

Bulletin of the British Myriapod Group 5 (1988)

RECENT RECORDING OF MYRIAPODS IN SOUTH-WEST WALES

Ian K. Morgan

Nature Conservancy Council, 1st Floor, 16 Barn Road, Carmarthen, Dyfed.

Introduction

Until recently, the centipedes and millipedes of south-west Wales have been relatively poorly recorded, with the slight exception of Pembroke (VC 45) which has been popular with the holidaying naturalist. This is reflected in the number of centipede records previous to 1984 from the three vice-counties that now make up Dyfed (Table 1). There are a few recent records for the area, for example, Barber and Kime (1974), and the Biological Working Group for Wales contributed some records about the same time.

It was against this background that the present author started to make collections of myriapods in the area early in 1985. The collections were initially mainly in Carmarthen (VC 44) but later covered Pembroke (VC 45), Cardigan (VC 46) and to a lesser extent Glamorgan (VC 41) and Brecon (VC 42). More recently, some help has been provided by A.O. Chater (AOC) and A.P. Fowles (APF) in VC 46 resulting in several new county records.

Up to February 1988 over 900 specimens have been collected (mostly by selective hand-searching), comprising approximately 290 centipedes and over 610 millipedes; at least 67 of these are new county records and 8 are new to Wales. Pitfall trapping (part of a NCC-funded survey) by Chris Bray on a number of Pembrokeshire and Cardiganshire coastal heathlands produced three new county records; these myriapods have not been included in the totals given above, nor in the species totals that accompany the following species accounts, because of the different technique of sampling.

The records held at the Biological Records Centre (BRC) at Monks Wood have not been consulted; the following account refers almost exclusively to the 1985-1987 recording period. The new county records are summarised in Table 2 and are itemised in an Appendix. The number of species now known in each of the five vice counties of south-west Wales are given in Table 3.

Table 1

Centipede records previous to 1984
(source: Barber, 1986)

County	Vice county	Records previous to 1984	Records previous to 1960
Carmarthen	44	2	nil
Pembroke	45	49	2
Cardigan	46	10	3

Table 2
New County Records in south-west Wales,
1985 - 1987

Vice-county:	(41)	(42)	44	45	46
Chilopoda	0	2	14	4	6
Diplopoda	5	2	19	5	9

Table 3
Number of species of Myriapoda in south-west Wales

Vice-county	Chilopoda	Diplopoda
(41) *	23	24
(42)	16	15
44	24	31
45	19	19
46	16	22

* updated using information supplied by
J.G. Blower, 1987

As well as providing records for the centipede and millipede recording schemes, much useful ecological data has been obtained and a number of nationally scarce species have been recorded, some occurrences representing notable extensions of range, e.g. the millipedes Nopoiulus kochii, Leptoiulus belgicus, Thalassiosobates littoralis, and the centipedes Hydroschendyla submarina and Lithobius tricuspis.

The Species List

In the following list, details of habitat and microhabitat in which the species occurs are summarized, but it must be remembered that in some instances the sample size is often small - therefore any general statements should be regarded as provisional. Only the data from the three vice-counties of Dyfed (VC 44, 45 and 46) have been added to give the records totals. The status of each species in VC41 and VC42 is shown in parenthesis, though some interesting records from these latter vice-counties are mentioned in the main text. Vice-county occurrences are based on information published in the British Myriapod Group Newsletter (1983 etc.); those marked by an asterisk (*) being new records for the county during the survey period 1985 - 1987.

C H I L O P O D A

GEOPHILOMORPHA

Himantariidae

Haplophilus subterraneus (Shaw) 17 records, VC44, 45, 46 (also VC41, 42).
Under logs, stones etc. in leaf litter and rich soil, woodland and gardens.

Hydroschendyla submarina (Grube) VC44*, 45.
One record only during the survey period - under rocks just above H.W.M. Wharley

Point 22/340093, 5.9.1986. Barber (1987) quotes Lewis (1962) as being 'doubtful' regarding the Pembs. record for this uncommon species; the authenticated Carms. specimen must now lend support for its occurrence in neighbouring VC45.

Schendyla nemorensis (C.L. Koch) 12 records VC44, 45, 46 (also VC41).
The records are usually for dry situations - limestone scree, cliffs, rubble, dry woods and grassland.

(S. peyerimhoffi Brol. & Rib. (VC41)).

Could well occur in coastal parts of VC's 44, 45 or 46 as it has been recorded on more than one occasion by J.G. Blower on the neighbouring Gower Peninsula (Barber, 1987)).

Geophilidae

Strigamia crassipes (C.L. Koch). 4 records, VC44*, 46*.

Too few records to comment on habitat requirements. Three records were under logs in woodland, the fourth at the junction of woodland and a coastal cliff.

S. acuminata (Leach). 7 records, VC44*, 45*, 46* (also VC41*, 42).

Only seven records, it may be of interest to note that all were from wet localities - damp woodland, wet scree, Carex pendula litter in alder (Alnus glutinosa) carr, etc.

S. maritima (Leach). 6 records, VC44*, 45, 46*.

All records are from under rocks at or near H.W.M. on the coast, the Carms. sites at the edge of muddy estuaries, the Cards. site on coastal shingle.

Geophilus carnophagus Leach. 9 records VC44, 45, 46 (also VC41, 42).

Mostly under logs and leaf litter in acidic woodland, also one record from an upland corrie. Large urban forms have been noted near Llanelli (21/59).

G. electricus (L.) VC46*

Only one record of what is regarded as an uncommon species - under a stone, cliff-top grassland, Clarach Bay 22/586843, 18.2.1987.

(G. osquidatum Brolemann. VC41 (in Barber, 1983)).

G. insculptus Attems. 8 records, VC44*, 45, 46 (also VC42*).

The records are as follows: leaf litter in acidic woodland (4), suburban hedgerow (2), litter in an old orchard (1).

Necrophloeophagus longicornis (Leach). 9 records, VC44, 45, 46 (also VC41, 42).

Under stones, logs etc. in a variety of situations and habitats.

Brachygeophilus truncorum Bergsøe & Meinert. 14 records, VC44, 45, 46 (also VC41, 42).

Under wood, leaf litter and stones; mostly woodland and scrub.

SCOLOPENDROMORPHA

Cryptopsidae

Cryptops hortensis Leach. 25 records, VC44, 45, 46* (also VC41, 42*).

In a wide range of sites especially synanthropic and woodland; only a few records for acidic upland areas.

Cryptops parisi Brolemann. 3 records, VC 44* (also VC41)

Noted in three man-influenced localities in south-east Carmns., under rubbish in an old limestone quarry at Maesdulais, Drefach 22/517 145, 23.9.87; under rubbish on rank grassland at Ty'r fran, Llanelli 22/513 015, 2.1.1988; and under leaf litter in suburban scrub, Stradey 22/496 014, 9.1.1988. All specimens were larger than typical C.hortensis.

LITHOBIMORPHA

Lithobidae

Lithobius variegatus Leach. 39 records, VC44, 45, 46 (also VC41, 42).

Common and easily recognized hence the comparatively large numbers of records. Usually in woodland or scrub (including coastal woodland where it can occur with L. pilicornis and occasionally on waste ground with L. forficatus; one atypical record was from a sparsely-vegetated stoney beach far from woodland or scrub (two juveniles).

L. forficatus (L.) 24 records, VC44, 45, 46 (also VC41, 42).

Common in disturbed, open habitats - wasteground, farmyards, towns etc; occasionally in open woodland and other semi-natural habitats such as coastal cliffs. Also, perhaps surprisingly, three widely-separated records for acidic upland grassland (isolated from habitations) and several occurrences in pitfall traps on the extensive raised bog of Cors Fochno (Borth Bog, A.P.F. pers. comm.)

L. melanops Newport. 16 records, VC44*, 45*, 46 (also VC41*, 42).

Typically in dry habitats - dune grassland, coastal cliffs, old quarries on the Carboniferous limestone outcrop walls and also one indoor record. Occasionally in dry woodland, especially under bark.

L. borealis Meinert. 3 records, VC44, 45, 46* (also VC41, 42).

Two records from valley oak woodland and the third at the edge of a conifer plantation on moorland.

L. macilentus L. Koch. 2 records, VC44*, 45* (also VC42).

Both records are from localities on the Carboniferous limestone - one an inland ashwood, the other coastal cliffs.

L. tricuspis Meinert. VC44* (20.10.1987).

One recent record of this rare lithobid - a female under a piece of wood, in an overgrown acidic pasture (with scrub and woodland nearby) at Capel Hendre, 22/593117. Otherwise, this species is only known from parts of south Devon and one locality on the Isle of Wight (Barber, pers. comm.). It will be of interest to see whether this species is found elsewhere in winter-mild south-west Wales.

L. pilicornis Newport. 2 records, VC44*, 45 (also VC41).

Coastal woodland and scrub. Some specimens collected at Craig Ddu (22/31) were large (40mm +).

L. calcaratus C.L. Koch. 6 records, VC44*, 45*, 46* (also VC42).

Two records of this blackish lithobid from river shingle, two acidic grassland, one under stones in a disused limestone quarry and another in a pitfall trap on Cors Fochno raised bog in Cards. (APF).

L. crassipes L. Koch. 4 records. VC44, 45 (also VC42).

Two records from an upland corrie (Bannau Sir Gaer, 22/72 and 22/82), the third from leaf litter in a valley oakwood and another from the edge of an upland conifer plantation.

L. curtipes C.L. Koch. 2 records, VC44* (also VC42).

Both records refer to under stones in exposed upland grassland situations at 560 and 600m altitude.

L. microps Meinert. 28 records VC44, 45, 46 (also VC41, 42).

Usually in dry situations - duneland, wasteground, urban areas etc. but also in dry coastal woodland. One record from a pitfall trap on the raised bog at Cors Fochno. (APF).

Henicopidae

Lamyctes fulvicornis Meinert. 3 records, VC44*, 45*.

Most often seen in late summer and autumn; it is probably under-recorded, as the author has, in the past, probably overlooked the species due to confusion in the field with Lithobius microps. One record from damp acidic pasture, another from the wet floor of an abandoned limestone quarry, and the third from grassland near a pond (all under stones).

D I P L O P O D A

POLYXENIDA

Polyxenidae

Polyxenus lagurus (L.). 4 records, VC44*, 45, 46.

Recorded four times during the survey period: in a rock crevice on Foel-y-mwnt (coastal headland) 22/193520, ACC 26.1.1987; in the nest of a wren Troglodytes troglodytes in woodland near Llechryd 22/193436 APF 15.11.1987; and at Ynys lochtyn 22/314551, ACC and APF, 27.12.1987. At this last locality several individuals were found under stones on a rocky seaside headland with a sparse vegetation characterised by maritime lichens and a little red fescue Festuca rubra and thrift Armeria maritima. All these records are in Cards., VC46.

Also, most recently (28.1.1988) new to Carms., VC44, under rocks at Telpyn Point, 22/186072 in a very similar microhabitat to Ynys lochtyn, except that there is only limited development of lichens on the friable coal measure strata that comprise this headland. Survey work on the rocky promontories of Pembrokeshire and Gower (Glam.) should reveal additional occurrences of Polyxenus lagurus.

GLOMERIDA

Glomeridae

Glomeris marginata (Villers). 43 records, VC44, 45, 46 (also VC41, 42).

In leaf litter and humus-rich soil of woodland and scrub, avoiding the more acidic areas. Light brown and yellow forms have been recorded as well as the juvenile variety 'perplexa'.

CHORDEUMATIDA

Craspedosomatidae

Craspedosoma rawlinsii Leach. 6 records VC44, 46* (also VC41*).

This species seems to require wet conditions - the Cards. record was for flushed mossy scree in an ash Fraxinus excelsior - wych elm Ulmus glabra dingle wood. Similarly one of the Carms. records was also in a base-enriched dingle woodland where Craspedosoma was found in a mixture of bryophytes, opposite-leaved golden saxifrage Chrysonplenium oppositifolium and yellow archangel Lamiaeum galeobdolon growing over a very wet flushed slope. On 8.12.1986 mature adults were commonly encountered in such conditions whilst a protracted search was required on 6.11.1987 to turn up one individual (adult o).

Whilst the above two sites both demonstrate a calcareous influence a recent Carms. record was for an acidic oak Quercus sp. and birch Betula pubescens wood next to the R. Aman (22/61); again however this locality was wet. (Likewise the Glamorgan record referred to a wet oak-alder Alnus glutinosa wood).

In the region under review this species may prove to be a good contender as an indicator of old woodland.

Nanogona polydesmoides (Leach). 30 records VC44, 45, 46 (also VC41, 42). The sites where recorded include gardens, scrub and woodland. The preference for a degree of base-enrichment (Blower, 1985) also applies to SW Wales.

Brachychaeteuma melanops Brade-Birks. 3 records VC44*.
Recorded three times in the Llanelli area of south-east Carms. - under stones in gardens at Erw las, Llwynhendy 21/537993, 30.12.1987; under Reynoutria japonica leaf litter at Ty'r fran, 22/513015, 2.1.1988; and under a stone in a garden at Stradey 22/495013, 16.1.1988.
An aid to the field identification of Brachychaeteuma is the pure white colouration and the chordeumatid comma-like posture which the animals adopt when disturbed. Immature polydesmid stadia - with which they occur under stones etc. - are creamier in colour and have an elongate pose when disturbed.

Chordeumatidae

Chordeuma proximum Ribaut. 76 records, VC44*, 45*, 46* (also VC41, 42). A common autumn to spring millipede in leaf litter and under wood etc. Most common in scrub and woodland but also in hedgerows, wasteground and gardens where leafy humus accumulates.

Melogona gallica (Latzel). 12 records, VC44, 45, 46* (also VC41*, 42*). Found mostly in winter in leaf litter and humus-rich soil, usually in more base-rich sites than C. proximum e.g. slightly-flushed areas under Fraxinus or Corylus in valley oakwoods; occasionally under stones etc. on the Carboniferous limestone outcrop.

M. scutellare (Ribaut). 3 records only, VC44*, 46* (also VC41). The localities comprise: an ashwood slope in Cards; sandy stream deposits (with evidence of calcareous enrichment) at the base of a deep wooded dingle, and in rich alluvium in a coastal garden (last two sites, Carms.). Both species of Melogona are probably under-recorded as the author has, in the past, confused them in the field with immature Chordeuma.

JULIDA

Nemasomatidae

Thalassisobates littoralis (Silvestri). VC44*
Several found under old clothing on the tideline at Penrhynwyn, Machynys 21/517974 on 12 Sept. 1986. The site is a gritty beach (old industrial slag etc.) with coarser rocks, muddy areas and saltmarsh nearby.

Nemasoma varicorne C.L. Koch. 5 records, VC44, 46 (also VC41, 42). Typically under bark in woodland, but very much scarcer in the region than the following species.

Blaniulidae

Proteroiulus fuscus (Am Stein). 27 records, VC44, 45, 46 (also VC41, 42). Found under bark, also under stones or logs etc. (where a thin layer of humus has accumulated) and sometimes in soil.

Choneiulus palmatus (Nemec). VC44* (also VC41).
One site - Bynea 21/555990 (3.5.1987). This locality is extensive area of waste ground adjacent to saltings; there is sparse growth of grass, spring ephemerals and other dry ground plants on the ironworks slag-based soil, with larger stones providing shelter for invertebrates including the isopod Armadillidium nasatum with which Choneiulus was first found at this site under a stone near H.W.M.

Noctuiulus kochii (Gervais). 5 records, VC44*.
Found under a stone at the above C. palmatus site on 7.10.1987 (a ♀) and also an abandoned railway-line at Llanelli 22/501001 (a ♂), under an old railway sleeper embedded in a gritty slag-derived soil, 14.10.1987; the creamy-white colouration was noticeable in the field.

J.G. Blower writes of this latter ♂, "The gonopods are quite distinctive and I can see the details without dissection." These specimens represent the fourth and fifth authenticated British records.
Further records are: under stones at Machynys 21/512981, 2.1.1988; under leaf litter on rank urban grassland, Ty'r fran, Llanelli 22/513015 (again 2.1.1988); and under stones on derelict industrial land at Sandy 22/497005, 9.1.1988.
Thus this species has been noted in five separate 1km squares (three 10km squares) in industrial south-east Carmarthen.

Blaniulus guttulatus (Fabricius). 21 records, VC44*, 45, 46 (also VC41, 42).
Under stones, logs etc. on richer, less acidic soils, both in woodland and more open habitats.

Archiboreiulus pallidus (Brade-Birks). (VC41*).*
One record only - under logs in an ashwood on Carboniferous limestone, Cheriton, Gower, 21/452932, 27.5.1985).

Julidae
Cmmatoiulus sabulosus (L.). 54 records, VC44, 45, 46 (also VC41, 42).
Most commonly encountered (and often in very large numbers) on the extensive dune systems of the region, where, in spring-summer, large numbers can be found wandering on the open sands and dunes, many perishing in the hot sun if shelter is not reached.
The species also occurs in dry, rocky, woodland, old walls and dry coastal sites generally.

Tachynodoiulus niger (Leach). 49 records VC44, 45, 46 (also VC41, 42).
Although common, T.niger avoids acidic areas being found in gardens, ashwoods (or other base-rich woodland) and duneland. The species' well known wandering ability has been noted in the region, it often being found high up in trees.

Cylindroiulus londinensis (Leach). 2 records VC44*, 46*.
A rare and apparently ecologically - restricted beast in the region with only two records. The first record was at Cwm Llyfnant, Cards. on 5.1.1987 (A.O.C.); here it was recorded at two sub-sites (i) in litter in a slope alder wood, 22/711974 and moss-covered scree under ash and wych elm 22/719975. C. londinensis was recently (2.11.1987), found in thick bryophyte mats growing on flushed, sandy alluvium at the bottom of a deep wooded dingle (Allt Penrhylas, 22/333268). The specimen collected at this locality was a large female 41.5 x 4.45mm (kindly measured by J.G. Blower).

C. caeruleocinctus (Wood). VC44*, 45.
Closely related and similar morphologically to the previous species and again apparently rare - with only one recent occurrence - in the region; Penybont 22/305273 under hazel Corylus avellana in a valley-side copse. Blower (1985) states, 'usually found in calcareous soils under cultivation'.

C. vulnerarius (Berlese). one record VC46* (also VC41).
A male collected in deciduous woodland by APF at Llechryd, Coedmore 22/193463 on 15.11.1987. It was dull mid-brown in colour - "rather more sclerotised than others I have seen" (J.G. Blower, pers. comm.).

C. punctatus (Leach). 50 records, VC44*, 45, 46* (also VC41).
Common under bark and woody humus generally, in woodlands etc.

C. latestriatus (Curtis). 28 records, VC44*, 45, 46* (also VC41).
The 'dry-ground Cylindroiulus', common on duneland, wasteground, stoney headlands and sometimes coastal woodland. Inland on disused limestone quarries and stabilised river shingle.

C. britannicus (Verhoeff). 9 records, VC44, 46* (also VC41).
Under logs and bark in woodland and hedgerows: perhaps under-recorded being initially confused by the author with Cylindroiulus latestriatus.

Julus scandinavicus Latzel. 24 records VC44, 45, 46 (also VC41, 42).
and

Cohyiulus pilosus (Newport). 69 records VC44, 45, 46 (also VC41, 42).
The relative habitat preferences of these two species are not yet certain in the region, both favour woodland conditions though J. scandinavicus can often be found away from woodland - in gardens or waste-ground for example. During the period of survey, Julus was normally found in less acidic circumstances than Cohyiulus - a reversal of the situation suggested by Blower (1985).

Lentoiulus belgicus (Latzel). 6 records, VC44* (also VC41*).
So far, only found in man-associated habitats in south-west Wales:-

- (i) Llwynhendy, 21/59 (a) gardens at Erw Las, 21/537993, 14.9.1986 etc. frequent
(b) garden at Parc Gitto, 21/537996, autumn 1986 occasional
- (ii) Waste ground at Bynea 21/555988, Oct 1987 etc. abundant
- (iii) Old limestone quarry, Pistyll, Llandybie, 22/623127, 16.9.1987 one only
- (iv) Also recently recorded in Glam. at Loughor 21/568985, occurring commonly in leaf litter of Japanese knotweed Reynoutria japonica on waste ground and scrub near houses, 22.11.1987.)
- (v) Again very common in leaf litter of Reynoutria at North Terrace, Dafen 22/528014, 3.1.1988.

All the above localities except (iv) - Glamorgan, are in Carmarthen.

The animals tend to become more noticeable as they attain maturity in the very early autumn, and they persist to at least late winter, being found under stones or other garden/wasteground debris.

At site (i) (a) above, Lentoiulus can be found in cavities of fallen apples, the holes having been initiated by the pest slugs Milax budapestensis and Deroceras reticulatum, though it is not known whether Lentoiulus is actively feeding in these apple holes or merely sheltering.

Brachyiulus pusillus (Leach). 12 records, VC44*, 45*, 46 (also VC41*).
Uncommon in dry situations such as coastal cliffs, wasteground, gardens and the limestone outcrop.

POLYDESMIDAPolydesmidae

Polydesmus angustus Latzel. 38 records, VC44, 45*, 46 (also VC41, 42). Typically encountered in woodland, often acidic such as the many oak-birch-rowan Sorbus aucuparia woods of the region. Far less often recorded away from woodland or scrub than P. gallicus.

(P. inconstans Latzel. (VC42*).

One record only - garden and greenhouse at Ty Mawr Mill 22/991570, 15.3.1986, where it is probably an accidental introduction amongst the extensive plant stock brought in by the owner, a keen gardener.

Davis & Jones (1978) state that it is a characteristic myriapod in the Derbyshire Carboniferous limestone quarries, but all searches on the limestone outcrop of south-west Wales have proved negative. Likewise, although Fairhurst (1979) found P. inconstans regularly in damp areas dominated by sea buckthorn (Hippophae rhamnoides) at Gibraltar Point Nature Reserve on the east coast of England, searches in the extensive growths of sea buckthorn on the south Carm. dunelands have failed to reveal this millipede.)

P. gallicus Latzel. 24 records, VC44*, 45*, 46* (also VC41).

Recorded in more open habitats than P. angustus - limestone cliffs, quarries, duneland, wasteground and gardens provide the typical habitat. It does, however, occur at times in woodland.

It is interesting to compare this species' apparent preference in south-west Wales for open habitats in contrast to the more restricted woodland habitats (Kime, 1978) and wet areas (Blower, 1985) in south east England; presumably this is a reflection of the preference shown by P. gallicus to the milder, wetter, 'Atlantic' conditions of Wales.

P. denticulatus C.L.Koch. 5 records, VC44*, 45, 46 (also VC41).

Of the only five records - indicating the comparative scarcity of this diplopod - two sites are old deciduous woodland, a third was under rocks in a mountainside corrie (with, however, relict elements of woodland herbaceous vegetation). The fourth site was a rather recent (50 yrs) pine plantation on duneland, whilst the fifth was on river shingle (APF).

C. Bray in his pitfall study on Pembs. and Cards. coastal heathy pastures, had P. denticulatus quite regularly in his pitfall traps - 33 P. denticulatus for 12 P. angustus and only one P. gallicus.

Brachydesmus superus Latzel. 14 records, VC44*, 45*, 46 (also VC41).

In woodland and scrub generally, particularly on the less base-deficient soils.

Macrosternodesmidae

Macrosternodesmus palicola Brolemann. VC44*

One record only - in the soil on a base-flushed slope with dogs mercury (Mercurialis perennis) and wild garlic (Allium ursinum) in an ashwood at Cwm Cych, 22/290354, 5.1.1987.

Ophiodesmus albonanus (Latzel). VC44* (also VC41).

Recorded only once in the present survey - in calcareous humus under stones in the Carmel Carboniferous limestone ashwoods, 22/601165, 29.4.1987.

Paradoxosomatidae

(Oxidus gracilis (C.L.Koch). (VC41*.)

This species can be found quite commonly in the heated greenhouses at Singleton Park, Swansea, 21/628926, its only known Welsh site.)

Acknowledgements

The author would like sincerely thank Douglas T. Richardson for the great amount of help provided with determination of specimens and for his encouragement to study Myriapoda. Messrs A.D. Barber and J.G. Blower have also kindly assisted with identification matters and all these three gentlemen commented and advised on this paper at manuscript stage. Gratitude is also due to Arthur Chater and Adrian Fowles for their help with the collection of specimens in their home county of Ceredigion (Cards., VC46). Their work has already produced some noteworthy records.

References

- Barber, A.D. (1983) - (Table showing vice-county distribution of centipedes). British Myriapod Group Newsl. (Nov. 1983): 8 (unpublished)
- Barber, A.D. (1986) - (Table showing level of recording of centipedes in England and Wales). British Myriapod Group Newsl. (Feb. 1986): 3 (unpublished)
- Barber, A.D. (1987) British Schendylidae (Chilopoda, Geophilomorpha). Bull. Br. Myriap. Gp., 4: 53
- Barber, A.D. & Kime, R.D. (1974) Some records of Chilopoda and Diplopoda from South Wales. Entomologist's mon. Mag. 109: 167
- Blower, J.G. (1985) Millipedes. Synopses Br. Fauna (New Series) No. 35. Linnean Soc. & Estuarine and Brackish Water Sciences Assoc. London
- Chatfield, J. (ed.) (1975) Biological Recording Group for Wales: Reports and Records of Field Meetings, 1974-75, pp 13-14. Nat. Mus. Wales, Cardiff.
- Davis, B.N.K. & Jones, P.E. The ground arthropods of some chalk and limestone quarries in England. J. Biogeography 5: 159-171
- Eason, E.H. (1964) Centipedes of the British Isles. London, Warne
- Fairhurst, C.P. (1979) The distribution of millipedes on a Lincolnshire sand dune system. In Camatini, M. (ed.) Myriapod Biology, London, Academic Press: 241-249
- Fairhurst, C.P. (1984) British Millipede Survey: 10,000 records for Great Britain. British Myriapod Group Unpublished Report. University of Salford
- Kime, R.D. (1978) The distribution of millipedes in the south of England - a preliminary survey. Abh. Verh. naturwiss. Ver. Hamburg 21/22 : 135-147
- Lewis, J.G.E. (1962) The ecology, distribution and taxonomy of the centipedes found on the shore in the Plymouth area. J. mar. biol. Ass. U.K. 42: 655-664
- Morgan, I.K. (1986) Chordeuma proximum in Dyfed, SW Wales. British Myriapod Group Newsl. 6: 5 (unpublished)
- Morgan, I.K. (1987) A provisional Review of the Millipedes of Carmarthenshire. Dyfed Invertebrate Group Newsl. 5: 13-16
- Richardson, D.T. (1983) - (Table showing the vice-county distribution of millipedes) British Myriapod Group Newsl. (Nov. 1983); 4-6 (unpublished)

APPENDIX 1

NEW COUNTY RECORDS OF MYRIAPODA IN SOUTH-WEST WALES, 1985-87 (VC41,42,44,45 & 46)

(all records I.K. Morgan unless otherwise stated)

*W = new to Wales

CHILOPODA

<u>Haplophilus subterraneus</u>	VC46 Cards	22/588794	under rubble, grassland, Crugiau, A.P. Fowles, Feb 1987.
<u>Hydroschendyla submarina</u>	VC44 Carms	22/340093	under rocks, maritime cliffs, Wharley Point, 5.9.1986.
<u>Strigamia crassipes</u>	VC44 Carms	22/303105	under logs, seaside woodland, Laugharne, 13.4.1985.
	VC46 Cards	22/193463	Llechryd, Coedmore, APF, 15.11.87
<u>S. acuminata</u>	VC44 Carms	21/49-01-	under logs, mixed woodland, Stradey Woods, 5.3.1987.
	VC46 Cards	22/745780	wet scree, ash-oakwood, Coed Rheidol, A.O. Chater, 8.12.1986.
<u>S. maritima</u>	VC44 Carms	22/30-09-	under rocks near HWM, Ferryside 5.3.1985.
	VC46 Cards	22/577797	under rocks, shingle beach, Tan-y-bwlch, APF 5.4.1987.
<u>Geophilus electricus</u>	VC46 Cards	22/586843	under stone, cliff-top grassland Clarach Bay, 18.2.1987
<u>G. insculptus</u>	VC44 Carms	22/629333	under stone, oak copse, Talley, 9.4.1986.
	VC42 Brecc	22/847161	under stones, Craig-y-Nos, 18.1.88
<u>Cryptops hortensis</u>	VC42 Brecc	22/757128	under leaf litter, oakwood NW of Waun-lwyd, 11.5.1985.
	VC46 Cards	22/585767	under garden debris, NE of Chancery APF, Feb 1987.
<u>C. parisi</u>	VC44 Carms	22/517145	under rubbish, Maesdulais quarry, Drefach, 23.9.1987.
<u>Lithobius melanoops</u>	VC44 Carms	22/36-01-	under stone, small dune area, Ferryside, 5.3.1985.
	VC45 Pembs	22/128396	under logs, dry oakwood, Pengelli. 9.8.1986.
	VC46 Cards	22/625754	under river shingle, Afon Ystwyth, Llanilar, APF, 15.2.1987.
<u>L. borealis</u>	VC46 Cards	22/711976	mossy scree, valley ash-wych elm wood, Cwm Llyfnant, AOC, 31.12.86
<u>L. macilentus</u>	VC44 Carms	22/669191	under rocks etc. limestone ashwood Carreg Cennen, 9.4.1985.
	VC45 Pembs	11/985944	under stones, limestone sea-cliff Stackpole, 13.9.1986.
<u>L. tricuspis</u> *W	VC44 Carms	22/593117	under wood, rough pasture, Capel Hendre, 20.10.1987.
<u>L. pilicornis</u>	VC44 Carms	22/325102	under wood, scrub woodland on sea-cliff, Craig Ddu, 4.4.1985.

<u>L. calcaratus</u>	VC44	Carms	22/590163	under stone, old limestone quarry, Carmel, 11.4.1986.
	VC45	Pembs	12/764263	Waun fawr, C. Bray, July-Aug 1986.
	VC46	Cards	22/695716	river shingle, Afon Ystwyth, Llanilar, APF, 22.2.1987.
<u>L. curtipes</u>	VC44	Carms	22/737189	under stone, upland limestone quarry, Foel Fawr, 30.4.1986.
<u>Lamyctes fulvicornis</u>	VC44	Carms	22/517145	under stone, wet floor of limestone quarry, Maesdulais, 23.9.1987.
	VC45	Pembs	22/366528	Rhos Pil-bach, CB, July-Aug 1986.
<u>DIPLOPCDA</u>				
<u>Polyxenus lagurus</u>	VC44	Carms	22/186072	under rocks, Telpyn Point, 28.1.1988.
<u>Craspedosoma rawlinsii</u>	VC41	Glam	21/583956	under leaf litter, wet alder-oak wood, NW of Cefn Gorwydd fawr, Gowerton, 22.5.1985.
<u>Brachychaeteuma melanops</u>	VC44	Carms	21/537993	under stones, gardens, Llwynhendy, 30.12.1987.
<u>Chordeuma proximum</u>	VC44	Carms	22/644215	under leaf litter mixed deciduous wood, Coed Tregyb, 7.10.1985.
	VC45	Pembs	22/171073	under leaf litter oakwood W of Amroth 17.3.1986.
	VC46	Cards	22/669940	under leaf litter, roadside copse, SW of Penrhyngerwyn, 29.10.1985.
<u>Melocoma scutellare</u>	VC44	Carms	21/537993	in soil, garden, Llwynhendy, 5.1.1987.
	VC46	Cards	22/450421	under leaf litter, ashwood, SW of Capel Dewi, 23.3.1986.
<u>M. gallica</u>	VC41	Glam	22/741057	Ynysmendwy, 18.12.1987.
	VC42	Breco	22/847161	under stones, Craig-y-Nos, 18.1.1988.
	VC46	Cards	22/585767	under leaf litter, garden next to dingle woodland, NE of Chancery, 19.12.1986.
<u>Thalassisobates littoralis</u>	VC44	Carms	21/517974	under rags etc. foreshore, Penrhyn-gwyn, Machynys, 12.9.1986.
<u>Choneiulus palmatus</u>	VC44	Carms	21/555990	under stones, industrial waste ground, Glynea, Bynea, 3.5.1987.
<u>Hopoiulus kochii</u> *W	VC44	Carms	21/555988	site as above, 7.10.1987.
<u>Elaniulus guttulatus</u>	VC44	Carms	22/641169	under leaf litter etc. mixed deciduous wood, Coed Llandyfan, 17.12.1985.
<u>Archiboreoiulus pallidus</u> *W	VC41	Glam	21/452932	under logs, ashwood, Cheriton, Gower, 27.5.1985.
<u>Cylindroiulus londinensis</u>	VC44	Carms	22/333268	in moss etc. base of deep wooded valley, Allt Penrhiwlas, 5.11.1987.
	*W	VC46	Cards 22/719975 to 711974	steep valley woodland, Cwm Llyfnant, AOC, 5.1.1987.
<u>C. caeruleocinctus</u>	VC44	Carms	22/305273	under wood etc. hazel copse, Penybont, 23.9.1985.
<u>C. vulnerarius</u>	VC46	Cards	22/193463	Woodland, Llechryd, Coedmore, APF, 15.11.1987.

<u>C. latestriatus</u>		VC44	Carms	22/365065	under logs, dunes, Tywyn Point, 9.2.1985.
		VC46	Cards	22/577797	under stones, beach, Tan-y-bwlch, APF, 5.4.1987.
<u>C. britannicus</u>		VC46	Cards	22/451443	under leaf litter, oak-ashwood, E. of Allt-yr-Odyn, 21.3.1986.
<u>Leptoiulus belgicus</u>		VC41	Glam	21/568985	under leaf litter, waste-ground/scrub, Loughor, 22.11.1987.
	*W	VC44	Carms	21/537993	under stones, etc. garden, Llwynhendy, 14.9.1986.
<u>Brachyiulus pusillus</u>		VC41	Glam	21/512855	under <u>Festuca</u> , cliff grassland, Oxwich Point, Gower, 12.2.1987.
		VC44	Carms	22/444075	under stones in rocky woodland, Cwm Clydach, 12.2.1985.
		VC45	Pembs	22/063221	under garden stones, NW of Rhyd-y-Brown, 16.3.1987.
<u>Polydesmus angustus</u>		VC46	Cards	22/477517	under leaf litter, roadside copse, Llaethliw, 18.12.1985.
<u>P. inconstans</u>	*W	VC42	Brecs	22/991570	under stones etc. garden Ty Mawr Mill, 15.3.1986.
<u>P. gallicus</u>		VC45	Pembs	22/063221	in leaf litter, garden, NW of Rhyd-y-Brown, 16.3.1987.
		VC46	Cards	22/631836	under stones, nursery bed, Plas Gogerddan, 12.3.1986.
<u>P. denticulatus</u>		VC44	Carms	22/404015	under log, pine forest on dunes, Pembrey Forest, 28.4.1985.
<u>Brachydesmus superus</u>		VC44	Carms	22/535131	under stones, scrub on old limestone quarry, NE of Garn Fawr, 22.2.1985
		VC45	Pembs	12/763261	Waun-fawr, C. Bray, July-Aug 1986.
<u>Macrosternodesmus palicola</u>		VC44	Carms	22/290354	under leaf litter/soil, ashwood, Cwm Cych, 5.1.1987.
<u>Onhiodesmus albonanus</u>		VC44	Carms	22/601165	under stone, ashwood, NE of Carreg-wenlais, 29.4.1987.
<u>Oridus gracilis</u>	*W	VC41	Glam	21/628926	in heated greenhouse, Singleton Park, Swansea, 19.8.1985.