374), with Parhelophilus consimilis (the rarest member of the genus) at the latter site on 16 June and also at Trefeiddan clay pits (12/733248) on 11 July and near St. David's tip (12/786263) on 13 June. Anasimyia contracta, like P. consimilis usually associated with Typha beds, was also recorded at Trefeiddan and St. David's. The very local Chrysogaster virescens, typically a species of bogs and acid pastures, was caught at Goodwick Moor in mid-June. Dry habitats produced records of Paragus haemorrhous from a variety of chiefly coastal sites and Eumerus sabulorum was found at Nolton (12/856196) on 24 May. In last year's report (DIG 16: 12-13) it was mistakenly reported that sabulorum had a predominately southern distribution in Pembs. but, as the accompanying map indicates, the known distribution is mostly northern and western. Finally, there was one record of Xylota florum in 1990, at Pencelly (22/132389) in late June, whilst the attractive, red-abdomened Brachypalpoidea lenta was observed at Cilgerran (22/197429) at the end of May.



DIPTERA RECORDING IN CEREDIGION, 1990 - A P FOWLES

If there was a transfer market in entomologists Ceredigion would probably have its cheque book out for several key players to strengthen the squad, with an eye to signing dipterists, hymenopterists and hemipterists in particular. Alas, second division teams have to rely on the talents of utility players and managers soon realise that there are gaps left unfilled as the season progresses. Diptera recording, to continue the metaphor, was effectively sidelined in 1990 but there were still a number of notable successes to maintain interest for the coming year. We were also fortunate to have Alan Stubbs "on loan" for two and a half days and his discoveries of the rare hoverflies Rhingia rostrata and Parasyrphus nigritarsis, at Pentwd (22/183454) and Banc-y-mwldan (22/200488) respectively, during visits on 19 and 20 May are sufficient to earn him the accolade of 'man of the match'. Otherwise, the hoverfly season was a fairly quiet one with only records of such stalwarts at Arctophila fulva (Rhos Cwmsaeson, 22/461585), Criorhina floccosa (Henllan, 22/353405) and Tropidia scita (Hen Afon Leri, 22/608921, and Pentwd) to raise the tone. Pentwd also produced the second county record of Parhelophilus consimilis, here in typical association with reedmace Typha latifolia.

To keep the county list ticking along it was necessary to re-examine reference material in light of the recent taxonomic revisions of the genus Platycheirus (Speight & Goeldlin de Tiefenau 1990, Vockeroth 1990). The detection of half-a-dozen new species of Platycheirus caused some consternation amongst syrphidologists and I suspect that there has been a grudging reluctance to acknowledge their existence. However, exist they do and it is now necessary to treat all unconfirmed records of P. angustatus, P. clypeatus and P. peltatus as sensu lato and reference specimens should be checked against the new keys. Knowledge of the distribution and habitat requirements of the newly-defined species is still very uncertain and for that reason I here list all of the confirmed Ceredigion records to date:

P. angustatus - Cymerau (22/695963), 19 Sept 1986 - woodland edge
P. clypeatus - Hen Afon Leri (22/608920), 14 July 1990 - coastal fen
P. europaeus - Figyn Blaenbrefi (22/717547), 19 Aug 1987- blanket mire
P. nielsenii -Coed Nant Llolwyn (22/587769), 30 May 1986 - dingle woodland
P. occultus - Cors Afon Ddu (22/667942), 17 Aug 1986 - brackish marsh
P. occultus - Coed Cwmere (22/698964), 20 July 1986 - upland flush
P. occultus - Cors Caranod (22/565647), 15 Aug 1987 - valley fen
P. occultus - Cors Caron (22/690635), 17 Aug 1987 - river fen
P. occultus - Banc-y-mwldan (22/200488), 19 May 1990 - seepage fen
P. occultus - Pentwd Marshes (22/183454), 19 May 1990- floodplain fen
P. peltatus -Afon Ystwyth, Llanilar (22/635750), 15 Sept 1985 - shingle grassland
P. ramsarensis - Llyn Eiddwen (22/607674), 20 Aug 1987 - upland lake fen
P. ramsarensis - Gors Lwyd (22/856757), 25 Aug 1987 - watershed mire

There was a scattering of useful records amongst the Larger Brachyceran families but no additions to their ranks in the vice-county. It was particularly pleasing to see the hornet robber-fly Asilus crabroniformis at Cilgwyn (22/318412) on 26 August. This striking black- and-orange predator is only known from two sites in the Teifi valley where it favours unimproved, cattle-grazed pastures. Suitable habitat is scarce in this agriculturally fertile district and the populations of this beautiful insect are also threatened by management neglect. Vieing with Asilus for the title of Britain's largest fly is the horsefly Tabanus sudeticus. It is a widespread species in west Wales but fortunately confines its attentions to grazing stock. At Bryn Bras (22/744800) on 1 August, Ian Francis chanced upon three females clinging to Juncus stems on which they had just laid large batches of white eggs. The only other tabanid of note this year was a single Atylotus fulva on Cors Fochno (22/641913) on 9 June. The warm Spring brought the bee-fly Bombylius major onto the wing by 17 March and two B. canescens were seen at Henllan on 6 May. Amongst the soldier-flies, Oplodontha viridula was common at Hen Afon Leri in July and Alan Stubbs found larvae of Oxycera pygmaea and O. trilineata in the flushes on the boulder-clay cliffs at Gwbert in May. Alan also recorded Beris clavipes at Pentwd and Banc-y-mwldan, the first county records I am aware of since 1939. Banc-y- mwldan also produced specimens of the uncommon snipe-fly Ptiolina obscura in May.

Craneflies inevitably featured prominently in the batch of records for 1990. The alder carr at RSPB Allt-ddu (22/705974) in Cwm Llyfnant yielded Lipsothrix errans and L. nervosa whilst willow carr at Banc-y-mwldan produced the much rarer Scleroprocta danica (=sororcula). Limonia goritiensis, whose larvae inhabit grassy overhangs at the edge of flushes and trickles on coastal cliffs, was found at Creigiau Gwbert on 19 May and 12 August. The floodplain fen at Pentwd provides good habitat for a diverse cranefly fauna and three notables were recorded here - Helius pallirostris, Limonia complicata and Molophilus pleuralis.

Records were scarce for most other dipteran families but they included a few items of interest. A highlight was the discovery of the scarce conopid Leopoldius signatus at two sites in late summer - two males at Cae Heslop (22/318413) on 26 August and a female caught in a water- trap at Coedmore (22/201429) on 16 September. The dung-fly Scathophaga scybalaria was seen at Banc-y-mwldan in Spring and the snail-killing flies Psacadina verbekei and Pteromicra angustipennis were swept from vegetation within the willow carr at Pentwd on 19 August. The empid Tachydromia halidayi was abundant on river shingle at Ty'n-yr-helyg (22/595765), a known site for the species, on 1 July and the curious spider-parasite Acrocera globulus was found at Rhos Gellie (22/380533) during the DIG field meeting on 7 July. The only previous record of the latter species in Ceredigion was from the wet heath at Cors Caranod (22/565647) in July 1987 by the Welsh Peatland Invertebrate Survey.

I am grateful to Dave Boyce, Ian Francis, Alan Stubbs and Nick Thomas for Ceredigion Diptera records in 1990.

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[This paper includes the formal publication of P. nielsenii as new to science. Keys distinguishing nielsenii (referred to as 'species A') from peltatus are published in the 1986 Supplement to 'British Hoverflies' and in Stubbs, AE (1988) - The Platycheirus peltatus group, with notes on species A in Britain, and other allies. *Hoverfly Newsletter* 7: 9-11]

MOLLUSCA

SNAILS AND SLUGS IN CARMARTHENSHIRE, 1990 - I K MORGAN

A small population of the so-called 'lapidary snail' Helicigona lapicida has been known from the eastern, ruined wall on Dryslwyn Castle Hill (22/555203) since December 1984 (Chater, 1985), and it has been assumed that the population was confined to this area. It was interesting then, to find two live individuals in woodland immediately SE of the Castle on 3 January, for it is clearly beneficial that this geographically-isolated population (it is some 50km west of the next known site, in Breconshire) is not limited to the wall - which would be vulnerable to remedial restorative work being undertaken, although 'Cadw' (the guardians of the ruins) have been informed of the presence of Helicigona.

The most exciting molluscan discovery in 1990 was the finding (new to the county) of the clausilid snail Cochlodina laminata at Coed Penrhiwiau (22/661237) near Bethlehem on 11 January. Here, in a steep dingle, the river cuts through some base-rich strata and the lower part of the 'cwm' is damp and mildly calcareous. Cochlodina is found at the mossy bases of alders and willows on level, alluvium-covered ground near the bottom of the woodland. On damp, drizzly days they can be noted ascending the trees (they are normally nocturnal) to search for moss and lichens on which to feed. The nearest-known populations are again in Breconshire, and on Gower. The snails Arianta arbustorum, Cepaea hortensis, Zenobiella subrufescens and Columella edule were associated with Cochlodina.

Spermodea lamellata, Z. subrufescens and Leiostylia anglica were recorded from a classic wet Chrysosplenium-flush in dingle woodland at Penyrallt-fach (22/338370) on 4 January. Leiostylia was also found in a sanicle-clad flush in Cwm Mawr (22/485021) (again in January) whilst, in the summer, another 'ancient woodland indicator' species - Li max cinereoniger - was found squatting in an old nestbox some six feet up a sycamore in the nearby Cwm Dulais (22/487033), within the Stradey Woods complex. During 1990, L. cinereoniger was additionally found at Allt Caeau-bychan mawr (22/717258), and L. anglica from two more sites (Glyn-hir, 22/642151, and SE of Bettws, 22/409260). Zenobiella was noted at several sites including an isolated remnant patch of woodland vegetation (Luzula, Oxalis, ferns and mosses etc.) on a steep, streamside, upland rock face (among tightly-grazed sheep pasture) above Pont Clydach (22/740195). The tiny Acicula fusca (another old woodland indicator) was discovered under boulders in a wet, upland ashwood at Coed Tir-hen (22/779275); the first modern Carmarthenshire record away from the limestone outcrop.

A healthy population of the calcicolous snail Ena obscura was found in crevices of an old, damaged, low boundary wall in woodland near Capel Dyddgen (22/468128), Crwbin in April; it is an extremely local and scarce species of calcareous situations in the county. The small Vallonia excentrica was noted in limestone grassland at Pant-y-llyn (22/605167) and, more surprisingly, under stones in short, hill-top turf at Pigyn Sion-Nicholas (22/666354), whilst Vertigo pygmaea, Pomatias elegans and Helicella itala were noted by DIG members at a known

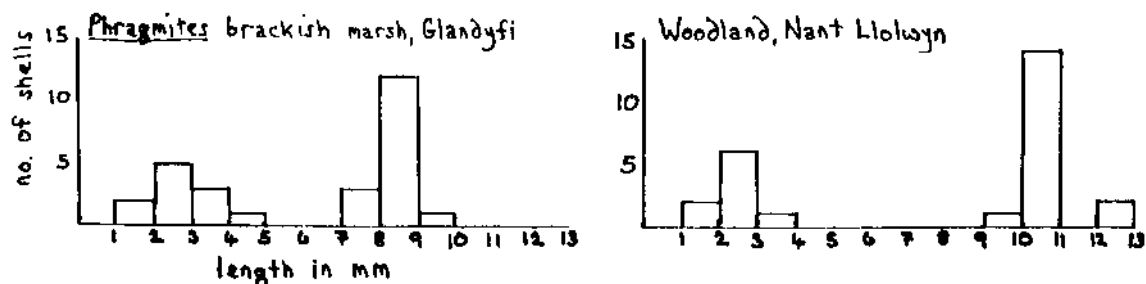
locality - Dolwen Point, Pendine (22/233078) - after the field meeting to Laugharne Burrows on 10 June. Examination of leaf litter samples from two other wetland localities - a Chara/Hippuris dominated slack at Machynys Ponds (21/512980) and Techon marsh (21/540993) - produced Vertigo substriata in abundance, whilst a nearby pond at Machynys (21/509983) held the distinctive freshwater snail Lymnaea auricularia (the 'ear pond snail'), which was also found in the calcareous Pistyll Pond, Llandybie (22/624167), earlier in April. The 'duck mussel' Anodonta anatina is a large freshwater mussel, externally with a dark, polished, brown shell, of local distribution, and which has very few records in Wales, although it is common and widespread in England. Some exceptionally large (90 x 160mm) specimens were found in an old, muddy oxbow of the Tywi near Dryslwyn (22/561205); normally the maximum sizes for this species are cited as no more than 60 x 100mm.

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LAND MOLLUSC RECORDING IN CEREDIGION, 1990 - AO CHATER

Clausilia bidentata is a snail normally associated with woodlands, old walls and more or less calcareous rocks, and in Ceredigion it is predominantly a species of the coastal fringe, with only a few woodland and synanthropic sites inland. In the Dyfi estuary, however, it rather surprisingly occurs in the upper zones of the saltmarsh all the way from Ynys-las to Glandyfi. In the plant community dominated by Juncus maritimus and Festuca rubra, regularly inundated by strong spring tides, it is the commonest species of land mollusc, the only others normally present being Discus rotundatus and Cochlicopa lubrica. Clausilia is abundant along the railway embankment along the estuary, and it was first thought that it might have spread into the marshes from here. But in 1990 it was found to occur amongst Juncus maritimus 350m out from the railway, at Ynys-hir (22/686969). This does suggest that some at least of the saltmarsh populations are permanent and natural. Clausilia is especially abundant in the brackish marshes variously dominated by Phragmites, Carex riparia and Scirpus maritimus by the railway just north of Glandyfi. The shells of all these saltmarsh populations are shorter than those from other habitats, though they are the same width (2.3- 2.6mm). Measurements of 27 living shells sieved from litter in brackish Phragmites swamp near Glandyfi (22/6968 9745, 29 January 1991), and of 26 living shells sieved from moss and litter under wych elm and ash in mixed woodland in Coed Nant Llolwyn (22/5859 7694, 31 December 1990), indicate that the two populations have a similar age structure, both having one generation a year, hatching probably in summer. The woodland adults, however, are nearly 25% longer. The length/breadth ratio of the 16 brackish marsh adults averages 3.3 (range 3.1-3.5), while that of the 17 woodland adults averages 4.2 (range 3.9-5.1). It would be very interesting to know whether Clausilia bidentata occurs in saltmarshes in other parts of Dyfed, and indeed of Britain as a whole, and whether there are similar differences in shape in such populations.



Realisation that Columella aspera can usually be beaten, at all times of year, from low-growing bushes of Ulex gallii, the autumn-flowering gorse, has led to a number of new tetrad records. Another technique worked well in mild, wet weather in mid-November when a nocturnal expedition to Cardigan led to Limax flavus being recorded in all four tetrads in the town. Acicula fusca has been found in four more sites, including Coed Nant Llolwyn (22/585769), bringing the total of species for this SSSI to 42, and providing a second, though not very reliable, ancient woodland indicator mollusc (cf. DIG 13: 8-12).

A solitary broken shell of Pomatias elegans, obviously recent, was found in a molehill at Mwnt (22/195519), at the edge of the NT car parking area in rich, calcareous, very sandy grassland, only 200m from where A P Fowles found a much older-looking subfossil shell in another molehill (DIG 4: 15-16). These shells must be evidence of a population here, probably continuing until recent decades. The occurrence of Pomatias on sands, a rare phenomenon, is discussed by Boycott (1921).

The most surprising record of the year was an adult Cochlicella barbara (a predominantly Mediterranean species occurring in Britain only as a naturalised alien at Torquay) found by Nick Hughes on "Chinese Leaf" bought at an Aberystwyth greengrocers. Subsequent enquiry revealed that the plants came from a grower at Evesham, suggesting that the snail may also be established there. I am grateful to D C Boyce, A P Fowles, and to IS Francis for many records during 1990.

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MYRIAPODA

MILLIPEDES AND CENTIPEDES IN DYFED, 1990 - I K MORGAN

Although it has been found at a handful of synanthropic sites in southern England and has been recently noted in Eire, Leptoiulus belgicus is essentially a millipede of south-west England. Strong populations have also been found - principally in synanthropic sites such as gardens and wasteground - in industrial South East Carmarthenshire (and adjacent Glamorgan), with only a couple of records from semi-natural, less man-modified habitats (two records from marshes in the Pembrey area, 22/40). Interestingly, Leptoiulus was again found in a marshland site - amongst dense Juncus litter in an area of poor fen near the abandoned Morlais Colliery, Llangennech (22/575025), in mid-October. In Carmarthenshire, Leptoiulus seems to appear during the first substantially wet spell of late summer/early autumn and it persists into the winter.

Craspedosoma rawlini prefers very wet habitats, normally in woodland. A new locality for this millipede was Coed Tir-hen (22/779275), where it was found in a wet-flushed area on 29 November. The colour of adult Craspedosoma can vary - from an unattractive dull brown to prettier individuals that exhibit different shades of brown, as in polished wood.

Little survey work was required for one interesting centipede record - a large individual of Lithobius pilicornis (which approached 40mm!) walking across the floor of the author's kitchen (at Llwynhendy 21/537993, 14 June) who had just been alerted of the presence of a 'giant centipede' by his wife! Lithobius pilicornis has a south-western tendency to its distribution in Britain and, in Carmarthenshire, is otherwise only recorded from coastal woodland south-west of Llansteffan (22/325101), though there are several records from Pembrokeshire. Geophilus fucorum seurati, collected from the mudflats immediately below the shingle beach at Penrhynwyn, Machynys (21/518974) in late September was new, not only to Carmarthenshire, but for the three vice-counties of Dyfed; however it is anticipated that this will prove to be a widespread species in suitable habitats in maritime areas of western Britain (A D Barber, pers.comm.,1990). Another centipede, Geophilus osquidatum, found on wasteground at Llangennech (22/521023) in mid-October was also a new county record for VC44.

It can be seen that all of the above records are from Carmarthenshire (VC44), there being no records of note from Pembrokeshire (VC45) or Ceredigion (VC46) this year. Selectively-collected specimens will be welcomed by the author, especially from Pembrokeshire which is not only rather poorly-recorded but also has the greatest potential for exciting finds.

ISOPODA

WOODLICE IN CARMARTHENSHIRE, 1990 - I K MORGAN

The rather scarce small, but delicately-coloured, pillbug Armadillidium pulchellum was found at two new sites in 1990. One was found under a log adjacent to nests of the ants Formica rufa and F. fusca (det. A O Chater) on a steep, acidic, shaley slope in dingle woodland at Abergorlech (22/582345) on 17 May whilst, about a month later, another was found under a stone in a disused limestone quarry south-west of Carmel (22/577160). These provide only the second and third vice-county records for the species.

Porcellionoides pruinus was re-found at the Tir Morfa-fawr dung heap (21/533982) where it was discovered in 1989 and the species was also found in a second vice-county locality; a large dung-heap by Glan Sawdde farm, Llangadog (22/707278) on 24 December. The only other 1990 woodlouse record of interest was the finding of a small colony of Cylisticus convexus under stones just above High Water Mark at the North Dock (21/498988) Llanelli, in late October. This species is now known from four (three coastal) vice-county sites.

WOODLOUSE RECORDING IN CEREDIGION, 1990 -AO CHATER

Armadillidium pulchellum continues to be found in more, sometimes unexpected, sites, for example in Deschampsia cespitosa tussocks on a roadside bank in a marshy valley at Brynceri (22/337514) and, most interestingly, a single juvenile found by A P Fowles in one of the wood ant Formica rufa nests in the conifer forest on the north side of Cwm Rheidol (22/701795). A. pulchellum is known to be associated with ants such as Lasius flavus in turf, and Donisthorpe (1927) records it with Formica fusca, but I am not aware of records of it in wood ant nests. The woodlouse invariably associated with ants, Platyarthrus hoffmannseggii, has so far been found in Ceredigion in the nests of Lasius niger (5), L. flavus (3) and Myrmica rubra (3); in other cases the ants were not identified.

Armadillidium depressum was found to be abundant on an old mortared wall near Cardigan Bridge (22/177458) after dark on 16 November, the first record from the south-west of Cardigan. Porcellio spinicornis, however, has still not been found in the extreme south-west, Cwm-cou village (22/292420) being the limit of its distribution to date. Porcellionides cingendus though was found in abundance in Yr Allt, Abermagwr (22/663743), a grazed formerly coppiced, sessile oakwood on a south-facing slope in the Ystwyth valley, well outside the previously known range of native sites for the species (the other site up the Ystwyth valley is clearly synanthropic, on the walls of Llanilar churchyard, 22/624751).

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PSEUDOSCORPIONES

FALSE SCORPION RECORDING IN CEREDIGION, 1989 - 1990 - AO CHATER

One new species, Chthonius orthodactylus, has been added to the county list (cf: DIG 14: 5-10), two specimens having been found by A P Fowles in dry grass litter under corrugated iron in the Nant y March dingle (22/608578). Nationally records of this species are confined to the south-east half of England, apart from two in South Wales and one in Ireland; it is undoubtedly under-recorded. The many other records made in this period do nothing to alter

the general picture of distribution and habitat preference given in the earlier article. Eighteen more farm buildings have been sampled, as have two pigeon lofts at Penparcau, Aberystwyth. The only find in the latter was a single specimen of Allochernes powelli at 22/589805. The use of sprays to control mites has probably made these lofts a less favourable habitat for false-scorpions than they were in the past.

A female Lamprochernes nodosus was found in a UCW pitfall trap in the Ynys-las Dunes NNR (22/607937), attached by its right pedipalp to the right femur of a female of the fly Delia platura - the first example of phoresy seen in Ceredigion. Roncus lubricus has now been found under the driftline in both the Dyfi (22/678965) and Teifi (22/189454) estuaries, and APF added to its varied habitats in Ceredigion by finding it at the top of a river shingle beach under an earth cliff on the Teifi at Alltybwla (22/258422).

ARACHNIDA

HARVESTMEN AND SPIDERS IN CARMARTHENSHIRE, 1990 - I K MORGAN

A little casual recording of spiders was again undertaken in 1990 and a few interesting records were made; once more Cynthia Merrett kindly helped with identification. Pembrey Burrows and Saltings (21/41-99-) has proved to be a productive hunting ground for spiders, as the recent noteworthy discoveries of Synagales venator, Ceratinopsis romana and Argenne patula have indicated; all are very local sand dune species. The extensive dunes of Laugharne Burrows have not been properly investigated for their spider fauna, but a small collection was made in fen habitats around the Witchet Pool (22/287075) on 14 June 1989, which included Theridiosoma gemmosum, a small (c2mm) orb-constructing spider of low vegetation in marshes of southern Britain. Further east, at the Machynys Ponds (21/512980), the 'water-spider' Argyroneta aquatica was noted by P M Pavett and the author on 13 October 1990; this species (which is 'new' to Carms.) can swim with ease and constructs an air-filled, underwater, bellshaped retreat. A beautifully-patterned crab-spider, collected on an ancient oak at Dinefwr Park (22/608226) by Mark Pavett in late May 1989 has recently been identified as Xysticus audax, again a new county record.

A visit to the Carboniferous limestone caves near Crwbin (22/468129) showed that the substantive 'cave spider' Meta menardi was still thriving; it was first discovered here in November 1985. Arctosa cinerea, Britain's most impressive wolf spider (the female can reach 17mm) was noted on the shingle of the Afon Tywi at Dryslwyn (22/549202) (B Stewart, 22 June 1990) and also upstream of Llandeilo (22/643231) (J Friese and NR Mathew, 1 August 1990). The little 'jumping spider' Euophrys lanigera again was noticeable this autumn in the author's home at Erw-las, Llwynhendy (21/537993), whilst not far away, Sitticus pubescens was noted on the walls of the derelict Glynea farm, (Bynea 21/553881).

Harvestmen were tackled with some gusto in 1990, and harvestmen are now reasonably well-covered in the county. Sabacon viscayanum was discovered at three new sites by the author (Coed Penrhiwiau 22/660237, various dates; Glyn-hir 22/644157, 1 August; Cwm Clydach 22/443075, 2 August). However, one species that the author searched for unsuccessfully was Oligolophus hanseni, which is associated with pines. None were found in the extensive Pembrey Forest and the Scot's pines at Llansteffan (22/352102), where B L Sage recorded the species in the 1950's, were too tall to sample! A new site for the range-expanding Dicranopalpus ramosus is Stradey Woods (22/489016), where it was beaten off the foliage of a redwood in early November, and the species was also noted at two inland localities in the Tywi valley - at Dryslwyn Castle Hill (22/555203) and Dinefwr Castle Woods (22/61— 21-); it seems that this distinctive harvestman is consolidating its colonisation of the county. Lophopilio palpinalis was found in oak litter at Pumpsaint (22/663401) on 7 November, new to the vice-county; there are currently few Welsh records for this harvestman.

SPIDER AND HARVESTMAN RECORDING IN CEREDIGION IN 1990 - A P FOWLES

The outstanding event of the year, without question, was the identification of a spider new to Britain from material collected in pitfall-traps on Cors Fochno (22/635915) in September 1989. A single female Heliophanus was taken on the central dome of the mire and, although it resembled the common H. flavipes, it was recognised by Alex Williams as being rather unusual. Subsequently, Peter Merrett confirmed that this was the first British record of H. dampfi Schenkel, a small jumping spider known from raised mires in Scandinavia, central Europe and the USSR. On checking Kefyn Catley's reference collection of spiders it was revealed that he had also taken a female dampfi, by sweeping heather on Cors Fochno in June 1986. Kefyn had assumed that his specimen was H. flavipes and it is perfectly feasible that specimens from other British raised mires stand mis-identified in the collections of arachnologists. However, Heliophanus species are generally found in dry, open habitats and their occurrence on raised mires would normally invite comment. At this stage it is impossible to say how widespread H. dampfi will prove to be in Britain but at present it appears that this is a very distinguished member of Cors Fochno's invertebrate fauna and the record marks a significant extension of its European range.

All else pales into insignificance but, despite the absence of resident arachnologists in the county, there were two other additions to the county fauna, which now stands at a respectable 296 species. On 18 February 1990 a male Oxyptila atomaria was taken amongst coastal grassland on the south-facing slope at the mouth of Cwm Drywi (22/425606). This small crab-spider is common in Britain in a wide variety of habitat-types where there is short vegetation on a dry substrate. A month later, on 18 March, a female Philodromus fallax was found amongst strandline debris on the foreshore at Ynyslas Dunes (22/611939). P. fallax is a nationally uncommon crab-spider, occurring locally on sand dunes around the coast of England and Wales where its cryptic colouration provides excellent camouflage against the background of sand.

The only other notable spider recorded in 1990 was Arctosa cinerea at Glanrafon (22/614804) and Tyn-yr-helyg (22/595765). Both of these sites are previously-known localities for this river shingle specialist. Material from the Cors Fochno pitfall-traps for 1990 has still to be identified and may be expected to provide records of Agroeca striata and Drassyllus lutetianus.

Harvestmen records were unexceptional this year and there was only one noteworthy observation. Two pitfall traps have been in operation in Coed Nant Llolwyn (22/587769) continuously since 17 February 1990 - one situated in dry oak/hazel woodland and the other in damp ash/willow woodland. Anelasmacephalus cambridgei had previously been recorded from the Llolwyn dingle (DIG 12:23-25) but it was a surprise to capture a total of seventeen specimens in the traps between 13 May and 3 November.

	13/5-3/6	3-30/6	30/6-31/7	31/7- 26/8	26/8-15/9	15/9-6/10	6/10-3/11
Oak/hazel	3	0	3	1	2	0	1
Ash/willow	1	0	2	1	1	1	1

Until recently Anelasmacephalus was thought to be rare in Wales and characteristically associated with woodlands on chalk and limestone. Since 1987 it has been found on several occasions in Carmarthenshire and in five localities in Ceredigion - three woodland sites and two coastal flushes. Harvestmen are poorly recorded in Wales as a whole and Anelasmacephalus is presumably widely-distributed but it is interesting that it appears to have broader ecological tolerances in West Wales than are currently known from its English haunts.

MISCELLANEOUS INVERTEBRATE RECORDS, CEREDIGION 1990 - A P FOWLES

NEUROPTERA - The giant lacewing Osmylus fulvicephalus was taken in a moth-trap set below Salem (22/668845) on 11 July by Peter Holmes. Although records of this conspicuous species are few and far between it is likely that Osmylus is widespread along the numerous wooded valley streams of the county. The distribution of the very handsome hook-tip lacewing Drepanopteryx phalaenoides is even more uncertain. A specimen captured in the Rothamsted Insect Survey light-trap operated by Ian Tillotson at Ty Coed, Tregaron (22/687618) on 14 October is apparently the first for Wales. However, in recent years this species, which was thought to be a denizen of oakwoods in northern Britain, has been seen with some regularity in a number of counties in southern England (cf: Neuronews 5: 10-11 and Ent. Mon. Mag. 126: 26). Perhaps it is undergoing an extension of range at present or, alternatively, its striking resemblance to a dead leaf may have caused it to be somewhat overlooked in the past.

SIPHONAPTERA - A specimen of the common bird-flea Dasypsyllus g. gallinulae (Det. RS George) was found amongst a pile of sawdust in the woodlands at Plas Gogerddan (22/630838) on 3 April. Although this species has previously been recorded for the vice-county (Ent. Gaz. 8:45-75), no locality details are available and therefore this represents the first 10-km square record for Ceredigion (see DIG 14:10-18).

HEMIPTERA - Pete Kirby's review of the Heteroptera of Ceredigion (DIG 17:1-9) has provided a solid foundation on which to develop knowledge of the bugs of the vice-county. Much remains to be done, however, and this is clearly demonstrated by the addition of a further eleven species to the county list to take the total to 206. Two of these species were collected in 1987 by the Welsh Peatland Invertebrate Survey and the rest were collected by APF; all specimens were kindly identified by Pete Kirby.

<u>Acalypta carinata</u>	Cors Caranod (22/565647) 15/8/87
<u>Dictyla convergens</u>	Pentwd (22/185455) - 21/8/87
<u>Ischnochoris angustulus</u>	Cwm Drywi (22/425606) - 18/2/90
<u>Megalonotus chiragra</u>	Cei Bach (22/413598) - 18/2/90
<u>Scolopostethus grandis</u>	Cwm Drywi (22/422603) - 18/2/90
<u>Kleidocerys truncatus</u>	Allt-wen (22/573791) - 15/4/90
<u>Chartoscirta elegantula</u>	Cors Afon Ddu (22/667942) - 29/4/90
<u>Cyllecoris histrionicus</u>	Lovesgrove (22/631815) - 7/6/90
<u>Gastrodes grossipes</u>	Cors Fochno (22/641913) - 9/6/90
<u>Peritrechus geniculatus</u>	Creigiau Gwbart (22/162492) - 12/8/90
<u>Deraeocoris ruber</u>	Cilgwyn, Afon Teifi (22/322413) - 18/8/90

Some of these species, such as P. geniculatus, K. truncatus, S. grandis, I. angustulus and D. convergens, have a generally southern distribution in Britain and are much more local in Wales. All of them are to be expected from Ceredigion and their previous absence from the county list merely reflects the lack of attention paid to Heteroptera locally. The only nationally uncommon Hemipteran recorded in the county this year was the leaf-hopper Sorhoanus xanthoneurus, although it is becoming clear that it is fairly widespread in western Britain on acid mires. It is a regular component of pitfall samples on Cors Fochno (22/635915) and three specimens were captured in July and August.

MOLLUSCA - The taxonomy of the aquatic gastropod Physa gyrina is very uncertain and it may prove impossible to maintain it as a separate species. It is a native of North America, where it is said to be especially characteristic of ponds liable to drying out. It was first recorded in Britain at Cardiff Castle in 1918 and there is a second Welsh record from the Glamorgan Canal at Whitchurch in 1968. The only other British record is from Worcestershire (32/83). Specimens found in abundance by AO Chater in 1990 in a nineteenth century ornamental pond at Glanrheidol (22/662793) have been determined by Dr. MP Kerney as P. gyrina, who remarks that they represent the extreme form of the species and match well with those from Cardiff Castle. The Glanrheidol pond has had no plants or animals deliberately introduced into it for at least twenty years and it has dried out completely in the summer months each year since the dry summer of 1976.