DYFED INVERTEBRATE GROUP

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EDITORIAL

Lin Gander, Ceredigion Conservation Officer of the Dyfed Wildlife Trust, has invited DIG members to Rhos Pil Bach and Pennar Fawr Mature Reserves on 12 June 1994 to celebrate the start of National Wildlife Week. The meeting will include recording the invertebrates present on these sites. Meet at the roadside at Plwmp SN369527, 9.00 AM.

Please note that the Ceredigion reviews in the following pages refer to the 1992 season, whilst those for Carmarthenshire and Pembrokeshire summarize records of interest for 1993. My thanks to those recorders who made the effort to submit summaries.

DIG members are reminded that 1994 subscriptions are now due (4 x 1st class stamps). No further newsletters (or reminders) will be sent to those who do not send their subs!

Finally, it is a pleasure to announce the appearance of Adrian Fowles' INVERTEBRATES OF WALES: A REVIEW OF IMPORTANT SITES AMD SPECIES - 157 pages full of interesting information and 16 superb colour plates. Published by JNCC and CCW at £24.50 (plus £3 postage) - £19.50 (plus £3 postage) to Dyfed Wildlife Trust members. (Cheques payable to "NHBS Ltd" - Natural History Book Service Ltd., 2-3 Wills Road, Totnes, Devon TQ9 5XN).

APOLOGIES & ERRATUM

The Newsletter is produced on a shoestring as far as time is concerned and it is obvious that the meticulous standards of the previous Editor have not been maintained. However, although efforts are made to ensure certain levels of accuracy and presentation, unfortunately errors do creep in. The major errors are corrected below. The Editor would always welcome to be informed of factual errors.

Corrigenda/Addenda

1. Carmarthenshire Butterflies & Moths, 1992 26: 2-7
Reference is made in the "Acknowledgements" to maps for the grayling and scarlet tiger. These maps were deliberately not included and reference to them should not have been made.

2. Recording of Larger Brachycera in Carmarthenshire 27: 6-12. There are obvious mistakes in the "References"

a) the second listed reference, should refer to C.M. Drake (1993) and not M. Chinery
b) the seventh and eighth listed references refer to I.K. Morgan.
c)

Additionally, profuse apologies to Peter Kirby for the asymmetric photocopying of his "Provisional List of the Heteroptera of Pembrokeshire" (VC45) 25: 20-33.

3. The Aculeate Hymenoptera of Pembrey-Tywyn Burrows, Carms. VC44 - P.M. Pavett DIG 27 (Autumn 1993): 1-4

A batch of specimens recently determined by M.E. Archer includes Chrysis angustula (Pembrey Forest 22/397007, 27.8.92, PMP) and two species of Sphecodes additional to the published list on p2 - pellucidus (at Pembrey Forest) and geoffrellus at Pembrey Burrows.

On the same list, it was omitted to mention that Eucera longicornis has Na status and Andrena bucephala similarly has Na status; Colletes marginatus also has Na status and not Nb as shown. Eucera has a thriving colony on the landward (E.) end of "Banc-y-Lord" 22/410049 (IKM, 17.6.92) whilst Andrena bucephala was taken on the northern margin of Pembrey Burrows 22/426004 where the dunes abut hedgerows and pastures (IKM, 26.4.87). The distinctive Eucera, with its long antennae, has few Welsh colonies (all coastal), whilst A. bucephala has only about 40 known post-1970 British stations. Colletes marginatus was recorded at Tywyn Burrows in July 1988 by both M.E. Archer and S.J. Falk.

Falk (1991) cites a record of Oxybelus mandibularis Na from Pembrey-Tywyn Burrows and Symmorphus crassicorrnis RDB3 from Pembrey Forest; the latter specimen taken by Steve Falk himself on 6 August 1985 (at 22/387043).

Finally, in the Autumn 1993 article, the full names corresponding to some initials were not explained; they are: MEA - Mike Archer, JTB - J.T. Burns, SJC Steve Coker, SJF - Steve Falk.

P.M. Pavett & I.K. Morgan
March 1994.

ORTHOPTERA IN CARMARTHENSHIRE, 1993 I.K. Morgan

In Carmarthenshire, the short-winged conehead Conocephalus dorsalis occurs in a few Juncus-dominated pastures and wetlands near the coast such as the southern part of the Ffrwd Fen reserve 22/419022 and around the smaller of the Machynys Ponds 21/512980. But it is in the upper zone of saltmarshes, particularly when dominated by stands of sea club rush Scirpus maritimus, that this endearing apple green species becomes abundant. It was in such habitat, at Llangennech 22/573020 that many were noted in early July. When disturbed, they have the engaging habit of jerkily moving to the far side of stems from where they cautiously observe intruders to their domain. Also mostly coastal in distribution is another bush cricket - the speckled Leptophyes punctatissima; one of which was beaten from brambles at the edge of Dyfatty Marsh 22/457010 Burry Port on 2 July.

The dark bush cricket Pholidoptera griseoaptera was noted in herbage along the disused Kymer's Canal, Kidwelly 22/402058 on 28 September and James McCallum gave its status in hedgerows alongside the B4312 from Llansteffan 22/350102 to Llangain 22/384150 as "common". The rather unobtrusive common groundhopper Tetrix undulata was recorded at two sites: a: Cwmcoch 22/358184 in April (J.McC.) and on former railway sidings at Pantyffynnon 22/625113 on 1 September.

PEMBROKESHIRE ORTHOPTERA 1993 J. Steer

The shortage of Orthopteran records for 1993 can probably be partly explained by the extremely poor weather. Around mid-summer the weather took a turn for the worse just when Orthopteran activity should have been at its peak.

A visit to the stretch of coast between Newgale and Solva was made on 5 September in the hope of finding the Grey Bush Cricket Platycleis albopunctata which had been found nearby in the St. David's area in 1947. Despite not finding Platycleis I was not unduly disappointed as the visit did produce a new 10km record for the Mottled Grasshopper Mvrmeleottetix maculatus. This species is widespread around the Pembrokeshire coast but has been recorded at only a few inland sites. One of these, the slate heaps at Rosebush was visited on 20 August when Mottled Grasshoppers were found to be abundant. Meadow Grasshoppers Chorthippus parallelus, Field Grasshoppers C. brunneus and Common Green Grasshoppers Omocestus viridulus were also present. The basic requirements for Mottled Grasshoppers- short vegetation and wel1 drained soil is obviously to be found inland as well as round the coast.

The best record for the year was a Short-winged Conehead Conocephalus dorsalis found by S.B. Evans and J. Donovan at Millin Pill (SM91) in September. This species has been found now at a number of salt marsh sites around the Cleddau Estuary. The only other area where it has been recorded is near Newport.

A single male Great Green Bush Cricket was discovered chirping in a small patch of undergrowth in the campsite at Newgale in September, a new 10km square record. This is some distance from its nearest known recorded site on the Dale Peninsula. Unless it has escaped detection in the past at this site, it is interesting to speculate how it might have arrived here as its powers of flight are poor. Perhaps it hitched a lift with a camper or maybe was kept captive as a pet and subsequently released.

The only record for Oak Bush Cricket Meconema thalassinum was at Parkeston in September by Annie Poole. This species is probably widespread but under-recorded in the county. It can be obtained by beating the lower branches of trees during the summer or searching in the autumn for females egg laying on the trunks of trees in the evening after dark.

Earwigs should not be ignored as they are classed with Orthoptera and are another under-recorded group. Let's hope for a better summer in 1994!

GRASSHOPPERS AND BUSH-CRICKETS IN CEREDIGION, 1992 - A. P. FOWLES

Although the Orthoptera are fairly well recorded in Ceredigion, it is still possible to add to our knowledge of their distribution, whilst almost nothing is known of their local ecology. There were three new 10-km records reported this year. *Chorthippus parallelus* was found in a gulley on the cliffs of Craig Ddu in the Doethie valley (SN768484) at 320 metres a.s.l., whilst *Meconema thalassinum* was seen on the old oaks of Parc Pont Faen (SN495591) in August. Arthur Chater unearthed an interesting record of house crickets *Acheta domestica* in conversation with Dai Morris Jones of Trefenter. Mr Jones lived at Brynamlwg, Trefenter (SN611685) until 1960 and can recall house crickets present there from the late 1930s until he left. It is no doubt relevant that a peat fire was kept continuously alight in the house.

There were few other records of particular interest this year. *Conocephalus dorsalis* was reported in August and September from the margins of Cors Fochno (SN63-91-) and a few *Metrioptera brachyptera* were captured in the Cors Fochno pitfall traps, as they are each year.

Records were gratefully received in 1992 from Mike Bailey, Dave Boyce, Arthur Chater, Lin Gander and Red Liford.

DRAGONFLIES IN CARMARTHENSHIRE, 1993 – I.K. MORGAN

Undoubtedly, the highlight of 1993 was John Eliis' (JRE) record of the variable damselfly Coenagrion pulchellum at the Ffrwd Fen Nature Reserve, Pembrey 22/419028. One individual (a female) of this species was swept from the lower branches of one of the grey willows which line the canal towpath on 13 June. C. pulchellum is a much-declined damselfly and a rarity in SW Wales. JRE also recorded two males of the hairy dragonfly Brachytron pratense around the small pond on the same reserve, and he additionally noted this local species at Furnace Pond (=Trebeddrod Reservoir) 22/504022 earlier on 2 June. Brachytron was also recorded by George Hutchinson (GH) and the author whilst engaged on botanical fieldwork at Tywyn Burrows 22/36-04- in mid June, and James McCallum noted six over drainage dykes just N. of the railway crossing near Cwmcoch 22/357187 on 5 June. A visit by JRE to Sandy Water Park 22/497005 on 17 June showed the common blue damselfly Enallagma cyathigerum and the blue-tailed damselfly Ischnura elegans to be the dominant two species (both with c.30 seen) on this rather new and extensive water body. About a dozen large red damselflies Pyrrhosoma nymphula, four azure damselflies Coenagrion puella and a single emperor Anax imperator were present.

John Steer provided some useful records for the very under-recorded NW of the vice-county with seven species near Llangeler 22/36-38- (C. boltoni, L. depressa, C. puella, P. nymphula, I. elegans, E. cyathigerum and S. striolatum).

A visit by the author and Julian Friese to the superb sedgy upland bog of Cors Bryn Mawr 22/671501 in early June showed the four-spotted chaser Libulella quadrimaculata to be the dominant dragonfly, with individuals also on the nearby Llyn-y-Gwaith (in VC46), and no less than c. 60 performed a mid-afternoon mass emergence near Cwmcoch on 5 June (J.McC.). Seepages on old spoil tips at Cynheidre 22/492085, with growths of common spike-rush Eleocharis palustris and Chara sp., supported a healthy, if small population of the keeled skimmer Orthetrum coerulescens, with c.8 mating pairs present on 12 July. Other Odonata included Pyrrhosoma nymphula (frequent), the green lestes Lestes sponsa (occasional), Enallagma cyathigerum (several), and a few scarce blue-tailed damselflies Ischnura pumilio (including ovipositing individuals). On the settling ponds downslope (to the N.) were Ischnura elegans, more Lestes sponsa and a golden-ringed dragonfly Cordulegaster boltoni - proof that "wasteground" or "derelict" sites can hold interesting wildlife assemblages! Richard Howorth also reported Orthetrum coerulescens in 1993- two near Coed Bryngarreg 22/613447 on 7 July. The writer, G.H. and R.D.Prvce recorded a few late individuals of this species on upland flushes NW of Rhosmaen 22/727148 on 1 September, together with the common hawker Aeshna juncea, the common darter Svmpetrum striolatum and Cordulegaster boltoni. The old lead mine spoil tip at Rhandirmwyn 22/782435, with its shallow pools supported several of the local black darter Svmpetrum danae in late August (G.H. et al).

The black-tailed skimmer Orthetrum cancellatum was again viewed at the Machynys Pond 21/511981 and additionally noted at the new "Penrhyngwyn Pond" 21/516974, in late July. This increasing southern species shows an affinity for new water bodies with bare margins.

Acknowledgements
Appreciative thanks to the following for submission of records:
Jamie Bevan
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Richard Howorth
George Hutchinson
James McCallum
Graham Motley
John Steer

ODONATA RECORDING IN CEREDIGION (VC46) IN 1992 - A. P. FOWLES

Since 1988 dragonfly recording in Ceredigion has been coordinated by Ian Francis. He made a special effort to survey Key Sites for the Odonata

Recording Scheme run by the Biological Records Centre at Monks Wood and visited the vast majority of sites in Ceredigion which have produced records of the target species. His detailed site accounts are an invaluable record of the most important dragonfly sites in the county. Ian has now left to work for the RSPB in Aberdeen so there has been a lull in recording activity since his departure. We wish him well in his new job and we are grateful to him for his splendid efforts in setting dragonfly recording in Ceredigion on such a firm and organised footing.

The appeal of dragonflies and their relative ease of identification means that there are still several people in the county sending in records, and there were several interesting records in 1992. At the edge of Cors Fochno (22/63- 92-) on 28 May, three *Brachytron pratense* were seen: a pair *in cop.* and a female ovipositing in *Sphagnum* in the peaty ditch alongside Llangynfelyn Common. Cors Fochno also produced several records of *Orthetrum coerulescens* and *Ceriagrion tenellum.* Mike Bailey watched a male *Ischnura elegans* here as it fed upon a male *Ceriagrion* t*enellum* (J. Br. dragonfly Soc. 9: 20). An unusual record of *O. coerulescens* was the sighting of a male at Tanybwlch (22/587794) on 29 June by Red Liford.

At Rhos Llawr-cwrt NNR (22/411501), David Woolley started counting the numbers of adult *Ceriagrion tenellum* present on the boggy seepage between the two pingos, their only site on the reserve. Numbers peaked at a maximum of seven adults but shortly afterwards cattle badly trampled the area and no more *tenellum* were seen. This is one of only 4 known sites for the species in Ceredigion and hopefully this precarious population has survived the ordeal.

C. t*enellum* was reported from Denmark Farm (22/585537) in 1992 by Barbara Taylor, who examined the single female at close range. Denmark Farm is 6 kilometres from the nearest known colony and the ponds on the farm do not appear to be suitable to support a breeding population but it will be very interesting to see if there are any further records in future years. Dragonflies are comprehensively surveyed at Denmark Farm and eleven species have been recorded breeding, including *Anax imperator.* In all, a remarkable total of seventeen species has been recorded on the reserve, a heartening reward for all the hard labour put into restoring the wildlife potential of Denmark Farm.

A small but useful batch of records was received in 1992 from Mike Bailey, Dave Boyce, Lin Gander, Patrick Heron, Red Liford, Ian Morgan, John Steer, Neil and Barbara Taylor, and David Woolley. Hopefully, someone will take over the recording scheme to build on Ian Francis' excellent work. In the meantime, records can be forwarded to me at CCW Bangor.

CARMARTHENSHIRE BUTTERFLIES & MOTHS 1993 - I K MORGAN

The 1993 season was something of a mixed bag: on the debit side many common species of butterflies were at a seemingly low ebb and after the sheer abundance of clouded yellows Colias croceus in 1992, there was only one record of this migrant in 1993 (at Machynys 21/510980 on 3 Aug). To balance this though, there were several discoveries of hitherto unknown marsh fritillary Euphydryas aurinia sites, comprising records of adults in late May-June and also the distinctive larval webs in autumn. As is now traditional, the butterflies will be reviewed first followed by the moths. Records are those of the author unless otherwise indicated.

BUTTERFLIES

Whereas the rather undistinguished food plants (buckthorn Rhamnus cartharticus and alder buckthorn Frangaula alnus) are rather difficult for the botanist to find, male brimstones Gonepteryx rhamni seemingly flaunt themselves in spring, unmistakable with their bright yellow wings and rapid flight (females have more sombre colouring). Male brimstones were seen at Pantyffynnon 22/622108 (1/4) along the railway line at Ffairfach 22/629213 (10/4, Julian Friese) and also at Bynea Railway Station 21/550992 (10/4, George Hutchinson). Green hairstreaks Callophrys rubi, distinctive with their apple-green underwings, also are most noticeable in spring (peaking in mid-May). The writer and JF

counted at least 35 along the steep, bilberry-clad banks of a rough track which descends from Mynydd Llanvbydder 22/533394 to Nant Garedig, 22/526399 on 11 May. JF also reports 16+ individuals of this species from Mynydd Cynrhos 22/622327 overlooking Talley on 6 May and two days earlier, N.R. Thomas noted "several" on a different part (22/620325) of the same locality. Graham Motley (GM) et al recorded a singleton at Pyllau Cochion 22/498266 (NW of Felingwm uchaf) on 20 May.

The dingy skipper Erynnis taaes is another springtime butterfly, fond of sunny places where its principal food plant - bird's-foot trefoil Lotus corniculatus grows. Agricultural improvement has destroyed many of the flower-rich dry pastures it once inhabited, and consequently this species must have declined considerably. Nowadays old quarries (particularly on the limestone), "wasteground" and the coastal dune grasslands are its strongholds in the county. Individuals were noted in 1993 near Carmel 22/577160 (7/6, disused limestone quarry), Cvnheidre 22/493087 (8/6, colliery spoil tip) and six counted by Barry Stewart (BS) on an unimproved pasture E of Ty Mawr 22/424031 in the lower Gwendraeth valley (5/6); the next day he noted another N of Cwrt- y-Beynor. 22/434038. Andrew Lucas (AL) had dingy skippers at four localities:- one at Crwbin Common 22/480326 (1/6); two near Maes-llydan 22/512064 (2/6) and several at Cefn Llech Clawdd 22/365339 (17/6). He also recorded a few at Cae Cwm Tywyll 22/481239 cn 8 June. BS also recorded 5 marbled whites Melanargia galathea near Cwrt-y-Beynon on 17 July and others nearby (8 at 22/433037 and 4 at 22/432037). Marbled whites are a rarity in a Welsh context but surprisingly frequent in south Carmarthenshire; other localities where the species was recorded in 1993 are listed below:

(i) Llangennech 22/573023, disused railway by Morlais colliery - 6, 25/6.
(ii) SE corner of Upper Lliedi Res 22/51-04- 27/6 G.K.& R.D.Prvce
(iii) Derwydd railway station 22/61917S - c.7, 7/7 (a site first discovered a few years ago by N.R. Matthew).
(iv) NW of Bryntirion, Llanedi 22/583088 - "several", 8/7
(v) "Stonefield", Llanedi 22/588085 - "several", 8/7
(vi) Cynheidre 22/493087, rank re-seeded grassland and rough ground with abundant legumes etc 2, 12/7

(iv), (v) & (vi) are "new" sites.

As suggested in the opening paragraph of this account, marsh fritillaries figured prominently in the records submitted by recorders for 1993 and several new localities came to light. "Two worn individuals" were observed by GM & JB at Penygraig 22/742226 on 2 July and 3 were seen earlier at Rhos Pwll-y-Gawnen 22/292299, on 27 June (JF). No less than SEVENTY were counted on the wing by Barry Stewart at Pinged 22/422036 on 5 June, and he also noted 25 SW of Bryn Hwthan 22/438039; 4 WSW of the same site (22/437039); 1 E of Ty Mawr 22/424031 and 5 N of Cwrt-y-Beynon 22/434038 (all 5 or 6/6). All these sites are just inland from the Ffrwd Fen N.R. in the lower Gwendraeth valley. CCW grassland surveyor Richard Howorth noted two marsh fritillaries NE of Esgair (NNW of Esgairdawe) 22/606439 on 15 June and a single individual near Cae Mawr (also near Esgairdawe) 22/602415 on 21 June. This species is also reported to occur at Mynydd Ystyffiau-carn 22/472265 (Lionel Kellaway per Sarah Andrews). In late October, GM reported 11 marsh fritillary larval webs at Caeau Penybont 22/583126; 1 at Pant-y-bara 22/602179 and 2 at Caeau Anwylfan 22/697136. Others (up to c.ll webs) were found by the author and Andrew Lucas in a rank, Molinia-dominated pasture just south of Llyn Llech Owain 22/569148 on 10 October and Janet Crowden surveyed some "rhos" pastures south of Bryn-Withan (Llwyn-teg, Llannon 22/556073), finding 14 webs. Location of such webs is important for one can then pinpoint areas used for breeding by the marsh fritillaries. Details about marsh fritillary larval web, and other aspects of the species' 1ife-history, is given in Thomas & Lewington (1991): 152-153. Andrew Lucas noted some 35+ marsh fritillaries south of Llyn Llech Owain

22/568147 on 8 June and c35 near Rhydcymerau 22/577384 two days later. Twenty were counted by the same recorder at Cefn Blaenau 22/584414 (17 June) and 50 + at the rear of Tywyn Burrows 22/36-05- (13/6). John Steer reported two marsh fritillaries on some Molinia-dominated pasture in NW Carms near Llangeler 22/3638 on 27/5. A silver-washed fritillary Argynnis paphia was noted at the western end of Carmel Woods 22/592163 (2 Aug, A.L.) and Barry Stewart watched another amongst the small copses and well-wooded hedgerows N. of Cwrt-y-Beynon 22/434038 (17/7).

Small Pearl-bordered fritillaries Boloria selene were reported by Richard Howorth from the following sites

(i)	W of Cwm Dawe (Esgairdawe)	22/601404	23.6.1993 - one
(ii)	NW of Penybryn (" ")	22/605445	1.7.1993 - >20 individuals
(iii)	N of Blaen-dyffryn (")	22/602448	" - one
(iv)	S of Pant (" ")	22/608437	2.7.1993 - one

Graham Motley and Jamie Bevan also had small pear1-bordereds at:-

(v)	Rhyd-lydan	22/623421	15.6.1993 - c.20
(vi)	Llwyn-celyn	22/597328	18.6.1993 - c.5
(vii)	Caeau Taldre	22/655477	22.6.1993 - c.20

Four small pear1-bordereds were also seen by Julian Friese at Rhos Pwll-y-Gawnen near Trelech 22/292299 (21 June) and Julian was extremely lucky to see, on 23 August, what is perhaps the County's most elusive butterfly - the brown hairstreak Thecla betulae a female of which landed on the hedgebank outside "Towy View", Ffairfach 22/641227. Another small pearl-bordered fritillary was additionally noted on a mire near Pontarsais 22/436272 (Morfydd Lloyd).

Graylings Hipparchia semele were noted (various dates, June-Sept) by George Hutchinson on the slopes of Mynydd Du (22/71-16-, 73-18- & 74-14-) on dry grassy/heathy areas - often rocky and south-facing. The preference of the grayling for free-draining sites which shed water rapidly has been noted by many authors - indeed it is a requirement as the grayling's chrysalis develops underground where damp-related diseases could be a problem (Dennis, 1992).

MOTHS

A substantial number of records was again provided by Barry Stewart - mostly as a result of his moth sampling in the Lower Gwendraeth valley (Pinged-Ffrwd etc). On 6 July for example, he took a beautiful carpet Mesoleuca albicillata (a rather local species which feeds on brambles) at just N of Waun Baglan wood 22/438034, on the slopes of Mynydd Penbre. Four noteworthy species were amongst the commoner species trapped here on the night of 23/24 June - a plain golden-Y Autographa iota, a privet hawk moth Sphinx ligustri and two each of a spinach Eulithis mellinata and a straw underwing Thalpophila matura. The spinach's caterpillars feeds on various currants and is consequently most often associated with gardens whilst the straw underwing is a most infrequently-recorded moth in SW Wales.

Among the crop of moths from the Ffrwd Fen N.R. (22/421027, 28/29 June) were: pinion-streaked snout Schrankia costaestrigalis; 7 round-winged muslins Thumatha senex; a dingy shell Euchoera nebulata; a double-lobed Apamea ophiogramma (it feeds on reed sweet-grass Glyceria maxima, which is abundant in the old canal), and a willow-carr species - the small seraphim Pterapherapteryx sexulata. A few days later (4/5 July), a poplar grey Acronicta megacephala was taken just E of Tv-mawr 22/424031; this species feeds on willows or poplars. Back at Ffrwd (on 6/7 July) a southern wainscot Mythimna straminea was taken again this year.

Towards the end of July (20/21) a privet hawk moth and a fern Horisme tersata were captured at Coed 22/427025; Horisme is rarely recorded in Wales. On the

same date, a wormwood pug Eupithecia absinthiata (a composite-feeder) was taken at Bryn teg 22/432029 whilst another pug species - the ash pug E. fraxinata - was amongst the catch near Cwrt-y-Beynon 22/433037 on 14/15 August. A small rufous Coenobia rufa was also captured.
Steve Lucas regularly trapped in 1993 at his home at 35 Maesquarre Road, Betws (22/642121) in the Amman valley. Around this site there is an abundance of acidic pasture and much woodland, both ancient and secondary. Additionally, as befits a partially built-up area, wasteground and cultivated areas are also frequent. All this resulted in good catches of a large number of species - some 170 in 1993 - including some which are scarce in SW Wales. The highlights are given below:-

Oak hook tip Drepana binaria (27 Aug)
Figure of eighty Tethea ocularis (9 June)
Peacock moth Semiothisa notata (28 June)
Small elephant hawk-moth Deilephila elpenor (28 June)
Garden dart Euxoa nigricans (28 June)
Broad-barred white Hecatera bicolorata (9 June)
Double line Mythimna turca (28 June)
Pale mottled willow Caradrina clavipalis (25 June & 20 Sept)
Marbled white spot Protodeltote pygarga (3 July)
Scarce silver line Bena prasinata (2 July)
Golden plusia Polychrysia moneta (3 & 20 July)

Some of these listed may, after more methodical trapping, prove to be reasonably widespread or frequent in the county. The golden plusia however is a particularly satisfying record (and seemingly also a new county record) of a species which feeds "on garden delphiniums Delphinium sp and monkshood (both wild and cultivated) Aconitum napellus.

Andrew Lucas also continued to actively moth-trap at various sites during 1993. The more noteworthy of Andrew's records are likewise listed:-

Grey birch Aethalura punctata Trapp (28 April)
Blomer's rivulet Discoloxia blomeri Carmel Woods (10 June)
Northern spinach Eulithis populata Carmel Woods (21 July)
Pretty chalk carpet Melanthia procellata Carmel Woods (30 July)
Small elephant hawk-moth Deilephila porcellus Trapp (10 June)
Short-cloaked moth Nola cucullatella Carmel Woods (12 July)
Barred chestnut Diarsia dallii Carmel Woods (21 July)
Burnet companion Euclidia glyphica nr Rhydcymerau (10 June)
Silver Hook Eustrotia uncula Cefn Blaenau (10 June)
Southern wainscot Mythimna straminea Trapp (2 July)

(Grid refs, of sites: Carmel Woods - 22/599164, Cefn Slaenau - 22/580415, nr. Rhydcymerau - 22/577385, nr. Trapp - 22/658182.

Also worth mentioning is AL's observation of an influx of c100 silver-Y's Plusia gamma at Ragwen Point 22/211072 on 18 October.

The best moth record of the year was probably Julian Friese's sighting of the diurnal wood tiger Parasemia plantaginis, observed at close range amongst heather on Mynydd Moelfre 22/330344 on June 27. JF also noted scarlet tigers Callimorpha dominula at two localities: (i) one near Llangynog Quarry 22/337161, 26 June and a mating pair at (ii) Cors Goch Llanllwch 22/365187 5 July.

Indeed, there was a spate of scarlet tiger records in 1993. All are listed below:
(iii) one at Dyfatty marsh near Burry Port 22/467010, 24 June (IKM)
(iv) one at Caeau Llwyn-celyn 22/597328 18 June (Graham Motley & Jamie Bevan).
(v) one at Caeau Llwynbwch 22/682313, 23 June (GM & JB)

(vi) two at Caeau Gellyfawr 22/598172, 29 June ("")
(vii) four W of Esgairdawe 22/601409, 22 June (Richard Howorth)
(viii) two at SW of Esgairdawe 22/605443, 1 July (RH)
(ix) one N of Blaen-dyffryn 22/602448, " "
(x) eight S of Pant 22/608437, 2 July (RH)
(xi) one SW of Llwynrhos 22/648433, 19 July "

A visit to Llyn-y-Gwaith 22/672505 on 5 June was rewarded by the presence of a red-necked footman Atolmis rubricollis on the slopes (in Carmarthenshire) to the south-east of this oligotrophic lake. Some noteworthy 1993 records were also received from James McCallum - a silver hook Eustrotia uncula on acidic pasture near Blaengors 22/434275 (2 June) and two interesting records from near Bronwydd 22/420237 - a white-pinion spotted Lomograoha bimaculata (23 May) and an oak nycteoline Nycteola revayana (26 Hay). A six-belted clearwing Bembecia scopigera was caught in flight in a small, disused limestone quarry SW of Carmel 22/577161 on 1 July - a third county record (IKM)

Acknowledgements
The recorders who have contributed to this year's review are listed below. All are sincerely thanked for their efforts - both recording in the field and for communicating their records, many of which are of significance.

Sarah Andrews	Richard Howarth	James McCallum
Jamie Bevan	George Hutchinson	Graham Motley
Janet Crowden	Morfydd Lloyd	John Steer
John Ellis	Andrew Lucas	Barry Stewart
Julian Friese	Steve Lucas	N.R. Thomas

It is sad to record that Barry Stewart, stalwart of moth recording for the last five years and a fine general naturalist, has left the county. May I offer additional thanks to Barry for all he has contributed.

A paper of Barry's, summarising what is known about the micro lepidoptera of Carmarthenshire, has recently appeared in the DIG Newsletter*.

References

Dennis, R.L.H. (Ed) (1992) - The Ecology of Butterflies in Britain. Oxford Univ. Press: 15-16.

*Stewart, B. (1993) - A Review of the Micro Lepidoptera in Carmarthenshire.Dyfed Invertebrate Group Newl. 27

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DIPTERA RECORDING IN CARMARTHENSHIRE, 1993

I.K. Morgan

Little recording was carried out in 1993. Indeed, virtually the only record of note made by the writer was just over the vice-county boundary into Ceredigion, VC46 - the individual of Sericomyia lapponum on a bog 22/669505 at the head of the oligotrophic Llyn y Gwaith on 5 June. The small wasp-mimic Chrysotoxum arcuatum was noted in a flowery bank in the Crychan Forest 22/841405 in early August.

The first "bee-fly" Bombylius major put in an appearance, typically on flowers of lesser celandines, in fine weather at Stradey Woods 22/49-01- on 26 March, whilst the scarcer (and smaller) Bombylius canescens was observed at flowers

of wild thyme on the limestone outlier of Carreg Cennen 22/670292 (29 June). The "bot fly" Gasterophilus intestinalis bothered horses in pastures near the WWT Centre at Penclacwydd 21/532938 on 22 July, whilst the scarce cleg Haematopota grandis (det. S.J. Falk) was caught at Llangennech 22/571020 (in saltmarsh/wet pasture habitat) on 23 July. An individual of the robberfly Machimus atricapillus, resting on a log in a cleared plantation near Gelli Aur 22/585195 (2 Aug) was an useful record as was Xylophagus ater seen, earlier in the season, amongst alder carr SW of Cilsan Bridge 22/580205 (5 May). Perhaps the most surprising record of 1993 was the occurrence of Stratiomys singulario r (= furcata) at an inland site - a siltation lagoon below the old spoil tips of the former Cynheidre colliery 22/491088, 28 May. Interestingly, the saltmarsh sea club rush Scirpus maritimus also grows around the same pond.

The survey* of a handful of coastal fenland sites by Peter Kirby yielded some worthwhile records, including the sciomyziid ("snail-killing") flies Antichaeta analis (RDB3), Psacadina verbeckei and Pherbellia schoenherri from Llangennech 22/569018, and the little bottle-green stratiomyiid Vanoyia tenuicornis from Dyfatty Marsh, Burry Port 22/457009 (17 June). The "strats" Beris geniculata (at Dyfatty Marsh) and Pachygaster atra (at Techon Marsh, Llwynhendy 21/540994) are apparently new to the vice-county; Nemotelus nigrinus (at Llangennech) was another useful record made by P.K. The hoverfly Melangyna umbellatarum collected on 22 September at Dyfatty Marsh was new to the vice-county list as was Platycheirus occultus (the latter species resulting from the "splitting" of P. angustatus s.l.). P. occultus was also recorded at Techon Marsh. Platycheirus fulviventris and Helophilus trivittatus at Dyfatty Marsh, Lejogaster splendida from Glynea Pond, Bynea 21/554989, and L. splendida and P. fulviventris at Llangennech are other hoverfly records worthy of mention.

The survey also provided numerous presumed new county records of other dipterans of various families.

In DIG 24:23 (April 1992: Diptera recording in Carms., 1991), reference was made to the possibility of Antherix marginata being found in Carmarthenshire. In fact, the author had overlooked the fact that this scarce fly has already been recorded (by himself) on the shingle beds/wet carr at Llwyn-Jack, SW of Llandovery 22/755331 on 18 June 1987. The specimen was det. by S.J. Falk.

Additionally, readers' attention is drawn to the omission of Antherix marginata from the summary of "Recording of Larger Brachycera in Carmarthenshire" DIG 27:7 (Autumn 1993).

*Kirby, P. (1994). South Carmarthenshire Fens Invertebrate Survey 1993 - Species Lists, 8 Feb. 2994 (unpub.report to CCW).

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

The amount of recording by dipterists in the county during 1992 was negligible and this is reflected in the brevity of the following account. In fact it was left to coleopterists to make the major discovery of the year when investigating the beetle fauna of old oak trees in Parc Pont Faen (22/496590). Amongst the redrot of a splendid hollow oak (Q12852), several distinctive fly larvae were collected (in association with abundant larvae of the anobiid beetle *Dorcatoma chrysomelina)* on 23 August. Subsequent investigation showed that these were therevid larvae. Most therevids develop in sandy soil and only a single species, *Psilocephal*a *melaleuca* (RDB 1), is known to inhabit ancient trees. British records of this species are confined to a few sites in the London area, particularly Windsor Forest, where it is known to breed in red-rotten oaks. Whilst it would seem that there is little doubt that the Pont Faen larvae are also *P. melaleuca*, confirmation by rearing larvae to the adult stage is desirable. However, they are reputed to be very difficult to rear and up to now (April 1994) the specimens I have kept for this purpose, though still alive, have shown little sign of development. Patience is called for!

The remaining 1992 Diptera records of note are all from wetlands. The notable snail-killing fly *Psacadina verbekei,* which is not uncommon in Ceredigion, was recorded at Banc-y-mwldan (22/201489) and Rhos Bwlch-y-rhandir (22/593733). Another sciomyzid of interest collected at Banc-y-mwldan on 25 July 1992 was a possible *Tetanocera freyi,* although the specimen was a female and cannot be identified with certainty. Banc-y-mwldan also produced second vice-county records for two species - the soldier fly *Beris fuscipes* (previously recorded here in the adjacent 10-km square in July 1987) and the hoverfly *Platycheirus nielseni.* The dung fly *Scatophaga scybalaria* was recorded at Rhos Bwlch-y-rhandir on 19 September 1992.

I am grateful to Mike Bailey, Dave Boyce, Austin Brackenbury, Lin Gander, Mike and Liz Howe, and Ian Morgan for their records.

COLEOPTERA RECORDING IN CARMARTHENSHIRE, 1993 I.K. Morgan

Again little fieldwork was completed, with few records of significance. The "cardinal beetle" Pyrochroa serraticornis was at Rhyd-y-Gors 22/405193, Llangennech Park 22/562022 and near Rhiw'r Adar 22/597227 in late May/early June and Platypus cylindricus was on an ancient, moribund sweet chestnut in Stradev Woods 22/489014 on 3 July.

Trichius fasciatus was noted feeding at the flowers of ox-eye daisies along the railway line above the Llangennech saltmarshes 22/573023 (16 June); its larvae doubtless utilising the enormous accumulations of drift wood hereabouts.

The attractive Chrysolina fastuosa was at Dyfatty marsh 22/467010 (again 16 June) whilst Chrysomela populi was abundant on creeping willow NW of Bryn-tirion, Llanedi 22/583088 on 8 July. Oiceoptoma thoracica was on a fruiting body of "stinkhorn" Phallus impudicus in a larch plantation at Taliaris Park 22/635282 in mid-August, while the local longhorn Strangalia quadrifasciata was netted in Stradey Woods 22/48-01- on 3 July and observed on wild parsnip umbells at Llangennech 22/577023 on the 13th of the same month.

Peter Kirby's survey of several coastal fens provided a number of very interesting records with, for example, the wetland soldier beetles Cantharis lateralis and Silis ruficollis at Llangennech 22/569018, the former new to Carmarthenshire, as was the Adonis ladybird Adonis variegata. Other NCR's at Llangennech were the ground beetle Agonum micans - (also at Glynea, Bynea 21/554989 and Techon Marsh, Llwynhendy 21/540994), and the hydrophilid beetle Enochrus quadripunctatus. The notable beetles Elaphrus uliginosus, Cassida murraea, Notaris scirpi, and Paederus riparius were also collected at Llangennech.

Glynea Pond, Bynea, an area of brackish marsh with adjacent Typha and Phragmites, produced three water-beetles new to Carmarthenshire – Coelambus impressopunctatus, Enochrus coarctatus and E. bicolor; and two weevils Anthonomus bituberculatus and Ramphus pulicarius. Dyfatty Marsh, Burry Port 22/457009 yielded the chrysomelids Donacia marginata and Galerucella pusilla, the weevil Cleopus pulchellus (both new to the county) and the notable weevil Notaris scirpi. The weevil Protapion fulvipes at Techon Marsh was another NCR. Notables at the latter fen were Silis ruficollis, Cassida murraea and the water beetle Cercyon ustulatus. Three notable water beetles were also recorded by Peter Kirby at Machynys Ponds 21/512980, namely Rhantus grapii, Enochrus halophilus and Helochares lividus. There were additionally new county records of various - often common - species for poorly-worked beetle families.

SPIDER RECORDING IN PEMBROKESHIRE (VC45) IN 1993 S. DOBSON

There was even less spider recording in the county than in previous years. The only records are from the course at Orielton Field Centre in August, and as there were only three participants, these are necessarily few.

There was one addition to the county list. This was Philodromus praedatus, a

been recognised in this country comparatively recently. It is typically found by beating oak trees and it is not surprising that two females were discovered in the oaks at Tycanol.

The colony of Atypus affinis, devastated by choughs at Stackpole two years ago (Dobson, 1992), was examined and over twenty webs were found, so it does not appear to have succumbed. A visit to the Atypus site at Marloes produced one web, but this was a very hurried visit with no time for a lengthy search.

On a visit to Skomer, many of the Manx shearwater nests were examined by lifting the plugs used to extract the chicks for ringing (with the warden's permission!). Metellina merianae, a spider normally found in dark, damp places, was found in several of them.

Apart from these, the records merely supplemented previous site records.

REFERENCE

Dobson, S. (1992). Spider Recording in Pembrokeshire (VC45) IN 1991. DIG Newsletter 24:27-28

HEMIPTERA: CARMARTHENSHIRE HETEROPTERA AND HOMOPTERA RECORDS, 1993 - I.K. Morgan.

As could be expected, Peter Kirby's South Carmarthenshire Fenland Survey produced several additions to the vice-county list; these are given below:

GLYNEA POND, BYNEA 21/554989
Hesperocorixa sahlbergi (Nb) - 19 Sept 1993
Saldula opacula (Nb) - "

DYFATTY MARSH. BURRY PORT 22/457009
Dicyphus globulifer - 22 Sept 1993
Tytthus pygmaeus - "
Tingus ampliata - "

The vice-county list for heteropteran bugs now stands at 247 species.

HOMOPTERA

The leaf hoppers Aphrodes albiger (new to Wales) and the froghoppers Delphacodes capnodes (Nb) and Megamelodes lequesnei were taken at Dyfatty Marsh. Delphacodes was also recorded at Liangennech 22/569018 together with Oliarus leporinus. Glynea Pond provided a third site for Delphacodes and the rare Calligypona reyi (RDBK). Calligypona is only known from five other British sites, including one elsewhere in Wales (Peter Kirby, pers. comm. 1993). Paralimnus phragmites was also collected at Glynea, it previously already having been recorded at this site.

All the above leaf/froghoppers have "notable" (N) status, ie they are known to occur in less than a hundred 10km squares. RDBK = taxa which are suspected to fall within Red Data Book categories but which are currently insufficiently known for assignment.

There were also many NCR's for common species of Homoptera emanating from Pete Kirby's survey.

SHORT NOTE

Adrian Fowles has drawn my attention to a paper in the Transactions of the Cardiff Naturalists Society (1952) 80:8-11, entitled "Additions to the known spider fauna of Glamorgan, Carmarthen, Monmouth and other counties in the British Isles" by A.M. Wild. This paper provides records for 18 spider species

collected at “Kidwelly Flats” 22/4120S0, Towyn (=Tywyn) Burrows 22/37-04- and "localities near Carmarthen".

The highlights of this summary are the records of Synageles venator at Tywyn Burrows on 28 May 1950 and Liocranum rupicola "roadside near Carmarthen" (and a mention of a previous record near Llandovery).

The discovery of this paper explains the source of various Carmarthenshire records cited by Merret (1974).

Reference

Merret, P. (1974). - Distribution maps of British spiders. British Spiders Vol 3. Locket, Millidge *G.* Merrett. Ray Society: 132-285

MISCELLANEOUS INVERTEBRATE RECORDS, CEREDIGION 1992 - A. P. FOWLES

Hemiptera

Casual recording of Heteroptera during the year produced records of three species new to the vice-county, bringing the total for VC46 to 217 species. The nationally scarce mirid *Adelphocoris seticornis* was swept from the flush vegetation of Banc-y-mwldan (22/201489) by APF on 25 July 1952. *Phylus melanocephalus* and *Psalus perrisi,* both of which are mirids associated with oak, were collected by Ian Morgan from the parkland at Old Cilgwyn (22/31-41-) during the DIG field meeting on 7 June 1992.

Hymenoptera

Material collected in water traps by NR Thomas at Coedmor NNR in 1990 has recently been identified by APF and Mike Edwards. The seven traps operated between 19 July and 16 September captured 32 species of non-social aculeates, totalling 246 specimens. A single *Trychrisis cyanea* was the only chrysid captured but surprisingly there were 23 specimens of four species of pompilids, *Anoplius nigerrimus*, *Arachnospila anceps, Procnemis fennica* and *Auplopus carbonarius.* The single A. *carbonarius,* a nationally scarce spider-hunting wasp with very few Welsh records, was taken in Hafod Wen meadow (22/202428) in early August (conf. SJ Falk}. The ten species of solitary wasps included *Pemphredon morio,* a nationally scarce sphecid (one in the River Meadow (22/202431) in early August), and the local *Crossocerus styrius.* The seventeen species of solitary bees trapped were all relatively common and widespread, although *Lasioglossum lativentre* (one in the River meadow trap in early September) is probably new to Ceredigion.

A 1992 addition to the county list of aculeates was the jewel wasp *Chrysis impressa* (det. M. Archer), taken by APF as it investigated cracks in the cottage wall of Rhyd-y-gwin, Llanfarian (22/554767) on 21 May.

Two oaks (Q18 & Q55) at Parc Nanteos (22/621732) had single oak apples on 21 May 1992. Oak apples are the gall produced by the cynipid wasp *Biorhiza pallida* and, unlike the familiar marble gall (caused by *Andricus kollari),* they seem to be rather scarce in west Wales. These are the first examples I have knowingly seen in Ceredigion and I suspect that it is also rare elsewhere in west Wales. Oak apples support the nationally scarce weevil *Curculio villosus* as an inquiline and this species has been recorded from six vice-counties in Wales, including Carmarthenshire, so oak apples are probably more widespread than my observations suggest. I would be interested to receive records from readers of any localities in Wales where oak apples are relatively abundant.

HYMENOPTERA: Formicidae

ANTS IN CEREDIGION, VC 46 - A.O. CHATER

Introduction

This survey and the maps in it are based on records made between 1986 and 1993, when an attempt was made to map the ant species in Ceredigion on a tetrad basis. Although very incomplete, enough has emerged in the way of distribution patterns and habitat preferences to make a preliminary report worthwhile. I am concerned here more with the wider aspects of distribution than with the details of the ecology of the various species.

Earlier ant records for Ceredigion, VC46, are few. No exhaustive attempt has been made to track them all down, and they are mentioned here only when they are of particular interest. Richards (1944) in the north of the district and Scudder (1956) on Cors Caron are among the early recorders whose records are summarised by Collingwood & Barrett (1964). Alexander (1981 etc) recorded ants on several National Trust properties. A major source of records for the present survey has been a series of programmes using pitfall and/or water traps under the auspices of the Nature Conservancy Council (now the Countryside Council for Wales), especially that of the Welsh Peatland Invertebrate Survey (WPIS) 1986-87 (Holmes, Boyce & Reed 1991), that on Cors Fochno NNR, ongoing since 1986 (Fowles 1987; Chater 1988), two smaller programmes in woodlands in the Coed Rheidol NNR (1987-89) and in the Coedmor NNR (1990) and one on river shingles (1987).

Problems of identification in the early stages of this survey were eased by the kindness of Barry Bolton, and later by Simon Hoy, both of whom checked specimens for me. I am greatly indebted to Adrian Fowles for numerous records and for help with the literature, and to Dave Boyce for information from the WPIS and for many records of his own. Others who have provided useful records include R.P. Bray, S.P. Chambers, W.M. Condry, E.J. Davies, J.L. Davies, C.J. Fuller, L.R. Gander, R. A. Spencer and N.R. Thomas.

Habitats

Ant distribution in Ceredigion seems to be particularly related to the main geographical features of the district, reflecting habitat features such as rock structure, soil structure and moisture, exposure and insolation, and vegetation cover. In some of the commoner and more consistently soil-nesting species it often seems possible to correlate the distribution of ant species with that of the main soil associations (for soil distributions see Rudeforth 1970 & 1994, and Rudeforth et al. 1984). This is easier for inland and upland sites and I have not attempted it for sites along the coastal slopes; my comments on soils are thus very partial. As well as 10km square and some tetrad maps, I have also included histograms of the altitudes of records of the commoner species to provide a further way of looking at their general differences in distribution.

The rocks throughout Ceredigion are Silurian and Ordovician mudstones, shales and sandstones, overlain in places by areas of boulder clays, extensive peatlands, screes, alluvial deposits with river shingles and gravels, and blown sands. The predominantly rocky coastal slopes, although mostly north and west-facing, are comparatively well insolated, have dry soils with much open ground and sparse, short, often heathy vegetation, and are a stronghold for the ants Formica fusca, Lasius alienus, L. flavus. L. niger, Mvrmica sabuleti, M. scabrinodis and Tetramorium caespitum. The deep, mostly east-west valleys through the uplands, from the Ystwyth valley northwards, are another feature with a particularly ant-rich fauna, where on the south-facing slopes there is often a mixture of sunny rock outcrops, stony or heathy slopes and slopes with well-drained, fine loamy soils; these sites have Formica fusca and more commonly F. lemani, Lasius flavus, L. niger, Mvrmica lobicornis, M. ruginodis, M. sabuleti and M. scabrinodis. The peaty and podzolic soils and blanket and other mires of the uplands in this northern part of the district and east of the upper Teifi have Myrmica ruginodis as by far the commonest species, lesser numbers of M. scabrinodis, surprising local abundance of M. rubra, and Formica lemani in the drier sites.

The large area of Ceredigion south of the Wyre valley, between the Teifi and the coastal fringe, mostly at 150-350 m. a.s.l., is remarkably poor in ants. Myrmica ruginodis is the only widespread and common species, with sparser M. scabrinodis. M. rubra, Formica fusca and F. lemani, and virtual absences of such otherwise common species as Lasiusflavus and L. niger. The high proportion of improved pastures and the general lack of deep valleys with dry south-facing stony slopes and of other dry open habitats, probably explains this paucity of species. The generally intensively farmed Teifi valley is also poor in ants, although Myrmica rubra is widespread and there is local abundance of Lasius flavus and some L. niger, Myrmica ruginodis (though much less than M. rubra) and M. scabrinodis. Lowland areas elsewhere in Ceredigion have rather similar proportions of these species.

The larger and denser woodlands, as in many other parts of Britain, are poor in species, although the drier coppiced oakwoods usually contain Myrmica ruginodis, and the damper lowland woods often have M. rubra. Stenamma debile is in several lowland woods on deep soils, and Formica rufa (the wood ant) colonies are a notable feature of both natural oakwoods and conifer plantations in the north of the district. The extensive sand dunes of the Ynys-las NNR support few ants except Lasius niger. This species is also the chief one on the river shingles and shingle heaths along the Ystwyth and Rheidol rivers, but here many others also occur, especially L. alienus, L. flavus, Formica fusca, F. lemani, Myrmica ruginodis and M. scabrinodis.

The two major raised mires of the Cors Fochno and Cors Caron NNRs support large populations of Myrmica ruginodis and M. scabrinodis, with Lasius niger fairly abundant on the former. Both mires have some Leptothorax acervorum, and Cors Fochno surprisingly has Myrmecina graminicola in its only Ceredigion station. Other lowland and middle altitude mires and fens have chiefly Myrmica ruginodis in denser, taller vegetation and M. scabrinodis in more open, shorter vegetation, and the same separation is a feature of other sites which they share such as grassy slopes, and agricultural land where M. scabrinodis is often confined to banks and path sides.

Some of the richest ant sites in Ceredigion are the dry, rocky knolls with small areas of often rather open oak woodland, on a mixture of well-drained podzolic soils and brown earths, where soils of these kinds (of the Manod association) otherwise of upland type came down to almost sea level along the east side of the Dyfi estuary (Rudeforth 1994). In one such site south-west of Craigypenrhyn, 22/652924, nests of ten species have been found, including Formica rufa, Lasius fuliginosus and Leptothorax acervorum. Of species characteristically nesting in rotting, hollow tree trunks only a few nests have been found in Ceredigion; Lasius fuliginosus is in several trees at this site and in a few others, and L. umbratus nests have been found in old parkland oaks at Hafod and Trawsgoed.

Conservation

The chief priority for conservation among ant populations in Ceredigion is the colonies of Formica rufa, and only about 15 of the current total of c.100 nests are in areas with formal protection: one in the Coed Simdde-lwyd Dyfed Wildlife Trust Reserve, which is also part of an NNR, five in the RSPB Reserve at Furnace, and about seven in the linear Ffordd Coed Dol-fawr SSSI on Powergen land in Cwm Rheidol; two more nests here are on Powergen land outside the SSSI. Seven nests are on Forestry Commission land at Gogerddan. The remainder are in private ownership. Of the site at Llancynfelyn, Fowles (1994) says: "As the only example of a rufa-dominated oakwood known in Wales, its conservation should be regarded as a high priority."

Four other species are of considerable local conservation interest. Of the two nests of Lasius umbratus, the one at Hafod is in an SSSI. Of the four Tetramorium sites, one is in the Allt Wen SSSI and one is on the Dyfed Wildlife Trust Cardigan Island Reserve. Of the five Stenamma debile sites, one is in the Coedmore NNR, one is in the Ynys-hir SSSI and RSPB Reserve, one is in the Coed Nant Llolwyn SSSI, and one is on the DWT Cardigan Island Reserve. The only Myrmecina site is on the Cors Fochno NNR.

Species accounts

Formica fusca (65 tetrads)
Widespread, especially along the coastal cliff slopes and in the upland valleys in the northern part of the district, but only 19% of all records are from over 200m a.s.l. and only 7% over 250m a.s.l. The main habitats are dry, well-drained, south or west facing rocky slopes, rock outcrops, screes, partially vegetated river shingles, leadmine and quarry spoil, railway embankments and stone banks. It is also quite often found in dry, usually open woodland. There are a few records from wet heath and fen sites, but it always seems in very low densities in such places. Nests have been found chiefly under stones in open ground and in rock crevices and shaley soil. Trails are often seen, especially in woodland, and workers forage widely and are often seen up trees and other vegetation.

F. lemani (52 tetrads)
Generally less widespread than F. fusca but much commoner than that species in the upland valleys and the uncultivated moorlands, 63% of all records coming from over 200m a.s.l. It is sparsely distributed along the coast, rare on the high ground between the Teifi and the coast, and has not been recorded in the Teifi valley. Its habitats are similar to those of F. fusca but it is even more restricted to exposed, sunny, stony slopes and is the commoner species in heathy sites; there is only one record from a fen site. It occurs in abundance in several recently felled conifer plantations, as by the Afon Merin, 22/772790, and by the Afon Tarenig, 22/823822, suggesting that it may be a rapid colonist of such sites. Nests have usually been found under stones on open rocky or stony ground, but a few mound nests have been seen in bracken and heathland. At Pontrhydfendigaid, 22/731664, a nest was found in damp soil under rank Cocksfoot and False Oat-grass on the east-facing bank of a water- filled ditch, a very unusual site.

F. rufa (7 tetrads)
Chater & Spencer (1989) described the distribution of this species in Ceredigion and included maps showing the location of all known nests. The following notes simply update this survey and refer to these maps. At Furnace (Map 1) in 1993 at least 4 nests were present in the wood east of the churchyard, there was one by Foel-fach, and the southernmost nest had moved into the garden of 1 Pandy. At Llancynfelvn (Map 2) 75 nests were found in May 1991, including 11 alongside the lane (where only 3 were known before), and there was an extension south-westwards of the main colony for some 25m. The isolated nest north of the road had gone. The owner of the land says that this colony of wood ants has been in existence to his knowledge for at least 50 years. Its importance is highlighted by Fowles (1994). At Tre'r-ddol (Map 3) both marked nests are gone, but a new nest was seen in 1992 at the base of the retaining wall on the east verge of the A487(T) below Coed Pantglas-mawr, 22/66249285 (c.250m north of the nest at 22/662925 that was deserted in 1989). This suicidally placed nest had gone by the next year. At Gogerddan (Map 4) there have been only minor changes. In Cwm Rheidoi (Map 5) three new nests were found in 1991 along the F.C. road, at 22/70007957, 70357958 and 70527952. In Coed Simdde-lwyd the two nests at 22/714787 are now one; on 1 July 1993 a trail of workers ran continuously for 86m westwards along the line of an old leat from this nest, an unusual distance for this species. About 100m east-southeast of this nest other trails indicated the presence of a further nest but none was found. Although no complete count has been made in any one year, it seems that there have been about 96-100 nests each year from 1991 to 1993, a slight increase from the numbers in 1984-1989.

Lasius alienus (30 tetrads)
Widespread and often abundant along the rocky stretches of the coast and in a very few sites in the uplands; 88% of all records are from below 200m a.s.l. On the coastal slopes it occurs chiefly on rock outcrops and screes, in stony, closely grazed turf and on stone banks. It also occurs on the partially vegetated backs of shingle beaches, in coastal heath, on stony boulder-clay slopes and in the marram dune area at Mwnt 22/194519 (but not on the much more extensive dune systems at Ynys-las and Gwbert, where L. niger is the only common ant). Inland it *is* on river shingle heath, leadmine spoil heaps, and on a few south facing rocky and heathy slopes. Nests have been found chiefly in rock crevices, under stones and in closely grazed turf and bare soil. At

Fron-gôg, 22/613812, a nest was found under stones on a damp, shaded roadside verge below a mortared wall, but this is the only record from such an uncharacteristic habitat.

L. flavus (123 tetrads)
Widespread and abundant along the coast and in uncultivated parts of the uplands (30% of the records come from over 200m a.s.l.), but rare on the high ground between the Teifi and the coast. It occurs in a great range of habitats but chiefly in dry, sunny places. In the uplands it is most abundant on the free-draining loamy Denbigh series soils in the Manod association, often on fairly steep slopes. Extensive areas dominated by dense arrays of mound nests can be seen in many places in the uplands, for example on the south facing slopes above Hafod, 22/759737, in Cwm Berwyn, 22/729581, and at Y Graig 22/687542. They are also a prominent feature of many heathy and grassy sites on the coastal slopes, as around Castell Bach, 22/361581 and at Pen Peles, 22/218523. In inland lowland areas there are few places where such arrays can be seen, but there is a good example in a small pasture near Henllan, 22/352407, and many mound nests can be seen in graveyards, as at Jezreel chapel, Goginan, 22/690813, and at Llancynfelvn, 22/649922. Field banks, gardens, river shingle heath, streambanks, open woodland and scrub, unimproved pastures and rocky slopes are favoured nesting sites, and the majority of nests found have been under stones or in turf and soil rather than as mounds. L. flavus was presumably much more widespread, especially in the uplands, before re-seeding of pastures and afforestation made so much of its preferred terrain unsuitable.

L. fuliginosus (10 tetrads)
Rare in the district and recorded usually as isolated nests. All sites are in the lowlands, below 170m a.s.l. It is curious that of the twelve sites, three are on railway tracks. The others are in woodland or scrub, with one in an isolated tree on a river bank and two in hedges. Located nests have been in holes and stumps of Oaks (8), Norway Maple (1) and Elm (1), under stones in open woodland, and in railway ballast. Trails are conspicuous from most of the nests. The open oak wood on a rocky ridge south-west of Craigypenrhyn, 22/652925, mentioned earlier, is the only site where a group of nests has been found.

L. mixtus (6 tetrads)
Apparently rare but probably under-recorded in comparison with most other species. Three of the five sites are on the coastal slopes: workers under a stone on the dry, grazed, grassy clifftop just north of Morfa Bychan, 22/565775 (conf. B. Bolton); several nests under stones embedded 10-20 cm deep in wet soil in flushes on the north facing slope above the sea at Castell Bach, 22/359579 - 360579); and a nest in a Mo1inia tussock in a damp north- northeast facing gulley just west of Pen Peles, 22/216522. The inland records are of a nest under a boulder embedded c.20cm deep in Sheeps Fescue/Molinia grassland at 240m a.s.l. by the Nant Clywedog-uchaf, 22/644516 (conf. S. Hoy), and of a worker caught in a pitfall trap in river shingle at 15m a.s.l. at Tynrhelyg, 22/595765.

L. niger (73 tetrads)
Common in many habitats along the coast and in the valleys in the north of the district, with a number of records along the Teifi valley. Like flavus it seems largely absent from the high ground between the Teifi and the coast, but unlike that species it is largely absent from the uplands, only 9% of records coming from over 200m a.s.l. It occurs chiefly in dry habitats, and is also abundant on cliff slopes, partially vegetated coastal beaches, dry grassland and boulder clay slopes. Away from the coast it occurs on rocky slopes, banks, wails and ruins, river shingle and heath, leadmines, in gardens and on waste ground. It never seems to occur in woods or even in scrub. It is regularly found in pitfall traps on the raised mire of Cors Fochno, at sea level, but there are few other records of workers from mires and fens. Nests have usually been found under stones, in grass tussocks, or as mounds.

L. umbratus (2 tetrads;
There are only two records from the present survey, both of nests from ancient hollow oaks in parkland. One at Hafod is a tree 424cm girth on a south facing

slope (conf. S. Hoy). The other is at Trawsgoed in a tree 458cm girth on level ground.

Leptothorax acervorum (19 tetrads)
Sparsely recorded and chiefly in the uplands. Of the few lowland sites two are in coastal heath, in Cribach Bay, 22/250521, and on New Quay Head, 22/381602, one is in the oak wood south-west of Craigypenrhyn, 22/552924, one is in a garden bordering woodland at Coed Nant Llolwvn, 22/584767, one is in Llangwyryfon old churchyard, 22/597705, and one is in a discarded tree stump in a pasture at Denmark Farm, 22/585536. The only site where the species has been found to be widespread and fairly common is on the raised mire of Cors Fochno, and it has also been recorded a few times on Cors Caron. At over 200m a.s.l. it occurs on stony slopes, dry banks and walls, stone heaps, river shingle, open woodland and heath. Nests have been found in dry rotten stumps and logs, and under stones and fenceposts.

Monomorium pharoensis (1 tetrad)
E.J. Davies, Ceredigion District Council Pest Control Officer (pers.comm. 1991) reported a large colony of this alien species in the kitchen, heating system etc of the Awel Deg Old People's Home at Llandysul, 22/414408, in 1989-90. It was successfully eradicated, but unfortunately no specimens were kept.

Myrmecina graminicola (1 tetrad)
The only records are from the raised mire of Cors Fochno, a surprising habitat for this species. No nest has been found, but in most years a few workers and females are found in pitfall traps along the boardwalk, 22/635915 etc. Several nests at least must be present in the open mire. Its normal nesting site is under stones in deep soil in sunny pastures, vegetated screes or open woodland, usually on calcareous soils. Cors Fochno seems to be about its north-western limit in Britain.

Myrmica lobicornis {7 tetrads)
Of the seven records from the present survey, five are of workers or nests: there are several nests among heather on spoil at Cwmsymlog leadmine, 22/699837, and under stones on a steep, south-facing sheep-grazed grass slope at the east end of Cwmystwyth leadmine, 22/809748; workers have been seen in Western Gorse heath on a south-facing slope in the Cyneiniog valley, 22/712880, and in similar heath south of Banc-y-mor on the coast, 22/562741; at Rhos Cross Inn, 22/620731, workers were found in rhos pasture. Females have been found at 460m a.s.l. above the Llyfnant valley, 22/748947, and in a pitfall trap at 430m a.s.l. at Figyn Blaen Brefi, 22/716546. O.W. Richards (1944) recorded the species in the Llyfnant in 1943.

Myrmica rubra (71 tetrads)
Widespread throughout the district except for the uplands; 82% of all records are from below 200m a.s.l. It occurs widely on the well-drained brown earths of the Denbigh association, and on gleyed alluvial soils of the Teme and Conway associations on the floodplains of the main river valleys. It is especially common on the coastal flatlands south of the Dyfi, around Aberystwyth, and between Llanrhystud and Aberaeron, as well as in parts of the Teifi valley. Although usually the chief species in cultivated land and improved pastures, it occurs in a great range of habitats including woodlands and scrub, the upper levels of saltmarshes, vegetated shingle, dune slacks, roadside verges, gardens and leadmines. With two remarkable exceptions, there are few records of workers from raised mires and other peatland sites, and they are usually of much smaller numbers than those of M. ruginodis at the same sites. M. rubra was, though, the most abundant ant recorded by the WPIS at two of the three highest sites they sampled: Gors Lwyd at 390m a.s.l., in an area of eroding peat hags, 22/856754, and in an area of blanket mire, 22/857757, and Llyn y Gwaith at 425m a.s.l. in a valley mire, 22/669504. The 929 workers trapped at Gors Lwyd were over five times as many as were trapped of any other species at any of the other 15 peatland sites sampled in Ceredigion; the only other ants trapped at Gors Lwyd were 50 M. ruginodis and 20 M. scabrinodis. Further investigation of M. rubra in such upland mires is required. Elsewhere, nests have usually been found under stones and in the soil of pastures, and a few mound nests have been seen especially in pastures liable to flooding.

M. ruginodis (154 tetrads)
The most widespread and common species in Ceredigion. It seems to be evenly distributed through the lowlands and uplands, although it is notably absent from most of the coastal flatlands (as around Aberystwyth and Llanrhystud) where M. rubra is most abundant. In contrast to . rubra, only 52% of all records are from below 200m a.s.l. It is by far the commonest and most widespread species of ant in the uplands, and was the most abundant ant in the WPIS pitfall traps in 9 out of their 16 sites in the district. It occurs widely in areas of podzolic and peaty soils where M. rubra is rarely found, especially in soils of the Hafren association that cover much of the uplands, and in waterlogged stagnogley soils of the Cegin association covering much of the high ground between the Teifi and the coast. Damp grassland, fens, all sorts of mires, wet heaths and moorlands are habitats where it is normally the commonest ant, but *it* also occurs in dry coastal scrub or grassy slopes, damp or dry woodland, dry grassland, leadmines, hedgebanks, roadside verges etc. It is the most abundant species in pitfall traps both on the raised mire of Cors Fochno and in the ancient woodland of Coed Rheidol. Nests have been found in soil, in grass, rush and moss tussocks, under stones or logs, in rotting wood, in banks and walls, in river shingle, among gorse and heather roots, etc.

M. sabuleti (20 tetrads)
Scarce, and chiefly along the coastal slopes, with a few inland records in the north of the district. The coastal sites are on dry, heathy or more often grazed, grassy slopes, partially vegetated scree, shaley outcrops and stone banks, both north and south facing. Inland it occurs on heathy and rocky ridges, stony south-facing sheep-grazed slopes, and, at the Allt y Crib leadmine, 22/652393, in a clearing in a conifer plantation. At these inland sites it occurs on well-drained loamy soils of the Denbigh series in the Manod association, nests have been found under stones, in vegetated screes, in crevices of shale outcrops, and in grass tussocks. Specimens from six sites have been confirmed by S. Hoy, and from one by B. Bolton.

M. scabrinodis (120 tetrads)
After ruginodis the most widespread species and fairly common throughout the district. It is rarely found in woodland and scrub, and generally occurs in more open and drier habitats and in shorter vegetation than M. ruginodis. In the WPIS pitfall traps it tended to be commoner, if not the most abundant species of ant, in areas with the shortest vegetation; thus it is often abundant on raised mires, such as those of Cors Fochno and Cors Caron, but is rare or absent from rank fen sites. It is common along the coast, and in the uplands seems especially characteristic, like Lasius flavus, of Manod association soils and also occurs, widely though less abundantly than M. ruginodis. on the peaty and podzolic soils of the Hafren association. It is generally only along the coastal slopes and inland on the Manod soils that it is commoner than M. ruginodis. A higher percentage, 66%, of all records are from below 200m a.s.l. It seems to be less dependent on undisturbed pasture than Lasius flavus and occurs more widely on the higher ground of the Mynydd Bach and Banc Sion Cwillt between the Teifi and the coast where that species is largely absent. It is widespread on dry grassy and rocky slopes, banks and heaths and in many other chiefly dry and exposed sites. Nests have usually been found under stones or in grass tussocks.

M. sulcinodis
W.M. Condry (pers.comm. 1991) reports that J.L. Davies collected and identified several specimens of this species in his company on Cors Caron (probably on the West Bog) in May 1950. J.L. Davies (pers. conim. 1994) says that although he was familiar with the species at this time; it would be unwise to accept the record in the absence of voucher material. There are no other records from VC46, but although it is rare in Wales its occurrence would not be unexpected.

Stenamma debile (5 tetrads)
Of the five records, all of isolated nests or workers, four are from lowland deciduous woodlands on fairly deep soils: Ash coppice at Ynys-hir, 22/677952; mixed woodland with Ash, Wych Elm etc in Coed Nant Llolwyn, 22/585769; a roadside bank in mixed woodland with Ash, Oak etc at Aberporth, 22/259509, and in a nettle patch by a ruined cottage at the edge of Oak woodland at Coedmor,

22/202428. The fifth record is of a worker collected from Cardigan Island by K. Catley in June 19S9, unfortunately without any further details of location or habitat. The island is very exposed and lacks trees and shrubs, and is covered chiefly by a dense sward of Rye grass over a deep mattress of litter, and by tussocky Cocksfoot and Fescue, with generally shallow, dry soils, and rocky slopes in places. Loxton (1989) gives other island records for this species, Grassholm, and Ynys Gwylan-fawr and Ynys Gwylan-fach in Aberdaron Bay. Further investigation of its occurrence on Cardigan Island is required. Specimens from all sites have been confirmed by B. Bolton or S. Hoy.

Tetramorium caespitum (4 tetrads)

In spite of repeated searches in suitable sites along the coast, only four records have been made and the species must be genuinely rare in Ceredigion. Four nests were found under stones in shaley and rocky soil of stabilised scree with scattered heather bushes, west-northwest facing and 50m above the sea on Allt Wen, 22/574791 ; two nests were found under stones on sparsely vegetated shaley outcrops where a pasture dips down to the stream at Mynachdy'r-graig, 22/557748, south-facing, c.20m back from the cliff edge and 50m above the sea; one nest in bare shaley soil in south-west facing heathy grassland with abundant Thyme and English Stonecrop above the mouth of the Afon Drywi, 22/426607, 25m a.s.l.; and several workers on bare soil on the clifftop 25m above the sea at the south-east corner of Cardigan Island, 22/161514. There is also a B.R.C. record "22/35, 1971, Pen-Rhyn rocks, G.H., det K.E.J. Barrett" which probably refers to the coast by Penrhyn farm just west of New Quay.

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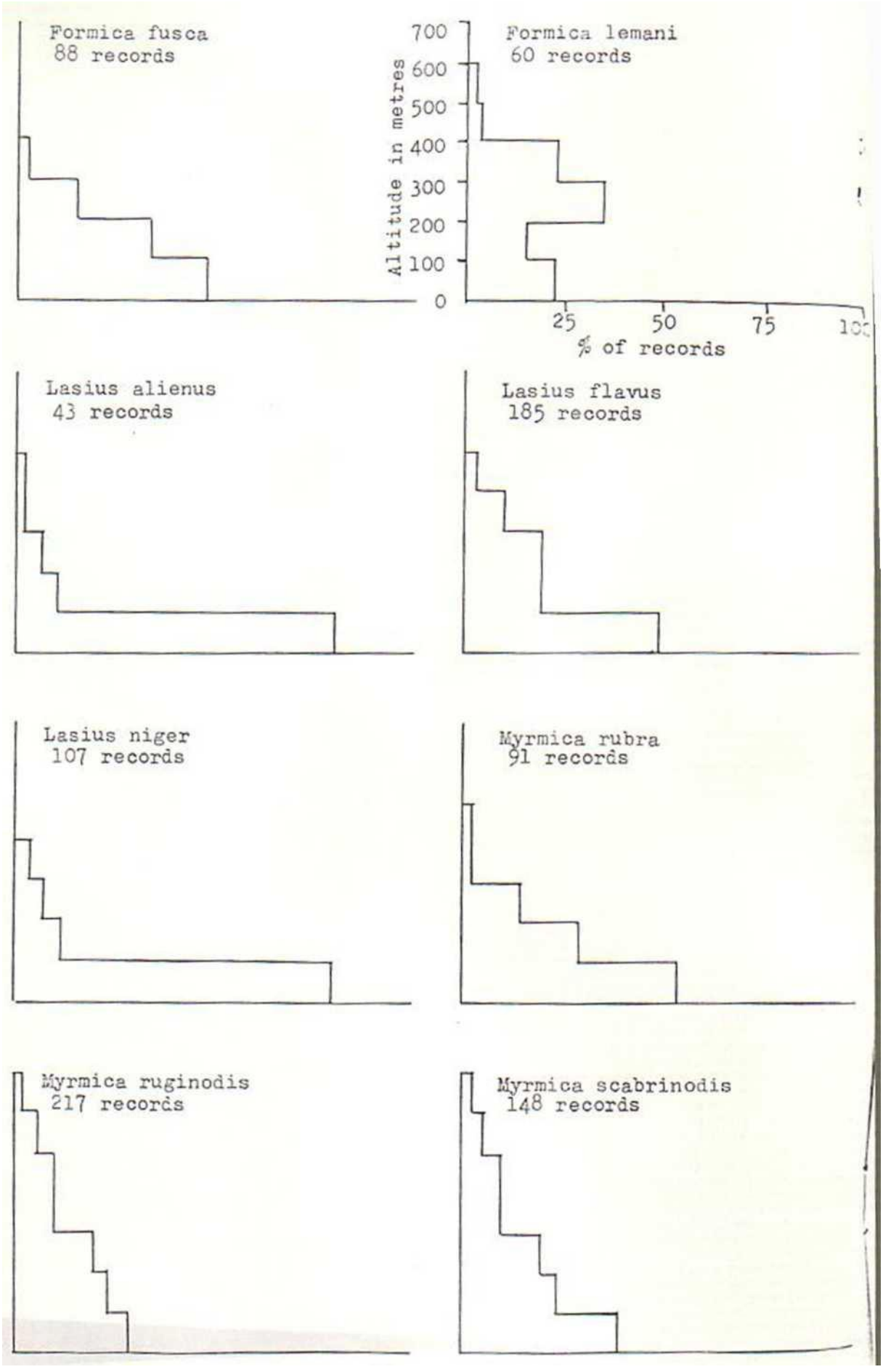
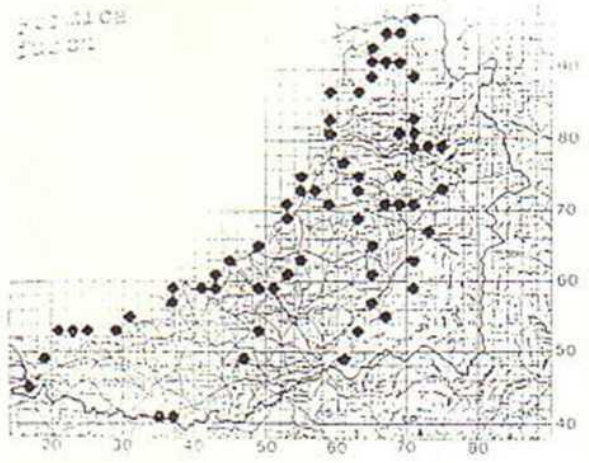
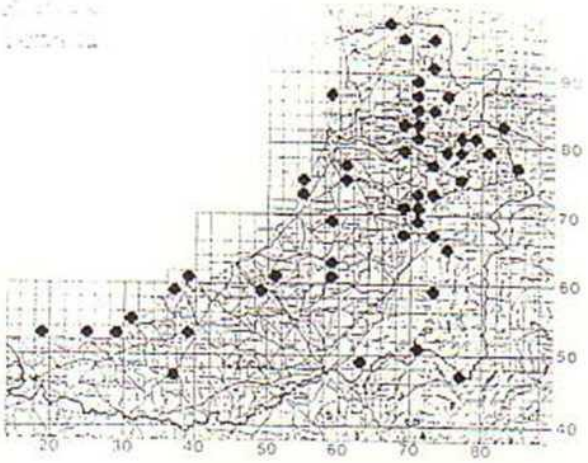
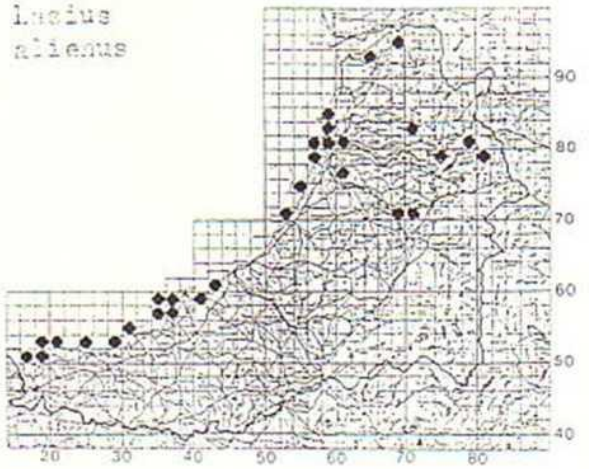

Formica fusca
88 records
Formica lemani
60 records
Altitude in metres
700
600
500
400
300
200
100
0
25
50
75
% of records
Lasius alienus
43 records
Lasius flavus
185 records
Lasius niger
107 records
Myrmica rubra
91 records
Myrmica ruginodis
217 records
Myrmica scabrinodis
148 records





Lucius
alienus



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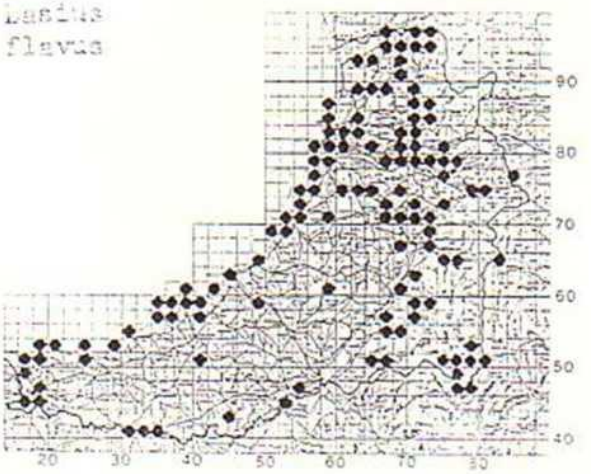
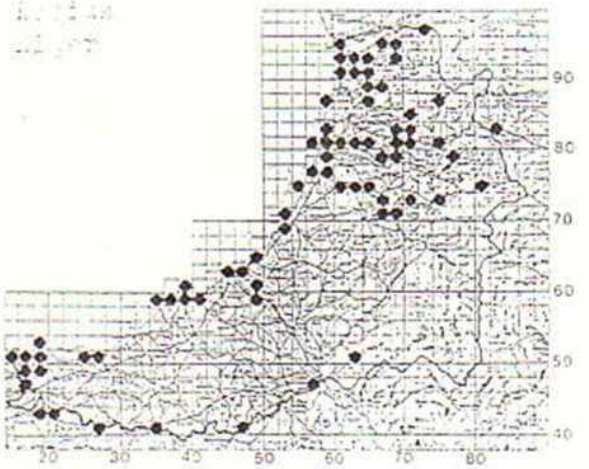
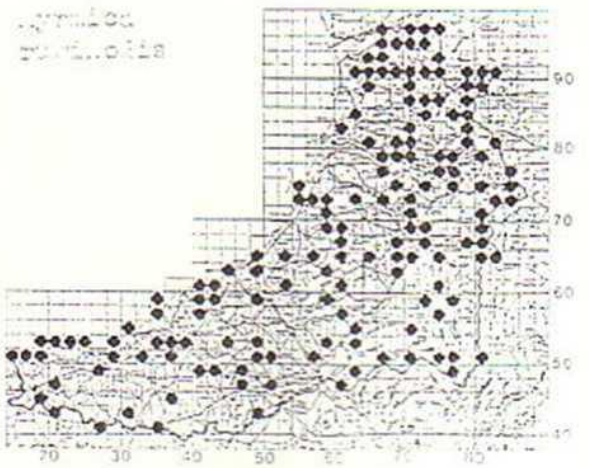
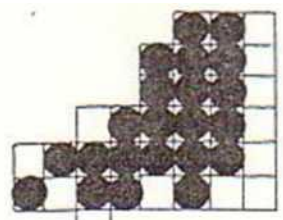
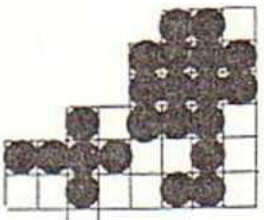








Formica fusca



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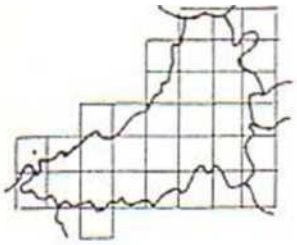
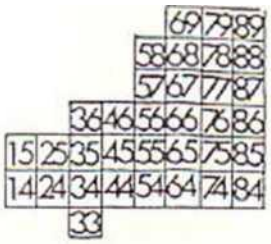
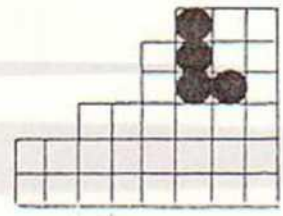
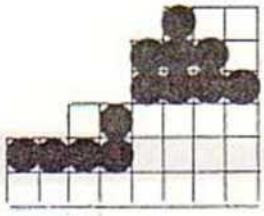


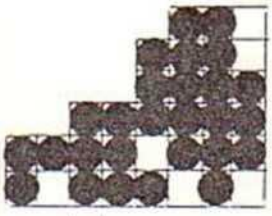




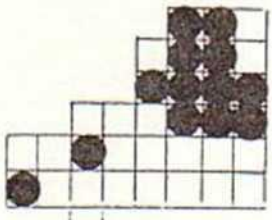
Formica rufa



Lasius alienus



Lasius flavus



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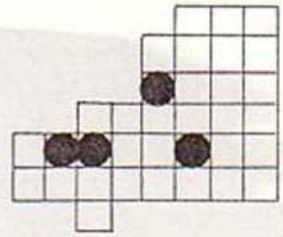

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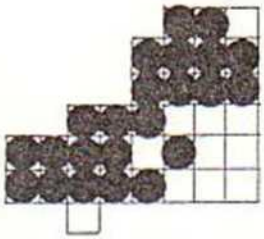

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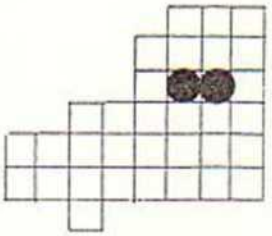
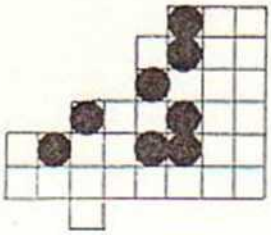
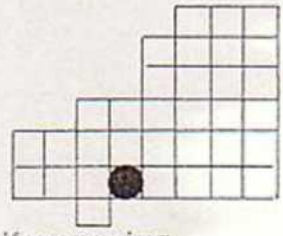


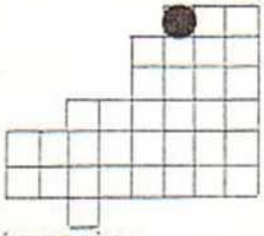
Lasius umbratus



Leptothorax acervorum



Monomorium pharoensis



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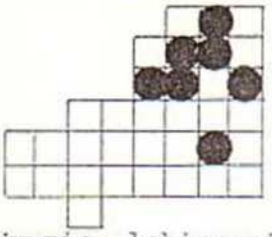

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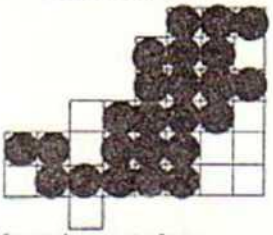

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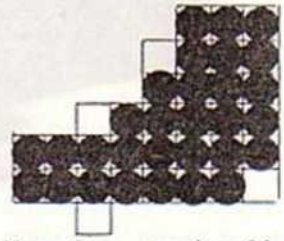

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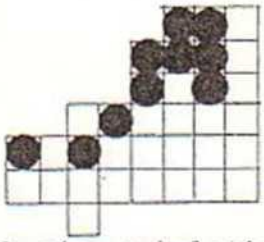

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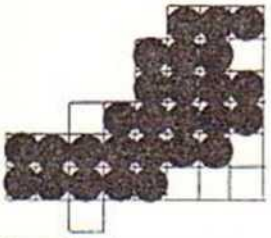
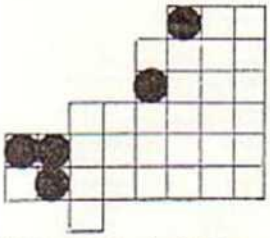
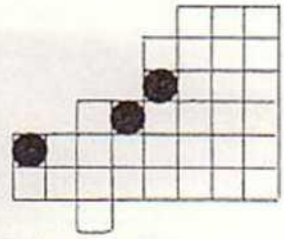


Myrmica scabrinodis



Stenamma debile



Tetramorium caespitum