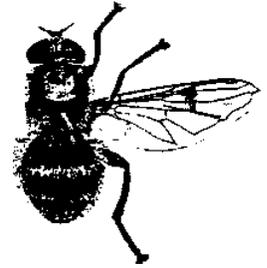


DYFED INVERTEBRATE GROUP



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As the Dyfed Invertebrate Group now passes into its fifth year, it is instructive to look back at what the Group has achieved over that period. In the very first issue of the DIG Newsletter, one of the primary aims of the Group was given as the collation of data on the distribution and status of the invertebrate fauna of Dyfed. This, I believe, has been successfully accomplished for a broad range of invertebrate taxa, although our knowledge of some groups naturally remains at a low level of definition. Another major achievement has been the impetus given to entomologists in other parts of Britain to establish similar groups with an emphasis on invertebrate conservation. To date, Invertebrate Groups (or their equivalent) have been formed in Oxfordshire, Gloucestershire, Staffordshire, Shropshire, Berkshire, Leicestershire and Clwyd, and the formation of a Gwynedd Invertebrate Group is proposed.

The DIG Newsletter, under the careful editorship of Adrian Fowles, has established itself as a voice for invertebrate survey and conservation, in south-west Wales, to the envy, perhaps, of other areas. The continued appearance of the Newsletter is made additionally important as, unfortunately, there is no longer a journal such as the once-excellent, and now sadly-defunct, 'Nature in Wales' in which papers and notes pertaining to the invertebrate fauna of Dyfed can be deposited. May I take the opportunity then, on behalf of the DIG membership, to thank Adrian for his unfailing initiative and hard work over the last four years, in ensuring the success of the Dyfed Invertebrate Group.

May I also remind members that the annual subscription for 1990 is now due - please send four 1st class stamps to Adrian Fowles at NCC Aberystwyth (address above).

As usual, there are three field meetings this year, one in each of the Dyfed vice-counties; details are given below.

10 June 1990 - Laugharne Burrows and the Witchett Pool, Carmarthenshire - Extensive dunes with damp slacks, diverse fen and open water communities at the MOD Proof and Experimental Establishment, Pendine. Members wishing to attend must send their name, address and nationality to IK Morgan, c/o NCC, 18 Barn Head, Carmarthen, SA31 1DD by 10 May, so that details can be forwarded to MOD staff. No photography is allowed and anyone who has not complied with the above request will not be allowed to attend this meeting. Meet at the main entrance (22/259090) to MOD Pendine at 10.45 am prompt for an 11.00 am start.

7 July 1990 - Rhos Gellie, Ceredigion - Thirty hectares of rhos pasture, poor-fen and wet heath, forming an extensive mosaic of small enclosures bounded by overgrown hedgerows which have developed into linear woodland. Rhos Gellie is an excellent example of the type of traditional farmland that once clothed much of lowland Ceredigion but the site is completely unknown entomologically. Meet at 11.00 am at the crossroads on the A487 in Synod Inn (22/403543).

12 August 1990 - Rosebush (Pant-maenog Forest and Mynydd Preseli), Pembrokeshire - Coniferous plantations on the flanks of the Preseli Hills and nearby acidic pastures and bogs. Meet at the lay-by just west of Rosebush village (22/072294) at 11.00 am.

ORTHOPTERA

ORTHOPTERA IN CARMARTHENSHIRE, 1989 - IK MORGAN

Orthoptera receive little recording effort at present within the vice-county, but nevertheless several useful records were made during 1989. *Tetrix ceperoi* was again recorded at Tywyn Burrows (22/3605) where it was first recorded by the author in 1985; this species favours the margins of flooded or damp dune slacks which are almost devoid of vegetation or just with a light covering of mosses or other low-growing plants. *Tetrix subulata* was seen at Ynys-uchaf (22/4914), again a known site; this species prefers perhaps slightly more thickly vegetated mossy areas and, as with *ceperoi*, always wet.

Although the author has not had the success in obtaining records of the oak bush-cricket *Meconema thalassinum* that is reported in Ceredigion, he was very pleased to 'beat' one from hazel next to an oakwood at Ty'n-y-cwm, Pontyates (22/460085) on 17 July. Dark bush-cricket *Pholidoptera griseoptera* have an overwhelmingly coastal distribution in Carmarthenshire, extending inland along the Gwendraeth Fawr valley and with a most curious inlier south-west of Llandeilo in the Cilsan area. A record of several NW of Carway (22/459073) on 9 August slightly extended inland the Gwendraeth Fawr population, whilst others were seen at Cilsan Mill (22/598222) by Neil Mathew in the same month. This isolated inland population was first discovered in 1985 by RG Woods and the author, when several were seen in hedgebanks near Cilsan Bridge (22/589217), where adults were still present in 1989. Always very secretive, a speckled bush-cricket *Leptophyes punctatissima* was noted on a brambly hedge north of Techon Farm, Llwynhendy (21/540992) in early September.

GRASSHOPPERS AND BUSH-CRICKETS IN CEREDIGION, 1989 - A P FOWLES

Although there is always a possibility that species like *Chorthippus albomarginatus* or *Tetrix subulata* may one day be found in Ceredigion, local orthopterists have a fairly clear picture of the known fauna and their habitat preferences. Recording effort, therefore, is largely a case of determining the full distribution of each species on the county list but valuable attention could be paid to ecological investigations in the future. For instance, very little is known about the foodplants of our grasshoppers in Britain and observations on their feeding-habits would be extremely interesting.

Meanwhile, the relative abundance of the various species of grasshoppers and bush-cricket in Ceredigion is becoming clear from the distribution maps compiled from the annual records. Tetrad (2km x 2km) maps are a crude measure of species-abundance, masking many anomalies in recording bias, and yet the totals to date do reveal a ranking order that I suspect most local naturalists would accept as being representative of the true situation:

Omocestus viridulus - 160; *Chorthippus parallelus* - 138; *Chorthippus brunneus* - 75; *Tetrix undulata* - 44; *Myrmeleotettix maculatus* - 29; *Meconema thalassinum* - 17; *Leptophyes punctatissima* - 14; *Conecephalus dorsalis* - 8; *Pholidoptera griseoptera* - 7; *Metrioptera brachyptera* - 7; *Metrioptera roeseli* - 5.

From this we can see that the common green grasshopper *Omocestus viridulus* is the commonest species, closely followed by the meadow grasshopper *Chorthippus parallelus*. The common groundhopper *Tetrix undulata* is probably grossly under-recorded because of its unobtrusive nature and is likely to be more widespread than the field grasshopper *Chorthippus brunneus*. The bush-cricket are more ecologically-restricted than the grasshoppers and this is reflected in their low tetrad totals. The exception to this is the oak bush-cricket *Meconema thalassinum*, which is our only arboreal orthopteran and passes un-noticed unless specifically searched for.

The 1989 season added a considerable amount of information on the distribution of Orthoptera in Ceredigion but there were only a few records of particular note. The mottled grasshopper

Myrmeleotettix maculatus was found on the dry, stony hillside of the south-facing slope of Cwm Berwyn (22/727582) - one of very few natural sites for this species inland. At Tyn-r-helyg (22/595765), an area of stabilised shingle grassland on the banks of the Ystwyth, a single speckled bush-cricket Leptophyes punctatissima was seen on 26 July. Leptophyes occurs on riverside meadows in the lower Teifi Valley but otherwise this is the only record of the species away from the coastal fringe. Meconema thalassinum was recorded from eleven sites this year, compared to a total of just eighteen previous records since its discovery in Ceredigion in 1952. This recording "explosion" is chiefly due to the technique of 'beating' the foliage of deciduous trees in Spring. Nymphs were found abundantly by this method in the last two weeks of May and were 'beaten' from oak, alder, willow and sycamore.

Of the scarcer species - Roesel's bush-cricket Metrioptera roeseli was reported from three localities on the margins of the Dyfi estuary; a single dark bush-cricket Pholidoptera griseoaptera nymph was swept from rank pasture at Coedmore (22/193436) on 24 May; and two bog bush-cricket Metrioptera brachyptera nymphs were swept on Cors Fochno (22/635915) on the night of 20/21 May. I suspect that there were many more sightings of the latter species on Cors Fochno in 1989 but not everyone remembers to submit their records! I am pleased, however, to note a gradual increase in the number of local Orthoptera recorders in the county and am grateful to D C Boyce, A O Chater, D Elliot, I S Francis, P Kirby, S J Lambert, R Liford and J B Steer for helping to improve our knowledge of this charming group of insects.

ODONATA

DRAGONFLIES IN CARMARTHENSHIRE, 1989 - IK MORGAN

The highlight of 1989 was the discovery, by Barry Stewart, of definite evidence of breeding in the vice-county by Orthetrum cancellatum, with several seen emerging from exuviae on 19 June at the new Wildfowl and Wetlands Trust reserve at Penclacwydd (21/531987) in the extreme south-east of the county. Hitherto, this species was not even recorded in the county, though it was known to breed many miles to the east at Kenfig on the Glamorgan coast. It was noted at Penclacwydd on several dates throughout its flight-period. Ischnura pumilio was also confirmed as a breeding species at the site with BS noting up to 30 individuals, including pairs 'in tandem', on 20 June.

Orthetrum coerulescens was again noted at Cefn Blaenau (22/579416) where it was first recorded in 1988 and a lone male was seen to patrol a Potamogeton-filled ditch alongside a railway line north of Horeb (22/494062) in mid-June.

Two noteworthy species recorded again at the Witchett Pool on Laugharne Burrows (22/285074) during 1989 were Brachytron pretense (several noted in mid-June) and Aeshna mixta (in mid-September). During the June visit to this rich site, Libellula quadrimaculata was observed exhibiting preference for the wet, mossy slacks, some of which, judging by their vegetation, are slightly acidic, and indeed quadrimaculata regularly occurs on bogs or oligotrophic water bodies - such as Llyn Llech Owain (22/567151) - elsewhere in the county.

ODONATA RECORDING IN CEREDIGION (VC 46) IN 1989 - IS FRANCIS

Fine weather over much of the summer prompted an increase in activity of dragonfly recorders in the vice-county, and a grand total of 368 records, of 19 species, from nine observers, was received. Five rare or uncommon species were noted, including the new vice-county record of Gomphus vulgatissimus from the Teifi opposite Cilgerran (22/200428), reported previously (Coker 1989). It remains to be discovered to what extent Gomphus occurs upstream of this point on the river, and whether the population is large. Certainly very few exuviae were found by Stephen Coker and Stephen Evans and an extensive search of the Ceredigion bank for one kilometre downstream of Llechryd on 4 June by Tony Fox and myself did not produce any specimens.

Anax imperator and Ceriagrion tenellum were both seen only at Rhos Llawr-cwrt (22/410500); Anax has not been recorded at any other site in Ceredigion since 1984, and is undoubtedly rare (rather than simply overlooked) in the vice-county. Several unsuccessful attempts were also made in 1989 to find Brachytron pratense, Coenagrion pulchellum and Orthetrum cancellatum on the west side of Cors Fochno and along the Leri dykes (the only site for each of these species in Ceredigion). Urgent effort must now be made to find these species in 1990, and to try and assess if habitat changes have made the area unsuitable for any of them.

A new site was discovered for Ischnura pumilio at Dolcniw, Afon Rheidol (22/647802); the record from this shallow backwater pool brings the total of 1km squares in VC46 for this species to 29, and the record is new for the 10km square. Nant Bryn Maen (22/634572) is already known for records of C. tenellum and I. pumilio in the 1980's; the addition of Orthetrum coerulescens in 1989 makes this site, a cluster of pingo fens, one of the best for Odonata in the vice-county. Finally, though frequent along parts of the Teifi, Calopteryx splendens was recorded in June from the Ystwyth catchment near Tynybedw (22/694709), a new 10km square record.

I thank DC Boyce, I Callan, AO Chater, AP Fowles, PM Miles, JB Steer, I Williams, D Woolley and the Welsh Peatland Invertebrate Survey (NCC) for records.

References:

COKER, A (1989) - The club-tailed dragonfly Gomphus vulgatissimus in West Wales. DIG Newsletter 14: 3-4.

LEPIDOPTERA

CARMARTHENSHIRE BUTTERFLIES AND MOTHS, 1989 - IK MORGAN

1989 will be remembered for the dry, warm summer which followed an exceptionally mild winter and an early Spring, with copious summer sunshine providing ample opportunities for adult butterflies to fly, feed and mate, though some larval foodplants were adversely affected by drought. It will be interesting to see whether the strong duneland populations of small blues Cupido minimus, whose larvae feed on this plant, will suffer a slump in 1990 at their Pembrey Burrows (21/4199) stronghold. Doubtless influenced by the mild weather of early 1989, there were many early sightings, such as a small tortoiseshell Aglais urticae on the wing on 12 February and peacocks Inachis io, speckled woods Pararge aegeria and a red admiral Vanessa atalanta flying by late March. April produced a handful of brimstone Gonepteryx rhamni records - at Pont-henri (22/47-09-)(DP), near Laugharne (22/3010) and on the sandy burrows (22/2807) to the west of that town (JR); a male was also at Dinefwr Castle Woods (22/6121) on 10 June. The brimstone is a distinctly local butterfly in Carms., with most records referring to the south-east, though it is capable of wandering.

Marsh fritillaries Eurodryas aurinia emerged on 26 May with twenty-six counted on a fine acidic 'rhos' pasture near Cencoed-uchaf (22/485032), three more were on a small flushed bog (22/479032) just west of the farm on the same date. At Tywyn Burrows (22/3605), probably Carmarthenshire's strongest colony, many scores were in flight on 27 May and they were also noted at Waun-fawr (22/496134) and at Gweunydd-cochion, south of Tumble (22/543101)(JRE & ROH). Nine adults were observed at Pen-ty meadows (22/483166) where larval webs had been noticed the previous year. A nice group of unimproved, horse-grazed, moist pastures north of Cynheidre (22/490079) also held a few marsh fritillaries (and small pearl-bordered Boloria selene) at the end of May. This latter site was a new locality for both fritillaries, whilst Crwbin Common (22/480126) also held a few marsh frits during this period, again a 'new' site. This brings the total of known, regular and extant marsh fritillary colonies in VC44 to twenty-five. Small pearl-bordered fritillaries were also noted (for the

first time) at Troed-y-rhiw, Cwm-hiraeth (22/348371); near Mynydd Sylen (22/518082)(JMW) and Crach gelli-fach (22/571247), several on a flower-rich meadow (JF).

Neil Mathew recorded dingy skippers Erynnis tages together with graylings Hipparchia semele and marbled whites Melanargia galathea on the limestone outcrop near Pant-y-llyn (22/605167), and it was a delight to see ample numbers of marbled whites flying over an uncut hay meadow behind Ty'n-y-cwm, Pontyates (22/460085) on 17 July, only halting to sip nectar at flowers of hardheads Centurea nigra. Another new site for this butterfly was an unimproved pasture at Tir-lan, Llannon (22/556073), noted by John Steer on 27 July.

There was a marked influx of large whites Pieris brassicae at the end of May, especially at the coast, and a strong immigration of red admirals began in late June; indeed it was a noted year for this species throughout the county. Clouded yellows Colias croceus were scarce, though there was a wide scatter of records, from the first at Cloigyn (22/420156) on 8 Aug (GH) until at least mid-September. Painted ladies Cynthia cardui though, were rare with just half-a-dozen or so, recorded from late July but mostly in late September.

Apart from the green hairstreaks Callophrys rubi seen at Pembrey Burrows in the Spring, the only other species of hairstreak recorded was the purple Quercusia quercus, observed in early August, perched on a small oak beside the Trebeddrod Reservoir (22/503023) at Furnace. There was but one reported sighting, too, of the silver-washed fritillary Argynnis paphia - at Pembrey Forest (22/3902) on 23 July (GH); dark green fritillaries A. aglaja were seen on the coast at Underhill, Marros (22/1907) in July.

If the status of the above two fritillaries may merit concern, other butterflies certainly did well in 1989. Wall browns Lasiommata megera, for example, were relatively common with a strong (third?) brood in the warm, early autumn, whilst the same period even witnessed a fourth brood of small coppers Lycaena phlaeas; in fact an abundance of the latter species will be a memorable feature of September 1989.

The author would like to thank the following who submitted records - Stuart Alexander, John Ellis (JRE), Julian Friese (JF), George Hutchinson (GH), Robert Hunt (ROH), Neil Mathew, David Poulter (DP), Richard Pryce, John Rees (JR), John Steer, Barry Stewart and JM Walls (JMW).

Moth recording in 1989 witnessed a considerable increase of activity with a more substantial effort being made by the author and by Barry Stewart. An ubiquitous species provided the first interesting record - a large yellow underwing Noctua pronuba caught, quite out of season, when it flew to a kitchen light at Llwynhendy (21/537992) on 1 March, normally the flight period is from mid-July onwards - the unusually mild winter must have greatly accelerated larval/pupal development.

A chamomile shark Cucullia chamomillae at Llwynhendy on 5 May was the first of several scarce species caught at a Heath trap at this site in 1989; it is a rather local moth in south-west Wales. Later, a double dart Graphiphora augur and a dog's tooth Lacanobia suasa were captured at the same trap. The daylight hours also produced noteworthy records in early May - the scarce yellow belle Aspitates ochrearia at Penrhwyngwyn (21/517974), Pembrey Burrows (21/4199 and 22/427003), Tywyn Burrows (22/3605) and on the small relict area of dunes by the North Dock, Llanelli (21/498990); individuals of the second brood were at Penrhwyngwyn on 26 August. A silver hook Eustrotia uncula on the wet slacks behind Tywyn Burrows on 27 May was a pleasing find - it was first discovered here during the inaugural DIG field meeting in June 1986; it is a noted inhabitant of wet, sedgy pastures.

Trapping at Stradey (22/495013) on 14 June yielded a red-necked footman Atolmis rubricollis and specimens of the impressive privet hawkmoth Sphinx ligustri. Sphinx was also recorded by BS at Pembrey Forest (22/391026) on 12 June when he additionally caught a sharp-angled peacock Semiothisa alternaria and a grass wave Perconia strigillaria, whilst not far away, at Pembrey Burrows, Barry recorded a sand dart Agrotis ripae, a local coastal species, on

28 June. Diurnal recording during this period resulted in records of five-spot burnets Zygaena trifolii at Llwyn Celyn (22/688326), Hafod (22/678092) and near Maesymeillion (22/748231) where a scarlet tiger Callimorpha dominula was also noted. Other day-flying moths were chimney sweepers Odezia atrata at Carmel (22/590126) and at Cae Tir Clun (22/783267). There were a few sightings of the immigrant hummingbird hawkmoth Macroglossum stellatarum at a scatter of localities this year with the first at Machynys (21/515973) on 24 July and others at Stradey (JRE), Pendine (22/2308) and inland at Rhandirmwyn (22/7844). A few silver Y's Autographa gamma (noted from late May onwards) and vestals Rhodometra sacraria were seen in early autumn.

Use of a borrowed, powerful Robinson trap, placed strategically by BS at Bryn-teg (22/435032) on the slopes of Mynydd Penbre and overlooking the Gwendraeth valley on 3 July, produced a catch of an astonishing 84 species, including scarcities such as the sharp-angled peacock, plain wave Idea straminata and scallop shell Rheumaptera undulata. Pembrey Burrows (21/41-99-) on the very humid and thundery night of 6 July, yielded several species at the Heath trap of the author (placed out hurriedly in view of the impending electrical storm!) - a broad bordered yellow underwing Noctua fimbriata and a small elephant hawk Deilephila porcellus; both are scarce species in SW Wales. On another trapping night at Pembrey, the white-line dart Euxoa tritici and the attractive Archer's dart Agrotis vestigialis were both caught. Also, in mid-July, the trap was set on the fen-pastures of Ynys-uchaf (22/488148) where round-winged muslins Thumatha senex were a notable capture; the caterpillars of this local marshland species are said to feed on certain mosses and lichens.

Barry Stewart's regular trapping - on 94 nights - at Tir Morfa (21/533983) in the Llwynhendy district on the northern flanks of the Burry Inlet, resulted in a total of 176 species, including those listed below:

Bordered sallow Pyrrhia umbra (2 & 3 July) - a local species, with the larvae feeding on retharrow.

Dog's-tooth (various dates, including 15 on 13 July) - a localised, often coastal noctuid.

Double kidney Ipimorpha retusa (18 July) - a local species associated with willow carr.

Lead-coloured drab Orthosia populeti (several dates) - an uncommon species associated with aspens and poplars.

Peacock moth Semiothisa notata (31 July) - a species, found mostly in southern England, which has been extending its range north and west in recent years; associated with birch scrub.

Rosy wave Scopula emutaria (several dates in late June and early July) - a notable moth associated with saltmarshes.

Sharp-angled peacock (27 & 30 May) - a local resident, first recorded in the vice-county in 1976.

White satin Leucoma salicis (19 July) - a rare species in Wales, though widespread in England from Cumbria southwards.

During the summer, BS also did some valuable recording work at the Ffrwd Nature Reserve (22/420025) near Pembrey, some 23 ha of fen-pasture, rushy grazings, dense reedbed and willow carr. Amongst the 54 species he recorded were several noteworthy wetland species - the crescent wainscot Mythimna straminea, striped wainscot M. pudorina and brown-veined wainscot Archanara dissolute. The last-named is only known from Gower and Clwyd in Wales, but was also later recorded at Llwynhendy by the author.

The coastal reed and reedmace marshes in the Llwynhendy-Bynea district of SE Carms. also produced several notable species in late summer, emphasizing the importance of these remnant marshlands for nature conservation. A brown-veined wainscot came to the light-trap at the author's Llwynhendy home on 5 August whilst at Glynea (21/553989) bulrush wainscots Nonagria typhae were caught on 6 August and subsequent dates and also in the marsh north of Techon (21/540995). Here also, pinion-streaked snouts Schrankia costaeistrigalis and Webb's wainscots Archanara sparganii were caught in August and early September. Bulrush and Webb's wainscots were additionally captured at the threatened Machynys Ponds

(21/511980). The bulrush wainscot is localised in Wales, while Webb's is only known from north Gower and two coastal sites in Pembs. A surprise capture at the Techon marsh on 9 Sept was an oak hook-tip Drepana binaria, a local but increasing species.

Back again on the coast, the remaining area of natural shingle beach at Penrhynwyn, Machynys is known to hold several local or rare invertebrates, so it was pleasing to record the noteworthy large ranunculus Polymixis flavicineta on 21 Sept; it is an exquisitely-patterned species resembling a lichen-covered stone. Finally, a capture of a waved carpet Hydrelia sylvata is reported from the Rothamsted survey trap operated by Dafydd Davies at Rhandirmwyn (22/781448), though full details of this and other captures are not yet at hand; the waved carpet is a rare species of wet woodland.

NOTE: This is an abridged and modified version of an article that first appeared in the Llanelli Naturalists Newsletter (Winter 1989-90), pp3-9.

LEPIDOPTERA RECORDING IN VC45, PEMBROKESHIRE, DURING 1989 - R ELLIOTT

The very hot and long summer raised hopes of large numbers of records throughout the county. Sadly, this has not happened with very few records being received and those only from regular recorders. Nevertheless, with regular moth-trapping being carried out at Lamphey, the total number of Lepidoptera records for the year was in excess of 1,400.

Only three species of skipper were recorded during the year, with the small skipper Thymelicus sylvestris in flight from early June to early August and the large skipper Ochlodes venata recorded in flight from late May to early August, mostly from Dowrog Common NR (DR Evans). For both of these species the flight period was about one or two weeks earlier than expected. The dingy skipper Erynnis tages was recorded only once, by SB Evans at Oakwood (22/067123) on 16 May. Migrant clouded yellows Colias croceus were again seen in the county with 18 records of this species ranging from Strumble Head in the north (JW Donovan, 17 Sept) to Manorbier Newton in the south (J Hambly, 30 July). The records range in time from mid-June to late-Sept without an appreciable break.

Hairstreaks are conspicuous by their absence, with no records in the county for 1989. Two records for the small copper Lycaena phlaeas on 27 May are the only indication of the first generation and the emergence of the second brood seems to have started during mid-July and sightings continued until the end of Sept. The brown argus Aricia agestis is generally restricted to the south of the county where its preferred habitat seems to be limestone grassland and coastal sand-dunes. The only record this year was of one at West Williamston NR on 3 Aug (R Elliott). The common blue Polyommatus icarus was recorded from late May right through to early Sept, with a gap between mid-June and mid-July that probably represents the interval between the first and second generations.

Red admirals Vanessa atalanta were recorded continuously from late May through to mid November with large numbers about in August, including one night-flying individual which was taken in a MV light-trap. Two records for the painted lady Cynthia cardui in June probably represent part of the initial migration from the continent. The rest of the records for this species all occur in August and probably consist of both migrants and locally bred individuals. Three early records (16 Jan, 11 & 28 Mar) for the small tortoiseshell Aglais urticae and one late record (27 Dec) all represent overwintering individuals. The spring emergence of the peacock Inachis io took place mainly during late March and early April, with other sightings on 5 Feb (SB Evans) and 11 Mar (R Elliott). The main summer/autumn emergence of peacocks occurred between early July and mid September.

Small pearl-bordered fritillaries Boloria selene were recorded from late May to mid July by DR Evans on Dowrog Common NR with records in June from Western Cleddau Mire NR (G Knights) and the Solva/Newgale area (SB Evans). Stephen Evans was also responsible for the only record of dark green fritillaries Argynnis aglaja in June. Silver-washed fritillaries Argynnis paphia were only recorded twice, once at Allt Henllys (22/118394) by SB Evans

and at Hundleston (II Harries). Marsh fritillary Eurodryas aurinia records came only from Dowrog Common NR (DR Evans & D Hampson) between late May and mid June. Grayling Hipparchia semele sightings at Freshwater West (H Harries) in July, Dowrog Common NR (DR Evans) and Ramsey Island (JW Donovan) in August confirm the association of this species with coastal limestone.

The most interesting macro-moth species recorded during the year was the feathered brindle Aporophyla australis pascuea. It was taken at light on three occasions (25 & 27 Sept and 2 Oct) at Merrion (11/939969) by R Elliott. Specimens sent to the National Museum of Wales confirmed the identification. All the individuals seen had much darker markings than is usually expected and this was also confirmed by comparison with museum specimens. The distribution of this species is normally considered to be local and sporadic along the coasts of southern England from Kent to Cornwall. As far as I can tell, this is a new record for the vice-county. Other interesting species include hummingbird hawkmoths Macroglossum stellatarum in Lamphey on 22 & 26 Aug (R Elliott) and in Manorbier (12/066976) on 28 Aug (D Rees) and two specimens of the dark arches Apamea monoglypha ab. aethiops at Lamphey on 13 & 23 June. Melanic forms such as this occur commonly in the northern half of Britain but are more unusual and less frequently found in the southern part of the country.

LEPIDOPTERA RECORDS FROM CEREDIGION IN 1989 - AP FOWLES

1989 began with a continuation of the unseasonably mild weather that saw several species of moths appearing at the end of 1988 much earlier than their normal flight period (Tillotson 1989). Early emergences this year included small quaker Orthosia cruda on 26 Jan, early grey Xylocampa areola (6 Feb), common quaker Orthosia stabilis (8 Feb) and water carpet Lampropteryx suffumata (18 Feb), and right through Spring many species were being recorded on their earliest-ever dates. The rest of the year was characterised as "rather average" by most recorders and, despite the best summer we've had since 1984, there was little of great excitement to report. It was, however, pleasing to see hummingbird hawkmoths Macroglossum stellatarum widely-recorded and a total of seven specimens were observed between 20 June and 22 Sept. Otherwise it was a quiet year for migrants but the occurrence of a single white-point Mythimna albipuncta at Ty Coed, Tregaron (22/687618) on 4 July represents an addition to the county list. The Ceredigion total remains at 552 species of macro-moths (not 553 as erroneously reported in DIG 13: 1-5) as PM Miles has withdrawn his record of small emerald Hemistola chrysoprasaria from Cnwch-coch (Miles 1987) as a misidentification of the light emerald Campaea margaritata.

Three other records stand out as particular highlights of 1989. A single thrift clearwing Bembecia muscaeformis was seen flying along a sunny cliff face at Gwbert (22/160503) on 17 June, the second successive year that this species has been recorded in the county after a gap of 55 years without any records at all. A straw underwing Thalpoiphila matura at Rhydyfelin (22/594793) on 5 May was only the fourth seen in Ceredigion, the previous records were in 1962, 1969 and 1975. Blomer's rivulets Discoloxia blomeri were trapped at Ty Coed, Tregaron on 17 June and Coed Nant Llolwyn, Llanfarian (22/588770) on 8 July. This elm-feeding geometrid was last recorded in 1977 and it was feared that Dutch Elm Disease might bring about the local extinction of this pretty moth (Miles 1978). At Llanfarian, a single specimen was caught in a trap set amongst a stand of twenty healthy elms Ulmus sp. in dingle woodland, with about twice as many trees having succumbed to disease. It is encouraging that Blomer's rivulets have managed to hang on through the ravages of the disease and it was also a delight to go down and empty the trap each morning throughout July as the elm foliage was festooned with up to forty clouded magpies Abraxas sylvata on each occasion.

Several moths which have been observed on few occasions in Ceredigion were reported this year. The day-flying orange underwing Archiearis parthenias, a local species of open birch scrub, was seen twice in Spring at Eglwysfach (22/69) and two shore wainscots Mythimna littoralis came to light in the foredunes at Ynyslas (22/605935) on 30 July. The Rothamsted traps produced their usual crop of good records with eight saltern ears Amphipoea fucosa

at RAE Aberporth (22/250520); lead-coloured drab Orthosia populeti, small rufous Coenobia rufa, white satin Leucoma salicis, valerian pug Eupithecia valerianata and marsh oblique-banded Hyponodes turfosalis at Ty Coed, Tregaron; and beautiful snout Hypena crassalis and light brocade Lacanobia w-latinum at Plas Gogerddan (22/629837). A light brocade was also trapped at Salem (22/669843) and other uncommon moths recorded here included two brown-spot pinions Agrochola litura and a short-cloaked moth Nola cuculatella.

It was a good year for scarlet tigers Callimorpha dominula with records from seven sites and adults were seen in abundance on several of these. The scarlet tiger is a conspicuous member of a distinctive assemblage of wet pasture moths that are still common in Dyfed but declining in other parts of England and Wales as a result of agricultural improvement. This assemblage includes the forester Adscita statices, silver hook Eustrotia uncula and devon carpet Lampropteryx otregiata. Each of these were recorded in Ceredigion in 1989 but the forester appears to be the scarcest of the group and was only seen at Comins Capel Betws (22/6157). There are many other species which are nationally uncommon but generally widespread in Ceredigion and there were records this year of pale pinion Lithophane socia, red-necked footman Atolmis rubricollis, oak-tree pug Eupithecia dodoneata, golden-rod pug E.virgaureata, cloaked carpet Euphyia biangulata, dotted carpet Alcis jubata and double-line Mythimna turca.

The annual larval transect to monitor the fortunes of the rosy marsh moth Eugraphe subrosea on Cors Fochno (22/6391) after the fire of 1986 was carried out on the night of 20/21 May. It was with great relief that, four seasons after the fire, larvae were found for the first time on the section of the mire which had been burnt in 1986. The standard transect yielded 22 individuals on the unburnt mire at a density of one larva per 4.77 m² and two individuals on the 'burnt' mire at a density of one per 60 m². Measurements were again made of the height of the bog myrtle Myrica gale plants on which the larvae were feeding and this gave a mean height of 23.8 cms. The combined observations of 1988 & 1989 (n=81) give a mean height of 26.3 cms. An extremely interesting observation was the discovery of a single larva feeding on the pedicel of a new flower-head of common cotton-grass Eriophorum angustifolium, a foodplant not previously recorded for the rosy marsh moth. Whether this represents an isolated occurrence or an alternative food-source before the Myrica catkins open is unknown and it will be interesting to examine Eriophorum flowers in early Spring in future years.

The pattern for butterflies in 1989 was rather similar to the moths as Spring began well, followed by a lull in summer, and then a favourable autumn. Some of the early summer butterflies were induced to emerge much earlier than usual by the hot weather of May, including large skipper Ochlodes venata (21 May), large heath Coenonympha tullia (27 May) and meadow brown Maniola jurtina (30 May). Even more surprising was the appearance of a female orange-tip Anthocharis cardamines on 22 January indoors at Eglwysfach - a possible explanation being that a pupa had been brought in to the house on garden honesty plants.

Of the scarcer species in Ceredigion, the most successful in 1989 was undoubtedly the small pearl-bordered fritillary Boloria selene which appeared in great abundance at many sites. Records were received from forty tetrads with the flight period lasting from 29 May to 19 July. Extraordinarily, a singleton was also seen on the edge of Cors Caron (22/689622) on 24 Sept and this individual was checked closely to confirm the identification. Second broods are occasionally reported in southern England but the only such occurrence in Ceredigion previously was on 7 Aug 1941. Marsh fritillaries Eurodryas aurinia also had a good year with the annual monitoring transect at Rhos Llawr-cwrt NNR (22/410499) yielding the highest Index of Abundance (132) since 1984. Adults were first seen here on 25 May and the last was recorded on 22 June. There were reports from four other sites in the county, including a singleton at Cors-y-sychnant (22/699688) on 18 June, which perhaps indicates the existence of a previously unknown colony on this extensive area of unimproved pasture. There was also a new site reported for pearl-bordered fritillaries Boloria euphrosyne; four adults were flying over coastal grassland at the mouth of Cwm Cilfforch (22/439616) on 21 May in typical habitat. Cilfforch is the northernmost of the characteristic coastal dingles of southern Ceredigion which harbour most of the known colonies of pearl-bordered frits in the county and it is unlikely that any colonies now occur north of Aberaeron. The scarcity of silver-washed fritillaries

Argynnis paphia continues with records of just four individuals this year - at Aberarth (22/479639), Llanfarian (22/584767) and two at RSPB Ynyshir (22/6896).

In contrast to the silver-washed fritillary, commas Polygonia c-album continue to be more and more widely-recorded in the county and were seen in twenty tetrads between 27 March and 19 October. This seems to be a real increase and not a product of observer-effort and the comma is now almost certainly commoner than at any time this century. A change of fortunes may also be imminent for the brimstone Gonepteryx rhamni as an attempt is underway to re-introduce the species to RSPB Ynyshir. Brimstones are thought to have become extinct here in 1980, probably as a result of the shading of their foodplant, alder buckthorn Frangula alnus, by the maturing conifer plantation of Covert Du (22/676953). The RSPB have now planted many new bushes of alder buckthorn on the reserve and are embarking on a programme to re-establish the brimstone. Eight pupae and an adult from Woodwalton Fen, Cambs., were introduced into suitable habitat as an initial step and it is planned to release considerably more in 1990. Perhaps brimstones may one day have naturally re-colonised Ynyshir as stray individuals continue to wander through Ceredigion. There were two reports this year - in the Rheidol valley (22/726783) on 24 May and at Trefrew (22/694709) on 11 June - but in future Ceredigion sightings may once again originate from home-bred stock.

A more striking example of butterfly movements was the sighting of 'thousands' of small whites Pieris rapae on the cliffs at Gwbirt (22/158501) on 2 Sept. Small whites were recorded more frequently than usual throughout the county this year but most are likely to have been immigrants as this species does seem to be rather scarce as a breeding resident. It would be interesting to receive records of larvae of both small and large whites found breeding on garden brassicas to gauge the relative abundance of the two species in Ceredigion. A small immigration of clouded yellows Colias croceus was also evident during the summer. There was an isolated record in June and then a further 26 individuals were reported between 30 July and 3 Sept. An unusual feature of this immigration is that most sightings were from inland localities, whereas the clouded yellow is usually commonest along the coast. There was a similar distribution to the fifteen records of painted ladies Cynthia cardui this year, perhaps suggesting that migrant butterflies reaching Ceredigion filtered up from southern England rather than reaching land for the first time on the Welsh coast as is usually supposed.

The most interesting of the remaining butterfly records in 1989 was the sighting of a male brown hairstreak Thecla betulae near Llechryd (22/209437) in September. Adults of this elusive species are rarely seen but it is probably fairly widespread in suitable habitat. There were few records of green hairstreaks Callophrys rubi but, as in 1988, large numbers were seen on the moorland at Craig-y-pistyll (22/719857) in early May. Holly blues Celastrina argiolus were seen at four sites and there was just a single sighting of dingy skipper Erynnis tages, at Cwm Cilfforch on 21 May. Although common blues Polyommatus icarus did not appear to be particularly abundant in coastal localities, there was a welcome return to some of their inland haunts with half-a-dozen records from dry grassland sites away from the coast. The scarcity of common blues inland since 1984 has been puzzling and presumably they are capable of surviving at very low population levels during unfavourable summers.

As mentioned above, large heaths emerged early this year on Cors Fochno and lasted through to 10 July. The monitoring transect here gave an Index of Abundance of 72, continuing the steady decline since counts began in 1986: the Index for the last four years is - 120.5 (1986), 112.5 (1987), 93 (1988), 72 (1989). The large heath is poorly-represented in the National Butterfly Monitoring Scheme and the Cors Fochno transect is providing valuable information on population trends for this species. Single-species transects for other uncommon butterflies in Dyfed would also be of great interest and I would be happy to advise any DIG members who may wish to contribute to butterfly knowledge in this way. Perhaps there is a colony of small pearl-bordered, graylings, small blues, etc. nearby which could easily be visited on a few sunny days during the summer? By establishing such transects and pooling information we will be in a better position to understand the fluctuations of butterfly populations in response to habitat or climatic change.

As ever, I am grateful to the following naturalists for contributing Ceredigion Lepidoptera records during the year - ME Baines, DC Boyce, PM Burnham, AO Chater, SJ Coker, IS Francis, C Fuller, PR Holmes, P Kirby, SJJ Lambert, R Liford, PM Miles, VJ Monaghan, IK Morgan, P Mudie, H Roderick, D Smith, R Squires, JB Steer, P Thornley, IJL Tillotson, I Williams, CS Wood-Baker, & D Woolley.

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DIPTERA

DIPTERA RECORDING IN CARMARTHENSHIRE, 1989 - IK MORGAN

The 1989 recording season saw several noteworthy additions to the vice-county's syrphid fauna. News that Brachypalpus laphriformis had been recorded in Ceredigion prompted PM Pavett and the author to search for it, further south, in suitable deadwood-rich habitats. On 29 May, two males were discovered at Dinefwr Deer Park (22/612227), one on a fallen oak-trunk and the other on a sunlit, isolated oak log amongst sparse bracken. The same site yielded Brachypalpoides lenta on elder flowers, as was one seen in early June just south of New Mill (22/259128). Microdon mutabilis, whose larvae develop in the nests of ants, was out on the wet slacks of Tywyn (22/3605) and Laugharne (22/279074) Burrows in late May/early June; it is currently only known in the county from these two coastal and one inland localities. The saltmarsh Platycheirus immarginatus was found on transitional saline/dune slack vegetation at Tywyn Burrows whilst, at Laugharne, the related P. fulviventris was noted; Trichopsymia flavitarsis and Chrysogaster macquarti were also present on the wet, mossy slacks at Laugharne. Another record of C. macquarti was made by Adrian Fowles at the threatened Machynys Ponds (21/512980), south of Llanelli, whilst inland the fenny pastures at Ynys-uchaf yielded Anasimyia lunulata (a new county record) for the Welsh Peatland Invertebrate Team.

Examination of beds of bottle sedge Carex rostrata around the oligotrophic lake of Llyn Llech Owain (22/567151) produced the Red Data Book species Platycheirus perpallidus (another NCR), a northern hoverfly more typical of upland Britain. Other new county records were the neat little Melangyna guttata (a male) on a rose flower at Ffrwd Fen, Pembrey (22/419029) in June, and Eumerus sabulonum in late June on slumped, clay cliffs at Underhill (22/202076), Marros and at the nearby Ragwen Point (22/223072); both specimens of Eumerus were flying, typically low, over a sparse vegetation of bird's-foot trefoil, centuary and English stonecrop.

There was a handful of scattered records of Leucozona laternaria from wooded localities - a species that is quite scarce in Dyfed and only occasionally recorded, though 1989 seemed to be a favourable year. Rhingia rostrata was noted for the fourth consecutive year at Dinefwr Castle Woods (22/6121); this time by Mark Pavett. It would be most useful if this little-known species could be subjected to some more detailed observation in 1990, to try to ascertain at least some information on the basic ecology of this hoverfly, which is normally erratic in occurrence.

The winter of 1988-89 was exceptional in its mildness and Spring came early, perhaps contributing to the earliest record yet of the familiar bee-fly Bombylius major - 27 March at Pont-newydd (22/448073). Of its smaller relative B. canescens there were but two records

during 1989 - on dry coastal grassland at Craig Ddu (22/325101) on 2 June and another on the clay cliffs at Underhill Farm, Marros (22/196076) a few weeks later.

Robberflies seemed to be more in evidence during the 1989 season, including Pamponerus germanicus, which on 27 May was common around scrubby areas at Tywyn Burrows, including one that had caught the robber-fly Dioctria rufipes as prey. Inland, Machimus atricapillus was observed at two localities on the Carboniferous Limestone outcrop - an area of pavement and scrub at Carreg-eidon (22/493137) and wood-edge at Carmel (22/590162), both in July.

Britain's biggest horsefly Tabanus sudeticus was seen at several sites (all damp pastures) and the, mostly southern, green-eyed Atylotus fulva was netted on the semi-upland flushed pastures at Cefn Blaenau (22/579416) on 13 July; only its third vice-county locality. Soldier-flies provided few surprises, but the discovery of Oxycera nigricornis on tufa-flushes at Dinefwr (22/606225) by Mark Pavett was noteworthy. Perhaps the best Larger Brachycera record of the summer was Thereva lunulata, located on the expanses of river shingle beside the Tywi at Llanwrda (22/714307). One of these silvery therevids was caught, with some difficulty, as it flew over the sun-baked shingle on 17 July, where it blended - surprisingly well - with the grey stones of the river shingle; when finally caught it was resting on a bank of finer sandy material. Fluvial habitats also yielded another interesting record - that of Ochthera mantis on the Cothi near Abergorlech (22/557319) on 12 August; it has curious mantis-like front legs, hence the specific name. The specimens seen were congregating around the silty banks of a small backwater.

Many empid flies, found swarming around a willow bush on sheep-grazed pasture north-east of Alltwalis (22/463331) by George Hutchinson on 4 May, were later determined by John Deeming of NMW as the notable Rhamphomyia subcinerascens.

Mark Pavett reports the capture of the craneflies Ctenophora bimaculata, C. pecticornis and C. atrata at Dinefwr Park (22/62) in 1989.

CORRIGENDA

The reader's attention is drawn to the erroneous determination of Ctenophora bimaculata at Stradey Woods (22/40) in DIG 15: 8; this specimen was subsequently determined by AE Stubbs as C. pecticornis. My thanks are due to Alan Stubbs for drawing my attention to this error.

HOVERFLY RECORDING IN PEMBROKESHIRE, 1989 - S & A COKER

Damp heath, cliff-top and woodland habitats in Pembrokeshire all provided hoverfly records of note during 1989. For example, the wet, horse-grazed heath at Dowrog Common (12/772271) yielded Orthonevra geniculata at willow flowers on 26 April and Parhelophilus consimilis (the rarest member of the genus) was taken on 22 July at 12/769267. Similarly, Chrysogaster virescens, regarded as a species of bogs and wet pastures, was caught at March-bach Pools (12/883397) and at Tre-rhos (12/922271) in May.

A special effort was made during the season to ascertain the status of Eumerus sabulorum in the vice-county; it was found at thirteen sites (in ten 10km squares), all on coastal grassland and all but one on the Carboniferous Limestone of south Pembrokeshire. Another syrphid of coastal habitats is Xanthogramma citrofasciatum, discovered on cliff-top grassland at 'The Falls', St. Brides (12/804113) and at Short Point (12/798044), both at the end of May. Also recorded in a cliff-top situation was Chrysotoxum elegans at March-bach on 29 May, a species which is more usually associated with woodland-edge habitats. Tropidia scita and Platycheirus immarginatus were noted at several coastal localities during 1989; both are probably widespread, if local, around the Pembrokeshire coast.

Cheilisia nebulosa was the first woodland species of note, the specific name referring to the dark clouding on the wings. One was captured in the authors' garden at Mountain, Clarebeston Road (22/062222) on 12 May. The Red Data Book Parasyrphus nigritarsis has

now been taken at no less than five Pembs. sites, three during 1989 - Cilgerran Castle (22/195431) on 13 May; Pleasant Valley (22/145065) on 14 May; and Old Mill Grounds (12/953166) on 16 May. The individuals captured were flying over open ground in wet meadows and often near streams. The two other Pembs. sites where this species has been taken are Scotchwell (12/966164) and Manorbier marsh (21/063977), both in 1988. Some of these specimens have been confirmed by SJ Falk. Another woodland rarity is Rhingia rostrata, found in its third Pembs. site at Malgwyn castle (22/213434) at the end of August.

Eriozona syrphoides, found resting on willow leaves in a conifer plantation at Bellstone Quarry (22/079305) on 12 Aug, was a new county record and it was also later recorded in a wet meadow at Glan Syrynwy (22/070299). Other uncommon woodland species recorded included Didea fasciata [Old Mill Grounds, 27 July]; Brachypalpoides lenta [Mountain, Clarebeston Road, 30 May]; and Criorhina berberina, Platycheirus tarsalis and Xylota coeruleiventris at several localities. Arctophila fulva was noted at a few more new localities, bringing the total number of known Pembs. sites for this chestnut-haired bee-mimic to 39 in eighteen 10km squares. Cheilosia grossa and Chrysotoxum arcuatum were also recorded, new to the vice-county, in 1989.

DIPTERA RECORDING IN CEREDIGION, 1989 - A P FOWLES

There were several occasions during the 1989 season on which the relative paucity of hoverflies drew comment from recorders. Habitats which normally produce an abundance of syrphids often had just a small number of individuals of common species, even on the many fine days we had this year. This was one of the reasons behind the low level of recording in 1989 but it is also true that less attention than usual was paid to Diptera recording.

Sixty-six species were observed during the course of the year, although there were still two new additions to the county list. Brachypalpus laphriformis was taken on 15 May at RSPB's Allt-ddu reserve in the valley woodlands of Cwm Llyfnant (22/713973). A second specimen was found dead on the window-sill of the reception centre at RSPB Ynyshir (22/682962) a few weeks later. This was formerly regarded as an extremely rare species of old woodlands but it has been recorded more frequently in recent years, presumably as a result of the increased popularity of hoverflies. The other new county record was a male Melangyna arctica taken in a water-trap at Llyn-y-gwaith (22/668503), presumably originating from the adjacent forestry plantation as the larvae feed on conifer aphids.

Of the remaining noteworthy records, perhaps the most interesting was the discovery of several Eumerus sabulorum on close-grazed coastal grassland at Cwm Cilfforch (22/439616) on 21 May. It appears that this scarce species is actually quite widespread around the Dyfed coast but this is only the second record for Ceredigion. Male Parasyrphus nigrirarsis were present again on their favoured washing-line in late May and this woodland-edge locality at Nant Llolwyn (22/584767) also had Criorhina ranunculi at apple-blossom on 14 and 22 April. Another good woodland hoverfly, Brachypalpoides lenta, was seen in Cwm Soden (22/367576) and Xylota coeruleiventris was common in the upland conifer plantations near Llnoedd Ieuan (22/805816). Anasimyia contracta, a scarce fly associated with stands of reedmace Typha spp, was abundant in the marginal fen of the lake at Tan-y-graig (22/588758).

Few other Diptera families produced interesting records this year. The cone-headed flies (Dip., Conopidae) were particularly scarce and although things started well, with a male Conops vesicularis flying around hawthorn blossom in the wood-pasture of Coed Mynachlog-fawr (22/744653) on 4 June, a single Sicus ferrugineus was the only other record in 1989. The conopids are parasitoid on bees and wasps and their present rarity is probably related to the poor summers of recent years depriving them of hosts. It may take several years before their populations recover. Also at Coed Mynachlog-fawr on the same day, a single Lasiopogon cinctus was taken - an addition to the county robberfly fauna. Another new species for Ceredigion was the bee-fly Villa modesta, seen in both 10-km squares along the shingle beach at Tanybwlech (22/57-79-,22/57-80-) on 25 July. Bombylius canescens, a nationally scarce species which is still quite common in Dyfed, was recorded at Cwm Cilfforch

and Plas Gogerddan (22/630838) in late May.

Wetland flies of note in 1989 were Pherbellia griseola, a snail-killing fly swept from the lush fens of the Teifi oxbows at Maesypwll (22/564466), the soldier-fly Nemotelus notatus which was common in the dune slacks at Ynyslas (22/610939), and the horsefly Tabanus sudeticus which was reported from four localities in July. The rather ignominious habitat of a telephone box at Salem (22/669842) produced a specimen of the rare crane-fly Ctenophora atrata. This is one of the few crane-flies which breeds in deadwood, usually birch. Another deadwood fly is Xylophagus ater, whose larvae are predators on beetle larvae living under bark. A pair of adults were seen in cop, on the trunk of an oak at Coed Mynachlog-fawr on 16 May and larvae were found under the bark of alder, beech and oak at Coed Cefn-coch (22/751962), Coed Afon Arth (22/482631), Ponrhydygroes (22/740727), Coed Nant Llolwyn (22/588770) and Coed Wallog (22/596859). Finally, the tachinid fly Gonia picea was caught on the slopes of Constitution Hill (22/583827) on 9 April. Little is known about this family of flies in Ceredigion but this species is uncommon nationally. The adults appear in Spring and the larvae are probably parasitoids on agrotid moth larvae, although they may also feed on the grubs of bumble-bees or solitary bees as well.

The Diptera are grossly under-worked in Ceredigion and all records are gratefully received. Contributions in 1989 came from - DC Boyce, S & A Coker, IS Francis, PR Holmes, G Hopkins, P Kirby, SJ Lambert, IK Morgan, and DK Reed.

COLEOPTERA

CARMARTHENSHIRE COLEOPTERA RECORDS, 1989 - IK MORGAN

A notable ground beetle which was discovered at several localities during 1989 was Badister sodalis - found under stones or moss in damp woodland at Amroth (22/174074), Capel Dyddgen (22/467125) and Glyn-hir (22/643155). Other localised carabids noted during the year were Elaphrus uliginosus at the Machynys Ponds (21/512980) and Bembidion laterale under a stone on mudflats at nearby Penrhyngwyn (21/517974); both in early May. With Elaphrus was the local rove-beetle Staphylinus dimidiaticornis. B. laterale was also noted at Tywyn Burrows (22/3605) during a visit by a group of coleopterists on 15 April, when DC Boyce and AP Fowles recorded no less than twenty-six species of carabids, including Agonum nigrum, Dyschirius globosus and Harpalus neglectus. Other noteworthy species recorded during the Coleopterists' Meeting were Bembidion properans, Aphodius plagiatus, Staphylinus dimidiaticornis, Cassida vittata, Notaris bimaculatus, Baeckmanniolus dimidiatus, Altica ericiti, Sitona cambricus, Psylliodes chrysocephala and Notaris scirpi.

Prior to visiting Tywyn Burrows, the group quickly inspected the fen-pastures and reed-beds at Ffrwd Fen, Pembrey (22/419023), where the notable weevil Sitona cambricus was also noted. Later in the season, Silis ruficollis, a fenland soldier-beetle, and the local ladybirds Chilocorus renipustulatus and Exochomus 4-pustulata were also found at this site. The next day, the shingle expanses and associated pools, scrub and grassland alongside the Afon Tywi at Llanwrda (22/7130) provided the venue for the coleopterists' attentions. The carabids Lionychus quadrillum, Perileptus areolatus, Clivina collaris and Amara praetermissa; the staphylinids Lathrobium angusticolle and Deleaster dichrous; and the five-spot ladybird Coccinella 5-punctata were found. Five-spot ladybirds were also noted (on 5 May), together with the local click-beetle Fleutiauxellus maritimus, on river shingle SW of Dinefwr Park (22/603222) and, rather surprisingly, on a small stream (Afon Melindwr) south of Rhydcymerau (22/585378) on 13 July. Here, a single '5-spot' was seen on an umbel of wild angelica beside a gravelled forest-track and another was on a tiny area of shingle alongside the stream itself; clearly C. 5-punctata is not confined just to the major rivers of south-west Wales. Incidentally, a rough count of '5-spots' at Llanwrda on 13 July gave a total of twenty-nine individuals.

Back in April, another site that received the attention of the visiting coleopterists was Dinefwr Deer Park (22/610225) near Llandeilo, already well-known for its deadwood invertebrate fauna,

where they added a number of species to the list of old timber Coleoptera known from the Park, including larvae of the click beetle Stenogostus villosus, and Orchesia micans was noted in bracket fungi. Mark Pavett, in a series of visits to Dinefwr, made a substantial contribution to our knowledge of this important site: the clicks Selatosomus bipustulatus and Prosternon tessalatum were just two of many interesting records. The carabids Dromius agilis and D. quadrinotatus, recorded by Mark in early May, are also believed to be new county records. It is hoped that a note reviewing recent work at Dinefwr Park and Castle Woods will appear in a future DIG Newsletter. The discovery of the remains of Sinodendron cylindricum in an old beech at Derwydd (22/613176) is worthy of mention as this provides only the 3rd vice-county station for this striking beetle.

There were several interesting ladybird records during the year, such as the uncommon orange ladybird Halyzia 16-guttata under leaves of a large hybrid lime Tilia x europaea at Dinefwr Park; it was also found - under leaves of sycamore - near Dryslwyn (22/563192) in late September. 19-spot ladybirds Anisosticta 19-punctata were swept from marginal fen vegetation around the Witchett Pool (22/285074) on Laugharne Burrows on 14 June, whilst on 5 September John Steer made the exciting discovery of the cream-spot ladybird Harmonia 4-punctata on Pinus at Bynea (21/553984) - new to the vice-county and only the second record for Dyfed. Both colour morphs of this ladybird, which is quickly spreading north and west throughout southern Britain, were noted. Harmonia was also found, under bark of Scots Pine near the entrance to Pembrey Forest (22/416007) at the end of December: clearly this attractive colonist has already established itself. Also found under bark of an old Scots Pine, this time at Stradey Woods (22/493015) on 31 December - were the distinctive remains of Endomychus coccineus and Halyzia 16-guttata, in the webs of the spider Amaurobius fenestralis; on the same tree, away from the webs, was a single live, hibernating Halyzia. In late October, a hibernating kidney-spot ladybird Chilocorus renipustulatus was found, deep under moss-covered limestone blocks, in woodland at Capel Dyddgen.

Glow-worms Lampyris noctiluca were reported from the limestone outcrop at Pant-y-llyn (22/605167) by Neil Mathew this summer, whilst Malthinus seriepunctatus found in coastal scrub at Craig-ddu (22/325101), Malthodes marginatus (wood-edge at Gwarmacwydd, 22/467127) and M. minimus (scrub at Capel Dyddgen) deserve mention as these smaller cantharids are poorly-known in Carmarthenshire; they were all determined by KNA Alexander.

Though a common sand-dune inhabitant, the sheer abundance of Aegialia arenaria at Pembrey Burrows (21/4199), in atypically warm sunshine during the second week of February, is worthy of note. It was estimated that the extensive dune systems hereabouts must have held literally thousands of this scarabaeid, whose larvae feed on decomposing vegetable matter. Opatrum sabulosum and Melanimon tibialis were also frequent on these coastal burrows during the Spring, as was the curious Notoxus monoceros, found at the base of marram grass. Other noteworthy coastal records include Clivina collaris and Pogonus chalceus near Kidwelly (22/398064) and Nacerdes melanura under driftwood at Penclacwydd (21/525984). Nearby, in the old farmhouse of Tir Morfa-fawr, Llwynhendy (21/533983), Barry Stewart had an uninvited house guest in the form of several individuals of Blaps mucronata, which is, of course, a noted synanthrope. Phyllobrotica quadrimaculata was on the wet slacks of Laugharne Burrows (22/313074) and Ffrwd Fen, both in June, whilst AP Fowles found the weevil Sitona cylindricollis well-established on melilot at Machynys (21/5197) on 25 June. Other weevils of note collected during the year were Mecinus collaris, on coastal shingle at Penrhynwyn, Machynys, and Acalles ptinoides in an old oak at Dinefwr Deer Park (22/608226); all determined by AP Fowles. MG Morris kindly identified a batch of weevils collected in earlier seasons in Carmarthenshire, and these included Apoderus coryli from Tregyb Wood (22/642215), beaten from hazel coppice on 13 July 1988, and Pissodes castaneus taken at Pembrey Forest (22/398008) on 18 June 1988.

Hitherto thought to be a great rarity, the staphylinid Haploglossa picipennis was found in the linings of kite Milvus milvus nests collected by PE Davis and AV Cross from two separate 10km squares in the vice-county. The material also included the beetles Atheta nigricornis, A. harwoodi and Carcinops pumilio; JA Owen determined the staphylinids.

There were three new county records of water beetles - Helophorus fulgidicollis collected by Garth Foster "in saltmarsh pools below Kidwelly Castle" (22/4007); and the author collected Anacaena bipustulata in the Swan Pool Drain, Pembrey (22/417006) and Hydroporus longulus in a calcareous woodland stream, west of Pendine (22/224087). Laccobius atratus, found in a water-filled Sphagnum-hollow at Cors Carmel (22/594157) in mid-October, was a second vice-county record.

The above account is based, in addition to the author's observations, on records submitted by the following, to whom I am most grateful: PM Pavett (for many records during the year), AP Fowles, DC Boyce, JB Steer, and the party of coleopterists who visited Carms. in mid-April - RS Key, KNA Alexander, M Darby, EW Aubrook, M Collier and DG Hemingway.

Keith Alexander, ML Cox, Garth Foster, Adrian Fowles, ML Luff and Mark Pavett have kindly determined Carms. specimens during the year.

COLEOPTERA RECORDING IN CEREDIGION (VC46) DURING 1989 - DC BOYCE

Ninety-seven Red Data Book or Nationally Notable beetle species have been noted in Ceredigion during 1989. This figure compares with 64 species in 1988 (Boyce 1989a), 50 in 1987 (Boyce & Fowles 1988) and 9 in 1986 (Fowles 1986). These figures reflect the growing interest in the beetle fauna of the county but are also related to an increasing expertise, in terms of fieldcraft and identification ability, of local recorders.

Carabid beetles are probably the most well-worked group in the county, with at present some 160 species recorded. Nineteen notable species were recorded in 1989. On river shingle, the Red Data Book Lionychus quadrillum was again recorded from Ty'n-yr-helyg on the Ystwyth and another specialist of this habitat, Perileptus areolatus was present at Dolcniw, Rheidol, on 26 July. Clivina collaris is a more generalist riverbank species, being found during the year on muddy riverbanks of the Afon Teifi at Henllan and Coedmore. In the estuarine reaches of rivers a distinctive suite of ground beetles occurs. Aepus marinus was found on the estuary of Afon Teifi under stones on muddy shores at Gwbert and St. Dogmaels. Nearby, at Poppit, Agonum nigrum was found in litter on the upper reaches of the shore. Brackish muddy shingle in the intertidal stretch of the Afon Ystwyth at Tanybwllch also resulted in the recording of Bembidion maritimum at its only known Ceredigion locality, where it was first noted in 1987 (Boyce & Fowles 1988).

There is an old record of Bembidion pallidipenne from VC46 (Moore 1957), but 1989 provided the first modern record for the county. It was found by AP Fowles in a winter-flooded slack at Ynyslas Dunes NNR on 10 October. This species requires damp habitats on sandy substrates and the paucity of such habitats in Ceredigion means that this beetle is certain to be very restricted in its distribution. This area has also produced other interesting beetles, such as Bledius annae and Dyschirius politus. Most of the dune slacks on the reserve are rather heavily-vegetated and it is to be hoped that this small piece of more sparsely-vegetated slack can be maintained in its open state.

Moving onto other coastal habitats, damp boulder-clay cliffs at Cei-bach produced Bembidion saxatile, and B.stephensi was found in similar habitat at Ynys Lochtyn and in damp spoil at Llangrannog Quarry in March. A visit to the dry maritime grassland of Constitution Hill on 9 April was rewarded with a single specimen of the lovely metallic blue and red Lebia chlorocephala.

Trechus micros is a small reddish carabid with much-reduced eyes and long setae on its body; adaptations to its subterranean existence. A single individual found under a stone at the edge of improved pasture near Morfa-mawr farm on 19 March was the first record for this species in the county. Laemostenus terricola is also thought to lead a largely subterranean life-style in association with mammal burrows. A singleton was found in October at Ynyslas Dunes during the pitfall-trapping programme organised by Dr John Gee of UCW Aberystwyth. Two

specimens of L. terricola were also noted in the actively-worked sand quarry at Banc-y-warren near Cardigan. This site also produced two individuals of Amara fulva, a markedly eastern species in the British Isles and a record of considerable bio-geographical interest, it is a specialist of dry, eroded sandy, habitats and so, like the aforementioned B. pallidipenne, it is certain to be of very restricted distribution in Ceredigion.

Another visit to the shingle heath at Ty'nbedw, by P Kirby, SJ Lambert and AP Fowles, resulted in records of Amara equestris and Pterostichus lepidus where they were first discovered the previous year (Boyce 1989). Surprisingly, the only notable wetland carabid encountered during the year was Agonum ericeti, which is one of the characteristic components of the raised mire beetle fauna. Seventy-five specimens were captured during the pitfall-trapping survey of Cors Fochno NNR conducted in the summer months by PM Burnham.

The long-term monitoring survey carried out by JE Davis in Coed Rheidol NNR has enabled a good picture of the invertebrate fauna of a sessile oakwood to be built up. Beetles found in the pitfall-traps during 1989 were generally rather disappointing but did include the stenotopic ground-beetle Pterostichus oblongopunctatus and also P. aethiops. A visit to this area of the Rheidol Gorge on 19 Feb revealed large numbers of P. oblongopunctatus overwintering under the bark of felled oak logs and with them was a single specimen of P. aethiops. P. oblongopunctatus was also found in the ancient valleyside oakwood of Coed Cefn-coch on 8 Oct. Wandering at night across the woodland floor of the dingle at Coed Nant Llolwyn was a single Asaphidion curtum.

Not much work was done on water-beetles in 1989 but the visit to the county by P Kirby and SJ Lambert in late July generated some good records. They found Enochrus affinis, E. coarctatus and Helochares punctatus in the peat-cuttings on Cors Fochno NNR and these three species were also encountered at Rhos Llwr-cwrt NNR, where Stictonectes lepidus was additionally found. E. affinis was also recorded in the course of the Cors Fochno monitoring programme. The tiny Chaetarthria seminulum was also found at Rhos Llwr-cwrt on 9 June. Bio'essus minutissimus, a rare species of gravel-bottomed rivers, was present when AP Fowles, P Kirby & SJ Lambert visited the shingle banks of the Rheidol at Dolcniw on 26 July. Perhaps the most intriguing water-beetle record of the year was that of the hydraenid Ochthebius exsculptus from a brackish pool on the coastal cliffs at Llwynysgaw. This species is characteristically associated with gravel-bed rivers and has not been recorded before in Ceredigion.

Histerids are one of the more under-recorded beetle families in Ceredigion, a circumstance resulting from the limited attention thus far paid to the carrion, dung and compost micro-habitats in which many members of the family occur. Gnathoncus buyssoni is one of a suite of beetle species that specialise in living in birds' nests. The discovery of this beetle in a kite's nest-lining was of great interest. The only other notable histerid encountered during the year was the dune specialist Baeckmanniolus dimidiatus, a dead specimen being picked up by JA Owen at Ynyslas Dunes on 10 October. Like the histerids, the ptilids (or featherwing beetles) have been little-studied in VC46, primarily because of the difficulties in identifying species correctly. However, JA Owen did find Ptinella denticollis under oak bark at Coed Mynachlog-fawr on 11 October.

Artificial bedding placed in a badger sett by AP Fowles in Coed Nant Llolwyn between 15 & 25 November produced five species of Catops, including two specimens of the scarce C. longulus. Another notable leioidid found in 1989 was Choleva glauca near Llyn-y-gwaith. The only notable carrion beetle (Silphidae) seen this year in Ceredigion was Dendroxena quadrimaculata. In its case, the family name is a misnomer as it is an arboreal predator of Lepidoptera larvae. A single specimen was beaten from the foliage of sessile oak at Coed Mynachlog-fawr on 16 May. Another family with but one notable record was the Scydmaenidae, the record being of Stenichnus poweri found in a nest of the ant Myrmica scabrinodis at Banc-y-mor. The shining fungus-beetles (Scaphidiidae) are a small family of just five species, of which three are now known from VC46 following the addition of Scaphisoma boleti on 25 November from Peterwell.

The rove-beetles (Staphylinidae) provided many interesting records during 1989. The sub-family Omaliinae is noteworthy for the fact that many of its members are winter-active. Allied to this, many of the species are northern and western in their distribution. Two such species are Xylostiba monilicornis and Phyllodrepoidea crenata. Both of these were found under the bark of a fallen beech in old parkland at Hafod on 17 December. In addition, the latter species was also recorded at Coed Mynachlog-fawr under dead birch bark on 22 Jan. One other member of this sub-family, Lesteva hanseni, was present on coastal cliff seepages at Penbryn in January.

The Aleocharinae include many small species that are difficult to identify. However, some of the species are more striking in appearance and one such is Lomechusa emarginata. This is a shiny red beetle, with long, stout antennae, that resembles a small clockwork toy as it bumbles about in the nests of ants of the genera Formica and Myrmica. The beetle possesses tufts of hairs on the basal tergites of the abdomen which may produce secretions attractive to its hosts. A single specimen was found in the nest of Myrmica scabrinodis on a south-facing scree slope at Llangrannog Quarry. A second individual was taken by AO Chater in a Formica fusca nest near Llancynfelyn in April. Another ant-associated species is Zyras laticollis, which was found in moss placed in the runs of the ant Lasius fuliginosus at Plas Gogerddan in May.

More obscure aleocharines noted in 1989 were Haploglossa picipennis, Hydrosmectina subtilissima, Philhygra scotica and Diglotta mersa. H. picipennis has been regarded as a great rarity in Britain, being a specialist predator in the nests of raptorial birds. A study of kite nest-linings collected by AV Cross and PE Davis in 1989 revealed it to be a regular component of the invertebrate community of the nests. Haploglossa was present in five of the six Ceredigion nests sampled and was the commonest beetle recorded. H. subtilissima is a river shingle beetle which was found at Glandwr on the Rheidol in October, whilst P. scotica was excavated from shingle at the edge of one of the upland lakes of Llynoedd Ieuan. D. mersa was found in burrows in rather sandy saltmarsh deposits on the Teifi estuary at Poppit. Also on this area of saltmarsh was the tiny tachyporine Cypha pulicaria, a single male being found in litter on the upper shore. Lower down, in burrows in the estuarine muds, the Red Data Book oxyteline Carpelimus halophilus (conf. PM Hammond) was quite common.

As with the omaliines mentioned earlier, Proteinus crenulatus is considered to be a northern and western species in Britain. It was pleasing to find good numbers of this beetle in artificial badger bedding in Coed Nant Llolwyn in November, and also at the same site in December in a trap baited with rotting fruit. This latter lure also resulted in a first county record for Quedius invreae on 21 December.

Uncommon river shingle staphylinids found during the year were - Neobisnius prolixus at Ty'n-yr-helyg and Thinobius strandi at Tynbedw on the Ystwyth and Erichsonius signaticornis at Dolcniw and Glanyrafon on the Rheidol. Another species most often found in river shingle is Deleaster dichrous, one of which entered a moth-trap at Rhyd-y-gwin, Llanfarian in July. Earlier in the year it was found in more typical habitat on the riverbank in Coed Allt Castell-geifr, Llanarth. Other notable rove-beetle records were of Lathrobium angustatum from flushed boulder-clay cliffs on the coast at Mwnt and Tachyporus atriceps recorded by JA Owen at Ynyslas Dunes and by AP Fowles in an artificial 'nest' placed in a mole-run in Coed Nant Llolwyn.

The two rare river shingle pselaphids Brachygluta pandellei and Biblopectus minutissimus were both recorded again this year, the former at Tynbedw on 26 July and the latter at Glanyrafon on 10 October. Two interesting additions were made to the click-beetle fauna of the county. Ampedus nigrinus is a small black species that breeds in the deadwood of conifers. One was beaten from foliage in a conifer plantation above Cwm Llyfnant on 14 May. The second species is Selatosomus bipustulatus, a singleton being found in ancient woodland at Coedmore on 24 May. Like A. nigrinus, this beetle feeds on deadwood, though in its case deciduous wood is utilised. It is considered to be an indicator of ancient woodland with a continuity of deadwood habitats by Harding & Rose (1986). Rhagonycha translucida (Cantharidae) is another species that favours ancient woodland. One was found in the course of the pitfall-trapping programme in Coed Rheidol NNR on 25 June. Another addition to the Harding & Rose list for VC46 was Phloiophilus edwardsi. This beetle, which is the only British representative of the family Phloiophilidae, was found by AP Fowles under the bark of a dead

oak branch in Coed Wallog on 27 December. *P. edwardsi* is associated with fungi and a similar food-source is utilised by the pollen-beetle (Nitidulidae) *Epuraea distincta*, which appears to occur exclusively on the willow bracket fungus *Daedaleopsis confragosa*. The beetle was found on this fungus at Taliesin Carr and at Coed Ffynnon-caradog in April. Yet another fungus feeder, but this time a member of the family Rhizophagidae, is *Rhizophagus nitidulus*. Again, this is a Harding & Rose indicator species with records during the year from Coed Mynachlog-fawr and Hafod.

In addition to its interesting ground-beetles, a trip to the sand quarry at Banc-y-warren on 15 October also resulted in the first phalacrid record for Ceredigion. The species in question was *Olibrus liquidus*, which was quite commonly taken by shaking vegetation growing on the sandy banks. The visit to this site was of very short duration and it is clear that it has enormous potential for producing further exciting invertebrate finds.

The ladybirds (Coccinellidae) are one of the better-worked groups in the county. The two specialities of VC46, *Halysia 16-guttata* and *Coccinella 5-punctata*, were both found at a number of sites again this year. The former is a species of damp woodland where it is generally found on the underside of sycamore leaves. It was encountered in Cwm Woods, Plas Gogerddan, Coed Allt Castell-geifr, Coed Pwll-crown, Coedmore, Coed Ffynnon-caradog and Coed Nant Llolwyn. *C. 5-punctata* is another of the river shingle specialists and was recorded this year at Dolaugwyrddon on the Teifi, Dolcniw (Rheidol), and at Tynbedw and Tanybwllch on the Ystwyth.

The sole mould-beetle (Lathridiidae) of interest was *Dienerella elongate*, found by AO Chater in haybarn refuse at Glandyfi in November. An unexpected record was that of the attractive *Tetratoma ancora*, a Harding & Rose indicator, which was located on a tree trunk at night in Coed Nant Llolwyn. Other 'Harding & Rose' species recorded this year were *Quedius maurus* (Staphylinidae) and *Mycetophagus atomarius* (Mycetophagidae). With the four additional indicator species already mentioned, this brings the total number of 'Harding & Rose' species known from Ceredigion to seventeen (cf. Boyce 1989b).

Another predominantly mycetophagous (fungus-feeding) family is the Melandryidae and many of the species are considered to be confined to old forest areas. The paucity of such habitats in Ceredigion means that only four of the eighteen British species are known here. However, a trip to the pasture-woodland at Coed Mynachlog-fawr on 22 January did result in the discovery of dead specimens of both *Orchesia micans* and *Abdera flexuosa* in spiders' webs on alders. A third member of this family, *Melandrya caraboides* was recorded by PR Holmes, in its third station in the county, at Salem on 28 May and 7 June. This beetle is believed to occur primarily in dead willows. Longhorn beetles were not in great evidence in 1989 and the only records of note were of *Judolia cerambyciformis* at Allt-ddu and Dolcniw in early summer.

The final part of this review is concerned with the large, phytophagous families of leaf-beetles (Chrysomelidae) and weevils (Apionidae, Attelabidae and Curculionidae). Coastal grassland, with its rich variety of plants, provides a good hunting-ground for leaf-beetles; *Lamprosoma concolor* being found at RAE Aberporth during the DIG field meeting on 16 July and *Cassida prasina* on sandy grassland on the coast at Penbryn in January. Wetlands also have considerable interest - *Longitarsus holsaticus* was again found on its foodplant, lousewort *Pedicularis* spp., at Rhos Llawr-cwrt and at Rhos Pil-bach. The handsome *Phyllobrotica quadrimaculata* was present in lake fen at Nanteos on its foodplant skullcap *Scutellaria galericulata* and *Altica ericeti* was swept from vegetation on the raised mire of Cors Fochno. *Galeruca tanacetii* was widely-recorded from a number of damp, unimproved grasslands and it appears to be a regular inhabitant of such habitats in the county, feeding chiefly on devil's-bit scabious *Succisa pratensis*. Another chrysomelid found in damp conditions is the alder-feeding *Chrysomela aenea*, a single individual being found in wet woodland near Glaspwll in Cwm Llyfnant on 14 May. The closely-related *Chrysolina brunsvicensis* favours dry conditions where its foodplants, St. John's-worts *Hypericum* spp., grow. P Kirby and SJ Lambert found this beetle on vegetated river shingle at Ty'n-yr-helyg. Lastly, *Hydrothassa glabra*, a buttercup-feeder, was encountered at Denmark Farm in rank grassland at the edge of the newly-dug pond.

The weevils were much more intensively worked by AP Fowles in 1989 and this has resulted in numerous interesting records amongst the 150 species now known from the county. The attelabid weevil Apoderus coryli is a beautiful red and black species which was found by beating hazel at Coed Nant Llwlwyn and Coed Moelwyn in May. Two notable apionids were found this year. A single Apion affine was captured on a dry, south-facing scree slope with scattered plants of sheep-sorrel Rumex acetosella (its foodplant) at Ynys Fergi on 28 January and one A. pubescens was caught in a pitfall-trap set in a dune slack at Ynyslas Dunes in October.

The remaining records are of true weevils (Curculionidae). As with the leaf-beetles, many weevils favour dry coastal turf, species recorded from such habitats were; Trachyphloeus aristatus from Ynys Lochtyn, Alophus triguttatus at Constitution Hill, Ceutorhynchidius dawsoni from Ynys Lochtyn, Constitution Hill and Mwnt, Orobitis cyaneus and Gymnetron labile from Pen Dinas, and Pseudostyphlus pillumnus, a sand-dune specialist, found in UCW pitfall-traps at Ynyslas Dunes in October. Caenopsis waltoni is also predominantly a species of dry coastal habitats, being found in such situations at Banc-y-mor and Pen Dinas, but there was also an inland record from dry grassland on the slopes of Cwm Berwyn. Sitona lineelus was also found on coastal grassland at Penbryn and in the sand quarry at Banc-y-warren. Its close relative S. cambriacus was found on boulder-clay cliffs at Cei-bach and also in rank grassland at Trawscoed. Mesites tardii is again a coastal beetle, but in its case it is found in deadwood habitats. Dead specimens were found in the coastal dingle at Llanina on 8 Jan under the bark of decaying sycamore and walnut trees. Another deadwood weevil, Pentarthrum huttoni, was found in the rather atypical habitat of haybarn refuse at Maesgwyn and Aberdare. The woodland weevil Acalles misellus was taken in Coed Nant Llwlwyn on 22 April by beating wild rose Rosa sp. Polydrusus pulchellus (= chrysomela) was found in a small area of saltmarsh vegetation near the mouth of the Ystwyth at Tanybwllch on 17 June. The old course of the Afon Leri produced a single specimen of Litodactylus leucogaster, sitting on a floating Potamogeton leaf. Sadly, this site has recently been aggressively dredged and it is to be hoped that L. leucogaster persists on other parts of the Leri ditches where its foodplants Myriophyllum spp. occur. Lastly, a single male of the Red Data Book Phytobius olssoni (conf. RT Thompson) was taken amongst its foodplant, water purslane Peplus portula, on the muddy fringe of a farm pond at Rhos Pil-bach on 8 July.

Some idea of the beetle fauna of Ceredigion has been built up over the last few years, with the total list for the county standing at around 1,200 species. Much, however, remains to be done and the author is always grateful for more information. I hope this review will stimulate others to keep records of Dyfed beetles, be they common or rare.

Acknowledgements: Many thanks for records and help with identification to - AO Chater, GN Foster, AP Fowles, PR Holmes, P Kirby, SJ Lambert, ML Luff and JA Owen.

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Grid refs. (Prefix SN[22]) of sites mentioned in the text;

Aberdare (170483)	Henllan, Teifi (362403)
Afon Leri (608912)	Llancynfelyn (652923)
Allt-ddu (716973)	Llangrannog Quarry (319542)
Banc-y-mor (562743)	Llanina (404594)
Banc-y-warren (202484)	Llwynysgaw (218515)
Cei-bach (405597)	Llynoedd Ieuan (795817)
Coed Allt Castell-geifr (420583)	Llyn-y-gwaith (670505)
Coed Cefn-coch (751963)	Maesgwyn (515675)
Coed Ffynnon-caradog (616834)	Morfa-mawr (500657)
Coed Moelwyn (643712)	Mwnt (194518)
Coed Mynachlog-fawr (744655)	Nanteos (616783)
Coed Nant Llwlwyn (588770)	Penbryn (293525)
Coed Pwll-crwn (623836)	Pen Dinas (582803)
Coed Rheidol NNR (741778)	Peterwell (570477)
Coed Wallog (596857)	Plas Gogerddan (630838)
Coedmore, Teifi (193436)	Poppit, Teifi (160480)
Constitution Hill (583826)	RAE Aberporth (24-52-)
Core Fochno NNR (635915)	Rhos Llawr-cwrt NNR (411499)
Cwm Berwyn (727582)	Rhos Pil-bach (366528)
Cwm Llyfnant Plantation (737972)	Rhyd-y-gwin (584767)
Cwm Woods (597835)	Salem (668844)
Denmark Farm (586536)	St. Dogmaels, Teifi (163469)
Dolaugwyrddon, Teifi (564466)	Taliesin Carr (651912)
Dolcniw, Rheidol (647802)	Tanybwllch, Ystwyth (57-80-)
Glandwr, Rheidol (605803)	Trawscoed (670731)
Glandyfi (690967)	Tynbedw, Ystwyth (695715)
Glanyrafon, Rheidol (614804)	Ty'n-yr-helyg, Ystwyth (595765)
Glaspwll, Cwm Llyfnant (734974)	Ynys Fergi (613895)
Gwbart, Teifi (168481)	Ynyslas Dunes NNR (605935)
Hafod (762733)	Ynys Lochtyrn (313543)

ERRATA: Two beetle records previously reported from Ceredigion in the DIG Newsletter have recently been shown to be erroneously identified. They are -

Melanophthalma (= Corticarina) fuscata reported from Tanybwllch (DIG 7: 3) is Corticarina gibbosa.

Otiorhynchus rugostriatus reported from RAE Aberporth (DIG 14: 20) is Otiorhynchus ligneus.

MYRIAPODA

MILLIPEDES AND CENTIPEDES IN DYFED, 1989 - IK MORGAN

There were several records of the small white Brachychaeteuma melanops this year, two were from Carboniferous Limestone sites - the Grove ashwoods, Pendine (22/224087) and in an ants' nest at Capel Dyddgen quarry, Crwbin (22/467125); it was also found under rubble on wasteground at Kidwelly (22/406069) and on a tiny expanse of river shingle near Ammanford (22/622132). Additionally, it was regularly seen in the author's garden at Llwynhendy (21/537993) under stones and soil.

Not recognised before was the tree-climbing ability of Craspedosoma rawlinsii, it normally being associated with wet woodland flushes and the like. Yet it was noted twice as a climber of trees in 1989 - under bark of a beech in Stradey Woods (22/489017) in late March, and no less than six under bark of a dead spruce Picea sp. alongside the Afon Morlais (22/543055) at the end of October; both sites were, however, near areas of impeded drainage. Another tree-climber was Cylindroiulus caeruleocinctus, recorded new to Ceredigion (VC46) by AP Fowles under ash-bark in Coed Nant Llwlwyn (22/588770) during July.

Penrhynwyn, a natural shingle beach on the coast near Llanelli (21/517974), is home to the rare maritime millipede Thalassiosobates littoralis, first found here in 1987. This year it was noted in early May, proved impossible to find throughout the dry summer, and re-appeared in good quantity after late summer rains. It occurs under stones of over 5cms or so diameter embedded in grit with some humic material, at about 45cms below the strandline, which was sparsely vegetated with plants such as Glaucium flavum, Beta maritime, Festuca rubra and Atriplex spp.

Known to be of almost exclusive synanthropic tendencies in SE Dyfed, the rare Leptoiulus belgicus was surprisingly found in deep accumulations of Juncus litter, in semi-natural habitat, at Ffrwd Fen (22/419023) near Pembrey at the beginning of October; it seems to be essentially a late summer/mid-winter creature in south-west Wales. Two other uncommon millipedes recorded were Ophiodesmus albonanus, a small white species apparently confined to woodland on the limestone outcrop, and the rarer Nopoiulus kochi which was abundant under stones on raw, immature and gritty, industrial soils at Bynea (21/557987) on 29 April.

The hothouse alien Oxidus gracilis was recorded for the first time in Dyfed in the Botanic Gardens at UCW Aberystwyth (22/596820, VC46) by Dr MP Ireland in November. A month or so earlier, a banana plant had been cut down in the tropical greenhouse (min. temp. 70°C) and when the sap had stopped flowing a seething mass of millipedes, estimated at 3-4000, appeared almost overnight. This handsome, chestnut and light amber, species has been introduced to hothouses throughout the world but probably originated from eastern Asia. It was first recorded in Britain almost one hundred years ago but there has only been one other Welsh record, at Singleton Park Gardens, Swansea.

Amongst the centipedes, there was one new county record in 1989 - the small whitish geophilomorph Henia brevis, a little-recorded species for which most records refer to synanthropic situations in southern England. It was found in rich, moist garden soil at Llwynhendy in late April. Although new to Carmarthenshire, there is one previous Dyfed record - at Llanrhian churchyard (21/558988), Pems., where the author found an example under stones in Jan 1988; Henia brevis is considered to be a 'Mediterranean' species by biogeographers, and at the edge of its range in Britain.

There were a handful of records of the blackish Lithobius calcaratus from typical acidic situations but also one record from the floor of a disused limestone quarry, whilst October provided almost a glut of records of Cryptops parisii - found at no less than five sites in and around Carmarthen (22/42), in gardens, allotments and wasteground, and one from roadside dingle woodland SE of Cynwyl Elfed (22/386264).

[Note: all above records refer to Carms. unless otherwise indicated].

ONBCIDEA

WOODLICE IN CARMARTHENSHIRE, 1989 - IK MORGAN

Until now thought to be confined to the western cliffs of Carmarthenshire, Porcellionides cingendus was found commonly under stones on the old harbour wall at Pembrey (21/437999) in early February, additionally it was found under rubbish and other detritus in a haybarn at Tir Morfa-fawr (21/553982) in May and a singleton was captured under a flaking wooden fencepost at Ffrwd Fen (22/419023), to which it had escaped flooding in late December. The range of this Lusitanian species is now known, therefore, to extend all along the coast of the vice-county.

At long last, that purple-hued denizen of dung heaps - Porcellionides pruinosus - has been found in Carmarthenshire! It was found in a substantial heap of dung at Tir Morfa-fawr where many previous checks to ascertain whether this fickle woodlouse was present had proved

negative. But on 18 November many were discovered, distinctive with their grape-like purplish bloom, pale legs and antennae with pale annulations. Haplophthalmus danicus was noted under bark in Stradey Woods (22/492017) and in humus under stones forming part of a railway line at Llwynhendy (21/541976); whilst the colourful Cylisticus convexus was frequent under slaggy stones forming a mound near H.W.M. at Llangennech (22/563011) in late March. Porcellio spinicornis was noted only once - in February, on a crumbling mortared wall that lined the old road near the bridge at Edwinstford (22/633344).

Armadillidium nasatum, distinctive with its gull-grey and darker longitudinal stripes, was noted on natural habitat (a limestone scree slope) at Mynydd-y-garreg (22/439093); on wasteground at Kidwelly (22/406069) and very abundantly on industrial wasteground at Bynea (21/557987). This latter locality (dry gritty grassland on the site of an old steel/tinplate works and now occupied by a chemical factory) holds several rare or noteworthy invertebrates and the attractions of such sites for species like A. nasatum should be the subject of investigation. A. nasatum was also very abundant along old railway sides below 'The Esplanade', Carmarthen (22/415199) in early October, whilst not far away, on a separate area of wasteground (22/415195), A. depressum was found to be frequent.

WOODLOUSE RECORDING IN CEREDIGION, 1989 - AO CHATER

Armadillidium pulchellum has been found in three more inland sites in the south of the county, in Allt Llanfair, a rocky, ancient sessile oakwood by the Teifi (22/435406), in a bracken clearing in Allt Cilgrraig, an ancient sessile oakwood at Capel Dewi (22/454427), and in an oak, sycamore and birch wood near Waunifor (22/457412). At least the first two are good native sites, and it will be interesting to see if the species can be found in the much more extensive sessile oakwoods further north in Ceredigion. Meanwhile, DC Boyce found it on an open, rocky hillside on Foel Fawr (22/691950).

Cylisticus convexus was found by AP Fowles on Constitution Hill, Aberystwyth (22/583827), its fourth tetrad, and Halophiloscia couchii was found at Creigiau Aber-arth (22/498655, DCB) and at Wallog (22/589856, APF), bringing its total of tetrads to six. The very dry summer was probably responsible for the absence of records of Haplophthalmus. DCB and APF found Platyarthrus hoffmannseggi abundant in nests of both Lasius flavus and L. niger under stones on the bank of the Cwm Rheidol Reservoir (22/696795), the best inland colony so far known and especially surprising as the site is not infrequently flooded.

Over the years several juvenile Porcellio specimens have been found at farms that were probably P. dilatatus (known for certain only from coastal limekilns at Llansanffraid (22/519684)), but this year a more adult female, undoubtedly this species, was found at a ruined farm near Dol-y-bont (22/637881). Another synanthropic species, Porcellionides pruinosus, was found at four more sites, in straw in Dutch barns at Llwr-cwrt (22/415500) and Maesllwyd (22/514511), and in manure heaps at Penrhiw (22/227499) and Morfa-mawr (22/503657). Porcellio spinicornis was found to be thriving on the ruined folly on the island in Llyn Eiddwen (22/605668). The colony seems likely to have been there since the folly was built over a century ago as no later repairs are known to have been done on it and any other more recent means of introduction seems improbable in this remote site.

MOLLUSCA

SNAILS AND SLUGS IN CARMARTHENSHIRE, 1989 - IK MORGAN

Considering that it was not known as a British species (it originates from SE Europe) before 1972, the pale, worm-like slug Boetgerilla pallens continues to colonise the county at a remarkable rate. It was recorded from a dozen or so new localities in 1989 and is now known from no less than eighteen 10km squares; it was not known in Carm. prior to 1985! Its habitats are often synanthropic but include 'wilder' situations such as semi-natural woodland and

saltmarsh edge. A synanthropic site also provided an interesting record on 23 October when several specimens of the yellow-bodied Limax flavus sensu stricta were found under wood on a dung heap/rubbish pile in the farmyard at Tre Waun-uchaf (22/642378) near Llansawel; a specimen was confirmed by dissection by AO Chater.

The snail Zenobiella subrufescens was found at a wide scatter of seven woodland sites, including individuals noted climbing a dead standing stem of hogweed near Llanboidy (22/222219) during continuous drizzle in late October. The 'ancient woodland indicator' snails Leiostryla anglica and Spermodea lamellata were found in a steep Chrysosplenium flush at Cwm ddol-fawr (22/488273) on 19 October. There is only one old Carms. record for the woodland snail Acicula fusca - that of JW Vaughan who found two examples in "moss from (the) roadside near Talley Abbey" on 27 June 1911 (MP Kerney, pers. comm.). It was pleasing, therefore, to locate it at three localities along the Carboniferous Limestone outcrop in 1989 - Carmel Woods (22/591163); near Pendine (22/225083); and SW of Crwbin (22/468128). All were found under moss-clad stones under ash/hazel woodland in March and April.

Ena obscura is another rare snail in the county, which the author has not seen since he found one on the scrub-covered Old Red Sandstone cliffs (22/3609), south of Ferryside, in March 1985. In 1989 it was discovered on 28 April in an old, disused limestone quarry (22/577160) SW of Carmel village (just one dead, though fresh-looking, empty shell) and, a few days earlier, an empty, worn shell was found in limestone scree at Mynydd-y-garreg (22/439093). The limestone outcrop provided another good record in October when about 24 live individuals (and five empty shells) of Helicella itala were found in a small, grassy clearing within young woodland at Capel Dyddgen (22/467125) near Crwbin. It was noticeable that these snails were concentrated in a discrete area of long, damp grass and a careful search of the more open areas of the old quarry only revealed two dead shells.

LAND MOLLUSC RECORDING IN CEREDIGION, 1989 - AO CHATER

Tetrad recording continues, with the commonest species, Discus rotundatus, now being recorded from 240 of the 529 tetrads. An ecologically catholic but comparatively sparsely distributed species, Nesovitrea hammonis, is recorded from 90 tetrads and an indicator of 'good' wetland and damp woodland sites, Vertigo substriata, is recorded from 73. Two hundred and nineteen litter and vegetation samples have now been taken and sieved from 141 tetrads. It is important to sample even the most unpromising habitats, and it was a surprise to find Columella aspera abundant, along with seven other species, in moss and conifer-needle litter collected for sieving from a dry, mature Douglas fir Forestry Commission plantation at Trawsgoed (22/669724).

Habitat preferences for most species in the district are now becoming clear, although it remains difficult to allow for recorder bias. Balea perversa, now known from 39 tetrads, has been recorded from 14 mortared wall sites, 3 litter sites in woods, 1 sea cliff site, and 30 sites where it occurs on trees (the great majority on ash, a few on elder, horse chestnut and grey willow, and single records from gorse, beech, ivy, elm, sycamore and Norway maple), but whether this reflects its real choice of habitats is very uncertain.

The most unusual assemblage of species found was in a damp gully on the sea cliffs just west of Pen Peles (22/216522), with purple moor-grass tussocks, meadowsweet, marsh pennywort etc. Among the eleven species present were Zonitoides excavatus (usually confined to acidic woodland sites in Ceredigion, although known from a very few other fen and flush sites in the open), Cochlicopa lubricella (otherwise in dry, sandy sites and on mortared walls) and Columella aspera and Clausilia bidentata (usually separated, like the other two species, by their preferences for more acidic and more calcareous sites respectively). This is one of a number of cases in which the concept of indicator species for various ecological conditions seems to break down where flushes on sea cliffs are concerned.

No new species were recorded for VC46 in 1989, but slugs from New Quay (22/390599) and Aberaeron (22/457629), referred to in the previous report (Chater 1989), were confirmed by dissection as Limax flavus, as was a specimen from the UCW campus at Penglais (22/598819). Boettgerilla pallens is now known from 25 tetrads and, as it is being recorded proportionally more frequently as time goes on than other slugs with equally catholic habitat preferences such as Arion subfuscus, Milax sowerbyi and Deroceras reticulatum, it seems that its actual increase in the district can be gauged. (The four species were recorded respectively 86%, 56%, 68% and 65% as often between July 1987 and December 1989 as between January 1985 to June 1987). I am grateful to DC Boyce, AP Fowles and IS Francis for many records during the year.

References:

CHATER, AO (1989) - Land mollusc recording in Ceredigion, 1988. DIG Newsletter 12: 20-21.

ARACHNIDA

HARVESTMEN AND SPIDERS IN CARMARTHENSHIRE, 1989 - IK MORGAN

Mitosoma chrysomelas, a small and delicate harvest-spider, distinctive with several transverse rows of tubercles across its body, was found in a saturated mat of opposite-leaved golden saxifrage Chrysosplenium oppositifolium growing in dingle woodland at Cwm ddol-fawr (22/488273) on 19 Oct. On 24th of that month, another site for Sabacon viscayanum was discovered when two adults were found, under a stone, in a wet flush south-west of Cil ddewi-fawr (22/543055). One was sent alive to John Sankey, the national recorder for the Opilionid Recording Scheme, and it was subsequently photographed - the first time ever for this rare species.

As well as the harvestman Dicranopalpus ramosus, which is regular in late summer on the external walls of the author's home at Llwynhendy (21/537993), the interior also provided some records of interest in 1989, including the local salticid (jumping-spider) Euophrys lanigera, the tiny (max. 2mm) pinkish Oonops domesticus and the largely southern, long-legged Pholcus phalangioides. The dunes at Pembrey (21/4199) and Tywyn (22/3605) Burrows had Xerolycosa miniata, Arctosa perita and Zelotes electus in late April, whilst the small, relict dune area at the North Dock, Llanelli (21/498990) yielded two uncommon spiders in late May - Hypsosinga pygmaea and Argenna subnigra (det. CM Merritt). The dry shingle beds beside the Twyi at Llanwrda (22/715307) yielded the magnificent Arctosa cinerea on 6 May (PM Pavett) and three males on 13 July.

SPIDER AND HARVESTMAN RECORDING IN CEREDIGION, 1989 - AP FOWLES

Yes, he's gone - Lampeter's gain is America's loss! The spiderman of Mid Wales has packed his bags, forsaken the rural idyll of the sheepwalks for the Yankee monotony of high mountain ridges and primeval forests and, like his namesakes, we hear that he continues to frighten the ladies! Perhaps he'll see the error of his ways and return to the glories of Dyfed's peat bogs but, in the meantime, there's a large vacuum in spider recording in Dyfed and this is reflected in the paucity of the notes that I am able to compile for this report.

Ceredigion was virtually unknown in spider terms before Kefyn Catley appeared and it is largely through his efforts that the county list has now climbed to a respectable 283 species. There were four species recorded for the first time in the county this year but there is also a reasonable batch of material awaiting identification for anyone who wishes to take up the challenge! The most interesting of these new species is the theridid Dipoena prona, a ground-active predator which preys on ants amongst heather litter. It is a scarce species nationally, known from just a few counties in southern England, and the male caught on

Cors Fochno (22/635915) in April is the first record for Wales. Another addition to the county list from Cors Fochno is Thanatus striatus, a distinctively-marked member of the Thomisidae (crab-spiders) which is widely-distributed in Britain but never common. A single specimen was captured in a pitfall-trap on the central dome in April. Clubiona brevipes, a common spider found on the foliage of trees and bushes, was beaten from riverside alders at Henllan (22/362403) on 24 May. Woodland is probably the least well-worked of the county's habitats for spiders and pitfall-traps set in a valley oakwood at Salem (22/669844) in June by Peter Holmes caught a specimen of the money-spider Ceratinella scabrosa. This is a widespread but uncommon species of moist habitats where it lives amongst moss and leaf-litter.

The only nationally notable spiders recorded this year (in addition to D. pronae) were - Arctosa cinerea on river shingle at Ty'n-yr-helyg, Ystwyth (22/595765); Marpissa nivoyi in the dunes at Ynnyslas (22/605935) and also taken in a pitfall-trap on Cors Fochno; Zelotes lutetianus and Agroeca striata on Cors Fochno. There were only two harvestman records of note in Ceredigion in 1989 - Anelasma cephalus cambridgei was found in another coastal flush, this time near Pen Peles (22/216522) on 19 July by Dave Boyce and Dicranopalpus ramosus was an unusual catch in a moth-trap set in a garden at Llanfarian (22/584767) on 16 July.

MISCELLANEOUS RECORDS FROM THE SMALLER ORDERS, CEREDIGION 1989 - AP FOWLES

NEUROPTERA - A specimen of the giant lacewing Osmylus fulvicephalus was found dead on a windowsill of the flour-mill at Felin-geri, Cwm Cou (22/300423) by Arthur Chater on 6 July. Suitable breeding habitat for this local species occurs in the adjacent wooded valley.

HEMIPTERA - Two individuals of the rare bug Micracanthia marginalis were caught on Cors Fochno (22/6391) in mid-summer. There is a single record for Fenn's Moss on the Welsh Border but otherwise Micracanthia is only known from heathlands in southern England and Thorne Moors in Yorkshire where it inhabits the bare margins of pools. Two other notable species taken on Cors Fochno this year were Sorhoanus xanthoneurus (two specimens) and Stroggylocephalus livens (three specimens). Both of these leafhoppers are restricted to wetlands but their foodplants are incompletely known.