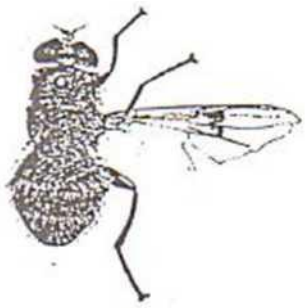
DYFED INVERTEBRATE GROUP



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SOME THOUGHTS ON THE USE OF INVERTEBRATES AS INDICATOR SPECIES OF ANCIENT WOODLANDS IN CEREDIGION - Adrian Fowles

The main aims of nature conservation in Britain today can be loosely summarised as the conservation of individual rare species and the conservation of scarce and representative examples of semi-natural and natural habitats. To succeed in both objectives we need to have a sound base of biological recording so that we can identify which species are under threat and recognise the components of significant habitat assemblages. This is fairly straightforward for some taxa, such as birds, higher plants and butterflies, but for the lower plants and most invertebrates there is a long way to go before we can confidently claim to be fully aware of conservation priorities. It is possible to take some short cuts, however, as there are clearly some types of habitats which are nationally (or internationally) scarce and hence any species which are ecologically confined to such sites will be deserving of our utmost efforts. Southern heathlands or soft rock cliffs are obvious examples which need to be conserved even if we are not absolutely certain of the status of their specialised inhabitants. A different approach has to be applied for more widespread habitat formations, as in the case of woodlands. The development of the National Vegetation Classification (Rodwell 1991) now provides a framework for defining botanical communities but it is unlikely that a similar method will ever be designed to cater for invertebrates. An alternative strategy is to consider which invertebrate species can be considered indicative of 'habitat quality' and to assess the value of sites on the presence or absence of those species. Refinements will inevitably need to be made in the light of further knowledge about the ecology and habitat-fidelity of individual species, but the general concept of 'indicator species' is now widely accepted.

As the natural climax vegetation of most of the land surface of lowland Britain, ancient woodlands have been the focus of much of the effort to identify indicator species - eg. Garland (1983), Harding & Rose (1986), Kerney & Stubbs (1980), Peterken (1974a), Rose (1976), Stubbs & Falk (1987), etc. Ancient woodlands are amongst the least-disturbed of our semi-natural habitats and are therefore considered to support the best examples of representative species-assemblages for the flora and fauna that we assume to have occurred in primary forests. Management has certainly modified most of these assemblages but, in principle, the conservation of ancient woodlands is undoubtedly the correct approach if we are to seek to conserve those habitat types which are closest to the original wildwood. The concept

of Indicator' species, however, assumes that, for whatever reason, some taxa are confined to ancient sites and therefore safeguarding ancient woodlands is necessary for the conservation of these species. The most frequent explanation for the restricted distribution of indicator species is that their poor colonising ability prevents them from reaching and occupying secondary woodland habitats as these mature. (For a discussion of the terms 'primary', 'ancient' and 'secondary' in relation to woodlands, see Peterken 1977). By implication, these species inhabit a finite number of sites and, without translocation, they will inevitably decline in abundance as ancient woodlands are destroyed or their habitat quality, however defined, deteriorates.

The problem with this theory is that woodland plants and animals behave differently in different parts of their geographic range. This fact has been accepted for a considerable period of time and is particularly striking with regard to the woods of south-east England compared to those of western Britain. Establishing a list of botanical indicators for ancient woodlands in Lincolnshire, Peterken (1974a) recognised that it would not be applicable nationally and, specifically, "in an oceanic climate which appears to be generally favourable for woodland speces". Similarly, with woodland Coleoptera, Hammond (1974) declared that "as certain species which are rarely found outside of woods in the east may be found in the open in the west, the destruction of woodland habitats may be expected to have had a differential effect on such species according to the part of the country". There are innumerable examples of this regional variation amongst the invertebrates (and higher plants). For instance, the snail *Zenobiella subrufescens* is regarded as a reliable indicator of ancient woodlands in eastern England (Kemey & Stubbs 1980) but in the west can also occur in hedgerows, secondary woodlands and, occasionally, in damp pastures (Chater 1986). Several of the fritillary butterflies are effectively confined to woodlands in the east (Fuller & Warren 1991) but inhabit open grassland in western Britain. A conspicuous example is the small pearl-bordered fritillary *Boloria selene,* but pearl-bordered *B. euphrosyne,* high brown *Argynnis adippe* and even heath *Mellicta athalia* fritillaries also exhibit this tendency. *Cychrus caraboides* provides an example of a beetle that is regarded as an ’old’ woodland indicator in the east (Terrell-Nield 1990) but which is frequent in open country in the west. Whilst dispersive ability may, to some extent, be influenced by local weather conditions, it seems that woodland taxa are more likely to be ecologically restricted in eastern England because of that region's continental (or sub-oceanic) climate. Indeed, where oceanic species occur in the east they tend to be found chiefly in climatically favourable refugia, such as the sheltered and humid ghylls of the Wealden woodlands (Rose 1957). Further research would be necessary to elucidate whether rainfall levels or the incidence and severity of frosts, for example, is the major limiting factor.

The great tradition of botanical recording in Britain has meant that the task of evaluating indicator species has been comparatively easier for the woodland flora than for invertebrates. Nonetheless. it has proved to be extremely difficult to define indicator plant lists for western woodlands (eg. Buchanan & Fuller 1980). No serious attempts have been made with respect to the invertebrates but certainly molluscs seem to be less useful in this regard than in eastern England (Chater 1986). However, some invertebrates are undoubtedly only found in ancient woodlands throughout the country, though these tend to be species with highly specialised ecological requirements (Warren & Key 1991). Their restricted distribution can invariably be explained by a lack of suitable micro-habitats outside ancient woodlands. As Hammond (1974) points out with respect to the Coleoptera "it is the species associated, in the larval stage at feast, with the wood of mature or dead trees and with arboricolous fungi that are hardest hit. Such species may suffer local extinction throughout an area in which forest has been fragmented. Species of the forest floor and those dependent on leaves, seeds and flowers are apparently able to persist more successfully in small pockets of forest or able to recolonise such areas.

Many threatened saproxylic invertebrates occupy niches which are only present in large, over-mature trees and these are only likely to occur in woods that are at least several hundred years old and hence are generally classified as ancient on documentary evidence. It is known that a few landscaped parklands of eighteenth century origin have an impoverished fauna despite the quality of dead wood habitats available (Bratton & Andrews 1991). This may suggest that some saproxylic species are unable to colonise secondary habitats but it might also be due to the considerable isolation of these parklands from suitable refuges for the species concerned. McLean and Speight (1993) refer to the dispersal of saproxylic invertebrates in France along non-ancient woodland corridors between ancient forests many kilometres apart. Many of the magnificent oaks of Windsor Great Park were planted in 1580 in open pasture and yet their saproxylic fauna is outstanding (Harding & Rose 1986), presumably as a result of colonisation from the neighbouring Windsor Forest. The buprestid beetle *Agrilus pannonicus* has recently demonstrated the colonising powers of saproxylic invertebrates as it was thought to be restricted to a handful of the best pasture-woodlands in Britain but has now almost certainly spread to many new sites (Warren & Key 1991). The woodland invertebrate fauna must have initially colonised Britain from the continent as forest cover spread following periods of glaciation. Many species continued to disperse northwards as woods became established, and their composition was modified, in response to differing climatic episodes. Although there is some indication that habitat fragmentation may lead to the development of sedentary populations amongst some species of invertebrates (Dempster 1991), it seems likely that most woodland invertebrates are capable of at least slow rates of colonisation of available habitats.

Ancient woodlands may also contain micro-habitats other than over-mature trees which are not found outside their boundaries. Secondary woods which have developed on former agricultural land are less likely to contain unmodified watercourses or humid gulleys, for instance, and hence ancient woods may continue to provide the only breeding sites for invertebrates associated with such features, including many species of woodland Diptera (cf. Falk 1991). Woodlands develop characteristic soil profiles and the ancient 'forest brown earths' (Colebourn 1989) are a micro-habitat that may take several thousand years to recreate in secondary woodlands. Of all the communities that might be confined to ancient sites it is the inhabitants of woodland soil, the decomposers of leaf litter and their predators, that are potentially the most restricted. However, Hammond (1974) points out that, in general, few soil and litter beetles are apparently confined to ancient woods, nor is there evidence that any species of earthworm are found only in ancient woodlands (Sims & Gerard 1985). It is possible that some millipedes, *Craspedosoma rawlinsii,* or centipedes, eg. *Chalandea pinguis,* are only known from ancient woodlands but no detailed analysis exists for either of these groups. Of course, Collembola, mites, and other neglected groups of soil invertebrates may be more sensitive to the disturbance of ancient woodland soil profiles and their conservation should also be a concern in the desire to preserve our natural heritage (cf. Ball & Stevens 1981).

Land use history in Ceredigion has conspired to restrict most of the remaining ancient woodlands to the steep sides of valleys (Lister & Whitbread 1987), chiefly along the river systems of the Rheidol, Ystwyth, Arth, Aeron and lower Teifi, or in the narrow, incised valleys in the north of the district, eg. Cwm Llyfnant and Cwm Clettwr. They are dominated by neglected sessile oak coppice which was mainly felled during the First World War. The county has been practically depleted of over-mature trees and the saproxylic fauna is correspondingly poor (Boyce 1988). In fact, the best trees for saproxylic beetles are probably the pasture oaks of Old Cilgwyn, Parc Pont Faen and Parc Nanteos. The oldest trees on each of these sites were almost certainly planted about 200 years ago in open parkland.

Generally, documentary evidence for secondary woodland in the county is not particularly reliable and the determination of ancient woodland by such means is largely speculative. This causes great difficulties when trying to decide whether there are invertebrates which can be regarded as 'ancient woodland indicators' locally. Some species, such as the ground beetle *Pterostichus oblongopunctatus,* are known only from the northern valley oakwoods and are probably, therefore, confined to ancient woodlands. However, few known secondary woodlands can match the environmental characteristics of these sheltered, humid woods. This begs the question, as discussed above, whether taxa are limited to ancient woodlands because of their ecological continuity or because of the presence of specific microhabitats or microclimates. Many species of beetle, for instance, which are classified as ancient woodland indicators in northern England (Garland 1983) are frequently found in known secondary sites in Ceredigion. It seems much more likely that woodland cover in the county is sufficiently well distributed to permit colonisation of secondary habitats if they contain the necessary environment for successful breeding. The paucity of the 'ancient woodland' invertebrate fauna in Ceredigion is probably a product of management abuse (clear-felling and over-grazing, for instance) and the destruction of important microhabitats, rather than being due to a lack of ancient woodlands.

Much more recording, research and analysis is required to determine the contribution made to invertebrate conservation by secondary woodlands in Ceredigion. On present evidence it appears that well established secondary woods, as in Cwm Soden south of New Quay for example, are superficially comparable to ancient woods and contain a fauna and flora of value to nature conservation locally. Peterken (1974b, 1977) recognised this by including 'Woods formed by a long period of natural structural development' in his group of five woodland types (the other four are primary or medieval woodland types) that are important to conserve in Britain. These are secondary woods which have developed naturally for a considerable time (eg. 150 years or more) and have gained a forest structure and species complement of ecological interest, "where secondary woodland has become established on ground adjacent to primary woodland and therefore has a nearby source from which even species with a low colonising ability can establish themselves" (Peterken 1977). It is highly probable that many woods in Ceredigion fall into this category.

Where such secondary woodlands have developed without periods of inimical management they may contain environmental features of importance for invertebrates. The danger in searching for ancient woodland indicators amongst different species groups is that they may confer an artificial reverence on the age of a particular woodland at the expense of these less venerable woods. There are good reasons in the climatically less-favourable south-east of England to defend ancient sites per se, but in western Britain it would be wiser to prioritise woodlands on broader grounds. Just as ancient woodlands contain environmental features peculiar to their topographic situation, it may be necessary to recognise that mature secondary woods also have their own distinctive characteristics which are important for woodland invertebrates. Level woodland on former agricultural land is more likely to contain glades and rides, for instance, or may have a more stable management history which has maintained early successional stages for associated butterflies, bees, bugs and flies, etc. In a thought-provoking paper, Spencer (1990) opened the argument for a careful consideration of the importance of ancient woodlands to nature conservation. He comments that "there is also a case to be made though for active conservation of a wider range of other important woodland sites, which may not be that old but which possess woodland plant communities, species or other features not found in ancient woodland".

Listing species which are only found in ancient woodlands in a certain area may have less to do with history than topography. Spencer (1990) looks in detail at the ecology of a handful of vascular plants which he feels are useful indicators of ancient woodlands and concludes that there are good reasons, largely because of their reproductive biology, why each species is so restricted. The ecology of woodland invertebrates is poorly known by comparison and it will rarely be possible to identify why a species should be confined to ancient woodland. However, it is frequently evident that 'ancient woodland' species are associated with a particular type of microhabitat that is itself extremely localised. These species are not so much indicators of ancient woodlands as indicators of the occurrence of their preferred microhabitat (cf. Tattersfield 1990). Many genuinely ancient woods, as well as secondary woods, may lack these microhabitats and therefore the absence of indicator species is not a reflection of their antiquity but of their limited habitat diversity. Ceredigion's valley oakwoods, for example, are poor for 'Harding & Rose' beetles because of the absence of over-mature trees and not because their lineage is called into question. By qualifying lists of indicator species with some indication of the ecological requirements of the species involved it should be possible to highlight those features which are of conservation importance for invertebrates in Ceredigion's woodlands. With sufficient data, this would draw attention to the strengths and weaknesses of the habitat quality in the county's woods; the presence of flushes, over-mature trees, rides and glades, bracket fungi, etc. This would help to identify why species are restricted in a particular area. Lott (1989), for instance, points out that the Harding & Rose species are effectively grouped according to a sort of ecological hierarchy - "Group 3 species tend to be associated with the peripheral areas of trees such as sapwood, bark and fungal fruiting bodies" whilst "Group 1 and 2 species are often associated with heartwood and require large trees".

Attempts to construct lists of indicator species for ancient woodlands in Ceredigion, for a range of invertebrate groups, have been largely unsuccessful. Candidate species have either proved to be too widespread, occurring in mature secondary woods or old parklands as well as ancient woodlands, or at best are associated with scarce microhabitats whose own distribution is confined to ancient woodlands, perhaps as a result of past land use history. In a sense, the presence of members of this latter group can be taken as indicative of ancient woodlands as they are characteristic of sites where particular microhabitats have either survived, or have been maintained, as a result of the historical pattern of land use. However, their presence in ancient woodlands does not necessarily imply that those species cannot become established in secondary woods if suitable conditions become available. The original intention of at least some of the existing lists of indicator species (eg. Rose 1976, Harding & Rose 1986) was to highlight sites with an 'ecological continuity' of important microhabitats. This is a perfectly valid and sensible aim, as long as 'ecological continuity' does not become inextricably linked with the concept of 'ancient woodlands'. In much of the literature relating to woodland indicator species there has been an unfortunate tendency to equate the two terms.

If the concept of indicator species is designed to assist with the comparison of woodlands for the purposes of conservation evaluation then it would seem that a new approach is needed, or at least a new set of definitions. An isolated, red-rotten, oak tree in a pasture at Lovesgrove has the same number of Harding & Rose beetles recorded from it as the whole of Coed Rheidol NNR. This indicates the quality of the saproxylic habitats in that one tree and clearly does not suggest that the two sites are of equivalent value as habitats for all woodland beetles. As Streeter (1974) points out: "The important point seems to be that a site that is highly rated as a habitat for forest indicator species is not necessarily one that would be highly rated as a good example of a mature forest ecosystem". The conservation of the isolated tree may be important for saproxylic beetles but Coed Rheidol will be of far greater significance for the assemblage of canopy, leaf litter, and woodland flush invertebrates it sustains. It is the nature of the habitat

involved that is important and not its 'ancientness'.

In a recent review of the importance of saproxylic Coleoptera in the process of assessing the conservation value of British woodlands, Hammond & Harding (1991) recognise that a revision of the existing lists of indicator species is overdue. They suggest that a number of additions and deletions are necessary to bring the list into line with current knowledge of the status of individual species. However, from the examples cited it would appear that the proposed revision would consist largely of national rarities which are confined to a handful of the best pasture woodlands in the country. Such a list would serve to highlight the importance of Windsor Great Park or the New Forest, for instance, but would have little application over much of Britain. Obviously any national list of saproxylic indicators has to take account of rare species confined to the best sites, but it should also be flexible enough to have some relevance to the less-distinguished woodlands that predominate throughout Britain. The emphasis here seems to be to restrict the list of indicators to those species which occur only in extensive remnants of ancient woodland. For example, it is proposed that "a re-appraisal of species that appear to be good colonists of secondary woodland (eg. *Eledona agricola, Prionychus ater, Stenagostus rhombeus)* is desirable also" (Hammond 1991). Each of these examples is rare in Wales and only *S. rhombeus* is presently known from Ceredigion, where it occurs in single red-rotten oaks in two parkland sites. National lists must take more account of regional variation in the status of species (cf. Lott & Alexander 1992) if they are to have any significant impact on conservation evaluation.

Achieving this will require the co-operation of entomologists throughout Britain, each providing their assessment of species' status in their own region, resulting in a co-ordinated list which accommodates the variation in bio-geographical trends. There are already some developments on this front for saproxylic invertebrates but other elements of the woodland fauna have been -more or !ess neglected. We need to develop a classification system that recognises the role of microhabitats in woodland conservation and establish lists of indicator species accordingly. This is an immensely difficult problem, particularly with our incomplete knowledge of the ecology of most woodland invertebrates, and a satisfactory solution is probably not possible at present. Some sort of Eltonian system (Elton & Miller 1954), specifically tailored for the woodland environment, is probably required but this is best left for national consensus. Whilst there is an obvious need to draw specific attention to the vulnerability of saproxylic invertebrates, it would also be sensible to construct indicator lists for the other elements which are recognised as being major ecological guilds amongst the woodland invertebrates, for example, the phytophagous, hygrophilous, saprophilous, thermophilous or arboreal guilds.

If we are to persist with the current system of 'continuity indicators' then we need a more flexible approach to account for the broader ecological tolerances of many species in western Britain. It would be sensible to identify as indicators both those species which have colonised mature, naturally-developed, secondary woods as well as those which are apparently confined to ancient woodlands. For convenience this combined group could be termed 'old woodland indicators'. This would permit a fuller understanding of the range of invertebrates that constitute the woodland assemblages in Ceredigion. With such knowledge we can then set about improving the situation by instigating management or designing contiguous woodland habitats which will allow for slow colonisation in the centuries ahead. Woodland conservation is a long-term strategy. With changing attitudes towards land use in Britain there is every possibility that a network of secondary woodland, linking with ancient sites, can dramatically increase the distribution of a very wide range of 'ancient' woodland plants and animals. The conservation of established secondary woodland has a part to play in this - "If the total woodland area had

remained much higher, and if land use outside woodland had been less intensive, then secondary woodland would have quickly developed the plant and animal communities characteristic of primary woodland; the distinction between ancient and recent woodland would have been much reduced; and habitat conservation would have been defined in less conservative terms" (Peterken 1977). For some species it is already too late to turn back the clock but we do now have the potential to significantly improve the situation for a high proportion of our existing woodland wildlife.

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CARMARTHENSHIRE BUTTERFLIES & MOTHS 1996/97- I K Morgan & S Lucas

Butterflies - I K Morgan

[Note: In the butterfly account, grid references are normally only given at the first usage of a site name]

1996

Painted lady butterflies *Cynthia cardui* dominate the memory of the 1996 butterfly season, from the first sighting on 30 May (Barry and Sandra Stewart, BSS; at Bynea 21/54-99-) to later in the summer when this migrant was widespread and common. Red admirals *Vanessa atalanta* - of which there was a moderate number recorded - appeared earlier, on 5 May initially at Betws 22/642121 (Steve Lucas, SL). After several seasons of near absence, it is pleasing to note two records of the related comma *Polygonia c-album* - at Pembrey Forest 22/405013 on 3 April (Mark Pavett) and one inland at Taliaris 22/663296 on 3 Aug. (Alan Clarke, ACLA).

Again with migrants, clouded yellows *Colias croceus* were noted from 4 August, when one was sighted at Sandy Water Park, Llanelli 22/497005 (IKM). Subsequently, there were ten other records mostly at the coast but also inland.

There were 11 observations (at 9 sites) of the brimstone *Gonepteryx rhamni,* all within the regular SE Carms. range of this species. The first was a male near Betws 22/628102, noted by R E Lucas on 18 March, whilst on the 30th of that month one was seen at Morfa, Llanelli

/517785 (BSS). The next sighting was a singleton at Hendy 22/577031 on 7 April (SL), then another by the same recorder, three days later at Maesquarre Road, Betws 22/642121. Julian

Friese (JF) also saw one at Dinefwr Castle Woods 22/619221 on 20 April. There were three records (all SL) from the Wildlife Trust's reserve at Rhos Cefn Bryn 22/555072 near Llwyn-teg, Llannon (where the food plant, alder buckthorn grows sparingly in the hedgerows) - 2 on 7 May, on 17 June and 3 there on 18 June. Others were seen at Coed Gwempa (near Llandyfaelog) 22/436115 on 15 June (JF) and at Parc Howard, Llanelli 22/505012 on the next day (IKM).

Two dingy skippers *Erynnis tages* on rough ground at Bynea 21/54-99- on 30 May was an useful record (BSS), as were the green hairstreaks *Callophrys rubi* near Telpyn Point 22/192075, at the far west of the county's coastline on 15 May (Graham Motley, GSM). The best hairstreak record (and competing with the pearl-bordered fritillary sighting - see below - for the most interesting record of 1996) was the elusive brown hairstreak *Theda betulae,* noted at Taliaris 22/663296 on 1 September by ACLA. Small blues *Cupido minimus* were at their usual stations on the Pembrey dunelands, including an estimated 60 individuals on Pembrey Burrows 21/41-99- on 23 June (BSS).

Likewise, dark-green fritillaries *Argynnis aglaja aglaja* were at their usual Pembrey Forest haunts (22/37-04- and 38-03-) in late July (SL). Only two records of small pearl-bordered fritillaries *Boloria selene* were submitted - at Blaen bydernyn-uchaf 22/560440 on 4 July (GSM & Jamie Bevan (JMSB)) and at Garreg lefain 22/721367, 6 July (4 seen, JF). GSM made a most significant record on 15 May, in the form of a solitary pearl-bordered fritillary *Boloria euphrosyne* near Telpyn Point 22/182073. There are very few recent records of this critically declined species in the county, though it is still known from the same stretch of coast further east at Morfa-bychan 22/225075.

The elegant silver-washed fritillary *Argynnis paphia* was noted at four localities, including Pembrey Forest (22/38-03-, SL and 22/41-01-, BSS); Llwyn-treharne 22/236194 (GSM); Llangynog 22/342179 (SWD) and Cwm Crychan 22/823392 (SL); all records were in the mid July-mid September period.

Marsh fritillaries *Eurodryas aurinia* were carefully monitored at Rhos Cefn Bryn NR, 22/555072, where up to 59 were seen (on 18 June) by SL and Janet Crowden. Four were also seen by GSM & JMSB at Plasmynydd 22/453168 on 14 June and again four at Blaen bydernyn-uchaf 22/560440 by GSM on 5 July. The status of this species in Carmarthenshire has been comprehensively summarized (Lucas, 1996) in a report which lists some 50 post-1989 colonies (one third of the Welsh total), of which 40 can be classed as small, 2 medium and, 2 large and 6 of unknown status. In addition there are 17 post-1989 sites where single adults have been recorded.

Moths - S. Lucas

1996

The start of the 1996 moth recording season was delayed by the prolonged winter. At the author's main recording station at Betws, a planned programme of long term trapping was brought to dramatic halt shortly after earnest trapping began when the Robinson Moth Trap inexplicably burst into flames one evening at the beginning of June. Despite some head scratching from the insurance company the claim was eventually settled.

Nonetheless, a host of other recorders were busy at various locations around the county. Barry and Sandra Stewart (BSS) continued to trap at Llwynhendy and at several other sites, until they moved to Gorseinon in Glamorgan. Their move brings to an end continued recording at Llwynhendy that has gone on for several years. In September, an article written by a long standing

Wildlife Trust: West Wales member, on the larva of the elephant hawk moth *Deilephila elpenor* appeared in two local newspapers. The response from the readers was quite amazing, with over twenty telephone calls reporting sightings of larvae from all over the county as well as other species of lepidoptera including a single humming-bird hawk-moth *Macroglossum stellatarum* at Myddfai in September. As a result, a number of new recorders came forward and it is now hoped to start a moth and butterfly recording group in the county. Grid references for sites are given at the end of this summary.

Microlepidoptera

Again, a number of new county records were added to the county list.

1 *Niditinea piercella,* at Llwynhendy, (BSS) 15/6

2 *Phalonidia affinitana,* at Pembrey Burrows, (BSS) 23/6

3 *Acleris cristana,* at Llwynhendy, (BSS) 16/5

4 *Pammene aurantiana,* at Llwynhendy, (BSS) 26/7

Niditinea piercella., in common with many others in the same family, is a species whose larvae feed on a wide variety of matter including that of animal origin. In this case, the association is with bird nests as with its close relative, the brown-dotted clothes moth *N. fuscella. Phalonidia affiniata*, of which some 400 were noted in mid June, is associated with sea aster *Aster trifolium* where the larvae feed on the whole of the plant including the roots. The tortricoid *Acleris cristana* is morphologically variable as are many of the genus *Acleris.* The adults are to be found where there are dense stands of blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna* from which they can be beaten. *Pammene aurantiana* is another tortricoid, it is diurnal and tends to fly high up in the canopy of sycamore *Acer pseudoplatanus* but will come to light.

Macrolepidoptera

Of the 263 macrolepidoptera moths recorded during 1996, 29 of these were of 'Local' status. The very attractive day flying five and six-spot burnets were reported widely from unimproved grassland habitats throughout the county, including reclaimed land at the former Cynheidre Coliery on 5 and 8 August (SL). The oak hook-tip *Drepana binaria,* whose larva feed on oak, is a species which should be encountered more often but was only recorded from just two sites - Llwynhendy 20/6 (BSS) and at Betws 17/8 (SL). Other species of local status recorded were:

1 Cream wave *Scopula floslactata*; Llwynhendy (BSS) 15/6

2 Oblique carpet *Orthonama vittata;* Llwynhendy (BSS) 15/6 17/6. Betws (SL) 19/6 & 10/9 (AC) 31/8

3 Wood carpet *Epirrhoe rivata;* Llwynhendy (BSS) 20/7

4 Small seraphim *Pterapherapteryx sexalata*; Llwynhendy (BSS) 20/6 & 16/7

5 Yellow-barred brindle *Acasis viretata*; Llwynhendy (BSS) 15/6

6 Small-angled peacock *Semiothisa alternaria*; Llwynhendy (BSS) 20/6-18/7, Rhos Cefn Bryn Nature Reserve (SL) 18/6

7 August thorn *Ennomos quercinaria*; Betws (SL) 10/9-25/9

8 Brussel's Lace *Cleorodes lichenaria:* Pumpsaint (AW) 24/6, 6/7 & 22/7

9 Square spot *Paradiarsa consonaria;* Betws (SL), 7/4

10 Scarlet tiger moth *Callimorpha dominula* Llwynhendy (BSS) 30/6, Garreglefain, 22/721367 (Julian Friese), Llangynog (SWD) 11/7, Pembrey Forest (SL) 19/7; Llanddarog (GM) 10/7. Blaen-bydernyn-uchaf, (GM & JB) 4/7

11 Lunar marbled brown *Drymonia ruficornis*; Llwynhendy (BSS) 7/5 & 9/5

12 Rosy footman *Miltochrista miniata*; Llwynhendy (BSS) 20/7, Betws (SL) 18/8

13 Short-cloaked moth *Nola cucullatella*; Llwynhendy (BSS) 16/7-20/7
14 Least black arches *Nola confusalis; Ll*wynhendy (BSS) 4/6
15 Triple spotted clay *Xestia ditrapezium*; 18/7
16 Dog's tooth *Lacanobia suasa;* Llwynhendy (BSS) 7/6-27/6 & 18/7
17 Southern wainscot *Mythimna straminea*; Penclacwydd (BSS) 28/7, Llwynhendy (BSS) 18/7 & 24/7
18 Obscure wainscot *Mythimna obsoleta*; Llwynhendy (BSS) 20/6 & 13/7-24/7
19 Red sword-grass *Xylena vetusta;* Penclacwydd 21/3 & 23/3, Llwynhendy 15/5
20 Alder moth *Acronicta alni;* Pumpsaint (AW) 21/6 & 26/6
21 The coronet *Craniophora ligustri;* Llwynhendy (BSS) 27/6
22 Marbled green *Cryphia muralis*; Llwynhendy (BSS) 26/7
23 Double kidney *Ipimorpha retusa;* Penclacwydd (BSS) 28/7
24 The olive *Ipimorpha subtusa;* Llwynhendy (BSS) 26/7
25 Dingy shears *Parastichis ypsillon*: Llwynhendy (BSS) 18/7-26/7
26 Rufous minor *Oligia versicolo;,* Llwynhendy (BSS) 12/6 - 24/7, Gelli Aur Country Park 20/7
27 Oak nycteoline *Nycteola revayana;* Llwynhendy (BSS) 20/4, Betws (SL) 20/4
28 The blackneck *Lygephila pastinum*; Llwynhendy (BSS) 13/7-20/7
29 Pinion-streaked snout *Schrankia costaestrigalis*; Llwynhendy (BSS) 16/7

Notable A Species

1 Lunar yellow underwing *Noctua orbona,* Betws, (SL) 21/9
2 Scarce burnished brass *Diachrysia chryson,* Llwynhendy, (BSS) 24/7 & 26/7

Notable B Species

1 Forester *Adscita statices,* Rhos Cefn Nature Reserve, Llwyn-teg, (SL), 21/6
2 Devon carpet *Lampropteryx otregiata,* Taliaris, (AC) 4/9
3 Broad-bordered Bee Hawk-moth *Hemaris fuciformis,* Nant Gwyn, Trawsmawr, (Mrs M J Baker) 6/6
4 Crescent dart *Agrotis trux,* Llwynhendy, (BSS) 20/7
5 Double lines *Mythimna turca,* Gelli Aur, (SL) 20/7 and Llwynhendy, (BSS) 24/7
6 Red-necked footman *Atolmis rubricollis,* Llwynhendy (BSS) 16/7
7 Silky wainscot *Chilodes maritimus,* Llwynhendy (BSS) 20/6

The crescent dart was first noted as a Carmarthenshire species by E Kay at Laugharne in 1871. Since then there have been only 6 records, all from coastal stations at Wharley Point, Llwynhendy and Penclacwydd. Another very early record, also by E Kay was the white colon *Sideris albicolon.* Since then however, this moth has not been recorded in the county until it was re-discovered at Llwynhendy on 18/7 (BSS). This is predominantly a coastal species whose larvae feed on a variety of plants including sea bindweed *Calystegia soldanella* and sea rocket *Cakile maritima.* The bulrush wainscot is a species not noted for usually being attracted to light and its presence is best detected by searching for pupa on stems of common reedmace *Typha latifolia,* however a singleton was taken at light at Betws on 2/9 (SL). The broad-bordered bee hawk-moth was closely observed feeding at garden *Aubretia,* at Trawsmawr. Here the garden abuts woodland with abundant honeysuckle, the larval foodplant of this much declined species. This is apparently only the second county record. The only other record appears in the relevant distribution map in volume 9 of *The Moths and Butterflies of Great Britain and Ireland.*

<u>Migrants</u>

Migrant moths featured regularly throughout the year. Perhaps the best record was a new county record - the ni moth *Trichoplusia ni* found at Penclacwydd 3/9 (BSS). However, for numbers the record must go to the silver y *Autographa gamma* when some two thousand were recorded at Llanelli on 18/6 (BSS) although not to be outdone, the same recorder also took over 230 Rush Veneers *Nomophila noctuella* during a period of 10 days in June. This pyralid is a well known migrant which is most often found in open country particularly near the coast. Other migrants to be recorded are:

1 Diamond-back moth *Plutella xylostella*; Llwynhendy 7/6-24/7, Pumpsaint 23/7 (AW)
2 *Udea ferrugalis',* Llwynhendy 11/6-18/7 (BSS), Betws 17/8-25/9 (SL), Taliaris 31/8 (AC) Pumpsaint 20/6-23/8 (AW)
3 The gem *Orthonoma obstipata*: Llwynhendy 17/6-26/7 (BSS), Pumpsaint 15/8 (AW), Betws 18/8 (SL)
4 Humming-bird Hawk-moth *Macroglossum stellatarum*: Cefn Sidan 25/5, one flying in from sea in evening (I K Morgan); Llangynog 30/5 (SWD); Mandinam -/7 (M Lampard); Johnstown 15/9 (JT) and Llandeilo 16/9 (GM)
5 Pearl underwing *Peridroma saucia*; Llwynhendy 27/6 (BSS)
6 Small mottled willow *Spodoptera exigua*; Llwynhendy 7/6 & 11/6 (BSS), Pumpsaint (AW) 9/8 & 19/8
7 Bordered straw *Heliothis peltigra,* Llwynhendy 20/6 (BSS), Pumpsaint 16/6 (AW)
8 Dark sword grass *Agrotis ipsilon;* Penclacwydd (BSS) 23/4 Pumpsaint (AW) Betws (SL)
9 Rush Veneer *Nomophila noctuella;* Pumpsaint (AW) 12/6-23/8

Grid references

Ammanford	22/635128
Betws	22/642121
Blaen-bydernyn-uchaf	22/560440
Cefn Sidan	22/376025
Cynheidre	22/496080
Garreglefain	22/721367
Gelli Aur Country Park	22/59-19-
Johnstown	22/399187
Pembrey Burrows	21/41-99-
Pembrey Forest	22/40-01-
Pumpsaint	22/660404
Llandeilo	22/629224
Llangynog	22/342179
Llwynhendy	21/537993
Mandinam	22/736282
Myddfai	21/77-30-
Penclacwydd	21/53-98-
Rhos Cefn Bryn Nature Reserve	22/555072
Taliaris	22/663296
Nant Gwyn, Trawsmawr	22/365238

In last year's report. the scarce tissue *Rheumptera cervinalis* was reported as being a new county record. Following further examination of the voucher specimen by Dr P Waring, National Scarce Moth Recorder, it was decided that this individual was misidentified and should have been identified as the more common tissue *Triphosa dubitata.* This is perhaps a salutary tale and highlights the importance of retaining a voucher specimen or photographs, especially where new county records are concerned.

My thanks are extended to all those who contributed their lepidoptera records during 1996 including Barry and Sandra Stewart (BSS), Graham Motley (GM) and Jamie Bevan (JB), Alan Clark (AC), John Treherne (JT), S Wynn-Davies (SWD), Arfon Williams (AW) and Mrs M J Baker.

Butterflies – IK Morgan

1997

In direct contrast to the previous year, painted ladies were conspicuously absent, with just two records - one at Johnstown 22/399187 on 22 Aug. (J Treharne), and another singleton at Llandeilo 22/62-22- on 28 August (GS M). Red admirals were around from 28 March, when one was seen in company of a peacock and a small tortoiseshell, at Ffrwd Fen Nature Reserve 22/420028 (IKM); subsequently late summer saw many records of this attractive migrant. A comma at Stradey Woods 22/487016 on 22 March was the first seen by the writer after the dearth of records for several years, contrasting with the mid-late 1980's which witnessed an upsurge in the fortunes of this species; seemingly it is now making a marked recovery. Commas were also reported from several other sites: Pwllau, Taliaris 22/663296 (A Clarke) - 21 Mar & 2 Aug.; Pembrey Forest 22/38-03-, 20 July, Betws 22/642121, 7 Aug. (both Steve Lucas Brohedydd, Llangynog 22/342179, 28 July & 24 Sept. (Mrs S Wynn-Davies, SWD); Llwyncelyn, Llansadwrn 22/689325, 11 Aug. (J Humphrey, JH) and several times in the autumn at Llystyn Cottage, Brechfa 22/530309 (Mrs E Grey). It was also seen twice at Nantgwyn near Trawsmawr 22/365238, 19 to 23 Aug. (Mr J Baker, J Br); and at Nant-y-llyn, Ffarmers 21/671493, 12 Aug. & 27 Sept. (Tony Braithwaite. TB).

Brimstones were observed at Derwydd 22/613177 a ♂ on 18 March, a ♂ at Cwrt Henry 22/544226 on 4 April (both Julian Friese); in Stradey Woods, 22/489015 ♂, 31 March and another ♂ flying speedily over Pont Abraham 22/576073 on 16 May (both IKM). No less than 11 sightings of brimstones were made by Janet Crowden (JC) and Steve Lucas during 1997, seven at Llwyn-teg 22/555072, on the Wildlife Trust's Rhos Cefn Bryn NR from 1 April to 29 May. Here, on two dates (14 & 27 May), two individuals were seen. SL also saw this species at Saron 22/5912 (1 May), Betws 22/642121 and also at the Cilrhedyn Peat Workings, Sardis 21: 162 on 14 April. Another individual was at Pant y pwll, Meinciau 22/459119 in May (Miss J Isley), and Tony Braithwaite at Nant-y-llyn, Ffarmers 22/671493 provided three records of brimstones on 27, 31 May and 3 June, presumably members of the perhaps outlying population that exists in the NE of the county. A grizzled skipper *Pyrgus malvae* was out in the sun at Pembrey Forest 22/390025 on 19 April whilst a dingy skipper was noted on the limestone/quartzite ridge at Mynydd y Garreg 22/433083 on 14 May (both IKM).

Sarah Andrews reported the presence of a marbled white *Melanargia galathea* at Broadoak & Thornhill Meadows 22/581120 on 30 June and a small pearl-bordered fritillary at Caeau Caradog 22/652458 (24 June); she, together with Pamela Williams, saw three silver-washed fritillaries feasting on bramble blossom at Coed Deri 22/745280 on 30 July. This fritillary was also recorded. at Nantygwyn, Trawsmawr 22/365238 on 19 Aug. (J Br), at Pant Gwyrdd,Llanfynydd 22/555286 on 2 Aug. (M Williams) at Brohedydd, Llangynog, 20 July & 25 Aug. (SWD), Llwyncelyn, Llansadwrn, 19 Aug. (JH) and Felindre 22/347388, 8 July (SL & Lin Gander). JF saw a single silver-washed fritillary at Felin-newydd, Milo 22/596181 on 19 July, and two at Pontynyswen 22/531248 on 10 Aug. The wooded Brechfa-Pontynyswen-Abergorlech area remains a stronghold for this butterfly; both of JF's records 'were alongside river clearings with bramble blossom'. Small pearl-bordereds were also noted at Nant-y-llyn, Ffarmers on 3 & 17 June (TB), and at Nantsaise farm 22/346335, where up to four were seen by GS Motley & JMS Bevan on 17 June. Marsh fritillary monitoring continued at Rhos Cefn Bryn NR by JC & SL, with a maximum of 12 seen on 29 May. A single individual was also

recorded by GSM & JMSB at Nantsaise farm on 12 June. A marbled white was present at Ffrwd NR 22/4102 on 14 July (SL) and, interestingly, one was noted on the Drysgol ridge, Glanamman 22/689149 by Dr S Spencer on 27 July, where graylings *Hipparchia semele* were also seen. The latter species is long known from the dry, thin-soiled south-facing slopes of Mynydd Du and elsewhere on the adjacent coalfield.

Green hairstreaks were seen on several occasions at Rhos Cefn Bryn NR (JC & SL), at Teague's Wood, Pendine 22/1908, 1 May (SL), Grogwynion Farm, Porthyrhyd 22/506147, 14 May (Mrs A M Jones) and also at Nant-y-llyn, Ffarmers, 24 May (TB); whilst purple hairstreaks were noted near Drysgol 22/689149 on 27 July (SS), and at Nantgwyn, again in July (J Br). To complement the 1996 sighting, there were two records of brown hairstreaks - at Brohedydd, Llangynog, 6 Sept. (SWD) and at Llwyncelyn, Llansadwrn Oct. (JH). A butterfly which has seemingly been distinctly scarce in the last few years is the holly blue *Celastrina argiolus;* one was observed by Steve Lucas at Teague's Wood, Pendine 22/19-08- on 1 May. Another useful coastal record was that of a brown argus *Aricia agestis* at Pendine 22/23-08- on 9 Aug. (BSS).

Acknowledgements: Thanks are due to all the recorders mentioned above and particularly the County Butterfly & Moth recorder. Steve Lucas for providing much data.

Reference:

Lucas, S (1996)- The Status of the Marsh Fritillary *Eurodryas aurinia* in Carmarthenshire. Unpublished Dyfed Wildlife Trust (now the Wildlife Trust, West Wales) report to CCW.

Moths - S Lucas

1997

1997 could best be described as a fairly uneventful year for moth recording. The prolonged winter delayed the emergence of many early spring flying moths, but a short warm spring witnessed emergence times returning to normal.

With Barry and Sandra Stewart now firmly entrenched in Glamorgan, the volume of records has greatly diminished despite the continuity of the author's long term trapping station at his home at Betws; a number of other sites however, were targeted. The country park at Gelli Aur was once again visited in the vain hope that the very attractive lime hawk-moth *Mimas tilae* might be present, but - alas - to no avail. In mid June, an introduction to moths was held at the invitation of Mr & Mrs. Gibbons, who were joined by interested members of the Llangynog Gardening Club, at their grounds at Llangynog, which yielded 37 species. At Trawsmawr near Carmarthen, Mr. Jon Baker borrowed an MV trap and recorded some 62 species during a cool and wet week in August.

Unless indicated, all records are those of the author. Grid references for sites are given at the end of this report.

Migrants

Unlike 1996, migratory species were infrequent. At the beginning of the year, a humming-bird hawk-moth was seen on 10 April by Mrs. Owen at Maesycrugiau and at Trawsmawr on 24 July. JB caught a white speck *Mythimna unipuncta* using a torch and net, a technique he employed elsewhere. Two individuals of dark sword-grass *Agrotis ipsilon* were recorded in August and two specimens, one rather well worn, of convolvulus hawk-moth *Agrius convolvuli were* brought to the author's attention by residents of Ffairfach and Betws.

1. *Macroglossum stellatarum,* humming-bird hawk-moth, Maesycrugiau 10/4 (Mrs. Owen)
2. *Mythimna unipuncta,* white speck, Trawsmawr 24/7 (JB)
3. *Agrotis ipsilon,* dark sword-grass, Betws 10/8; Trawsmawr 22/8 (JB)
4. *Agrius convolvuli,* convolvulus hawk-moth, 1/9 Ffairfach, 15/9 Betws (both determined by author)

Microlepidoptera

No significant records of the microlepidoptera were made during 1997 although *Lozotaeniodes formosanus,* a beautifully-marked tortricoid, was caught at Betws. This is the second county record, the first having been recorded at Pembrey Forest in 1995. This species is associated with Scot's pine *Pinus sylvestris.* The following microlepidoptera have a "local" distribution:-

1. *Lazataenia forsterana,* a tortrix moth, 11/7 Betws
2. *Lozotaeniodes formosanus,* a tortrix moth, 20/7 Betws
3. *Acleris cristana,* a tortrix moth, 10/3 Fforest, (BSS)
4. *Agriphila selasella,* a pyralid moth, 12/7 Betws; 9/8 Pendine (BSS)
5. *Agriphila latistria,* a pyralid moth, 12/7 & 17/7 Betws
6. *Catoptria pinella,* a pyralid moth, 31/7, 10/8 & 15/8 Betws
7. *Pyrausta purpuralis,* a pyralid moth, 9/8 Pendine (BSS)
8. *Myelosis cribrella,* thistle ermine, 4/7 & 28/7 Betws

Macrolepidoptera

A reasonable number of species that have "Local" and "Notable" status were recorded and these are detailed in the list below. Some of these can be singled out for special mention.

Deilephila porcellus small elephant hawk-moth, is an attractive moth normally associated withchalk downland and coastal sandhills where the larva feed on *Galium.* Previous records would indicate that it does not appear frequently, at least here in Carmarthenshire; none the less, it was taken no fewer than eight times at Betws this year. In July, Mr. J. Humphrey reported seeing a "clump" of *Zygaena trifolii decreta,* five-spot burnet at Llansadwrn. He thought that there must have been at least 50 or more individuals, presumably mostly males vying for the attention of females. In 1995, the author planted a small root stock of *Symphytum officinale* (Comfrey) the main larval foodplant of *Callimorpha dominula,* scarlet tiger, at Betws. It was a great surprise that, towards the end of July, a female was recorded on the plant where she remained for about a week. Whilst the moth was brought into captivity for a period of 24 hours, a number of eggs were laid and these were scattered under the plant when she was released.

Pechipogon strigilata, common fan-foot, is not, as the name suggests, a common moth. It is a woodland speies whose larva feed on withered leaves, and has only previously been recorded once in Carmarthenshire (BSS), but is generally thought to be confined to the southern counties of England. *Mythimna turca,* double line, again a woodland species although in this case the larvae feed on various grasses, is regularly recorded in most years. The same cannot be said of *Furcula bicuspis,* alder kitten, which was only discovered in the county in 1994 (BSS) at Tycroes less than five miles from Betws. It was recorded there again in 1995 (BSS).

Local Species

1. *Hepialus fusconebulosa*, map-winged swift. 14/7 Gors Goch Llanllwch NNR
2. *Hepialus hecta*, gold swift, 7/7 Taliaris (AC)
3. *Zygaena trifolii decreta,* five-spot burnet. 14/7 Ffrwd Farm Mire SSSI, 17/7 Glyn Tai Pond, 29/7, Parc Ynys Dawela; July Llansadwrn (JH)
4. *Lasiocampa quercus.* oak eggar, 9/8 Pendine (BSS)
5. *Scopula immutata.* lesser cream wave. 24/7. 26/7. 30/7 & 19/8 Trawsmawr (JB)

6. *Orthonama vittata,* oblique carpet, 14/8 Trawsmawr (JB)
7. *Rheumaptera undulata,* scallop shell, 15/8 Kidwelly Quay (JB)
8. *Euphyia unangulata,* sharp-angled carpet, 15/8 Betws
9. *Epione repandaria,* bordered beauty, 7/8 Taliaris (AC)
10. *Eupithecia fraxinata,* ash pug, 21/5, 25/5 & 30/5 Betws
11. *Aplocera plagiata,* treble bar, 15/8 Trawsmawr
12. *Euchoeca nebulata,* dingy shell, 30/5 Betws, 14/7 Cors Goch Llanllwch NNR
13. *Semiothisa alternaria,* sharp-angled peacock, 30/5, 16/6, 4/7 & 11/7 Betws; 15/6 Beacon Bog SSSI; 28/7 Trawsmawr (JB); 9/8 Pendine (BSS)
14 *Plagodis dolabraria,* scorched wing, 4/6 & 11/6 Betws
15. *Epione repandaria,* bordered beauty, 28/7 Trawsmawr (JB)
16 *Ennomos erosaria,* September thorn, 21/8, 22/8 & 23/8 Trawsmawr (JB)
17 *Cleorodes lichenaria,* Brussels lace, 3/6 Betws
18. *Ectropis crepuscularia,* small engrailed, 2/5 Gelli Aur Country Park
19. *Deilephila porcellus,* small elephant hawk-moth, 30/5, 3/6, 4/6, 9/6, 16/6, 6/7, & 17/7, Betws
20. Furcula bifida, poplar kitten, 30/5 Betws
21. *Drymonia ruficornis,* lunar marbled brown, 25/4 & 1/5 Betws, 2/5 Gelli Aur Country Park
22. *Miltochrista miniata,* rosy footman, 28/6, 6/7, 9/7, 11/7, 12/7, 17/7, 20/7, 31/7, 2/8, 6/8, 15/8 Betws; 24/7 & 30/7 Trawsmawr (JB)
23. *Cybosia mesomella,* four-dotted footman, 14/7 Cors Goch Llanllwch NNR
24. *Callimorpha dominula,* scarlet tiger, 22/7 Cors Goch Llanllwch NNR, 14/7 Cwm Coch Farm, 29/7 Betws; 7/7 Halfway (IKM); 27/7 Waunclunda (SA); 17/7 Nantsaise Farm (GM/JaB); 15/6 Taliaris (AC)
25. *Papestra biren,* glaucous shears. 1/5 & 24/5 Betws
26. *Mythimna pudorina,* striped wainscot, 6/7 Betws, 14/7 Cors Goch Llanllwch NNR
27. *Acronicta alni,* alder moth, 30/5 & 4/6 Betws
28. *Acronicta menyanthidis,* light knot grass, 15/5 Betws
29. *Craniophora ligustri,* coronet, 9/6, 16/6 & 20/7 Betws 14/6 Llangynog
30. *Ipimorpha subtusa,* olive, 10/8 Betws
31. *Apamea scolopacina,* slender brindle, 25/7 Trawsmawr (JB); 10/8 Betws
32. Mormo mormo. old lady, 23/8 Taliaris (AC)
33. *Oligia versicolor,* rufous minor, 3/6-31/7 Betws, 14/6 Llangynog; 4/7 Taliaris (AC)
34. *Coenobia rufa,* small rufous 15/8 Betws
35. *Pyrrha umbra,* bordered sallow. 11/7 & 12/7 Betws
36. *Deltote uncula,* silver hook, 14/6 Rhos Cefn Bryn
37. *Bena prasinana,* scarce silver-lines, 11/7 Betws
38. *Euclidea glyphica,* burnet companion, 24/5 Pont Abraham
39. *Lygephila pastinum,* blackneck, 11/7 Betws

Notable A
1. *Lasiocampa trifolii,* grass eggar, 9/8 Pendine (BSS)
2 *Pechipogon strigilata,* common fan-foot, 9/7 Betws

Notable B
1. *Lampropteryx otregiata,* Devon carpet, 17/8, 19/8, 14/8 & 21/8 Trawsmawr (JB)
2 *Eupithecia expallidata,* bleached pug, 28/7 Trawsmawr (JB); 6/8 Betws
3. *Discoloxia blomeri,* Blomer's rivulet. 4/6 Betws
4. *Furcula bicuspis*. alder kitten, 1/5, 15/5, 27/5 & 30/5 Betws
5. *Atolmis rubricollis,* red-necked footman, 30/5, 6/6 & 9/6 Betws
6. *Mythimna turca,* double line, 11/6, 16/6, 28/6, 5/7, 6/7, /97, 11/7, 12/7 17/7 & 20/7 Betws
7. *Cucullia asteris.* star-wort, 12/7 Betws

Recorders

My thanks are extended to all those who contributed their lepidoptera records during 1997, 11 of which were returns from the Butterfly Conservation/Biological Records Centre Millennium Atlas Project.

Sarah Andrews	Mr. Jamie Bevan (JaB)	Mr. Jon Baker (JB)
Mr. Tony Braithwaite	Mr. Alan Clark (AC)	Mrs Jan Crowden
Mr. David Foot	Mr. J. Friese	Ms Lin Gander
Mrs. E. Grey	Mr. John Humphrey (JH)	Jill llsley
Mrs. Ann Jones	Mr. Graham Motley (GM)	Mr. Ian Morgan (IKM)
Mrs. Owen	Mari Roberts	Dr. S. Spencer
Mr. and Mrs. Barry and Sandra Stewart (BSS)		Dr. Nigel Stringer
Mr. John Treherne	M. Williams	Mrs. Shirley Wynn-Davies

All butterfly & moth records should be submitted to the County Lepidoptera Recorder: Lucas, 35 Maesquarre Road, Betws, Ammanford, SA18 2LF.

I should also like to thank Mr. and Mrs. Gibbons for their warm welcome at their home at Llangynog and with suitable refreshments this made a particularly memorable evening.

Grid References

Betws	SN642121
Pendine	SN2308
Trawsmawr	SN365238
Llangynog	SN346175
Pont Abraham	SN580075
Cors Goch Llanllwch NNR	SN364185
Beacon Bog SSSI	SN353166
Cwm Coch Farm. Carmarthen	SN358184
Waenclunda	SN675319
Halfway	SN654298
Rhos Cefn Bryn, Llannon	SN550072
Ffairfach	SN6221
Maesycrugiau	SN474414
Gelli Aur Country Park	SN5919
Kidwelly Quay	SN398065
Nantsaise Farm, Hermon	SN346335

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Books

Two new books were published, which will be of interest to lepidopterists. The long waited Volume 3 of *The Moths of Great Britain and Ireland,* published by Harley Books covers the *Yponomeutidae* to the *Elachistadae* which includes the Ermine moths. It has a fascinating introduction on invasions of lepidoptera into the British Isles. Apollo Books, who are based in Denmark, produce a wide range of entomological literature have begun a major series on the Microlepidoptera of Europe. Volume 1, in English, details the *Pterophondae* (plume moths) with photographs of set specimens as well as line drawings of genitalia. A key to the genera is provided as is a distribution list by countries. Readers wishing to obtain this very useful book should try specialised retailers if they wish to avoid difficulties in paying in Danish Kroner. The publishers Viking, are reported to be publishing a companion to the well known *Colour Identificaton Guide to Moths of the British Isles* by Bernard Skinner this time on larvae whilst Harley Books have finally announced Autumn 1997 as the publishing time for *British Pug Moths - A Guide to their Identification* by Adrian Riley.

SPIDER RECORDING IN CEREDIGION 1995-97 - Mike Bailey

The number of spider species recorded from Ceredigion rose by five during this three year period and currently stands at a respectable 316. However, each of the newcomers to the list were collected before 1995 and very little fieldwork is currently being devoted to this group.

Examination of spirit-preserved specimens from three woodland sites, a rather under-recorded habitat in the county, produced the three new liniphid (money spider) species: *Walckenearia cucullata i*n Coed Rheidol NNR (SN 741778), taken June 1991; *Centromerus sylvaticus* at Coed Nant Llolwyn SSSI (SN 588770), taken December 1990; *Hylyphantes graminicola* at Coed More NNR (SN 202431), taken September 1990. In addition, the nationally notable (**Nb**) hunting spider *Zora nemoralis,* was collected from pitfall samples at Coed Rheidol in both 1991 at SN 741778 and 1992 at SN 742779.

Another linyphiid species new to Ceredigion was *Walckenearia dysderoides,* collected by pitfall trap at Cribach Bay, Aberporth (SN 251521) in May 1994. In October 1995 the same site produced the second county record of *Walckenearia incisa* (**Nb**), the previous occurrence deriving from shingle heath at Llanafan.

The basement of a Capel Dewi farmhouse at SN 448415, was the unlikely source of a further county record and nationally notable species, that of *Liocranum rupicola* (**Nb**), collected in July 1990 but only recently confirmed. This species has a mainly southern distribution in Britain and

is usually found under stone in dry places.

Whether or not the wolf spiders *Pardosa agrestis* and *P. purbeckensis* are conspecific has long been subject to disagreement among arachnologists. Previously it had been thought that all Welsh records were referable to P. *purbeckensis* but now Adrian Fowles has discovered that Kefyn Catley recorded *agrestis* at a DIG field meeting at RAE Aberporth in July 1989. This is the first Welsh record of *Pardosa agrestis* s.s, with a subsequent record coming from cliff grassland on the Great Orme in 1992.

Two Ceredigion sites were visited during a British Arachnological Society (BAS) spider recording week held in mid-Wales from 17-24 June 1995. At the watershed mire of Gors Llwyd SSSI (SN 858757) straddling the Radnorshire border, two previously recorded notable (**Nb**) species - the nocturnal hunter *Clubiona norvegica* and the liniphid *Satilatlas britteni,* were found, whilst at Cors Caron the handsome orb weaver *Singa hamata* (Nb) was predictably found on the West Bog at SN 683629, where it was swept again in July 1997.

Ynys Eidiol Common (SN 6739530) which is a remnant of raised mire from the formerly more extensive Cors Fochno complex beside the Dyfi estuary was subject to a brief survey in 1997, ten years after the Welsh Peatland Invertebrate Survey revealed the presence of an important spider assemblage. Amongst the 12 species added to the site list was the local wetland specialist *Pirata piscatorius,* whilst presence of the nationally notable (**Na**) liniphid *Maso gallicus* was confirm*ed*. *M. gallicus* which has not been recorded in Wales away from the Dyfi, was also collected at Cors Fochno (SN 622925) in July 1996 and at Aberleri fields (SN 614913) in 1997, and appears to be locally quite common where *Molinia-Myrica* mire communities occur.

Other notable species recorded from Cors Fochno NNR during the period were as follows: *Drassylus lutetianus* (**Na**) and *Agroecina striata* (**Nb**), two ground dwelling species, were each collected in pitfall samples in 1995, 96 & 97, while single individuals of the salticid *Marpissa nivoyi* (**Nb**) *w*ere present in the pitfall samples in 1995 & 96. *Heliophanus dampfi* (**Rk**) was swept from the sub-shrub layer in early July of both 1996 & 97. Captures in 1996 included the first male of the species to be recorded in Wales. In addition to Cors Fochno, where it was first discovered in Britain in 1991, this jumping spider is now known from two raised bogs in the Forth Valley, Scotland.

At Ynyslas dunes *Marpissa nivoyi* was taken from marram grass in its more characteristic sand-dune habitat in 1995 & 97. Also collected on two occasions from Ynyslas (in September 1995 & October 1997), was the liniphid *Ceratinopsis romana* (Nb), each time occurring under pebbles where shingle and dune habitats meet.

SOME RECENT RECORDING HIGHLIGHTS IN CARMARTHENSHIRE - I K Morgan

Invertebrate recording in Carms by the Editor has virtually ceased, but a few interesting records have been received. For instance, spring 1997 saw the finding (by Dave Hemingway) of the RDB1 weevil *Ceutorhynchus arcuatus* at Tywyn Burrows 22/36-05-, whilst the previous spring witnessed the long-awaited discovery of the all-red longhorn *Pyrhidium sanguineum* under bark of a hanging oak trunk at Dinefwr Park, Llandeilo 22/609223 by P M Pavett (April 1997).

In March 1997 I wrote to Dr Michael Kerney (of the Mollusca Section, Dept, of Zoology, the Nat. Hist Museum) to report what I presumed was the first county record of the Mediterranean snail *Theba pisana* at Pembrey Burrows (at SN 435002 - abundant and SN 413993, (rather less so). Here the species was associated with disturbed ground with *Raphanus raphanistrum* and

another area with *Equisetum arvense.* Dr Kerney wrote back to say I had been forestalled by a record made by P T Wimbleton in April 1993 (subsequently noted in the Recorder's Report in *J. Conchol* **35** (1994): 188). However, the plot thickens! Recently (Jan 1998) Adrian Fowles sent me a copy of *The Young Naturalist,* **6** part 64 (April 1885): 73-78, in which there is reference by the author (C G Barrett) to *Helix pisana (= Theba)* on Laugharne-Pendine Burrows (c. 22/20). as well as subsequently known sites in Pembrokeshire. It would be useful to ascertain whether *Theba* still exists on the sandhills of Laugharne-Pendine.

1997 saw a consolidation and extension of the known range of *Orthetrum cancellatum* in Carms. The writer noted it at the enlarged sand dune pond at Pembrey Country Park (22/397007, 22.9.97); and also inland at Ynys-fawr, near Carway (on a newish pond. 22/466077. 9.7.97) and Llyn Llech Owain (22/568152, 15.8.97). Neil Mathew even had several of these species as far inland as the oxbows below Dinefwr Castle (22/608222, 21.7.97).

An attractive species of bee which is seemingly currently doing rather well is *Anthidium manicatum,* which in spite of its distinctive morphology and earlier (mid-late 1980's) intensive period of aculeate recording wasn't recorded in Carmarthenshire until Barry Stewart noted it at Erw-las, Llwynhendy 21/537993 on 22.8.95, with a subsequent record (28.8.95) by IKM from Stradey Woods 22/495014. I even had it in an urban (if flower-rich) garden at Coronation Road, Llanelli (21/ 514999, late July 1996 & 97) where it frequent flowers of *Stachys lanata.*

Early in the summer, the 'bristle millipede' was found to be abundant on the old stone walls of St. Ishmael's Church 22/363083; it is already known from nearby Old Red Sandstone cliffs. The woodlouse *Porcellio spinicornis* was frequent on an old mortared wall at Henllan in the Teifi Valley, 22/353402 on 16.5.1997 (with Italian Lords and Ladies *Arum italicum* growing at its base)

Glow worms *Lampyris noctiluca* were reported by Huw Denman from 'Y Winllan', Brechfa 22/524303(30 June, 1997), and subsequently shown to IKM. Here *Lampyris* occupies a semi-landscaped (as a garden) area of base-rich spoil from a minor chemical works which formerly occupied the site. Tony Braithwaite also recorded this species (30-40 ♂♂ and 12♀♀) at Nant-y-llyn, Ffarmers 22/671494. The females were to be seen on south-facing sheep pasture, whilst the males were found dead on a window-sill (doubtless attracted by a light).

The hoverfly *Portevinia maculata* was seen at Cwmpengraig 22/349367 and Cwm Duad 22/379311, both on 16 May 1997 and associated with *Allium ursinum*. The Cwm Duad site also had the jumping spider *Evarca falcata* and the ant *Formica lemani.*

The Freshwater Pearl Mussel - recent records from the River Tywi, Carmarthenshire - Jenny Higgins & Rhys Williams

A freshwater pearl mussel *Margaritifera margaritifera* was recovered from the Afon Tywi near Abergwili, SN 422203 in September this year (Higgins J. 1997). The National Museum of Wales have a record of one found in 1902 by T W Barker at Llanarthne and CCW have also received a recent EA report of one found dead on a gravel island, just upstream from the Gwili confluence SN 44952060 (Mee D. 1996).

The 1997 bivalve was empty but in good condition indicating it may not have been carried far from its original settling place where it would have been partially buried amongst stones and gravel in the river bed. The freshwater pearl mussel is a nationally scarce species that is listed under Schedule 5 of the Wildlife and Countryside Act 1981 and covered by the EC Directive - Annex II and IV.

The shell of the freshwater pearl mussel is darker and heavier than that of other freshwater species such as the duck and swan mussels *Anodonta* spp, which are also known to occur in or close to the A.Tywi. The recent specimen had grown to a length of 12 cm and was probably around 80 years old. The freshwater pearl mussel can live for over a hundred years and was once abundant in healthy fast flowing rivers in western and northern Britain. These filter feeders have a complex life cycle. After the eggs are fertilized, the female releases the free-swimming glochidia larvae which then attach themselves to the gills of host fish such as trout or young salmon. The young mussel will eventually leave the host fish to settle away from the parent population. This ensures distribution within the river system where they are not having to compete for settling space. The adult mussels are relatively immobile and can form vast beds, their filter feeding action helping to maintain a clean aquatic environment.

Many rivers in England and Wales which once had healthy populations, now support critically low levels of ageing mussels. The decline of *M. margaritifera* has been recognised as occurring throughout Europe and the species is now regarded by the IUCN as vulnerable globally (Wells *et al.* 1993). The low recruitment and lack of juveniles is likely to be the result of a number of contributing factors which now reflect this current decline. These include agricultural run-off resulting in over-enrichment of the rivers, pollution effects of sewage effluent, acidification of river waters, possible decline of host fish, river modification and commercial pearl-fishing. In 1991 it became illegal to kill or injure a pearl mussel. A licence is required to investigate for the presence of pearls but a total ban on fishing may be necessary to ensure the recovery of the species.

A number of rivers within the UK have been or are in the process of being designated as Sites of Special Scientific Interest (SSSIs) and Special Areas of Conservation (SACs). It has been proposed that the Afon Tywi will be notified in 1998. The CCW will be working in conjunction with the Environment Agency and owners and occupiers of the A.Tywi to manage and conserve the special features of interest associated with the river. Further research is needed to understand the ecology of many riverine invertebrates including *M. margaritifera* if their future is to be ensured.

Jenny Higgins, Rhys Williams.
RIVER SSSI Notification Team.
Countryside Council For Wales, Llandeilo

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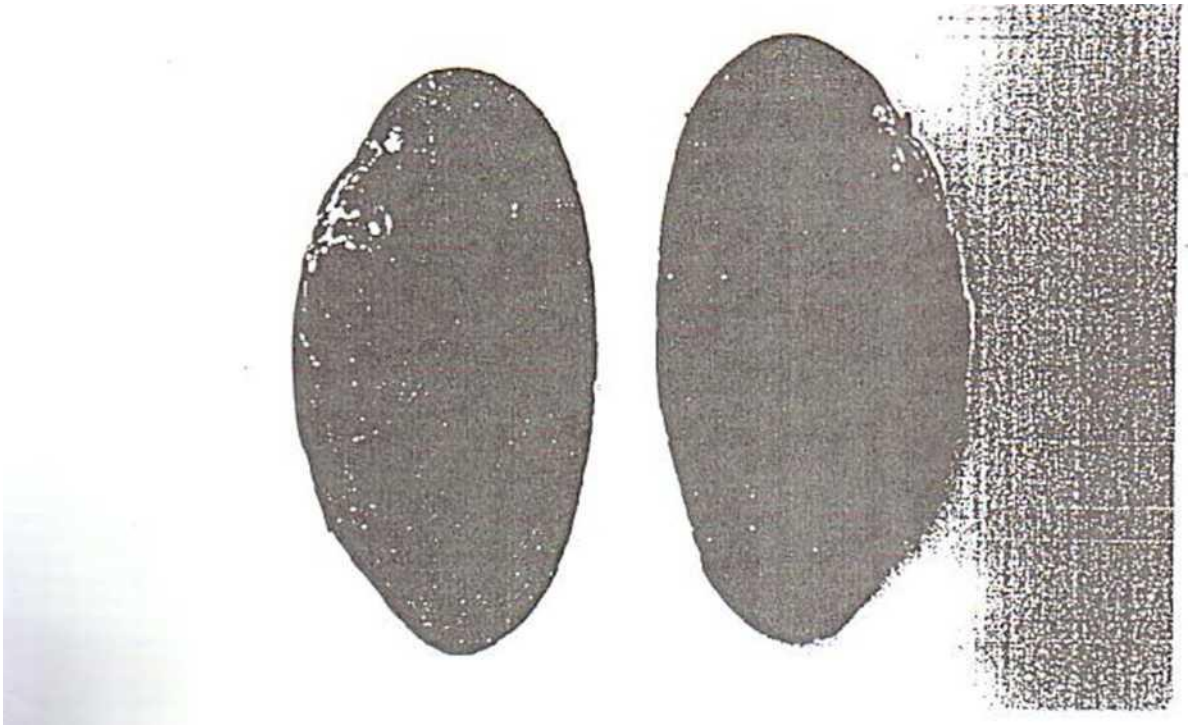

Above: *Margaritifera margaritifera,* Afon Tywi SN 422203 (J. Higgins, 5 Sept. 1997).