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COLEOPTERA RECORDING IN CEREDIGION, 1992 - A. P. FOWLES

Few areas of Britain (Yorkshire is a notable exception) can boast a long history of sustained recording of the less-popular invertebrate groups. In most vice-counties a few individuals initiate a period of enthusiasm for a particular order or family, to be followed inevitably by a lull of variable length until the group is taken up once again. Such an era of frenetic activity has now drawn to a close for Ceredigion with the departure of Dave Boyce and myself to new jobs and new challenges and beetle recording has entered a quiescent phase. Over the five year period between 1987 and 1992, knowledge of the county's beetle fauna increased substantially, as witnessed in earlier articles in the DIG Newsletter. Aided by local naturalists (such as Arthur Chater), reserve wardens, the Welsh Peatland Invertebrate Survey, and numerous national specialists (particularly John Owen), the species list has steadily grown to currently stand at 1558. We believe that only Glamorgan amongst the Welsh vice-counties has a better documented fauna. A much greater understanding of the richness of the county's woodlands, parklands, peatlands, sand dunes and river shingle has contributed to the conservation of invertebrates and their habitats in the county. Numerous nationally rare species have been discovered and a considerable number of beetle species have been added to the Welsh list (cf. Fowles & Boyce 1992). Whilst some recording continues locally, the Coleoptera have stepped out of the limelight for the time being. Nevertheless, there are undoubtedly many new discoveries still to be made and the next coleopterist who takes up residence in Ceredigion will find much of interest to spur them on to build on the solid foundation laid down in recent years.

The first beetle recorded in Ceredigion in 1992 was the bark beetle *Platypus cyllndrus,* found breeding in a massive fallen oak at Black Covert, Trawscoed (22/668723) on 1 January. Indeed, much of the recording effort during the year was concentrated on the saproxylic fauna of ancient oaks and other veteran trees in the county's parklands. In the north of the county, Parc Nanteos (22/620781) produced records of *Phloeophilus edwardsi, Platypus cylindrus, Abdera flexuosa* (bred from larvae in bracket fungi on old alders) and A*nthonomus ulmi* (beaten off elms). A visit to the Trawscoed estate (22/674732) on 23 February added the spider beetle *Ptinus subpilosus* to the county list, and other valuable records that day included *Dorcatoma flavicornis, D. chrysomelina*, *Anitys rubens* and *Tetratoma fungorum.* Red-rotten oaks on the National Trust property at Parc Pont Faen (22/496590) produced *Anitys rubens* and *Mycetophagus piceus,* but the fine old trees on this estate have still not lived up to expectations and more interesting species must surely await discovery. Old Cilgwyn (22/314416) was visited on 29 March and again, as a DIG field meeting (DIG 26: 15), on 7 June. Although Cilgwyn has only a handful of old trees it undoubtedly supports a rich fauna in a Dyfed context, with a total of twelve 'Harding & Rose' indicator species known from the site so far.

The March visit produced records of *Pediacus dermestoides, Stenogostus rhombeus*, *Mycetophagus piceus, Dorcatoma chrysomelina, Orthoperus nigrescens, Clambus pubescens, Phloeophora angustiformis, Aleochara stichai* and *Stenichnus pusillus*. By contrast, saproxylic beetles were conspicuously and surprisingly absent during the June field meeting, with the only old oak associates of any note being *Enicmus testaceus* and *Orthoperus nigrescens.*

Our knowledge of the saproxylic fauna in Ceredigion has increased considerably in the last couple of years, with many new species being recorded and several previously unsuspected sites being shown to contain important assemblages. The position outlined in Dave Boyce's 1988 paper (DIG 11; 13-15) on Ceredigion's dead wood fauna still largely applies in that the county's fauna is somewhat impoverished compared to much of England and eastern Wales. However, recent recording has demonstrated that our parklands are not entirely without interest. Whilst there is nothing to match Dinefwr Deer Park, Old Cilgwyn and a few other sites do support a significant assemblage of saproxylic beetles in a Welsh context and no doubt further recording will extend their species lists in the future.

SAPROXYLIC INDICATORS RECORDED FROM CEREDIGION'S TOP PARKLANDS

[Note: H&R* refers to the grades given to saproxylic beetles in Harding & Rose (1986). IEC is the Index of Ecological Continuity as devised by Alexander (1988)].

OLD CILGWYN (22/31-41-)
Stenichnus bicolor [H&R3]
Stenagostus rhombeus [H&R3]
Selatosomus bipustulatus [H&R3]
Ctesias serra [H&R3]
Dorcatoma chrysomelina [H&R2]
Pediacus dermestoides [H&R3]
Triplax aenea [H&R3]
Mycetophagus piceus [H&R3]
Orchesia undulata [H&R3]
Melandrya caraboides *[H&R3]*
Aderus occulatus [H&R3]
Platypus cylindrus [H&R3]
IEC = 13
Xyloterus domesticus [H&R3]

LOVESGROVE (22/63-81-)
Stenagostus rhombeus [H&R3]
Anitys rubens [H&R1]
Biphyllus lunatus [H&R3]
Mycetophagus piceus[H&R3]
Tetratoma fungorum [H&R3]
Platypus cylindrus [H&R3]
IEC = 8

TRAWSCOED (22/67-73-)
Dorcatoma chrysomelina [H&R2]
Dorcatoma fiavicornis [H&R3]
Anitys rubens [H&R1]
Tetratoma fungorum [H&R3]
Ptinus subpilosus [H&R2]
IEC = 9

PARC NANTEOS (22/62-78-)
Sinodendron cylindricum [H&R3]
Dorcatoma chrysomelina [H&R2]
Phloeophilus edwardsi [H&R3]
Mycetophagus piceus [H&R3]
Tetratoma fungorum [H&R3]
Xyloterus signatus [H&R3]
Platypus cylindrus [H&R3]
IEC = 9

PARC PONT FAEN (22/49-59-)
Dorcatoma chrysomelina [H&R2]
Anitys rubens [H&R1]
Mycetophagus piceus [H&R3]
Phymatodes testaceus [H&R3]
IEC = 7

The county's woodlands yielded a few additional interesting records in 1992. At Capel Maen-y-groes (22/387593) specimens of the weevil *Mesites tardii* were found in an old ash tree and a fallen oak in the Dyfed Wildlife Trust Reserve of Coed Maidie B. Goddard (22/211435) had dozens of *Xyloterus signatus* boring into the bark, several *Pediacus dermestoides* were underneath the bark of a nearby fallen branch, and *Epuraea distincta* was swept from the adjacent pasture. Bracket fungi collected from alders in Coed Llwyn Gwyn (22/683943) on 2 February eventually produced adults of *Orchesia micans, Abdera flexuosa* and *Tetratoma fungorum*, whilst *Orchesia minor* was collected off *Stereum* brackets on oak branches and *Triplax aenea* was found under the bark of an ancient rotten rowan. The weevil *Procas granulicollis* was recorded amongst *Corydalis claviculata* in bracken glades in Coed Cnwch-yr-arian (22/698792) on 27 May and 6 June. At 19.50 hours on 6 June a single *Procas* was watched feeding on *Corydalis* leaves - the first time this has been confirmed as an adult foodplant in the field (cf. Fowles 1992). Along the edge of the paths through Coed Cnwch-yr-arian the leaf beetle *Chrysolina brunsvicensis* was beaten off slender St John's wort *Hypericum pulchrum.*

Pitfall traps set in the neglected oak coppice of Coed Rheidol NNR (22/739778) during June and September had single specimens of the ground beetle *Pterostichus oblongopunctatus* and the dead wood beetle *Hylecoetus dermestoides*, along with four specimens of the Red Data Book staphylinid *Ilyobates nigricollis.* A brief visit to Coed Neuadd-yr-ynys (22/652925) on 1 April allowed an opportunity to sample the many ant nests there. *Formica rufa* nests contained the myrmecophiles *Leptacinus formicetorum* and *Nototheca flavipes,* whilst *Zyras funestus* was typically found in moss and under stones adjacent to a tree containing a nest of *Lasius fuliginosus.*

There was comparatively little active recording away from wooded habitats in Ceredigion in 1992. River shingle produced most of the remaining records of interest, with 5-spot ladybirds *Coccinella 5-punctata* recorded at two sites on the Rheidol (22/668783 & 22/728781). At Glanyrafon on the Rheidol (22/614804), Jonathan Cooter added the Red Data Book staphylinid *Scopaeus gracilis* to the county list on 22 June and he also reported *Hydrosmecta thinobioides* and *Perileptus areolatus.* On the same day at Ty'n-yr-helyg (22/595765) on the Ystwyth he swept the scirtid *Hydrocyphon deflexicollis* in profusion and the ground beetle *Lionychus quadrillum* was also present. There were very few water beetle records this year but Mike Bailey collected the notable dytiscid *Stictonectes lepidus* from ditches on the edge of Cors Fochno (22/628920) on 23 October. The Cors Fochno pitfall traps caught their usual quota of the notable ground beetle *Agonum ericeti* (107 specimens) and there were four specimens of the aleocharine rove beetle *Atheta strandiella.* Two male *Bibloplectus tenebrosus* in the pitfall traps added this Red Data Book pselaphid to the Ceredigion list and it was subsequently shown that a female *Bibloplectus* taken on Cors Fochno in 1991 was also *B. tenebrosus.* This species is known only from a handful of wetland localities in Britain and in Wales was previously known only from Crymlyn Bog in Glamorgan.

In the uplands, investigation of the fauna of 'hydrological source areas' by UWIST was undertaken as part of a contract to determine the sensitivity of upland habitats to catchment liming. Interesting records from this study included *Xlyobates nigricollis* at Gamallt (22/773558) and *Cyphon punctipennis* at Pwllpeirian (22/798766). Other wetland beetles of note in 1992 were the leaf beetle *Cassida murraea* at Coed Maidie B. Goddard (22/211435) and Banc-y-mwldan (22/201483) and the Red Data Book weevil *Bagous frit,* new to Ceredigion, from Banc-y-mwldan (22/197483) on 25 July. Finally, grassland beetles of interest were the violet-feeding weevil *Orobites cyaneus* at Coed Maidie B. Goddard (22/201434), larval mines of the jewel beetle *Trachys troglodytes* at Cilgwyn (22/314416) on 7 June, and the leaf beetles *Mantura rustica* on coastal shingle at Llanrhystud (22/523688) on 16 April and *M. obtusata* at Rhos Bwlch-y-rhandir (22/593733) on 19 September.

Thanks to Mike Bailey, Seb Buckton, Dave Boyce, Arthur Chater, Jonathan Cooter, John Davis, Red Liford, Martin Luff, Ian Morgan and John Steer for records and specimens of beetles in Ceredigion in 1992. I would like to take this opportunity to record my thanks to Dave Boyce for his advice, assistance and good company during our studies of Ceredigion's beetles. Our gratitude also goes to all of the other naturalists who helped us to collect beetles in the county and to the many specialists who so kindly put up with our constant calls on their time to help us to identify beetles.

Note: Re-examination of material has shown that the report of *Rhagonycha translucida* from Coed Rheidol (22/741778) on 25 June 1989 (DIG 16: 16-21) is erroneous.

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NOTICES

WELSH INVERTEBRATE REVIEW

The Countryside Council for Wales (CCW) has produced a newsletter of information on invertebrates and their conservation in Wales in 1992. It is intended that the Review will be produced annually in each autumn of the following year (with the issue for 1993 appearing early in 1995 to bring the series up-to-date). The Review will be distributed free to interested naturalists. If you wish to be included on the mailing list, please write to the Invertebrate Review Editor, Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ. Please note that the mailing list will be held on a computer database and is therefore subject to the provisions of the Data Protection Act 1984. If you do not want your details to be held on computer please notify the Invertebrate Review Editor in writing.

A CATALOGUE OF BRITISH ELATEROIDEA (COLEOPTERA) IN THE NATIONAL MUSEUM OF WALES - by A.H. Kirk-Spriggs & H. Mendel (Entomology Series No3)

Readers may be interested to learn of the appearance of the above publication priced £3.00 (£3.50 by post) and available from the Museum Bookshop, (N.M.W., Cathays Park, Cardiff, CF1 3NP).

The following is the author's abstract:-
'A catalogue of the National Museum of Wales' full British holdings of the beetle families Elateridae, Throscidae and Eucnemidae is presented, arranged in systematic sequence using current nomenclature. All label data for each specimen is given, together with references to specimens cited in the literature, where known'.

AN ANNOTATED LIST OF THE WOODLICE OF CARMARTHENSHIRE I.K.MORGAN

Introduction

Two-dozen species of woodlice are known from Carmarthenshire, out of a total of 37 British species, excluding hot-house aliens; and there is the possibility that a very few species remain unrecorded in the vice-county - perhaps *Miktoniscus patiencei* Vandel, 1946 (in saltmarsh/maritime shingle habitat), *Porcellio dilatatus* Brandt, 1833 (synanthropic situations) or possibly even the nationally rare Ar*madiliidium pictum* Srandt, 1833, which has once been recorded in the neighbouring Powys, and which may lurk in the ancient woodlands of the eastern part of the county.

In those extensive areas of Carmarthenshire that lie on acidic strata of various geological age, only the ubiquitous *Oniscus aselius, Porcellio scaber,* or *Trichoniscus pusiilus* are regular, but a far richer fauna occurs on the Carboniferous limestone outcrop, the coast and in synanthropic habitats. *Platyarthrus hoffmannseggi* is, for example, common in such areas, where the open, sunny and often rocky/rubbly areas also hold several species of *Armadillidium,* and - deeper under rocks - the regular A*ndroniscus dentiger.* The rare *Metatrichoniscoides celticus* has been recorded from one disused limestone quarry, and very recently (March 1994) *Oritoniscus flavus* was discovered, new to Britain, in the low-lying area SE of Llanelli.

The status of *Cylisticus convexus* is not quite clear. It may be a natural component of the fauna on the maritime fringe of the county (in shingle etc), but it also occurs in synanthropic situations such as wasteground. *Haplopthalmus danicus* is probably reasonably frequent, if irregularly recorded, in rotten wood-rich sites whilst *H. mengei* occurs on the coast and on the limestone; *Philoscia muscorum* is widespread in grassy habitats whilst the smaller but similar *Porcellionoides cingendus* is moderately strictly coastal; *P. pruinosus* is confined to a few dung heaps. Old walls and buildings support *Porcellio spinicornis* and *Armadillidium album* is a distinguished inhabitant of the county's sandy beaches where it can be seen under debris at the high water mark.

(Note on "First Records" - where H & S,1985 is given, this refers to 10km square records on the distribution maps published in Harding and Sutton, 1985).

CLASS CRUSTACEA
Order ISOPODA
Suborder Onisciaea

Family Ligiidae

Ligia oceanica (Linnaeus, 1767) - the "sea slater" which is regularly noted under stones etc near HWM at various coastal localities - below rubble piles on "soft" coasts such as Burry Port 22/45-00- or under natural rock outcrops on the cliffs further west. (First record: H&S,1985).

Family Trichoniscidae

Androniscus dentiger Verhoeff, 1908 - Records hail from throughout the vice-county, but are concentrated on the coast, where wasteground, gardens and the like provide suitable habitat; it is also frequent on the Carboniferous limestone outcrop but many other inland records refer to synanthropic situations - rubble or rubbish piles at roadsides, gardens etc. It has also been found under rocks/debris etc at HWM and *Androniscus* occurs at 585m on the upland limestone outcrop of Carreg-yr-Ogof 22/77-21-. An easily-recognized species due to its pinkish-carmine colouration. (First record: H&S,1985).

Haplopthalmus danicus Budde-Lund, 1880 - A small, dirty white species that is often found in humus or damp wood-rich situations such as accumulations of decayed leaf litter under laurel *Prunus laurocerasus* thickets, compost heaps or under driftwood piles at Tywyn Point (22/35-06-). (First Record: I.K. Morgan, Tywyn Point, 23.2.1985).

Haplopthalmus mengei (Zaddach, 1844) - Usually slightly smaller and whiter than the related *danicus, H. mengei* is found in two differing habitat types in Carmarthenshire - under thick accumulations of organic detritus on sandy beaches, as at behind Pembrey Saltings 22/435002 (where it occurs with *Armadillidium album),* and also in humus under stones on the Carboniferous limestone ridge (eg Carmel Woods 22/590163). There is currently no evidence that *H. montivagus* Verhoeff, 1941 occurs in the county, with microscopic examination of male *Haplopthalmus* all proving to be *mengei.* (First record: H&S,1985).

Metatrichoniscoides celticus Oliver & Trew, 1981 - This diminutive (3mm) national rarity was discovered by A.O. Chater under stones at the disused limestone quarry at Capel Dyddgen, Crwbin 22/468128 on 23.3.1986. It has not been refound since in spite of several searches of the exact spot. The following extract is taken from Chater (1986):-

'On 28 March 1986, in the company of I.K. Morgan and A.P. Fowles, I collected 5 individuals of this species in an overgrown, disused limestone quarry 7km inland near Crwbin in Carmarthenshire, VC44, 22/468128, at 170m a.s.l. The identification was confirmed by Alison Trew. The animals were under large blocks of limestone embedded 15cm or more in damp, stony soil among sparse, scrubby vegetation on the floor of the quarry, and half a dozen or so were seen under each suitable stone lifted in an area c.10 x 5 m. Associated species under the same stones were *Trichoniscus pygmaeus, T. pusillus, Androniscus dentiger, Armadillidium vulgare, Philoscia muscorum, Oniscus asellus, Porcellio scaber* and *Platyarthrus hoffmannseggi* (ants' nests were frequent). The site is some 50 km from the previous sites for *H. celticus* and is the first inland one. It is clearly worth searching other inland sites for this species, which is easily provisionally identified with a hand-lens by the complete absence of ocelli and the spinulose dorsal surface. In contrast to reports of the supralittoral specimens, the Crwbin animals were quite active and moved at about the same speed as *Trichoniscus pygmaeus* individuals of comparable size'.

Oritoniscus flavus (Budde-Lund) is a woodlouse hitherto only found in the Republic of Ireland with no records from mainland Britain (Harding & Sutton, 1985); it also occurs in western Europe. Harding & Sutton (loc.cit.) drew attention to its puzzling absence from Britain, terming the species a "biogeographical curiosity".

On 5th March 1994, whilst investigating the invertebrate fauna associated with various *Salix* and *Populus* in the low lying coastal belt SE of Llanelli SS59), the author noticed numerous purply-brown, fast moving woodlice in the saturated lower layers of a pile of red-rotted *Salix alba* lying in a grass- filled drainage ditch. The location of the ditch is NE of Dyffryn Farm, Bynea besides a public footpath north of the new Trostre-Yspitty A484 link road (21/548985).

It was noticeable that the *Oritoniscus* the lowest, wettest layer of the log pile (with, for example *Oniscus asellus* much higher up in the drier parts). The area around the ditch is very low lying (<5m) pastoral farmland, partly affected by urban growth and is essentially upper saltmarsh "reclaimed" in the 18th and 19th Century. Survey work will take place this winter to ascertain whether *Oritoniscus* occurs elsewhere on the alluvial coastal flats of Carmarthenshire. One possibility is that it is a long-standing introduction, for it is known that coal was exported to Ireland from shipping places very close to the site where this woodlouse was found and that vessels invariably returned loaded with ballast and, perhaps, *Oritoniscus*.

Examination, at home, of the specimens showed that only one ocellus was present on each side of the head. Paul Harding and David Biton subsequently confirmed the determination.
Trichoniscoides saeroeensis Lohmander, 1923 - Another tiny (4mm) woodlouse, coloured white and tinged with orange, which is normally found under rocks on the splash zone of cliffs eg Marros 22/197077, Wharley Point - Craig Ddu 22/352100 and Ferryside 22/362089; it is also known from the maritime shingle beach at Penrhyngwyn 21/515973. (Unidentified juvenile *Trichoniscoides* sp. were found in the old limestone quarry at Four Roads 22/440094 in October 1989). (First Record: A.O. Chater, Craig Ddu 22/362100, 4.4.1985).

Trichoniscus pusillus Brandt, 1833 - A small, shiny brown ubiquitous species of leaf litter etc. (First record: H&S, 1985).

Trichoniscus pygmaeus Sars, 1899 - Smaller and with much less pigment than *pusillus*, under-recorded with most records coming from the coast and the limestone outcrop. (First record: H&S,1985).

Family Halophilosciidae
Halophiloscia couchi (Kinahan, 1858) - A species of southern and western coasts, which has only been found once in Carmarthenshire, near Craig-ddu, Llansteffan 22/326100, where it was recorded by Arthur Chater on 4 April 1985. It occurred under pebbles besides a small freshwater stream near H.W.M.

Family Oniscidae
Oniscus asellus Linnaeus, 1758 - An ubiquitous woodlouse of damp situations, with particularly large specimens occurring on the limestone outcrop. Bilton has recently (1994) described a new sub-species of O. *asellus* - ssp. *occidentalis,* which is chiefly restricted to the extreme western parts of Europe and which prefers "damp woodlands, wetlands or old, rank grasslands". In contrast, the more ubiquitous ssp. *asellus* is regular in synanthropic sites. Intermediate hybrids occur. Two Carms. localities for ssp. *occidentalis* are cited: Dynevor (Dinefwr) Park 22/606226, P.T. Harding 3.4.1990; and "south of Rhydycymerau 22/584377 (date and recorder not given). It is quite possible that ssp. *occidentalis* will prove to be widespread in the vice county. (First record: H&S,1985).

Phlloscia muscorum (Scopoli, 1763) - Common in grassland habitats and wood- edge situations etc. (First record: H&S,1985).

Family Platyarthridae

Platyarthrus hoffmannseggi Brandt, 1833 - The small, white and blind woodlouse of ants' nests, recorded from many nests of *Lasius niger, L. flavus* and *Myrmica rubra* (and possibly other *Myrmica* sp.). Exceptional numbers (some 145) were once found in a nest of *Lasius flavus* at Machynys 21/511982 after heavy rain. Much more common on the coast and on the limestone ridge. (First record: H&S,1985).

Family Armadillidiidae

Armadillidium album Dollfus, 1887 - The "white pillbug" is confined to the sandy shores of Carmarthen Bay, where it can be found - in greatly variable numbers - under seaweed, driftwood or other accumulations of strandline debris. Some found (in March 1991) were under detritus some 10m up on a stone breakwater at Pembrey Harbour 22/437000. (First record: H&S, 1985).

Armadillidium depressum Brandt, 1833 - The largest *Armadillidium* which has only been regularly noted from two sites: under stones in the small, disused limestone quarry NE of Garn-fawr 22/535131, Drefach, where it is common; and on wasteground near Carmarthen 22/415199. It was also once found (1985), but not subsequently seen, in the old quarry at Capel Dyddgen 22/467127. (First record: I.K. Morgan, NE of Garn fawr 22/535131, March 1985).

Armadillidium nasatum Budde-Lund, 1885 - An inhabitant of dry coastal grassland (eg Marros 22/197077, Morfa-uchaf, Ferryside 22/371122 (with A. *vulgare))* and wasteground (eg "The Esplanade", Carmarthen 22/415199 and abundant near Glynea, Bynea 21/555990). It occurs on limestone scree (and a nearby old quarry) at Mynydd-y-Garreg 22/440094, and this species was also found in a derelict colliery yard at Dyffryn near Ammanford 22/623130 in 1991. The longitudinal bands of dark and light grey make this a distinctive species in the field. (First record: I.K. Morgan, nr Graig farm, Mynydd-y-Garreg, 22/440094, 26.4.1985).

Armadillidium pulchellum (Zenker, 1798) - As its specific name suggests, this is a pretty little woodlouse, with delicate colouration. It is known from a small expanse of limestone pavement at Carreg-eidon, Mynydd Llangyndevrn 22/493137 (associated with the ant *Lasius flavus,* though other ant species *(Myrmica)* are also present, 29.3.1988); from an old limestone quarry SW of Carmel 22/577160, (19.6.1990); and in close association with a nest of *Formica rufa* (wood ant) at Abergorlech 22/583345, where some twenty individuals, including juveniles, were found by sieving debris from the ants' nest on 25.3.1991. (First record: I.K. Morgan, Carreg Eidon - see above).

A*rmadillidium vulgare* (Latreiile, 1804) - This is the "common pillbug" of dune grassland, wasteground and other dry habitats, being particularly frequent along the coast, but also occurring inland on the Carboniferous limestone. More variably mottled than *A. depressum* (which tends to be a mostly plain, shiny dark grey). (First record: H&S, 1985).

Family Cylisticidae

Cylisticus convexus (De Geer, 1778) - An attractively marked species with orangy uropods which rolls up into an incomplete ball when molested. It is known from coastal situations - in maritime shingle at Penrhyngwvn, Machynys 21/515973; under rubble at the HWM at North Dock, Llanelli 21/498988 and Llangennech 22/563011; and associated with ruined collieries at Morlais, Llangennech 22/571022 and Nant Garenig 22/673127, Glanaman, (A.P. Fowles). (First record: I.K. Morgan, Penrhyngwyn, Machynys, 21/515973, April 1985).

Porcellio scaber Latreille, 1804 - Another ubiquitous woodlouse, preferring drier situations than *Oniscus asellus,* such as behind tree bark, in dry buildings, or on coastal dunes; sandy-coloured forms occur on the latter habitat- (First record: H&S, 1985).

Porcellio spinicornis Say, 1818 - Old, mortared walls provide a home for this specialist, which is doubtless under-recorded (if rather scarce), perhaps due to its nocturnal habits. Found on churchyard walls, old stone bridges, historic monuments or old, backyard walls, it is best sought, at such sites on damp evenings, with the aid of a torch. The species has also been recorded at the isolated upland farm of Blaenau 22/794241 near Llyn-y-Fan Fach (M. Shardlow, April 1994). (First record: I.K. Morgan, Llandeilo Church wall 22/632225, 10.12.1986).

Porcellionoides cingendus (Kinahan, 1857) - A "Lusitanian" species (ie found in the milder, more oceanic parts of SW Britain), that is known to occur all along the Carmarthenshire coast (though not usually on the dune systems), frequenting *Festuca* grass tussocks on cliffs and also in synanthropic situations eg the farmyard/haybarns at Tir Morfa-fawr 21/533982 and Penrhyn 22/482021. An unusual occurrence was a singleton found under a flaking wooden fence-post at the flooded Ffrwd Fen 22/419023 (1989) whilst a surprisingly inland record was in the old quarry just east of Llandyfan 22/642173 (1991). (First record: I.K. Morgan, east of Amroth, 22/176073, 5 October 1987).

Porcellionoides pruinosus (Brandt, 1833) - A denizen of old dung-heaps, only so far noted at Tir Morfa-fawr, Glan Sawdde, Llangadog 22/70227S and in the dung heaps by the pig-sties at Kidwelly Quay 22/398064. It has a characteristic purple bloom to the dorsal exoskeleton. (First record: I.K. Morgan, Tir Morfa-fawr, Llwynhendy 21/553982, 18 November 1989).

Asellus aquaticus Linnaeus, 1758 - This freshwater species is poorly recorded, but is known from several of the richer coastal ponds eg Machynys, ditches at Ffrwd Fen 22/420028 and at Bishop's Pond, Abergwili 22/445209; it is absent from the more acidic upland water-bodies.

Acknowledgements: Particular gratitude is due to Arthur Chater, who offered patient encouragement when the writer first started to look at woodlice early in 1985; Arthur has additionally made some noteworthy contributions to the county list.

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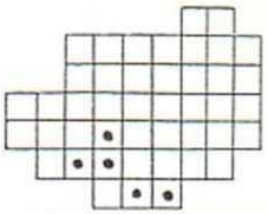

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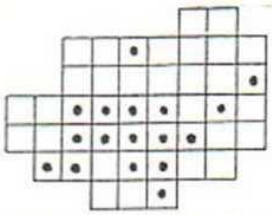

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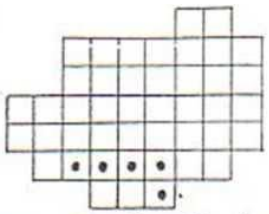

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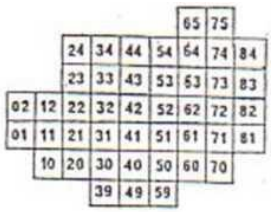

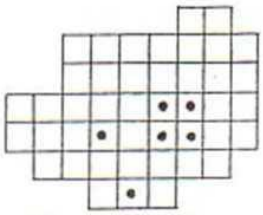

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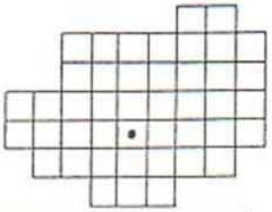

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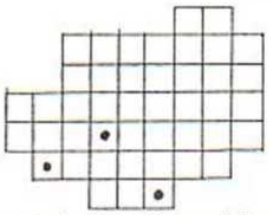

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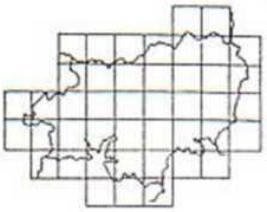

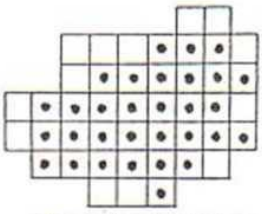

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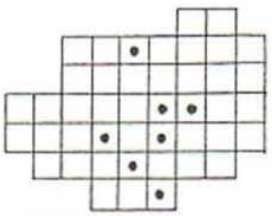

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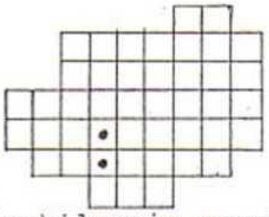

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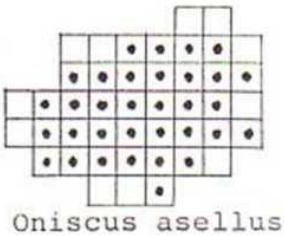

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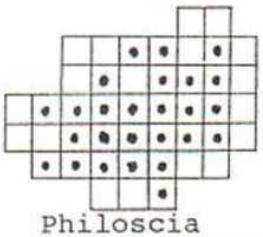

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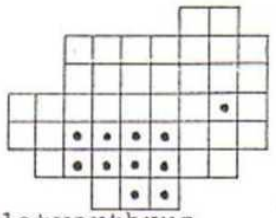

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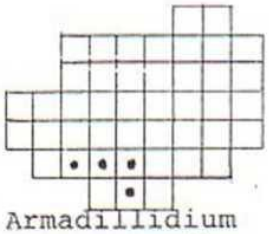

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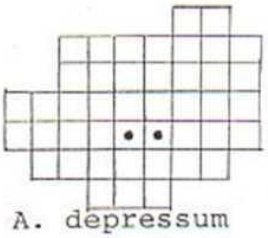

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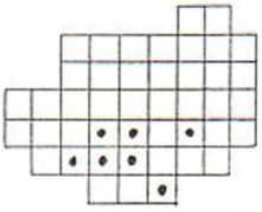

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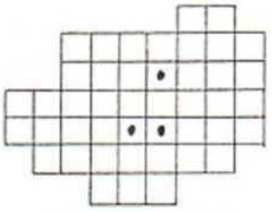

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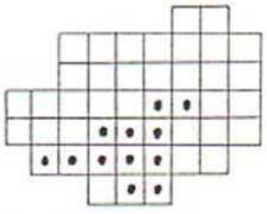

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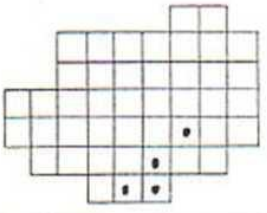

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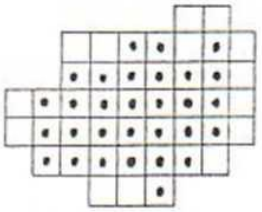
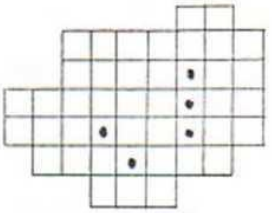


Porcelio scaber



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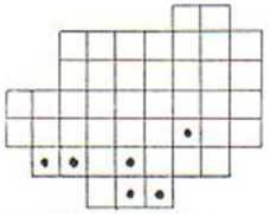

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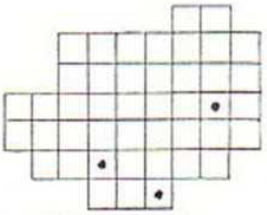

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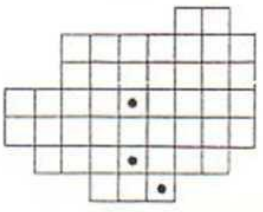

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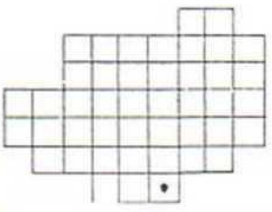

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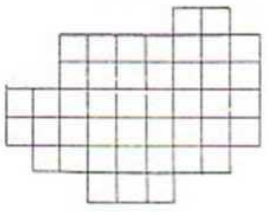

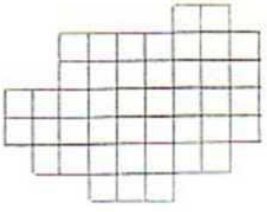

THE CLADOCERA OF THE BOSHERTON LAKES, PEMBROKESHIRE - C A Duigan

Introduction

The Bosherston Lakes are a series of artificial shallow marl lakes formed by the serial damming of the estuary at Stackpole, Pembrokeshire. The dense growth of aquatic macrophytes (including *Chara)* is considered one the lakes' most remarkable features. These features lead to the lake's recognition as a Site of Special Scientific Interest and a Nature Conservation Review Site. The lakes are part of the Stackpole National Nature Reserve and lie within the Pembrokeshire Coast National Park.

The invertebrate fauna of the Bosherston Lakes have been the subject of four major investigations (McNulty 1978; Thomas 1968; Wallace and Wallace 1986, 1989). Harvey (1980) surveyed the macroinvertebrate fauna of two streams feeding the lakes, as part of a water quality investigation. Thomas' (1968) report included records of Cladocera from four sampling stations in the Upper Eastern Arm, Central Lake, Central Arm and Western Arm. Unfortunately no details were given on the sampling methodology used but the sampling sites appear to be offshore as indicated on a report map. The author remarked that *Daphnia longispina* and three other macroinvertebrate species were typical of large areas of water containing overgrown and partially clear areas.

Methods

Single qualitative Cladocera samples were taken at two sites in the Bosherston Lakes on 2 July 1992. Site A (SR 968948) was on the southern side of the causeway across the Western Arm and *Nymphaea alba* was the dominant vegetation type present at this site. Site B (SR 974948) was on the northern side of the Central Arm dam where *Chara* was the only plant growth present. The samples were collected from the shore using a hand-held net (0.2 mm mesh; 17 cm diameter) which was moved over the substrate and through any submerged vegetation, from the edge of the lakes to a depth of 1 m. The material collected was preserved in approximately 4% formalin. In the laboratory successive aliquots of each sample were examined in a scored petri dish, using a binocular microscope, until all the material collected had been examined. The frequency and abundance of the species present were recorded using the DAFOR scale.

Results

A total of seventeen Cladocera taxa have been recorded for the Bosherston Lakes (Table 1). Seven taxa were recorded by Thomas (1968) and an additional 9 taxa are reported here. *Chydorus sphaericus* was the only species recorded during both investigations. An almost equal number of species was recorded from sampling sites A and B.

Ceriodaphnia pulchella and *Simocephalus vetulus* were dominant or frequent in the samples collected in July 1992. The remainder of the taxa were found only occasionally or rarely. It should be noted that subsequent revisions have combined *Bosmina coregoni* and *B. obtusirostris* under the species name *Bosmina longispina* (Fryer 1993).

Discussion

The lack of overlap between the species reported here and those recorded by Thomas (1968) is probably a product of different sampling strategies. Members of the Chydoridae (e.g. *Pleuroxus, Alona* and *Eurycercus*) occur amongst the vegetation in the littoral areas of lakes and ponds. In contrast, *Bosmina* and *Ceriodaphnia* species are frequently found in more open water conditions (Frey 1988). It is interesting to note that *Chydorus sphaericus* is usually found in association with other chydorids amongst littoral macrophytes but under certain conditions it may migrate into the open water plankton (Frey 1983) and this characteristic may account for it being reported in both investigations.

In Ireland, *Pleuroxus aduncus, Pleuroxus crigonellu*s and *Pleuroxus uncinatus* occur most frequently in a "Central Lowlands Group" of sampling sites (Duigan and Kovach 1991). The lakes within this group are underlain by Carboniferous limestone and therefore share some environmental similarities with the Bosherston Lakes. In Yorkshire, *Simocephalus vetulus* is considered an excellent example of a "lowland species" where it was often found in vegetation to which it anchors itself using antennal structures (Fryer, 1993).

Scapholeberis mucronata has an unusual habit. It has morphological adaptations which allow it to suspend itself from the underside of the water surface where it swims in an inverted position. It has been noticed that it is often found under calm conditions in quiet backwaters or amongst vegetation in larger expenses of water (Fryer 1993).

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Table 1. The Cladocera records for the Bosherston Lakes from Thomas (1968) and recorded during this investigation, with estimates of frequency and abundance on the DAFOR scale.

SAMPLING SITE	Thomas (1968) 1*	2*	3*	4*	Duigan (this paper) A	B
Acroperus harpae						O
Alona affinis					O	R
Alonella nana						R
Bosmina coregoni s. str.	+	+	+			
B. coregoni v. *lacustris*	+	+	+			
B. longirostris v. *cornuta*			+			
Ceriodaphnia pulchella					D	F
C. quadrangula	+	+	+			
Chydorus sphaericus			+		R	R
Daphnia longispina s. str.				+		
Eurycercus lamellatus					R	R
Graptoleberis testudinaria			+			
Pleuroxus aduncus						R
P. trigonellus					O	R
P. uncinatus					O	
Scapholeberis mucronata					O	
Simocephalus vetulus					F	D

Footnotes
In the DAFOR scale: D = dominant; A = Abundant; F = Frequent: O = Occasional; R = Rare. 1* = Site in upper section of the Eastern Arm; 2* = Site in Central Lake; 3* = Site in lower end of Central Arm: 4* = Site towards upper end of Western Arm.

THE SPIDER FAUNA OF MYNYDD DU (THE BLACK MOUNTAIN) – M.E.A. SHARDLOW 1994

Between 18 July and 10 August 1992, the spider fauna of the north facing slope of Mynydd Du (SN72, Carmarthen, VC44) was sampled using pitfall traps. A total of 3031 adult spiders were trapped, representing 41 species and nine families.

The pitfall traps were placed in eight groups of 15 traps at 50m intervals up the slope; the first site being at 300m (SN 795237) and the eighth at 650m (SN 796217). The two sites at the bottom of the slope were sited in heavily grazed *Agrosto-Festucetum* grassland with a soil pH of between 5.9 and 6.5. The top six sites were situated in more lightly grazed *Nardus* grassland with a more acid soil (pH 4.1 to 5.3).

There was a distinct difference between the fauna of the two habitats (see Table 1). The fauna of the *Agrosto-Festucetum* grassland was dominated by linyphid species such as *Oedothorax fuscus* (Blackwall), *Erigone dentipalpis* (Wider) and *Erigone atra* (Blackwall). This fauna is typical of ephemeral and arable habitats (Rushton et al. 1989). Three linyphid species with a local distribution were found in the *Agrosto-Festucetum* grassland: *Walckenaeria vigilax* (Blackwall), *Agyneta decora* (O.P.-Cambridge) and *Dicymbium nigrum* (Blackwall). As all three species were also recorded from the *Nardus* grassland, the *Agrosto-Festucetum* grassland was of marginal conservation interest for spiders.

The fauna of the *Nardus* grassland was much more varied, and contained many more spiders from non-linyphid families. Within the *Nardus* grassland it was possible to observe several trends caused by the changing environmental factors associated with increasing altitude (see Shardlow and James (in press)). Three additional local species were recorded in this area, *Trochosa spinipalpis* (F.O.P.-Cambridge), *Diplocentria bidentata* (Emerton), and *Rhaebothorax morulus* (O.P.-Cambridge). These last two species are of particular interest as Ratcliffe (1977) defines them as sub-montane. They were not recorded from Carmarthen (VC44) or Pembroke (VC45) by Fowles et *al* (1991) and the Brecon Beacons almost certainly represents the most southerly extent of their distribution in the British Isles. Of the four species only trapped above 550m, three *(Ceratinella brevipes* (Westring), *Centromerus prudens* (O.P.-Cambridge) and *Centromerita bicolor* (Blackwall)) are commoner in the north of Britain than the south. The spider fauna near the summit therefore has some similarities with communities found at higher latitudes.

The spider fauna of the grassland was restricted by the lack of structure. Due to a lack of suitable web sites, retreats or hunting habitats, many species do not occur in areas of continuous low vegetation. Away from the grassland, in gullies *Metellina merianae* (Scopoli) was recorded in orb webs between rocks. On the farm at Blaenau, on the northern base of the mountain, a much less restricted spider fauna was present, and the following species were recorded: *Amaurobius similis* (Blackwall), *Scotophaeus blackwalli* (Thorell), *Salticus scenicus* (Clerck), *Steatoda bipunctata* (Linneaus), *Enoplognatha ovata* (Clerck), *Tetraganatha montana* (Simon), *Metellina segmentata* (Clerck), *Zygiella x-notata* (Clerck), *Araneus diadematus* (Clerck) and *Nuctenea umbratica* (Clerck).

Of the Dyfed vice-counties, Carmarthen appears to have the least well-known spider fauna (Fowles et al. 1991). As a result, this study has generated six new vice-county records - *Scotophaeus blackwalli*, *Steatoda bipunctata, Diplocentria bidentata, Erigone promiscua, Rhaebothorax morulus* and *Centromerus prudens.*

Although most of the "interesting" species were recorded from the *Nardus* grassland, other habitats on and around Mynydd Du probably also contain "interesting" species. Notably the cliffs around the summit, the peat bog areas, and woodland around the base of the mountain are all likely to contain species not recorded in this study.

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Table 1. Numbers of individual spiders recorded in the pitfall traps at the eight study sites on Mynydd Du.

Species / Site	1	2	3	4	5	6	7	8	TOTAL
Altitude/m	300	350	400	450	500	550	600	650	
Micaria pulicaria (Sundevall)	1								1
Clubiona diversa O.P.-Cambridge			1						1
Xysticus cristatus (Clerck)							1		1
Pardosa palustris (Linneaus)							2	2	4
Pardosa pullata (Clerck)	1		24	26	27	16	9	5	108
Pardosa prativaga (L. Koch)	2								2
Alopecosa pulverulenta (Clerck)			1	3	1	1	4		10
Trochosa terricola Thorell			22	16					38
Trochosa spinipalpis (F.O.P.-Cambridge)				1	1				2
Pirata piraticus (Clerck)								1	1
Coelotes atropos (Walckenear)						10	2		12
Antistea elegans (Blackwall)	1								1
Robertus lividus (Blackwall)			2		1	3			6
Pachygnatha degeeri Sundevall		1	109	139	20	15	22	1	307
Ceratinella brevipes (Westring)							1		1
Walckenaeria acuminata Blackwall		2	1			1	4	1	9
Walckenaeria antica (Wider)			2	3	5	4	4	10	28
Walckenaeria nudipalpis (Westring)			1	1				1	3
Walckenaeria vigilax (Blackwall)		2	1					1	4
Dicymbium nigrum (Blackwall)		5		4		10	2	4	25
Peponocranium ludicrum (O.P.-Cambridge)								1	1
Pocadicnemis pumila (Blackwall)			1				1		2
OEdothorax fuscus	366	90				2	2	10	470

(Blackwall)									
OEdothorax retusus (Westring)	2	3							5
Tiso vagans (Blackwall)	2	18	5	9	32	35	24	69	194
Gongylidiellium vivum (O.P.-Cambridge)	1				2	3	9	10	25
Micrargus herbigradus (Blackwall)			12	2	9	6	8	1	38
Savignia frontata (Blackwall)	2	3						2	7
Diplocentria bidentata (Emerton)			1				6		7
Erigone dentipalpis (Wider)	286	283	2	1	2	1	11	67	653
Erigone atra Blackwall	135	194	8	16	13	50	149	360	925
Erigone promiscua (O.P.-Cambridge)	53	18					1	12	84
Rhaebothorax morulus (O.P.-Cambridge)					3	4	1	4	12
Agyneta decora (O.P.-Cambridge)	4	4	1		1				10
Meioneta saxatilis (Blackwall)	1								1
Centromerus prudens (O.P.-Cambridge)							1	1	2
Centromerita bicolor (Blackwall)						2			2
Lepthyphantes tenuis (Blackwall)	1								1
Lepthyphantes mengei Kulczynski			7	1	2	1	4	1	16
Lepthyphantes ericaeus (Blackwall)					3	3	2	3	11
Allomengea scopigera (Grube)								1	1
Total number of adults	858	623	201	222	122	167	270	568	3031