

DYFED INVERTEBRATE GROUP



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HEMIPTERA

A PROVISIONAL LIST OF THE HETEROPTERA OF CEREDIGION (VC46) - P KIRBY & SJ LAMBERT

Massee (1955) in the introduction to his county distribution of the British Hemiptera-Heteroptera, commented on the fact that for the counties of Montgomery, Flint and Cardigan he had been able to find only three, seven and nine records respectively. "A holiday spent by an Hemipterist in any of these three counties", said Massee, "might provide some interesting records". Thirty-five years on, things have improved a little for Ceredigion. Scudder (1956) pointed out that Massee had missed a number of Welsh records that had never reached the national British entomological journals, and he added a number of other previously unpublished records. Since then, there have been a number of other publications including Ceredigion Heteroptera records, and several sources of records as yet largely or entirely unpublished.

In spite of these additional records, the Heteroptera of Ceredigion are still poorly known. A visit to the county in July 1989 for a short period of recording provided a belated opportunity to follow Massee's advice and to do a little toward the further improvement of the knowledge of the county's Heteroptera. We spent four days gathering records from a total of eleven sites. Auchenorhyncha recorded on this trip will be the subject of a second paper.

Since other records of Heteroptera from the county are rather few and scattered, and have never previously been gathered together, the opportunity has been taken to present here all those which it has been possible to find, together with the records from July 1989, as a provisional list of the group for the county. The search for records has not been exhaustive. There may be other undiscovered published sources, and must surely be unpublished records we have not seen.

The July 1989 trip produced a total of 94 species of Heteroptera. Of these, fifteen do not appear in any of the sources of information on the Ceredigion Heteroptera that we have consulted. They bring the total of species recorded for the county to 195. There is still plenty of scope for further work. A number of generally common species remain to be recorded for the county, and there is no more than a handful of records for any of the species already known. Over 400 species of Heteroptera have been recorded from some south coast counties of England. It should be possible to find at least 250 species in Ceredigion.

In the following table the sources of records are indicated by codes following each species. Species are listed by family. Families are in taxonomic order; species are listed in alphabetical order within family. Species apparently recorded from the county for the first time during the 1989 visit are emboldened.

Source Codes:

- Ba = Bateman 1974
B = Bateman & Chatfield 1975
C = Carpenter 1927
F = Collected by A P Fowles 1987-90; det. P Kirby
FBA = Freshwater Biological Association. Species list for samples collected from Afon Teifi in 1978.
J40 = Jones 1940
J43 = Jones 1943
J49 = Jones 1949
J58 = Jones 1958
Je = Jenkins, Wade & Pugh 1984
KL = Collected by P Kirby & S Lambert, July 1989. These records are followed by code numbers indicating the sites at which they were made. These were:
1 = Cwmtudu (SN3557). 24.7.89
2 = Llangrannog (SN3154/5). 24.7.89
3 = Cors Fochno NNR (SN633920) 25.7.89
4 = Tanybwllch (SN5780, SN5779). 25.7.89
5 = Ynyslas Dunes NNR (SN6093). 25.7.89
6 = Dolcniw (SN6380). 26.7.89
7 = Ty'n-yr-helyg (SN595765). 26.7.89
8 = Parson's Bridge (SN748791). 26.7.89
9 = Tynbedw (SN6971). 26.7.89
10 = Coed Nant Llolwyn (SN587769). 27.7.89
11 = Rhos Llawr Cwrt NNR (SN411499). 27.7.89
L = Laurie & Jones 1938
M = Masee 1955
Mi = Miles 1957
Re = Rees 1983
Ry = Ryle 1957
S55 = Scudder 1955
S56a = Scudder 1956a
S56b = Scudder 1956b
S57a = Scudder 1957a
S57b = Scudder 1957b
St = J B Steer; manuscript list of records made in 1989
T = Thomas 1962
U = Specimens in the collection of the University College of Wales, Aberystwyth.
W = Welsh Peatland Survey: NCC survey material, collected P Holmes, D Boyce & D Reed 1986-88: det. S Judd or P Kirby

LIST OF HETEROPTERA RECORDED FROM CEREDIGION, WITH SOURCES OF RECORDS

Aradidae

Aradus depressus (Fab.) S56a

Acanthosomatidae

Acanthosoma haemorrhoidale (L.)

F, S56a

Elasmostethus interstinctus (L.)

B, S56a, S56b

Elasmucha grisea (L.)

S56a, S56b, S57b

Pentatomidae

Aelia acuminata (L.)

F, S56a

Dolycoris baccarum (L.)

F, B, KL (1, 7), S56a

Eysarcoris aeneus (Scopoli)

M, S56a, S57b

<i>Palomena prasina</i> (L.)	B, Mi, S56a, St
<i>Pentatoma rufipes</i> (L.)	Ba, KL (8), S56a, W
<i>Picromerus bidens</i> (L.)	F, KL (7), S56a, S56b, St
<i>Piezodorus lituratus</i> (Fab.)	F, KL (1, 7), S56a, St
<i>Troilus luridus</i> (Fab.)	KL (10), S56a, S56b
<i>Zicrona caerulea</i> (L.)	KL (9), Mi
<u>Coreidae</u>	
<i>Arenocoris falleni</i> (Schilling)	S56a
<i>Coreus marginatus</i> (L.)	F, KL (6, 7), S56a
<i>Enoplops scapha</i> (Fab.)	KL (2)
<u>Alydidae</u>	
<i>Alydus calcaratus</i> (L.)	F
<u>Rhopalidae</u>	
<i>Corizus hyoscyami</i> (L.)	F, S56a
<i>Myrmus miriformis</i> (Fall.)	F, KL (1, 4, 9), S56a
<i>Rhopalus maculatus</i> (Fieb.)	S56a
<u>Lygaeidae</u>	
<i>Drymus brunneus</i> (Sahlberg)	B, F, KL (10)
<i>Drymus sylvaticus</i> (Fab.)	F, KL (6), S55, S56a, S56b
<i>Kleidocerys resedae</i> (Panzer)	S56a
<i>Lamproplax picea</i> (Flor)	W
<i>Macrodemia micropterum</i> (Curtis)	KL (9), S56a
<i>Nysius ericae</i> (Schilling)	KL (1, 5, 7, 9)
<i>Nysius thymi</i> (Wolff)	F, KL (2, 6)
<i>Pachybrachius fracticollis</i> (Schill.)	F, Re, Ry, W
<i>Pachybrachius luridus</i> (Hahn)	Re
<i>Plinthisus brevipennis</i> (Latr.)	F
<i>Scolopostethus affinis</i> (Schill.)	KL (4), S56a, S56b, U
<i>Scolopostethus decoratus</i> (Hahn)	F, S56a, S56b, W
<i>Scolopostethus puberulus</i> (Horv.)	F
<i>Scolopostethus thomsoni</i> Reuter	S56a, S56b
<i>Stygnocoris fuliginus</i> (Geoff.)	F, KL (4), S56a
<i>Stygnocoris sabulosus</i> (Schill.)	F, KL (1, 2, 5, 11), S56a, S56b, U, W
<i>Taphropeltus contractus</i> (H.-S.)	Ry
<i>Trapezontous desertus</i> Seidenstucker	F
<u>Piesmidae</u>	
<i>Piesma quadratum quadratum</i> (Fieb.)	F
<u>Berytinidae</u>	
<i>Berytinus minor</i> (H.-S.)	S56a
<i>Berytinus signoreti</i> (Fieb.)	KL (4)
<i>Gampsocoris punctipes</i> (Germar)	F, KL (4, 5), S56a
<u>Tingidae</u>	
<i>Acalypta parvula</i> (Fall.)	F, KL (4, 9), W
<i>Derephysia foliacea</i> (Fall.)	F
<i>Dictyonota strichnocera</i> Fieb.	KL (11)
<i>Tingis ampliata</i> (H.-S.)	KL (4)
<i>Tingis cardui</i> (L.)	KL (4), S56a, S56b
<u>Reduviidae</u>	
<i>Coranus subapterus</i> (DeG.)	F
<i>Empicoris culiciformis</i> (DeG.)	S56a
<i>Empicoris vagabundus</i> (L.)	F

Nabidae

<i>Anaptus major</i> (Costa)	F, KL (5, 11), S56a
<i>Aptus mirmicoides</i> (Costa)	F, KL (7), S56a
<i>Nabacula flavomarginata</i> (Scholtz)	KL (11), S56a, S56b, W
<i>Nabacula limbata</i> (Dahlbom)	F, KL (6, 7, 10, 11), S56a, S56b, W
<i>Nabacula lineata</i> (Dahlbom)	S56a
<i>Nabis ericetorum</i> Scholtz	F, S56a, S56b
<i>Nabis ferus</i> (L.)	Ba, KL (2), S56a
<i>Nabis rugosus</i> (L.)	F, KL (2, 6, 7, 11), S56a, S56b, U, W

Anthocoridae

<i>Anthocoris confusus</i> Reuter	KL (4), S56a, S56b
<i>Anthocoris nemoralis</i> (Fab.)	F, KL (4, 7, 8, 10, 11), S56a
<i>Anthocoris nemorum</i> (L.)	B, F, KL (2, 7, 8, 10, 11), S56a, S56b, U, W
<i>Orius laevigatus</i> (Fieb.)	S56a
<i>Temnostethus gracilis</i> (Horvath)	KL (8)
<i>Temnostethus pusillus</i> (H.-S.)	KL (10)
<i>Xylocoris cursitans</i> (Fall.)	F

Microphysidae

<i>Loricula pselaphiformis</i> Curtis	F
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Miridae

<i>Adelphocoris lineolatus</i> (Goeze)	S56a
<i>Asciodema obsoletum</i> (Fieb.)	KL (7, 11), S56a
<i>Blepharidopterus angulatus</i> (Fall.)	KL (4, 6, 7, 9, 11), S56a, S56b
<i>Bryocoris pteridis</i> (Fall.)	KL (10), S56a, S56b
<i>Calocoris norvegicus</i> (Gmelin)	B, KL (1, 2, 4, 6, 10, 11), S56a, S56b
<i>Calocoris quadripunctatus</i> (Villers)	S56a, U
<i>Calocoris roseomaculatus</i> (DeG.)	Ry
<i>Calocoris stysi</i> Wagner	KL (10), S56a
<i>Campyloneura virgula</i> (H.-S.)	KL (1, 10), S56a
<i>Capsodes gothicus</i> (L.)	KL (1)
<i>Capsus ater</i> (L.)	KL (2), S56a, S56b
<i>Cyrtorhinus caricis</i> (Fall.)	S56a, S56b, U
<i>Dicyphus annulatus</i> (Wolff)	KL (4), S56a
<i>Dicyphus constrictus</i> (Boheman)	KL (10)
<i>Dicyphus errans</i> (Wolff)	S56a
<i>Dicyphus globulifer</i> (Fall.)	KL (10), S56a, U
<i>Dicyphus pallicornis</i> (M.-D.)	KL (4), S56a
<i>Dryophilocoris flavoquadrimaculatus</i> (DeG.)	S56a, U
<i>Harpocera thoracica</i> (Fall.)	S56a, S56b, U
<i>Heterocordylus tibialis</i> (Hahn)	S56a, U
<i>Heterotoma meriopterum</i> (Scopoli)	KL (2), S56a
<i>Leptopterna dolabrata</i> (L.)	F, KL (7, 11), S56a, S56b, U
<i>Leptopterna ferrugata</i> (Fall.)	KL (1, 2, 5, 7, 9, 11), S56a, W
<i>Liocoris tripustulatus</i> (Fab.)	F, S56a, S56b
<i>Lopus decolor</i> (Fall.)	KL (2, 7, 9), S56a
<i>Lygocoris contaminatus</i> (Fall.)	KL (6, 8, 9), S56a, S56b
<i>Lygocoris lucorum</i> (M.-D.)	KL (6, 10), S56a
<i>Lygocoris pabulinus</i> (L.)	KL (1, 6, 9, 10), S56a, S56b
<i>Lygocoris spinolai</i> (M.-D.)	S56a
<i>Lygocoris viridis</i> (Fall.)	KL (4, 10)
<i>Lygus maritimus</i> Wagner	KL (2, 4, 7)
<i>Lygus rugulipennis</i> Poppius	KL (7), S56a, S56b, U
<i>Macrotylus paykulli</i> (Fall.)	KL (4, 5), S56a
<i>Malacocoris chlorizans</i> (Panzer)	S56a, S56b
<i>Mecomma ambulans</i> (Fall.)	F, KL (1, 2, 8, 10), S56a

<i>Miris striatus</i> (L.)	S56a
<i>Monalocoris filicis</i> (L.)	F, KL (10), S56a, S56b, U, W
<i>Notostira elongata</i> (L.)	B, F, S56a, S56b
<i>Orthocephalus coriaceus</i> (Fab.)	S56a
<i>Orthocephalus saltator</i> (Hahn)	KL (11), S56a
<i>Orthops basalis</i> (Costa)	KL (10)
<i>Orthops campestris</i> (L.)	S56a
<i>Orthops cervinus</i> (H.-S.)	S56a
<i>Orthotylus adenocarpi</i> (Perris)	S56a
<i>Orthotylus ericetorum</i> (Fall.)	F, KL (2, 9), S56a, S56b
<i>Orthotylus flavosparsus</i> (Sahib.)	S56a
<i>Orthotylus marginalis</i> Reuter	KL (6, 7, 9), S56a, S56b
<i>Orthotylus ochrotrichus</i> Feiber	KL (1, 10), S56a
<i>Orthotylus tenellus</i> (Fall.)	S56a
<i>Orthotylus virescens</i> (D.& S.)	S56a
<i>Pachylops bicolor</i> (D.& S.)	KL (4, 7, 9, 11)
<i>Phylus coryli</i> (L.)	KL (1)
<i>Phytocoris longipennis</i> Flor	KL (1, 9, 10), S56a, S56b
<i>Phytocoris populi</i> (L.)	F
<i>Phytocoris varipes</i> Boheman	KL (1, 2, 4, 7), S56a
<i>Pithanus maerkeli</i> (H.-S.)	KL (1, 2, 6, 9), S56a, S56b, W
<i>Plagiognathus arbustorum</i> (Fab.)	KL (1, 2, 4, 6, 7), S56a, S56b
<i>Plagiognathus chrysanthemi</i> (Wolff)	F, KL (1, 2, 4, 5, 6, 7, 11), S56a, S56b
<i>Plesiocoris rugicollis</i> (Fall.)	S56a, S56b
<i>Polymerus palustris</i> (Reuter)	KL (6, 11), S56a, S56b, U
<i>Psallus ambiguus</i> (Fall.)	S56a
<i>Psallus diminutus</i> (Kirshb.)	F
<i>Psallus fallen!</i> Reuter	S56a, S56b
<i>Psallus haematodes</i> (Gmelin)	KL (6, 9, 11)
<i>Psallus salicis</i> (Kirschb.)	KL (7), S56a
<i>Psallus variabilis</i> (Fall.)	S56a
<i>Psallus varians</i> (H.-S.)	KL (8), S56a
<i>Stenodema calcaratum</i> (Fall.)	F, KL (7, 9, 10), S56a, S56b, U, W
<i>Stenodema holsatum</i> (Fab.)	F, KL (9, 10, 11), S56a, S56b, U, W
<i>Stenodema laevigatum</i> (L.)	KL (1, 2, 4, 7, 9, 10, 11), S56a, S56b, U, W
<i>Stenotus binotatus</i> (Fab.)	KL (2, 4, 6), S56a, S56b
<i>Teratocoris saundersi</i> D.& S.	KL (11), W
<i>Trigonotylus psammaecolor</i> Reuter	S56a, W
<i>Trigonotylus ruficornis</i> (Geoff.)	KL (1, 2, 4, 5, 7, 9, 11), S56a, W
<i>Tytthus geminus</i> (Flor)	W
<i>Tytthus pygmaeus</i> (Zett.)	W
<u>Dipsocoridae</u>	
<i>Cryptostemma alienum</i> H.-S.	F, KL (4, 6, 9)
<i>Pachycoleus waltli</i> Fieber	W
<u>Saldidae</u>	
<i>Chartoscirta cincta</i> (H.-S.)	Ry, W
<i>Chartoscirta cocksi</i> (Curtis)	F, Ry, W
<i>Micracanthia marginalis</i> (Fall.)	F, W
<i>Salda littoralis</i> (L.)	W
<i>Salda morio</i> Zett.	F
<i>Salda muelleri</i> (Gmelin)	W
<i>Saldula c-album</i> Fieb.	F, KL (4), S56a
<i>Saldula palustris</i> (Douglas)	F
<i>Saldula saltatoria</i> (L.)	F, KL (6, 10), S56a, S56b, W
<i>Saldula scotica</i> (Curtis)	F, KL (4, 6, 9), S57a

<u>Hebridae</u>	
Hebrus ruficeps (Thomson)	F, W
<u>Hydrometridae</u>	
Hydrometra stagnorum (L.)	C, F, J40, J43, J49, Je, KL(6), L, S 56a, T
<u>Veliidae</u>	
Microvelia reticulata (Burm.)	S56a, S56b
Velia caprai Tamanini	KL (10), S56a, S56b
<u>Gerridae</u>	
Aquarius najas DeG.	C, F, J40, J43, J49, J58, L, M, S56a, S57b, T
Gerris costai (H.-S.)	J43, M, S56a
Gerris gibbifer Schummel	C, J40, J49, KL(6, 11), S56a, S56b
Gerris lacustris (L.)	B, J40, J43, J49, KL(3), L, M, S56a, S56b, T
Gerris lateralis Schummel	S56a, S56b
Gerris odontogaster Zett.	S56a
Gerris thoracicus Schummel	J49, S56a, S56b
<u>Nepidae</u>	
Nepa cinerea L.	F, J43, Je, KL(11), L, M, Re, S56a, T
<u>Aphelocheiridae</u>	
Aphelocheirus aestivalis (Fab.)	J43, Je, M, Re, S56a, S57b, T
<u>Pleidae</u>	
Plea minutissima Leach	J43, M, S56a
<u>Notonectidae</u>	
Notonecta glauca L.	C, FBA, J49, J58, KL(11), L, S56a
Notonecta maculata Fab.	J49, S56a, T
Notonecta obliqua Gallen	J49, S56a, S56b
<u>Corixidae</u>	
Arctocorixa germari (Fieb.)	KL (11)
Callicorixa praeusta (Fieb.)	FBA, S56a, S56b
Corixa panzeri (Fieb.)	S56a
Corixa punctata (Illiger)	J49, L, S56a
Cymatia bonsdorffi (Sahib.)	KL (11), S56a
Hesperocorixa castanea (Thomson)	J49, KL (3), S56a, S56b
Hesperocorixa linnei (Fieb.)	S56a
Hesperocorixa moesta (Fieb.)	S56a
Hesperocorixa sahlbergi (Fieb.)	J40, J49, KL(11), S56a, S56b
Micronecta poweri (D.& S.)	J43, S56a
Sigara concinna (Fieb.)	S56a
Sigara distincta (Fieb.)	J49, KL (11), S56a
Sigara dorsalis (Leach)	FBA, J43, Je, M, S56a, S56b, T
Sigara falleni (Fieb.)	FBA, J43, Je, M, S56a, S56b, T
Sigara lateralis (Leach)	FBA, S56a
Sigara limitata (Fieb.)	C, S56a
Sigara nigrolineata (Fieb.)	S56a, S56b
Sigara scotti (Fieb.)	S56a
Sigara semistriata (Fieb.)	J43, J49, KL (6), M, Re, S56a, S56b
Sigara venusta (D.& S.)	FBA, S56a, S56b

DOUBTFUL AND ERRONEOUS RECORDS

There is an additional record of Nysius thymi in Scudder (1956a). This was before it was recognised that two species had been standing under this name in Britain. The Scudder N. thymi record could refer to either N. thymi or N. ericae, and has been omitted from the table.

Scudder (1956a) records Orius minutus (L.) from Cardiganshire. Since then, two additional species of Orius have been added to the British list, and it has been shown that the true O. minutus has yet to be recorded from Britain. The identity of the Scudder specimen is consequently unknown.

Scudder (1956a) records Lygus pratensis (L.). While not impossible, it is very much more likely that this record refers to another species, probably L. wagneri Remane. The taxonomy of the genus was very confused until its revision by Woodroffe (1966), and confusion between L. pratensis and L. wagneri was quite common. The record has been omitted from the table.

Records of Velia currens (Fab.) given by Jones (1940, 1943, 1949 and 1958), Laurie & Jones (1938) and Thomas (1962) could refer to either V. caprai or V. saulii Tamanini. Both species almost certainly occur in the county.

Scudder (1956a) gives a record of Aquarius paludum (Fab.) from the county, giving Carpenter (1927) as the source. Carpenter in fact makes no mention of the species, and the record is a transcription error. It is not included in the table.

Micronecta minutissima (L.) was recorded by Carpenter (1927). This was before it was recognised that three species of Micronecta occur in Britain. M. minutissima is a rarity. Given the habitat (streams) it is likely that this record refers to M. poweri. The record is omitted from the table.

Several of the older references give records of Sigara striata (L.). It has been shown since their publication that this species is confined to a limited area of Kent and Sussex, and that records from the rest of Britain refer to the closely related S. dorsalis. It has been assumed here that all S. striata records from Ceredigion are actually of S. dorsalis, and are listed as such in the table.

NOTES ON RARER SPECIES

Few of the Heteroptera recorded from Ceredigion can be regarded as nationally rare, and it seems worthwhile to draw attention to those which are. Included in this section are those species which are listed in the British Red Data Book (Shirt 1987) or which are considered to qualify as 'Notable' (believed to occur in less than 100 of the ten-kilometre squares of the National Grid in Britain) by the Nature Conservancy Council.

Eysarcoris aeneus (RDB category 2, 'Vulnerable'). Scudder (1956a) reports a single female captured by J R E Jones in the Aberystwyth district in 1940. The insect is otherwise known from Bedfordshire, Cornwall, Hampshire, Kent and Surrey, but has only been regularly recorded from the New Forest. It feeds on slender St John's wort Hypericum pulchrum, a plant found in a wide range of damp non-calcareous habitats. The bug can probably occur in very small and localised colonies, and may be easily missed.

Enoplops scapha (Notable) is a coastal species. It feeds on composites, usually on crumbling cliffs. It occurred in typical circumstances at Llangrannog, on Tripleurospermum maritimum beside the path up the cliff. Though it is an extremely local species, the discovery of E. scapha in Ceredigion is not surprising, since it has been recorded from both Caernarvonshire and Pembrokeshire.

Pachybrachius luridus (RDB category 3, 'Rare'). Otherwise known only from single sites in Kent, Surrey and Dorset, and from the New Forest in Hampshire, a specimen of this groundbug was taken by A E Stubbs at RSPB Ynys-Hir (SN678960) in September 1972 (Rees 1983). All British records are from Sphagnum areas.

Trigonotylus psammaecolor (Notable). This is a coastal species, found chiefly on sand couch Elymus farctus at the seaward edge of dunes. It is widely distributed on southern British coasts from Cumberland to Glamorgan and from Hampshire to Yorkshire, and there is an isolated record from Fifeshire. Scudder (1956a) reports its capture at Ynyslas Dunes by G B Ryle in 1955. Perversely, the only recent record is from the wrong habitat. Two were taken in a pitfall trap in a Molinia bog at Rhos Rhydd (SN572738) by the Welsh Peatland Invertebrate Survey in 1987. The site is only two kilometres from the coast and, in the absence of convincing evidence to the contrary, it seems best to assume that these were vagrants.

Tytthus geminus (Notable). This is a predacious wetland species, found in clumps of sedges or rushes in a wide range of wetland habitats. It is widely distributed in the southern counties of Britain, with records from Bedfordshire, Cambridgeshire, Cheshire, Hampshire, Kent, Lincolnshire, Staffordshire, Monmouthshire and Pembrokeshire, and a doubtful record from Surrey. The only known site in Ceredigion is Cors Caranod, where it was found by the Welsh Peatland Invertebrate Survey in September 1986.

Pachycoleus waltli (Notable). Recorded from Ynys Eidiol (SN673953) in August 1987 by the Welsh Peatland Invertebrate Survey, this small pinkish bug is otherwise known in Britain from Berkshire, Devon, Dorset, Hampshire, Norfolk and Pembrokeshire, and has also been recorded from Ireland. It is usually found in Sphagnum bogs, often at some depth in the moss, but can also occur in other mosses, and perhaps also in fen litter.

Micracanthia marginalis (RDB category 3, 'Rare'). This is a shorebug of wet heaths and mires. It usually occurs in small colonies on areas of more or less bare damp ground created by disturbance, management or fire. It was found on Cors Fochno in 1989 by both A P Fowles & P M Burnham and the Welsh Peatland Invertebrate Survey and, true to form, was recorded from an area which had been burnt. The bug is otherwise known in Britain from Dorset, Hampshire, Norfolk, Shropshire, Surrey, Yorkshire and Denbighshire.

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LEPIDOPTERA

THE MOTHS OF THE RSPB GWENFFRWD-DINAS RESERVE, VC44 - I K MORGAN

The Royal Society for the Protection of Birds Gwenffrwd and Dinas Reserves (22/749460) comprise some 688 ha of a complex of habitats that include grassy and ericaceous moorland, blanket bog, hanging sessile oak woodland, farmland (with unimproved pastures), rock outcrops and dingle woodland, located in the Cambrian Mountains north of Llandovery near the village of Rhandirmwyn, Carmarthenshire. The Reserve was initially established to conserve the distinctive and localized upland bird communities which includes such characteristic birds

as pied flycatcher, redstart, wood warbler, tree pipit, whinchat, raven, buzzard and red kite. As can be expected, the diverse range of habitats is also of considerable botanical interest and the Reserve mostly lies within the extensive Cwm Doethie-Mynydd Mallaen SSSI.

The moths of the Reserve have been well sampled by RSPB staff, initially by the first warden - John Humphrey - in the early 1970's and later by various assistant wardens - Russell Jones in 1983 and 1986, Paul Fisher in 1984 and Mel Kemp in 1985. Additionally, Bernard Skinner trapped at Bwlch-y-Rhiw (22/731466) on 30/31 July 1984. This report on the moths of the Reserve is entirely based on their records, which are kept on a card index by the current warden, Tony Pickup.

Of the three hundred or so moths known from the Reserve, many can be considered notable, scarce or localized species and, of these, the majority are representative of the woodland habitat - which is not unexpected in an area of quality, old, mixed, pollution-free woodland dominated by oak and birch. Substantial numbers of scarce species also represent the unimproved pasture and ericaceous heath habitats.

The maintenance of woodland, with a diversity of structure and the retention of existing tree and shrub variety, is a priority for the conservation of the bird communities that are found on the eGwenffrwd and Dinas; such management will probably also cater for the varied moth assemblages found on site. The structural mosaic, with open, grazed woodland and more densely-vegetated areas, together with a variety of locally indigenous shrubs and secondary woodland, undoubtedly favours a healthy moth fauna. Birch, for example, supports many species, such as the very local orange underwing Archiearis parthenias, a diurnal species that frequents the tops of birches on sunny days in March and April. Oaks (Quercus robur and petraea) have long been recognised as holding a vast invertebrate fauna with some three hundred or so British species known to feed on oak. Similarly, on the Gwenffrwd-Dinas Reserve many moths are associated with the oakwoods which clothe the steep hillsides, and local species include the grey shoulder knot Lithophane ornitopus, the blossom underwing Orthosia miniosa and frosted green Polyploca ridens.

Aspen holds the local poplar grey Acrionicta megacephala and swallow prominent Pheosia tremula, whilst blackthorn thickets support the tissue moth Triphosa dubitata (as well as brown hairstreak Thecla betulae butterflies), whilst the lesser-spotted pinion Cosmia affinis (an elm feeder) has also been noted on the Reserve, where wych elm - which grows at the base of the damp, flushed dingle slopes - is probably the larval food plant. Two alder specialists, the blue-bordered carpet Plemyria rubiginata and the small yellow wave Hydrelia flammeolaria have also been recorded, but a couple of beech-feeders - the barred hook tip Drepana cultraria and the barred sallow Xanthia aurago - may well have been wanderers from elsewhere in the neighbourhood. The rather scarce Welsh wave Venusia cambrica, a predominantly upland species, favours rowan as food for its caterpillars. The uncommonly-encountered goat moth Cossus cossus has twice been noted on the Reserve; its large caterpillars (one of the largest wood-boring insects in Britain) burrow into the wood of various deciduous trees, whilst the wasp-mimic lunar hornet moth Sesia bembeciformis, which is rare in Wales and whose larvae take "two years (to develop) in the trunks and upper roots of well-grown sallow Salix caprea" (Skinner, 1984), has been once recorded - in 1983 - new to the vice-county.

As well as the actual diversity of woodland trees and shrubs, structure can be important, with the beautiful carpet Mesoleuca albicillata favouring open woods, the double-line Mythimna turca reputedly liking ungrazed woodland and the scallop shell Rheumaptera undulata bilberry - clad slopes. Again, active management in creating clearings or open spaces for avian species will also probably benefit the moths. The relatively clean, unpolluted air of the Rhandirmwyn district (the older trees support a rich community of epiphytic lichens), favours two moths - the dotted carpet Alcis jubata and the Brussels lace Cleorodes lichenaria - species which have declined in more polluted areas elsewhere.

There is also a notable assemblage of moths associated with ericaceous heath, reflecting the comparatively healthy status of this habitat on the Reserve. The light knot grass Acrionicta menyanthidis, glaucous shears Papestra biren, heath rustic Xestia agathina, smoky wave Scopula

ternata and scarce silver-Y Syngrapha interrogationis, for example, are all heather or bilberry feeders. The beautiful yellow underwing Anarta myrtilli is a specialist heather-feeder which apparently favours leggy growths with a deep accumulation of litter (Sutton & Beaumont 1989). Management of moorland by fire, therefore, must take this into account, perhaps leaving, in a cyclic fashion, appropriate habitat for this local species. The northern rustic Standfussiana lucernea, which feeds on a variety of grasses and herbs on rocky sites, is considered a rare species in Wales but has again been noted on the Reserve.

There is also an important list of noteworthy moths of old, unimproved pastures that have been recorded. Such pastures are also interesting for butterflies - the marsh Eurodryas aurinia and small pearl-bordered Boloria selene fritillaries for example, have been noted. The moths of unimproved pastures have greatly declined in parallel with the destruction of these grazings by agricultural improvement - drainage, re-seeding and fertiliser/herbicide application. Uncommon species recorded on the Reserve include the silver hook Eustrotia uncula (the larvae feed on sedges and grasses in wet, acidic pastures); the Devon carpet Lampropteryx otregiata (feeds on marsh bedstraw); the small purple-barred Phytometra viridaria (feeds on milkworts); the forester Adscita statices (feeds on sorrel); and the wood tiger Parasemia plantaginis, which feeds on a variety of herbaceous plants. Also recorded is the grass rivulet Perizoma albulata whose larvae subsist on yellow rattle. The small black, day-flying chimney sweeper Odezia atrata frequents dry grassland with pignut, whilst much damper grazings have yielded the gaudy scarlet tiger Callimorpha dominula, whose bright colours are a warning to predators that it is poisonous; south-west Wales is a stronghold for this uncommon species. As well as holding the larval food plants, old unimproved pastures provide a variety of nectar sources for the adult moths and other insects.

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NOTEWORTHY MOTHS RECORDED AT THE RSPB GWENFFRWD/DINAS RESERVES

The more noteworthy species recorded are listed below (alphabetically, by scientific name) with observations on status derived mostly from Fowles (1988), whose comprehensive review of the moths of the adjacent vice-county of Ceredigion (VC46) is an appropriate and relevant source of information.

Acronicta alni - alder moth - a scarce species of woodland habitats; 3 on 6.6.1970.

A. megacephala - poplar grey - a local species whose larvae feed on aspen (and other *Populus*); 10/11.7.1986.

A. menyanthoides - light knot grass - a very local species of moorland, feeding on heather and bog myrtle; one on 8.6.1970.

Adscita statices - the forester - an old pasture species (no dates given).

Alcis jubata - dotted carpet - a lichen-feeder that is mostly confined to old oakwoods; 2.8.1970, 1.7.1971, 30/31.7.1984.

Anarta myrtilli - beautiful yellow underwing - a local and uncommon species of heather moor; 23 & 25.8.1985.

Apamea epomidion - clouded brindle - a scarce species in south-west Wales whose larvae feed on various grasses; two on 1.8.1985.

Archiearis parthenias - orange underwing - a scarce diurnal moth associated with birch, 30.3.1982.

Atolmis rubricollis - red-necked footman - a local woodland species; 18.5.1982 and 1.6.1986.

Bena prasinana - scarce silver lines - a rather rare inhabitant of oakwoods; four on 15.6.1973, one on 17.6.1973, and another on 21.6.1973.

Brachionycha sphinx - the sprawler - a local species of woodland and bushy places. 1970-72 (all November).

Callimorpha dominula - scarlet tiger - a notable species of open, damp habitats; 16.7.1985 and June/July 1986.

Cleorodes lichenaria - Brussels lace - a lichen-feeder that has declined in southern Britain.

Cosmia affinis - lesser-spotted pinion - this local species, whose caterpillars feed on elm, is only listed without dates.

Cossus cossus - the goatmoth - an uncommonly-encountered species; 22.6.1985 and 4.7.1985.

Deilephila porcellus - small elephant hawk - a mostly coastal species, which is local and uncommon in much of Wales; 23.7.1972.

Diarsia dahlia - barred chestnut - a very uncommon species; three on 13.8.1972, 14.8.1972, 19.7.1983.

Drepana binaria - oak hook-tip - an increasing, but still local, woodlander; 8.8.1970.

D. cultraria - beech hook-tip - a beech feeder; 14.6.1971 and 19.8.1971.

Eupithecia succenturiata - bordered pug - a ragwort feeder; 10.6.1973.

Eustrotia uncula - silver hook - a notable moth of wet pastures June-July 1970 (several dates).

Euxoa tritici - white-line dart - chiefly a coastal species; 16.7.1983.

Hepialus hecta - gold swift - a local species whose larvae feed on ubiquitous bracken; 16.7.1982 and 1.7.1985.

Hydrelia flammeolaria - small yellow wave - an uncommon species whose caterpillars probably feed on alder; 8.6.1970 and 6.7.1973.

Hydriomena ruberata - ruddy high flyer - a local moth (larvae eat eared willow); 15.6.1985.

Hypena crassalis - beautiful snout - a local species of established woods; 18 and 25.6.1973.

Idaea seriata - small dusty wave - a very local moth - one record on 25.8.1972.

I. straminata - plain wave - another uncommonly-recorded species; on 30.7.1970, July 1972 (several dates); and 26.7.1986.

Ipimorpha suasa - dog's tooth - a local moth, normally of coastal sites; 6 and 8.6.1970, 14.7.1972.

Lampropteryx otregiata - Devon carpet - a nationally-scarce moth of damp pastures; 13.6.1970 and June-August, 1973.

Lomographa bimaculata - white pinion-spotted - an uncommon woodland moth; 31.5.1985 and 1.6.1985.

Mythimna turca - double-line - a declining moth which requires mature deciduous woodland free from grazing; 1970, 71, 72, 73 and 1984 (June-August).

Odezia atrata - chimney sweeper - a dry grassland species; 30.6.1982.

Papestra biren - glaucous shears - an uncommon moorland moth; 1.6.1970, 25.5.1971, 11.7.1982.

Parasemia plantaginis - wood tiger - a very local and declining species of heathy sites; 9 and 25.7.1985.

Phytometra viridaria - small purple-barred - again a declined species of unimproved grazings; 8.6.1970.

Plemyria rubiginata - blue-bordered carpet - a notable species of damp alder woods; August 1973 (3 dates) and 26.8.1986.

Rheumaptera undulata - scallop shell - a scarce moth associated with bilberry in open woodland; 3 and 18.7.1970, 15.8.1972.

Scopula ternata - smoky wave - "a rare inhabitat of moorland... perhaps favouring gorges" (Fowles, 1988); 20.6.1970.

Sesia bembiciformis - lunar hornet moth - rather rare in Wales; recorded in 1983.

Standfussiana lucerna - northern rustic - another quite rare species of rocky situations; 31.8.1982.

Syngrapha interrogationis - scarce silver-Y - a very local species of ericaceous moor; 2.7.1970, 5.7.1973, 15.8.1973 and 30.7.1984.

Venusia cambrica - Welsh wave - a rare moth of upland areas; 24 and 25.7.1971.

Xestia agathina - heath rustic - a local heather-feeder; 3.9.1972.

Xanthia aurago - barred sallow - a beech-feeder, with four occurrences in August-September 1970.

COLEOPTERA

OBSERVATIONS ON THE OVER-WINTERING BEHAVIOUR OF THE ORANGE LADYBIRD - A P FOWLES

The orange ladybird Halyzia 16-guttata is one of the few British species of the family with a vegetarian diet and subsists largely on the powdery mildews which develop on the leaves of deciduous trees. Up until 1985 it had been thought to be quite a rarity in Britain and was known from just a handful of sites, chiefly in Dorset (Majerus & Williams 1989). In the

last few years, however, there has been a wealth of records submitted to the Cambridge Ladybird Survey and the latest count records it from 109 10-km squares (mainly in south-east England and west Wales but also occurring sporadically up to the Scottish Highlands). The reasons behind this increase are unclear, observer-effort is undoubtedly a major factor but there is also a strong possibility that the orange ladybird has recently been able to utilize powdery mildews growing on sycamores as a pabulum. Halyzia was formerly considered to be restricted to ancient deciduous woodlands, probably feeding on oak mildews, and the change in diet may have enabled it to colonise secondary woodland and thereby enhance its ability to disperse over large areas of the country. An analogous pattern of spread is also known for the mould-beetle Enicmus brevicornis which was once a great rarity of beechwoods in southern England but over the past thirty years has increased its distribution dramatically by adapting to feed on the sooty-mould of sycamore bark. Prior to 1987 there was only a single record of Halyzia in Ceredigion (Miles 1960) but over the past three years it has been recorded from a dozen woods scattered across the county. Most records result from the finding of adults in the summer on the underside of sycamore leaves, although a small number of adults have also been found during the winter and these latter records provide an insight into the range of over-wintering sites used by orange ladybirds.

The majority of ladybirds are known to seek out their winter quarters by early October and remain largely dormant until spring when they become active again in response to an increase in day length or temperature (Majerus & Kearns 1989). However, some species may become temporarily active during warm spells and this is most likely for the mildew-feeding species (like Halyzia) as they have a greater chance of finding food than their aphidophagous cousins (Majerus 1989).

The first modern record of Halyzia in Ceredigion came from the discovery of two adults under ivy litter on top of a stone wall at the edge of Coed Pwll-crwn (22/622834) on 11 March 1987 (Majerus 1987). This is probably a typical over-wintering site in normal years and there have been two further Ceredigion records in similar situations - in discarded bedding outside a badger-sett in Coed Nant Llolwyn (22/587769) on 20/11/88, and amongst leaf-litter at the base of a sycamore tree in Cwm Woods (22/600833) on 22/11/89. During the relatively mild winter of 1988/89 several adult orange ladybirds were found over-wintering in more exposed situations - on the trunk of a sycamore tree in Plas Gogerddan (22/628838) on 11 January 1989; four on beech trunks and one on an ash trunk in Cwm Woods on 24/1/89; and one on the branch of an ash tree in Coed Nant Llolwyn on 26/3/89. Additionally, a single adult was found underneath loose bark on an old ash in Coed Allt Castell-geifr (22/423583) on 12/3/89. By the middle of April 1989 it was apparent that Halyzia adults had left their over-wintering quarters and could be found commonly on the foliage of a variety of trees and shrubs.

The winter of 1989/90 was one of the mildest on record and, like the previous year, this may have enabled some species of ladybirds to overwinter in more open positions than usual. Whatever the reason for this behaviour, a number of adult Halyzia were found in exposed sites in the dingle woodland of Coed Nant Llolwyn during December 1989 and the opportunity was taken to make a few simple observations on their preferences for over-wintering sites. The area studied was a discrete block of woodland at the south end of the dingle, consisting of approximately 0.5 hectares of old oak/hazel coppice with a rich ground flora. The first ladybird was found on the stem of a young sycamore on 7/12/89 and over the next 3.5 months a total of thirty-eight adults was found. Observations took place chiefly at night, with visits every two or three days, as the ladybirds could be easily seen up to a height of six metres above ground as they 'gleamed' in the beam of a powerful torch. On discovery, the position of each adult (where possible) was marked with a white mapping-pin pushed into the bark approximately 15 cms below the ladybird. Measurements were then taken of the height above ground; the diameter of the trunk or branch that the adult was resting on; and the direction of most exposure. The main results of this study are displayed on the accompanying diagrams (Figs. 1-3) and they are largely self-explanatory. However, a few brief comments on these results, and some additional notes, are presented below.

Over-wintering aspect (Fig. 1) - It is known that some ladybird species favour particular aspects for over-wintering. For instance, the pine ladybird Exochomus 4-pustulatus is usually found on the south side of trees, whilst the heather ladybird Chilocorus 2-pustulatus usually adopts a north-facing situation when it over-winters on trees (Majerus & Kearns 1989). In contrast, adult Halyzia were chiefly found on the eastern side of trees in Coed Nant Llolwyn, although positions ranged from 345° to 185°. The number of adults choosing a north-easterly aspect suggests that they may be seeking shelter from the prevailing south-westerly winds. Besides lowering body temperature through wind-chill, the drying effect of wind can cause severe problems for insects and avoidance of desiccation may be another reason why the west-facing side of trees is not utilised. A third factor could possibly be protection from frequent wetting (which may promote fungal disease). Twenty-five of the twenty-nine individuals on vertical stems were positioned directly beneath an overhanging knot, twig or branch. During light rain, the north-east side of the stems usually stayed dry except for discrete trickles running down the length of the tree. Where these trickles meet an obstruction they are deflected and the bark directly beneath the obstruction remains dry. On several occasions during light rain I noticed that the ladybirds had moved a few millimetres to either side to avoid being in the path of one of these trickles.

Stem diameter (Fig. 3) - With few exceptions, the adult Halyzia in Coed Nant Llolwyn were found on relatively slender trunks of young trees or on thin branches - thirty individuals over-wintered on stems of less than 3.5 cms diameter. This was unexpected as seven of the eight adults found on trees during winter 1988/89 were on the trunks of mature beech and ash trees. The study area contains a dozen mature oaks and ashes but no ladybirds were ever found on these. This is a bit puzzling as broad trunks may be expected to provide greater protection from the elements but there may also be disadvantages in the form of increased risks of predation or desiccation. Ladybirds have the ability to clamp tightly to the substrate but if they over-winter on trees with roughened bark there will inevitably be tiny gaps between their elytra and the bark. This may enable invertebrate predators to gain a hold and dislodge the ladybird. Wood ants Formica spp. would be a serious problem for over-wintering Halyzia in many parts of their range but in Coed Nant Llolwyn the only obvious arboreal predators are the ground-beetles Bembidion harpaloides and three species of Dromius (particularly D. 4-maculatus), although whether they will attack Halyzia is presently unknown. Chinks between bark and elytra will also permit air to circulate underneath the ladybird's abdomen and hence heighten desiccation rates.

All of the 1988/89 records were on the smooth-barked trunks of mature trees but the older oaks and ashes of Coed Nant Llolwyn all have fissured bark. Of the thirty-eight individuals found in 1989/90, only one was over-wintering on rough bark (cherry) and this adult disappeared by mid-January.

Tree-species - Adults were found over-wintering on five different types of trees - hazel (23), hawthorn (8), sycamore (4), cherry (2), holly (1). This is probably an accurate reflection of the composition of the understorey in this part of the wood and should not be taken as indicating a preference for hazel. Elder is the only other suitable shrub present in the understorey but no Halyzia were found on its roughened bark.

Height above ground (Fig. 2) - It is quite possible that this histogram is affected by observer-bias. The canopy of the shrub layer in this part of the wood is about six metres above ground and it is clearly more difficult to detect ladybirds over-wintering at that height. However, up to four metres high Halyzia can be found easily by shining a torch along trunks and branches and I feel that a very high proportion of the adults present between 0-4 metres will have been found during the fifty-one visits made to look for ladybirds. The lowest individual found was 86 cms above ground level and the highest was at c.520 cms but there could have been many more much higher in the canopy. The only conclusions that can be drawn are that: (1) they do not seem to favour resting on stems close to the ground, and (2) in the shrub layer, the majority occur between 175 and 300 cms above ground level.

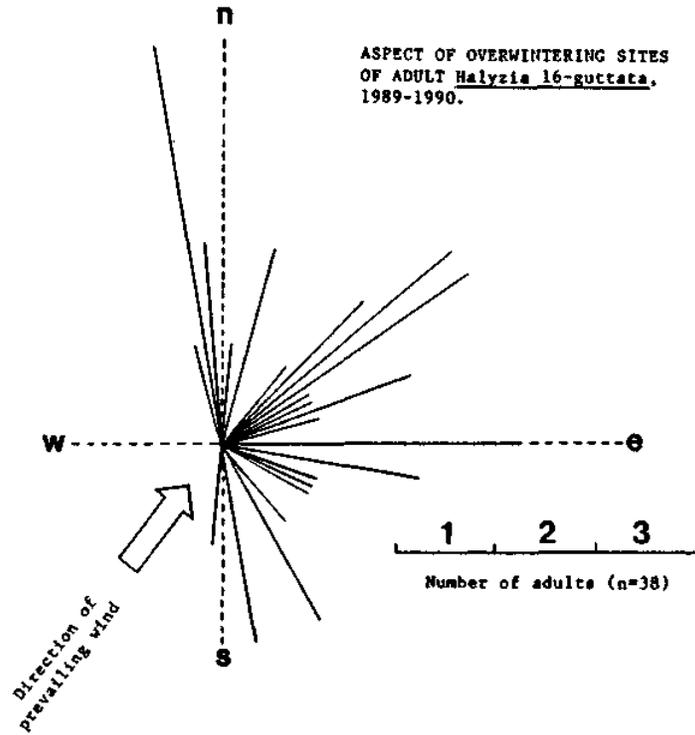


fig 1

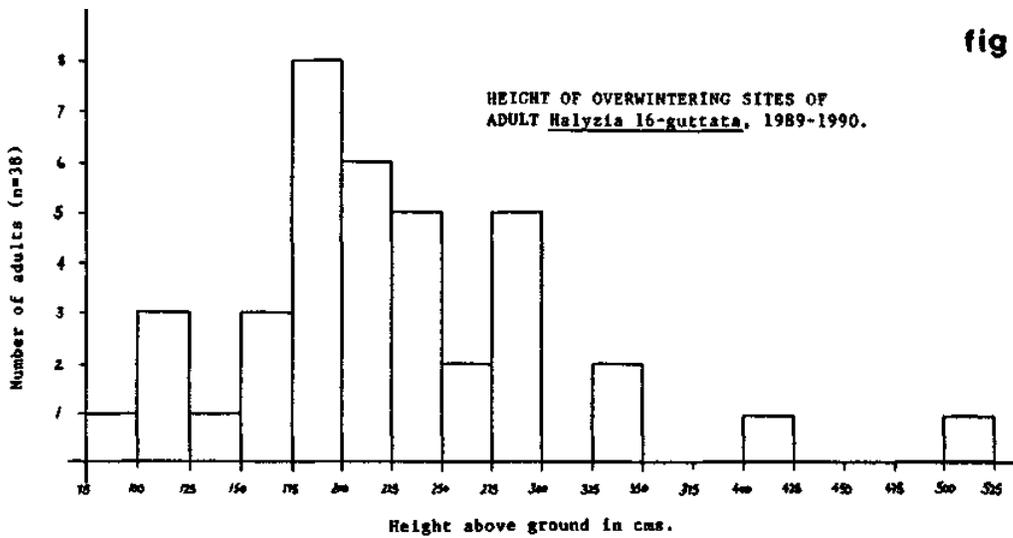


fig 2

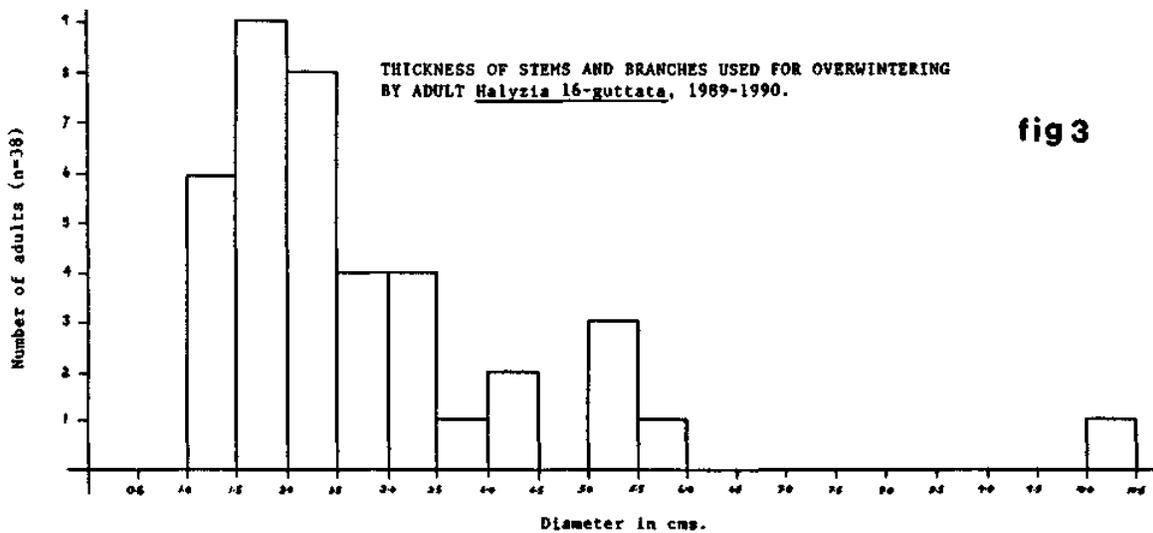


fig 3

Over-wintering dates - It is not known when the ladybirds took up their over-wintering positions as the first one was only noticed on 7 December. A concerted effort to find ladybirds only began in late January and over the next two months a total of thirty-eight adult orange ladybirds had been found. Only one adult was definitely recorded taking up an over-wintering position from the start as the branch it chose was routinely checked each visit. This individual arrived in position on 27 March and remained until 7 May.

Most of the ladybirds were 'fidgety' and moved at intervals up and down a stem or out along a branch, often returning a few days later to their original position. Very few remained relatively immobile, although one adult stayed within two cms of its original position for a period of 135 days, when it moved 25 cms down the sycamore stem it had over-wintered on and then finally disappeared 11 days later.

17 March was an exceptionally warm spring day (c. 24°C) and this seemed to trigger some activity in the ladybirds with 25% of the adults then under observation making substantial movements (up to one metre) from their original positions. Over the next four days six adults disappeared from observation but it is not known whether this was due to predation or dispersal. Sycamore burst into leaf on 29 March but, following the mid-March flurry, there was a period of inactivity with twenty-seven adults still in position on 21 April. Two days later, however, three had vanished and a further four had moved substantially. The major exodus occurred on 2 May when twenty adults disappeared, followed by one more the following night. This coincided with the appearance of the first blotches of mildew on the sycamore leaves. The departure of the final Halyzia determined the end of the study on 17 May.

Winter gales - January and February 1990 saw some fierce gales which brought several trees down at the head of the valley. One of these, a mature oak on the riverbank, crashed through the middle of the study plot but none of the Halyzia under observation showed any signs of disturbance, remaining firmly in their exposed over-wintering sites throughout the gales.

Aggregations - Most British species of ladybirds are known to form over-wintering aggregations, often consisting of a mixture of species (Majerus & Kearns 1989). The three other vegetarian ladybirds occurring in Britain (24-spot Subcoccinella 24-punctata, 22-spot Psyllobora 22-punctata and 16-spot Micraspis 16-punctata) have been found in large clusters; consisting of several thousand individuals in the case of Micraspis. By contrast, the maximum number of Halyzia recorded over-wintering together is twelve (Majerus & Williams 1989), but aggregations of the orange ladybird are uncommon and usually consist of just two or three individuals. At the time of first sighting, only two pairs of Halyzia were aggregating but during the course of the winter a further five aggregations were formed by individuals on the same tree coming together (four pairs and a trio). This figure includes a pair which came together on 2 March and stayed in contact until 16 April when they split up and each formed a new pair with other individuals on the same tree.

No other species were involved in these aggregations and, during the entire study, the only other ladybirds found were a single 7-spot Coccinella 7-punctata (over-wintering underneath a hazel branch until 11 March) and a cream-spot Calvia 14-guttata seen on one night only.

These observations provide a provisional insight into some of the aspects of the over-wintering behaviour of the orange ladybird but clearly there is much more to learn about this handsome species during the winter months. There are numerous limitations to the brief study described above but it has identified areas of interest which would benefit from detailed analysis. It may be that the extent of exposed over-wintering (as opposed to sheltering amongst leaf-litter) has been influenced by the recent mild winters and it will be intriguing to see if this pattern is maintained. Adult ladybirds spend most of their life in this dormant stage and their ability to survive this testing time will contribute significantly to population levels the following year. Exposed sites may be the preferred over-wintering situation for Halyzia and they are driven down into the litter-layer (where there is a much greater risk of predation) by severe frosts - warmer winters may see this attractive woodland beetle continuing to spread more widely across Britain.

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[Mompha locupletella bred from Epilobium parvifolium at Gwbert, VC46.]

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[Moths at Clarach (VC46), including Heliothis armigera - the second county record.]

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NOTE: A press release from the Nature Conservancy Council at the end of December 1989 generated numerous newspaper articles, most of which appeared at the beginning of Jan 1990. This related to the discovery, (by the Welsh Peatland Invertebrate Survey), of a new species of scatopsid fly from samples collected at Llyn Eiddwen, VC46. Several months later it was shown that this new species was synonymous with a species recently recognised from peatlands in Ireland and Switzerland and is therefore new to Britain and not new to science as reported. An account of this discovery will appear in a forthcoming issue of the *Entomologist's Monthly Magazine*.