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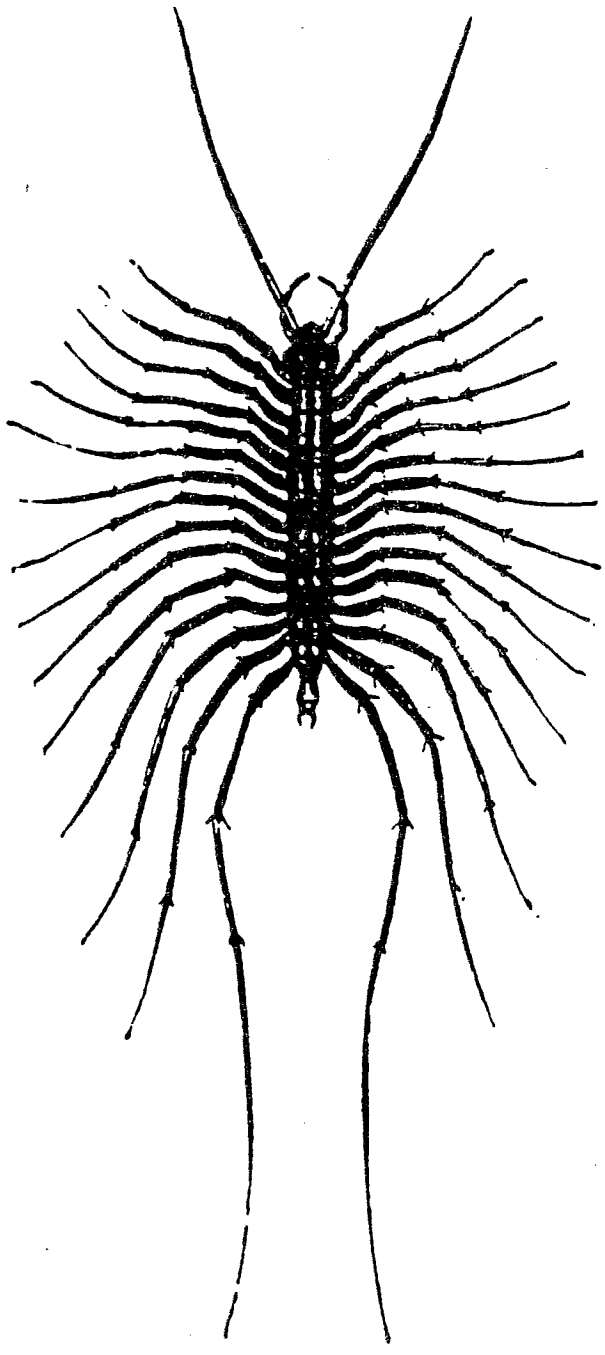
BULLETIN of the BRITISH MYRIAPOD GROUP

Edited for the Group by:
A.D. Barber
and
J.G. Blower



Volume 7

November 1990

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Bulletin of the British Myriapod Group 7 (1990)

EDITORIAL

This volume is turgid with county records, name changes and names which do not need to change. In volume 3 one of us found Geophilus proximus in the Shetland Isles and drew attention to the similarity of this animal to G. insculptus and the possibility that the one may have been confused with the other at some time in the past. Apparently no less an authority than Attems had done just this, as we learn in an article by Eason. Set against the changes which Eason has found to be necessary is the better news that most of our species of Cylindroiulus can retain their generic name; Helen Read explains in an article she has specially written for us.

Many of you (we hope) will already have started to prepare copy for volume 8, but note how standards are changing. Since Douglas Richardson took up millipedes in 1972, Yorkshire Millipedes have always been on the map, but the maps have now been published, here; 4,000 records (a record every other day) and 97% of 10km squares visited. Yes, we hope others will do for their county what Douglas has done for Yorkshire, but we expect no one will rush into print without at least attempting to approach the standards set by Douglas and his fellow Yorkshiremen.

Myriapodology globally is very much moving into the business of field recording and mapping of distribution. This transpires from a brief review of the 8th international Congress at Innsbruck included in this issue; this was the first and continuing impression of those of us privileged to attend. The new Congress is usually decided in a plenary session towards the close of the old; the 9th Congress is to return to Paris where it began twenty two years ago; it will be held in the bicentenary year of the birth of Jean Baptist Lanmarck, probably 27th July - 1st August 1993. There were two further important decisions at the plenary meeting in Innsbruck:

The permanent secretariat of C.I.M. (Centre International de Myriapodologie), namely J.-M. Demange and J.-P. Mauries is to be augmented by J.-J. Geoffroy and Mme Ngyen-Duy Jacquemin; thus the Liste de Travaux and Annuaire Mondial has a good part of its future assured; the other part depends on the subscribers who contribute data and cash towards the Liste; this was the third decision, to raise the annual minimum subscription to 120F.

When planning ahead for Paris 1993, how to finance and what to contribute academically, don't forget to transfer the date of our next joint meeting with B.I.S.G. in Dorset to your next year's diary (4th - 7th April 1991).

Correction to Lewis, J.G.E. On the two forms of Geophilus carpophagus in Somerset. Bulletin of the British Myriapod Group 6: 6-7

In the last line of table 2 the number of leg-bearing segments should read 55 not 45.

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ON THE TRUE IDENTITY OF GEOPHILUS INSCULPTUS ATTEMS, 1895

E H Eason
Bourton Far Hill Farm, Moreton in Marsh, Glos. GL56 9TN

It is clear from Attems' (1895: 163, fig.9) original description and figure of the maxillae of Geophilus insculptus that he had before him a specimen of G.proximus C. L. Koch and not one of the species known to British and most European authors as G.insculptus Attems. This misnamed species has been more recently described as G.glacialis by Verhoeff (1928) and G.henroti by Manfredi (1956), but Koren (1986) has shown that it was first described and figured by Attems (in the same paper as his description of G.insculptus) as Orinomus oligopus. this species has been variously placed, not only in Orinomus Attems, 1895 but in Orinophilus Cook, 1896 and Cyphonychius Verhoeff, 1928, all based on the peg-like structure of the second maxillary claw. It seems that this generic classification, which is not usually recognized, has led to oligopus being overlooked.

The correct synonymy of these two species now becomes -

Geophilus proximus C. L. Koch

Geophilus proximus C. L. Koch, 1847: 186; Brolemann, 1930: 159, figs 239-242
Geophilus insculptus Attems, 1895: 163, fig 9

Geophilus oligopus (Attems)

Orinomus oligopus Attems, 1895: 167, fig 11
Geophilus (Cyphonychius) glacialis Verhoeff, 1928: 231, fig 1
Orinophilus oligopus: Attems, 1929: 188, fig 175
Geophilus insculptus: Brolemann, 1930: 175, figs 279-283 et auct (non Attems, 1895)
Geophilus henroti Manfredi, 1956: 204

Name changes of widely known species are tedious, more especially when they are merely based on the revival of an early synonym. But now that Koren has shown that the species commonly known as Geophilus insculptus has been misdetermined, it is important that we should follow her example and call it by its correct name, particularly as the true insculptus (= proximus) has recently been added to the British list by Tony Barber (1986).

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YORKSHIRE MILLIPEDES

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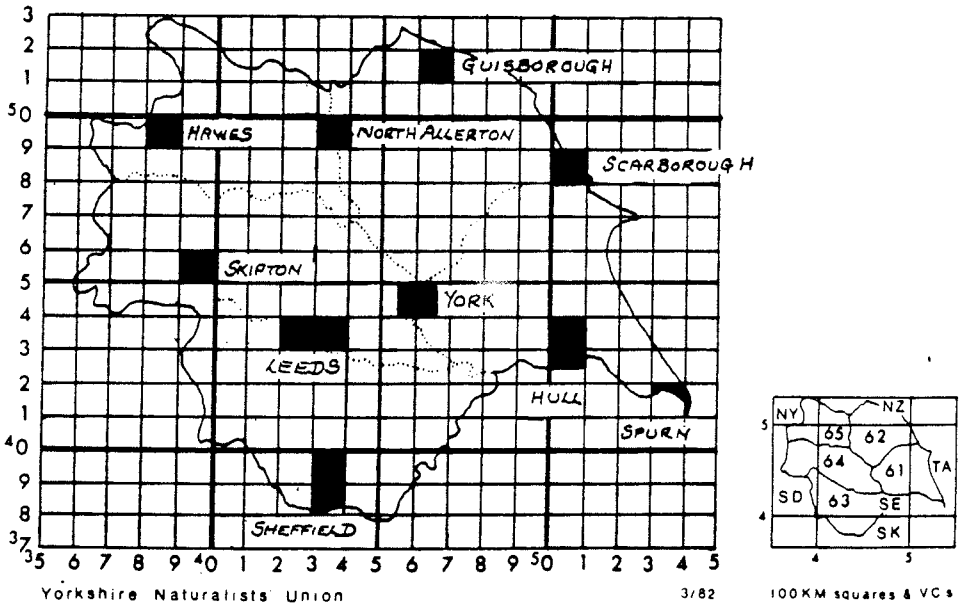
INTRODUCTION

It is hoped this review will bring up to date our knowledge of the millipede fauna of Yorkshire and, at the same time, remove the necessity for future researchers having to repeat the ground work. Detailed data and actual specimens are lodged with various organisations quoted in the text and these may be used for future taxonimic studies. Details of the methods adopted in the present survey (1970-1989) are given to help encourage others embarking on similar regional surveys. Historical details of what transpired previous to 1970 are also considered to be relevant.

Little is included about geology of the country, but all systems from the Ordovician to the Cretaceous (except Devonian) are represented and to some extent this indicates the tolerance of ubiquitous species.

It may be of interest to learn that this survey stemmed from a quite personal individual interest in myriapoda in general and was not initially planned as a deliberate scientific survey. As time went by the 'excitement of the chase' generated more interest which draw in more and more enthusiasts. No apologies are made for the time it has taken to complete the survey (20 years); in retrospect the task has been enormous but the effort is well justified.

YORKSHIRE DEFINED



MAP 1: YORKSHIRE

The boundary shown on the map is the Watsonian County boundary (Dandy, 1969), not to be confused with the quite different Local Government and Parliamentary Constituency Boundaries. The county is defined as being made up of the following 188 10km squares:

34(SD)64-69; 74-79; 84-89; 90-99. 35(NY)80-82; 90-92.
43(SK)19; 28; 29; 38; 39; 48; 49; 58; 59; 69.
44(SE)00-79; 81-89; 92-99.
45(NZ)00; 01; 10; 11; 20; 21; 30; 40; 41; 50-52; 60-62; 70-72; 80; 81; 90; 91.
54(TA)02-09; 12-18; 21-24; 26; 27; 31-33; 41.

Excluded are the following nine land-locked 10km squares each with less than five 1km squares belonging to Watsonian Yorkshire:- 34(SD)54; 55; 73.
35(NY)72. 43(SK)47; 57. 45(NZ)02; 31; 42.

All the coastal/estuarine 10Km squares are included irrespective of the number of 1km squares involved. In the 10Km squares shared with adjacent counties, collecting/recording has been confined to the portions of the 10km squares lying wholly within the Watsonian Yorkshire boundary (Richardson, 1983a).

HISTORICAL

The story can conveniently be divided into four periods:
1878: 1912 - 1921: 1950 - 1969: 1970 - 1989

1878

The first reference to the myripoda of Yorkshire comes in the form of an appeal by H. Franklin Parsons which appeared in The Naturalist under the heading "Neglected Orders" (Parsons, 1878)

> "..... I need only mention Arachnida, Myriapoda, Crustacea and Annelida. Who will take charge of these 'Neglected Orders' and tell us more of their wonderful forms and life histories? ....."

No one took up the challenge.

1912 - 1921

The information collected furing this period was not the result of a systematic investigation, as perhaps envisaged by Parsons, but more a collection of isolated sightings - five people being involved, nomenclature up-dated:-

TABLE 1

YEAR	RECDS	RECORDER	SPECIES	10km Sq
1912	1	R.S.Bagnall	Oxidus gracilis	45/10
1915	1	A.R.Jackson	Polydesmus inconstans	44/14
1916	1	T.Stainforth	Polyxenus lagurus	44/93
1917	1	R.S.Bagnall	Boreoiulus tenuis	43/23
1919	1	J.W.Jackson	Polyxenus lagurus	45/91
1920	5	H.W.Thompson	Glomeris marginata, Julus scandinavius, Blaniulus guttalatus, Cylindroiulus punctatus, Julus scandinavius, Polydesmus angustus	44/05 44/43 44/43
1921	1	R.S.Bagnall	Ophiodesmus albonanus	45/10
	11	5	10 Species 12 records	7
	Map p.		TABLE 2 +	

TABLE 1: Species recorded 1912-21

Bagnall (1918,1922): Jackson, A.R. (1916): Jackson, J.W. (1919): Stainforth, T (1916): Thompson, H.W. (1921).

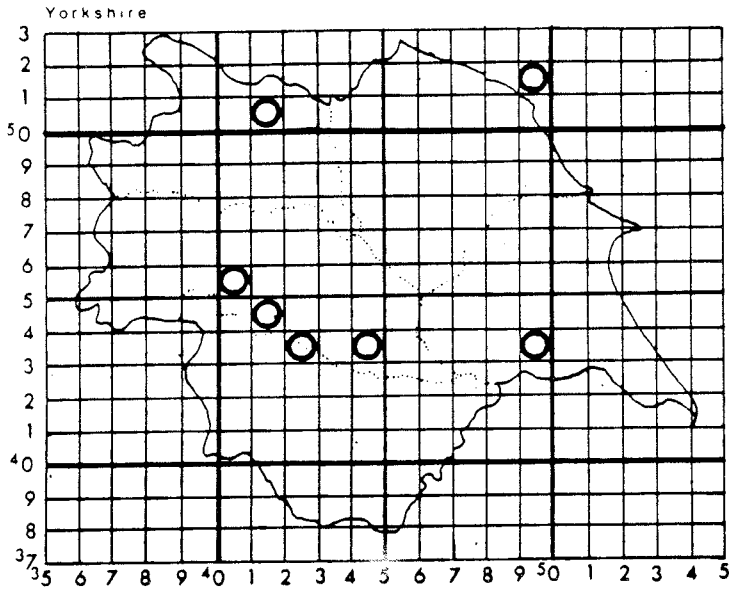
1950 - 1969

The 1952 Naturalist contained an article by Gordon Blower entitled 'British Millipedes with special reference to Yorkshire Species' (Blower, 1952) which contained not only a list of species, but more exciting still a key to identification. On face value the door had been flung wide open for anyone, even with the slightest interest, to take up the study. Blower's gallant attempt to promote interest, particularly amongst Yorkshiremen, fell on deaf ears as had Parson's appeal of 75 years earlier, or was it the 'Wars of the Roses' rearing its head once more? After all the invitation did stem from Manchester in the heart of 'Red Rose' country. The data for 1950-1969 is that of Blower and three of his colleagues: P.M. Butler; P.D. Gabbutt and Miss M.T. Sewell who between them amassed 265 records and raised the number of species for the county from 10 to 29. The era was rounded off by Dr S.L. Sutton's announcement (Sutton, 1969) of the finding of Stigioglomeris crinita bringing the number of records to 269, number of 10km squares visited 18, recorders 5 and species 30. (Table 2)

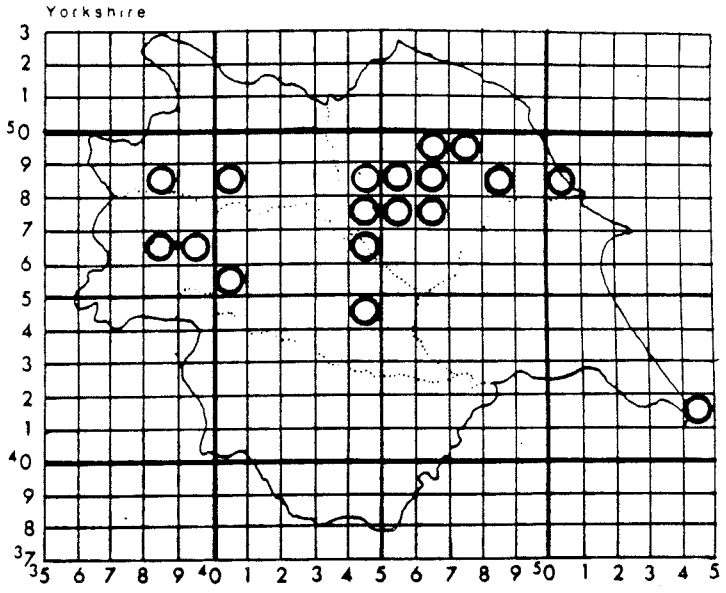
The 1950-1969 records are clear examples of recorder bias - Gordon Blower's contributions centred round the North Yorkshire Moors in V.C 62; Butler, Gabbutt and Sewell in the Malham area in V.C.64.

1970 - 1989

Just how things developed is best illustrated by dividing the survey into its two decades 1970 - 1979 and 1980 - 1989.



MAP 2: Records 1912 - 21



MAP 3: Records 1950 - 69

1970 - 1979

Believe it or not, it was not the inception of the British Myriapod Group in April 1970 that sparked off interest, but a consequence of redundancy. In the summer of 1972, the writer, whilst filling in time between jobs by thumbing through the pages of back copies of the Naturalist, came across Gordon Blower's article on British Millipedes (Blower, 1952). The subject matter looked interesting, the identification key not impossible, a small number of species, and, as a bonus, an order which had been neglected. An additional incentive was the existence within the Yorkshire Naturalists Union of "The Other Arthropods Committee" set up in 1968 (Richardson, 1988) for the purpose of investigating faunal orders frowned upon by the bonafide entomologists. An introduction to both Gordon Blower and Colin Fairhurst followed - the scene was set - there was no turning back.

No particular effort was made to co-ordinate recording although each recorder knew what the other was up to, each worked individually. By the end of the decade 18 people had contributed a total of 1409 records - 91% (1276) of which were the result of the efforts of just four individuals, W.A. Ely (Rotherham); A. Norris (Leeds); D.T. Richardson (Skipton) and C.J. Smith (York). Things were looking up. Every opportunity to advertise what was going on was siezed, particularly in the pages of the Naturalist (Ely (1977a,b), Howes (1973a,b), Richardson (1975a,b,c, 1979a,b,c))

1980 - 1989

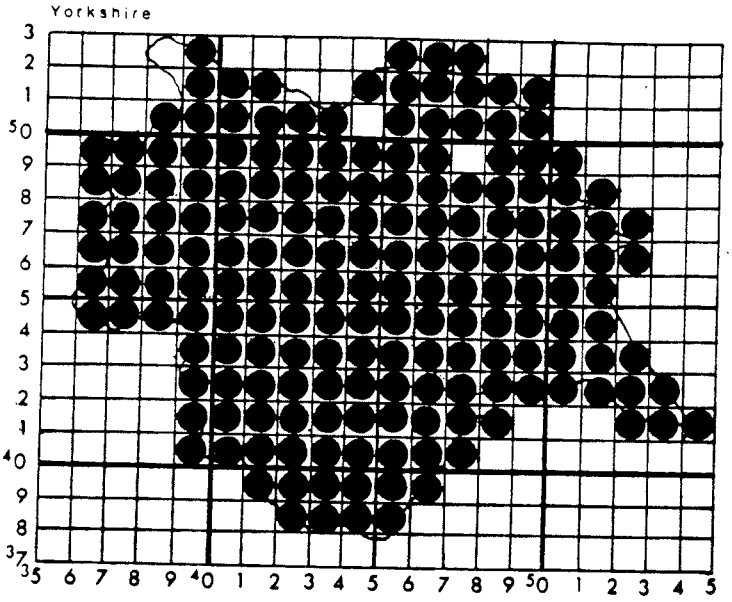
A number of quite different events crystallized the efforts put into work carried out during this decade. An isopod/myriapod workshop run by G.D. Fussey and D.T. Richardson at Leeds University in April 1980 attracted twenty participants most of whom remained with us. To assist co-ordination and communication the "Other Arthropods Study Group Bulletin" was introduced in which were published up-dates of distribution maps, progress reports, details of under recorded 10km squares, collecting techniques, etc., etc. March 1983 saw the introduction of the Yorkshire Naturalists' Union 10km square map card, affectionately known as the 'Doug Richardson card', which provided a visual method of showing species distribution. Maps for each species were prepared and mounted on display boards which were carted round and exhibited at every opportunity - woe betide you if there was not a dot in the 10km square in which you lived. March 1984 saw the introduction of the Yorkshire Naturalists' Union Bulletin a publication designed to take less academic articles than the Naturalist, the Other Arthropods Study Group bulletin was discontinued and communcation transferred to the pages of the new bi-annual publication. As the decade drew to a close the Other Arthropods Committee convinced the powers that be that a pocket sized species field recording card would be of great assistance to recorders and thanks to a generous donation from the Nature Conservancy Council 10,000 Other Arthropods cards were printed - the scene is set to take us to the end of the 20th Century and beyond.

Twenty one people, including members of the British Myriapod Group outside the county, contributed 2518 records during the final decade. 2275 (90%) of the records being the efforts of only four: W.A. Ely (Rotherham) P. Lee (Riddlesden); D.T. Richardson (Skipton) and C.J. Smith (York). (Blower (1985); Lee (1987a,b,c, 1988a,b, 1989); Lee and Richardson (1989); Richardson (1981a,b, 1982a,b,c,d, 1983b,c, 1985, 1987, 1988a,b)

1970 - 1989

Almost 4000 individual records were amassed during this period some may say that for twenty years this is not numerically exciting - a record every other day - but do not forget the size of the county and the fact that the same people were also recording woodlice, centipedes, harvestmen and spiders.

181 (97%) of the county's 188 10km squares had been visited, a far cry from the seven from 1912 - 1921 - we started off with seven squares visited and closed with seven unvisited.



MAP 4: Records Received 1970-89

During this period a further four species were added to the county list bringing the total to 34.

YORKSHIRE

POLYXENIDA

+ Polyxenus lagurus (Linné, 1758)

GLOMERIDA

+ Gloneris marginata (Villers 1789)
* Stygioglomeris crinita Brolemann 1913

CHORDEUMATIDA

* Craspedosoma rawlinsii Leach 1815
* Nanogona polydesmoides (Leach 1815)
* Brachychaeteuma bagnalli Verhoeff 1911
* Melogona scutellare (Ribaut 1913)

JULIDA

* Nemasoma varicorne C.L.Koch 1847
* Proterojulus fuscus (Am Stein 1857)
* Choneiulus palmatus (Nemec 1895)
Nopoiulus kochii (Gervais 1847)
+ Blaniulus guttulatus (Fabricius 1798)
* Archiboreojulus pallidus (Blade-Birks 1920)
+ Boreojulus tenuis (Bigler 1913)
* Ommatojulus sabulosus (Linné 1758)
* Tachypodoiulus niger (Leach 1815)
* Cylindroiulus londinensis (Leach 1815)
* Cylindroiulus caeruleocinctus (Wood 1864)
Cylindroiulus nitidus (Verhoeff 1891)
+ Cylindroiulus punctatus (Leach 1815)
* Cylindroiulus latestriatus (Curtis 1845)
* Cylindroiulus britannicus (Verhoeff 1891)
* Cylindroiulus parisiorum (Brolemann & Verhoeff 1896)
+ Julus scandinavius Latzel 1884
* Ophyiulus pilosus (Newport 1842)
* Brachyiulus pusillus (Leach 1815)

POLYDESMIDA

+ Polydesmus angustus Latzel 1884
+ Polydesmus inconstans Latzel 1884
Polydesmus gallicus Latzel 1884
* Polydesmus denticulatus C.L.Koch 1847
* Brachydesmus superus Latzel 1884
Macrosternodesmus palicola Brolemann 1908
+ Ophiodesmus albonanus (Latzel 1895)
+ Oxidus gracilis (C.L.Koch 1847)

NOMENCLATURE: Blower (1985)

First Recorded
+ 1912 - 1921
* 1950 - 1969
Unmarked 1970 - 1989

TABLE 2 Species recorded for Yorkshire

SPECIES RECORDED

The figures in parenthesis at the end of each species account denotes the number of 10km NG squares in which it has been found.

Polyxenus lagurus

A county rarity, records from two sites only - Brantingham Dale (44/93) April 1916 beneath bark (Stainforth, 1916) and Saltwick Bay (Nab) near Whitby (45/91) 1919 beneath shale fragments (Jackson, 1919). Attempts to re-establish existance at Brantingham Dale have resulted in failure but G.D. Fussey and I.M. Vandell met with more success when in June 1980 they found a very active colony at Saltwick Nab (Fussey and Vandell, 1980). Fussey visited the site again in April 1981 and again found many specimens. An excellent example of well documented records; Jacksons 1919 site description being of sufficient accuracy to enable a successful search to be made some seventy years later.

(2) (MAP 5)

Glomeris marginata

Little doubt this will prove to be ubiquitous. First record: 1920: M.W. Thompson: Bolton Abbey (44/05)

(102) (MAP 6)

Stigioglomeris crinita

This is a species, the finding of which never fails to induce a feeling of excitement. Distincitive it may be but its size <3mm does not assist detection. Evidence from the work done by Bocock, K.L. et.al (1973) shows that it is very much subterranean in its habits and that the only way of establishing its presence or otherwise in an area is to take soil core samples, an exercise which most will recognise is more than time consuming. The first record for the county by S.L. Sutton in 1969 came from soil core samples taken at Bramham Park near Wetherby (44/44) on the magnesian limestone (Sutton 1969) - the other seven were picked up quite at random. Establishing its true distribution within the county will be a lengthy and time consuming exercise.

(6) (MAP 7)

Craspedosoma rawlinsii

With two exceptions where it has been picked up from amongst leaf litter of deciduous woodland all the specimens collected have come from pitfall traps in relatively acid wet areas e.g. Askham Bog near York (44/57-48-) and sites on the North Yorkshire Moors. The indications are that it may well have a north-easterly distribution in the county and favour more acid terrain - time alone will solve this one. A rarity as far as Yorkshire is concerned. First record: 1964: J.G. Blower: Rievaulx area (44/58)

(7) (MAP 8)

Nanogona polydesmoides

More than likely to prove ubiquitous. First record: August 1950: P.M. Butler: Rievaulx area (44/58)

(86) (MAP 9)

DISTRIBUTION MAPS (Maps 5 - 38)

Legend

● 1970 - 1989

◉ Pre 1970 confirmed during 1970 - 1989 survey

○ Pre 1970 not confirmed during 1970 - 1989 survey

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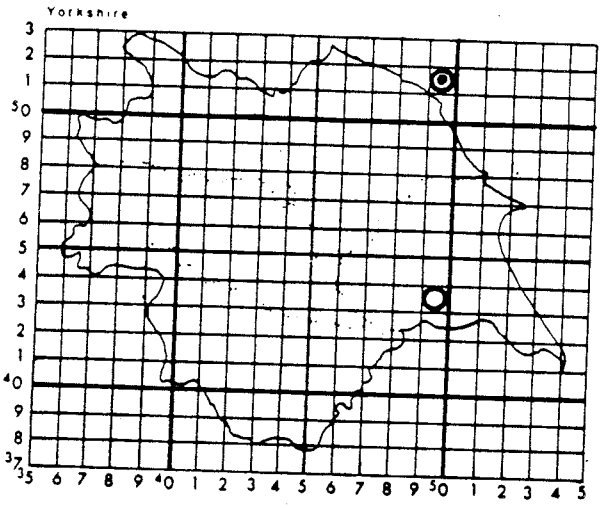

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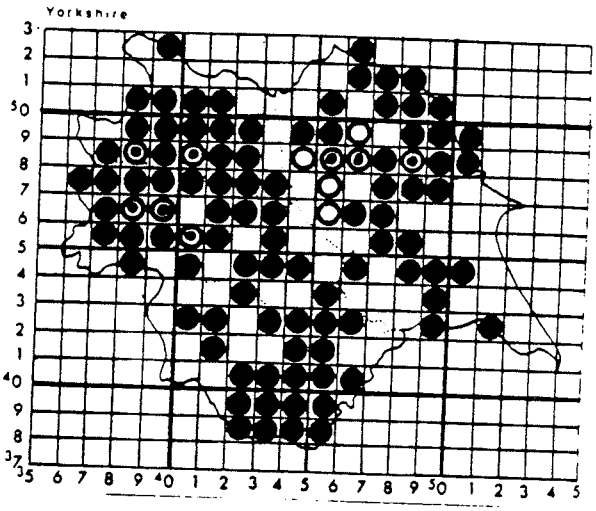

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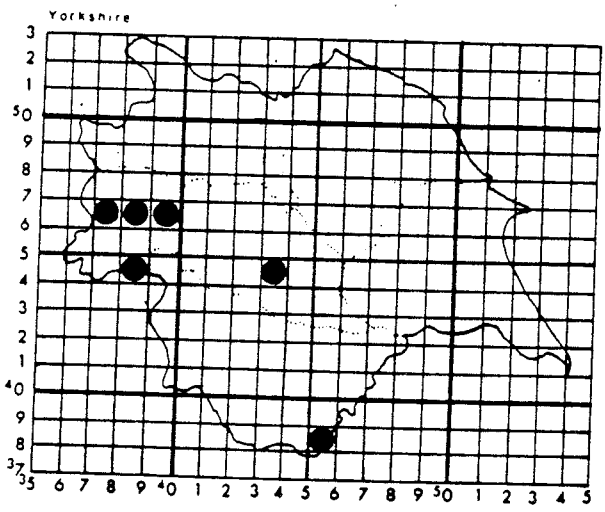

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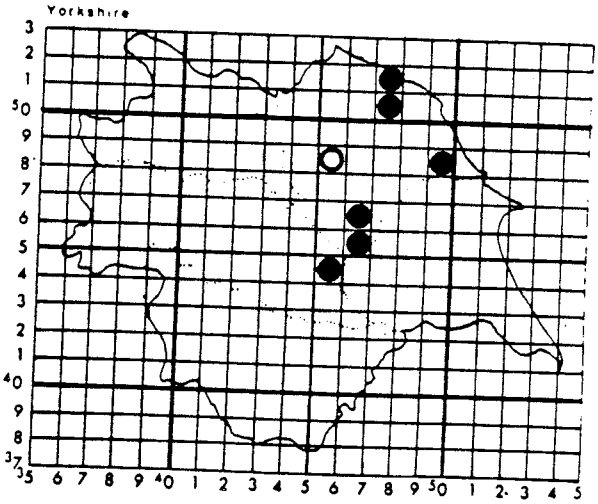


Brachychaeteuma bagnalli

Blower (1986) summarizes our knowledge of the very limited distribution and sites for the species in Great Britain. It is certainly a national rarity and we can perhaps congratulate ourselves in having any records at all for the county. Its small size is not thought to be the reason for paucity of records. First record: April 1956: J.G. Blower: Easingwold (44/57) in a garden: 1961: same site again: June 1986: P. Lee: How Stean Gorge, Lofthouse (44/07) under stone: August 1987: P. Lee: Riddlesden near Keighley (44/04) under stone in garden.

(3) (MAP 10)

Melogona scutellare

Whether or not the map shows the true distribution pattern within the county is open to conjecture. It is a quite small, very active and easily overlooked animal and adults are completely absent during the summer months - how many of us engage in grovelling about on hands and knees amongst wet leaf litter at the height of winter? There seems no reason why its range cannot be extended. In leaf litter, under stones in hedge bottoms, etc. First record: May 1951: J.G. Blower: Rievaulx area (44/58)

(20) (MAP 11)

Nemasoma varicorne

Blower (1952) remarks that it was recorded for adjacent Lancashire and Durham and that it had not been found in Yorkshire. I can distinctly recall my excitement on first finding it in the county in Grass Woods, Grassington (34/96) on the 28th October 1973 - I was then unaware that Gordon Blower had beaten me to the post. Once seen however, never forgotton and from that day on I never again assumed every thin brown sub-cortical millipede was Proteroiulus fuscus - I always hoped they might be Nemasoma varicorne - my caution paid off and it was not long before I became quite expert at recognising which loose bark would house the animals and which would not. It sometimes turned up in pure colonies often containing large numbers of individuals and sometimes mixed with P.fuscus. Its apparent absence from VC.61 is more likely due to the reduced number of trees in this heavily cultivated part of the Vale of York. No males have as yet turned up. First record: Aug 1955: J.G. Blower: Easingwold (44/57)

(38) (MAP 12)

Proteroiulus fuscus

With the exception of Cylindroiulus punctatus by far the most common sub-cortical millipede. No males have turned up. Will prove to be ubiquitous. First record: Sept 1950: J.G. Blower: Thornton-le-dale area (44/88).

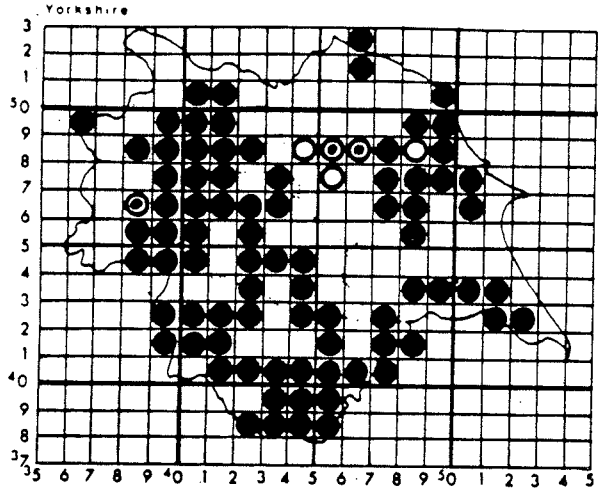
(99) (MAP 13)

Choneiulus palmatus

Only two records both of which predate the current survey. Sept 1950 P.M. Butler: Thronton-le-dale (44/88) and Nov 1961: J.G. Blower: Easingwold area (44/57). All the British records are from synthanthropic sites - greenhouses, botanical gardens and the like. Are we now more likely to find it in garden centres now most of our private and municipal greenhouses are gone?

(2) (MAP 14)

9



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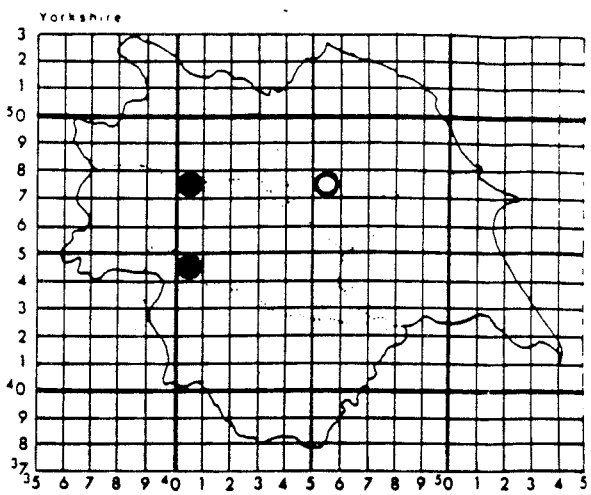

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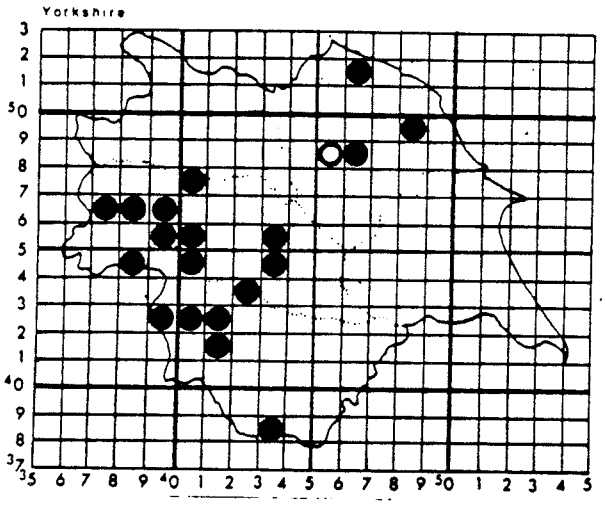

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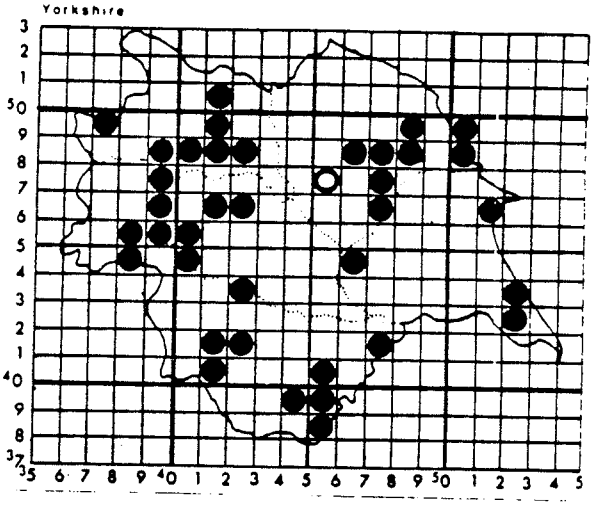

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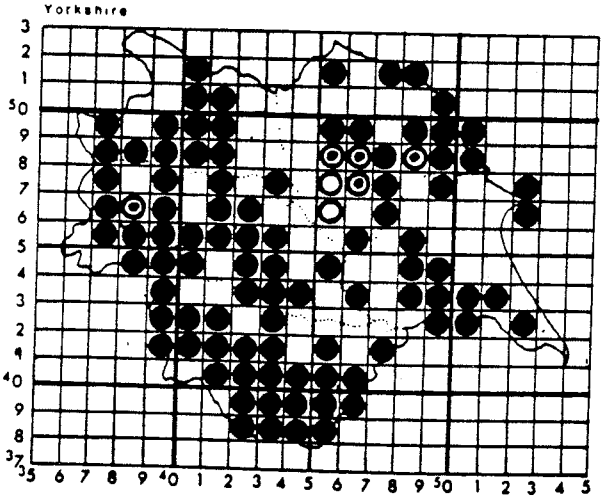

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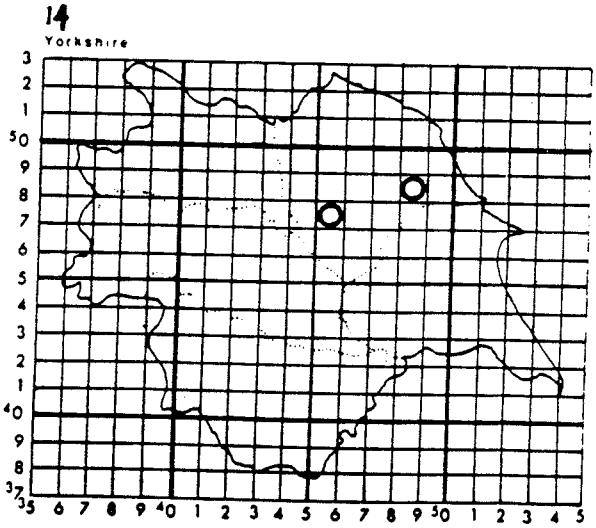

Nopoiulus kochii

Its presence in the county hangs on a thread as a single specimen was identified by Dr C.P. Fairhurst, amongst material collected from under stones in a small disused quarry in Bolton Abbey Woods (44/05) - September 1974 by D.T. Richardson. Further visits to the site have been unfruitful.

(1) (MAP 15)

Blaniulus guttulatus

There is little doubt its presence in the county will prove to be ubiquitous. First record: 1920: H.W. Thompson: Manor Garth Farm, Garforth (44/43)

(34) (MAP 16)

Archiboreoiulus pallidus

By no means as common as B.guttulatus but it can be seem to be well distributed across the country. There is no logical reason why its coverage cannot be extended. First record: July 1950: J.G. Blower: Bolton Bridge (44/05)

(28) (MAP 17)

Boreoiulus tenuis

The smallest of our blind blaniulids which with its orange to orange-red ozadenes may be dismissed as juvenile B.guttulatus unless care is taken to collect and examine specimens. Whilst most of the records are from under stones on base rich soils it is no respecter of altitude being found well above 330m O.D. Scattered distribution with some collector bias at the moment. First record: Oct 1917: R.S. Bagnall: Leeds area (44/23)

(14) (Map 18)

Ommatoiulus sabulosus

This is perhaps our most striking and distinctive species with its two orange to orange-red dorso-lateral longitudinal stripes, so distinctive that the gaps in the map truthfully represent areas from which it is virtually absent. It is perhaps significant that it appears to be absent from the western half of V.C. 63 and parts of South-West V.C. 64. Clay and heavy coal measure soils predominate and there is evidence that the animals prefer light calcareous loams and sandy soils. It is also often found high up on walls and on the lower branches of trees. First record: Aug 1950: J.G. Blower: Rievaulx (44/58) and Ampleforth (44/57)

(66) (MAP 19)

Tachypodoiulus niger

Ubiquitous, immature stadia often quite common and abundant in woodland leaf litter. First record June 1950: P.M. Butler: Spurn (54/41)

(167) (MAP 20)

Allajulus nitidus

A very late addition to the county list. First found under stones on a roadside verge and in an adjacent disused limestone quarry at Threshfield (34/96) in Nov. 1982 D.T. Richardson. A year later it turned up under boulders in a nearby hawthorn scrub on limestone at Skythorns (34/96). It was this latter find which

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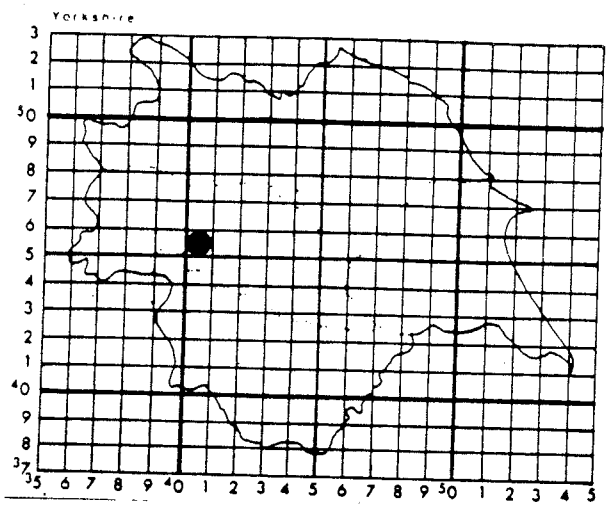

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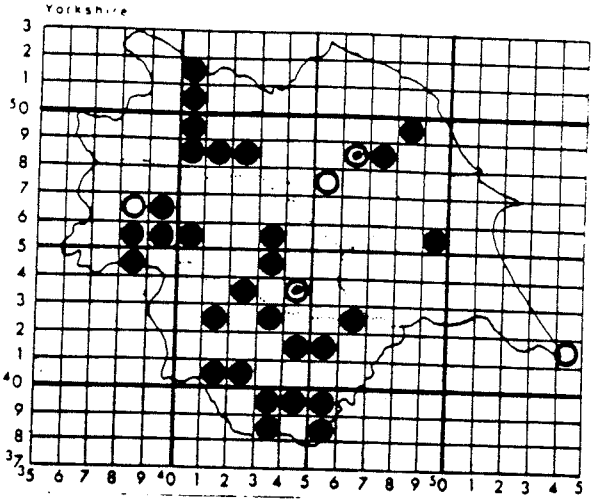

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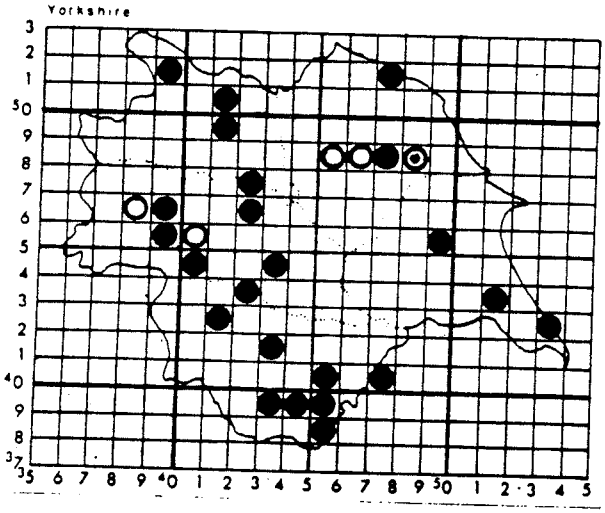

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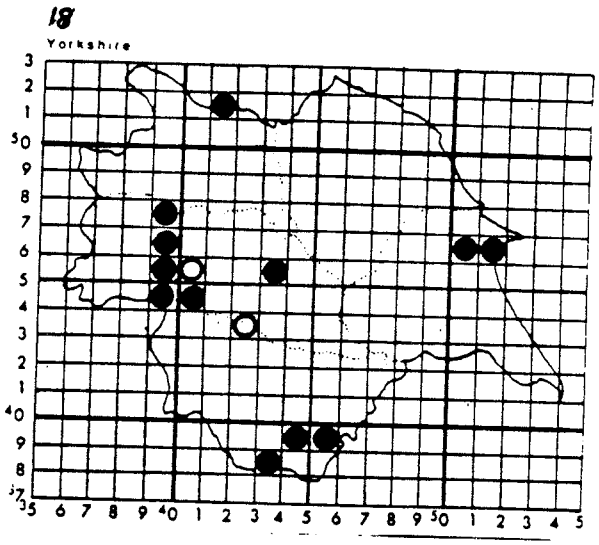

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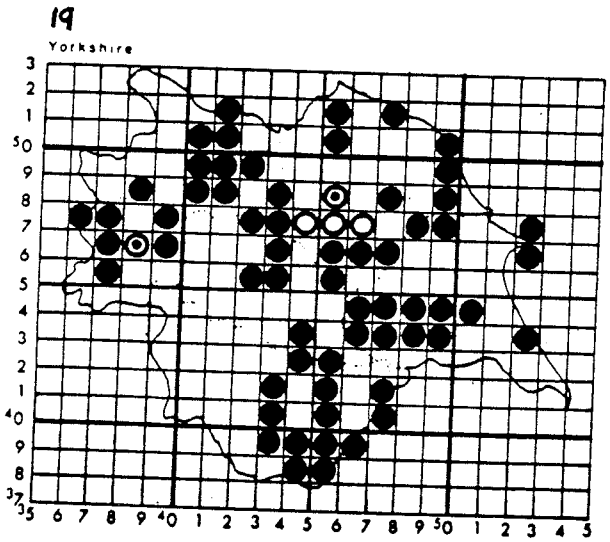

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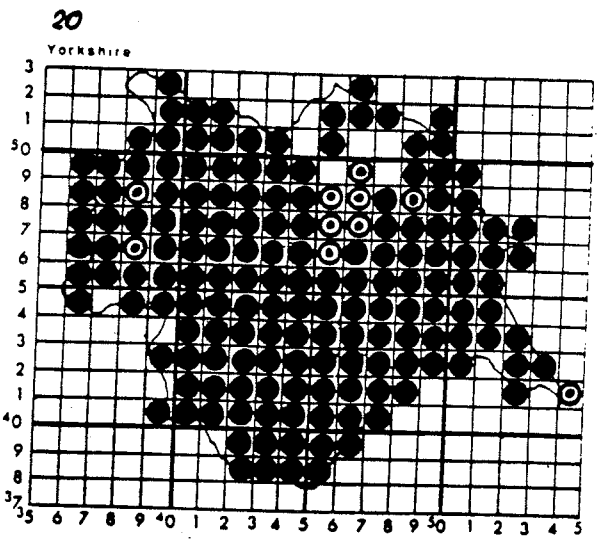

gave a clue to its real habitat - 30 to 100 cms beneath the surface - no wonder we had not come across it earlier. All subsequent specimens came to light only by levering-out deeply embedded boulders by means of a crowbar revealing the animals in grass roots and soil beneath.. If we are to extend our knowledge of its distribution it may mean carrying a crowbar about on field trips - reaction of local farmers to such activities is left to the imagination! So far only on carboniferous limestone.

(2) (MAP 21)

Cylindroiulus londinensis

Certainly a rarity - only three sightings all of which relate to the 1950's period; none have been found during the 1970 - 1989 exercise. April 1951: M.T. Sewell, Farndale area (44/69); Nov 1954 and Aug 1961: J.G. Blower, Helmsley area (44/68). Its distribution within the British Isles is limited to a number of widely scattered sites. There is no way it can have been overlooked for it is one of our largest millipedes. Often under piles of decaying logs.

(2) (MAP 22)

Cylindroiulus caeruleocinctus

As far as the British Isles as a whole are concerned there is a distinct south east distribution pattern. In Yorkshire there is a tendency for it to favour leaf litter in what are considered to be ancient relic woodland. Like C.londinensis it is far too big to have been overlooked and the map may well give a truthful picture reflecting a resticted distribution. First record: Aug 1950: J.G. Blower Rievaulx area (44/58)

(10) (MAP 23)

Cylindroiulus punctatus

The best known, most easily identifiable, and most common sub-cortical millipede. Vast numbers of immature stadia are frequently found in woodland leaf litter. The map tells its own story. First record 1920: H.W. Thompson, Manor Farm, Garforth (44/43).

(159) (MAP 24)

Cylindroiulus latestriatus

Blower (1985) remarks that it has now been recognized in most counties with a coastline but more often than not confined to the coast or a few miles from it. What records we have for Yorkshire seem to be the reverse for it has been found up to 130Km inland. One thing seems to be certain it appears to have a preference for light loam or sandy soils. By no means common. Identification in all cases has been confirmed by examination of genitalia. First record June 1950: P.M. Butler Spurn Head (54/41)

(6) (MAP 25)

Cylindroiulus britannicus

Far more common that C.latestriatus, the scatter of sites across the county rather suggests that given time its presence in most 10Km squares will be established. Under stones, logs, fallen bark, artefacts such as sheets of hardboard and bark of dead standing trees. Identification confirmed by examination of genitalia. First record April: 1951 J G Blower Duncombe Park Helmsley (44/68)

(28) (MAP 26)

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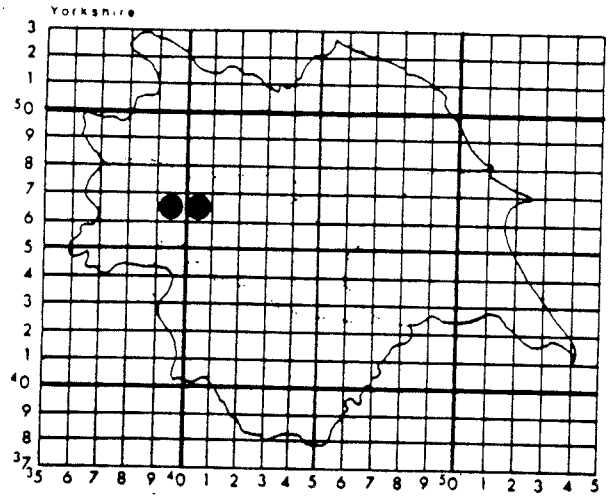

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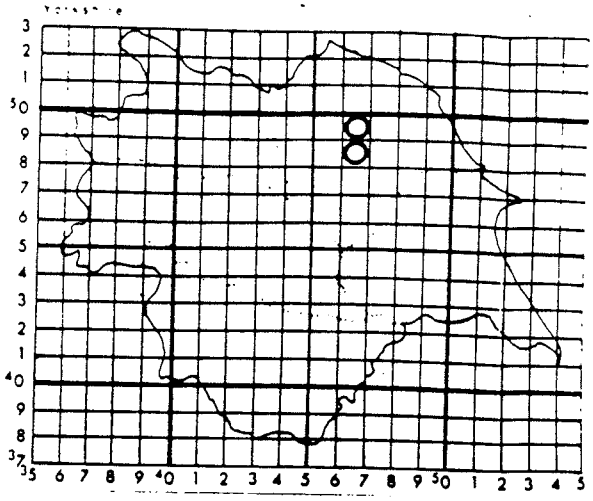

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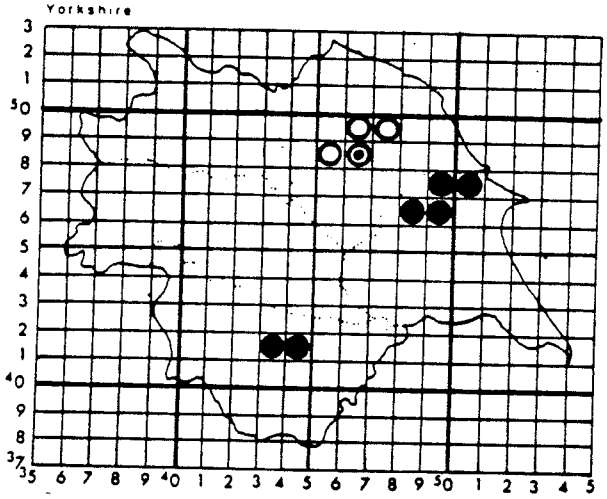

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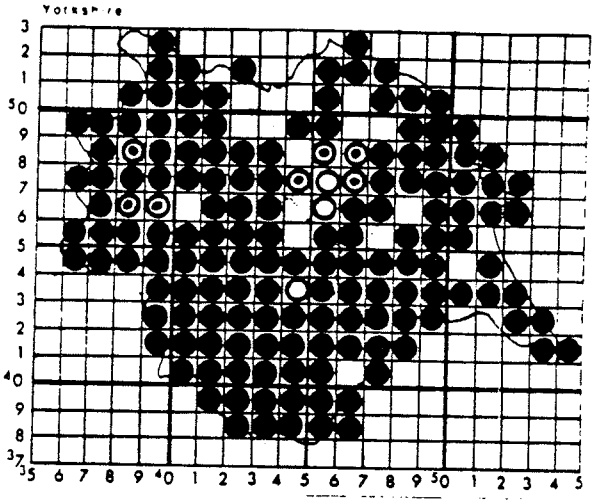

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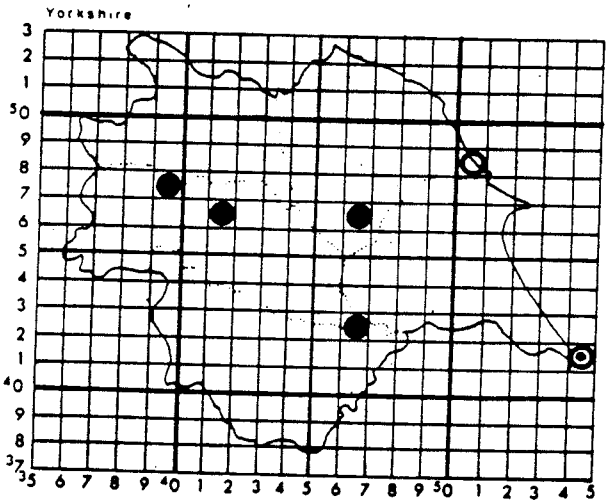

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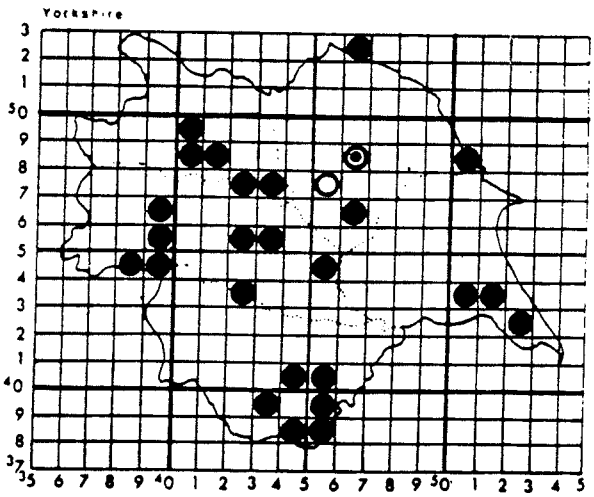


Cylindroiulus parisiorum

Without a doubt a county rarity. Four records only: Sept 1952 and Nov 1961 near Byeland Abbey (44/57) and Aug 1958: Rievaulx area (44.58) all by J.G. Blower. During the current survey Sept 1984: D.T. Richardson, Fountains Abbey (44/26) under stones amongst lead litter in deciduous woodland on magnesian limestone.

(4) (MAP 27)

Julus scandinavius

No reason to suspect that it will not be shown to be ubiquitous. Identifications confirmed by examination of genitalia. First record 1920: H.W. Thompson, Bolton Abbey (44/05)

(79) (MAP 28)

Ophyiulus pilosus

Another species which will without doubt prove to be ubiquitous. All confirmed by examination of genitalia. First record July 1950: J.G. Blower, Aysgarth (44/08)

(74) (MAP 29)

Brachyiulus pusillus

Despite its small size it is a most distinctive animal with its light-coloured dorso-lateral stripes and is too obvious to be overlooked. It is common in many counties of Great Britain and the only conclusions we can come to is that in Yorkshire it is limited to the lighter, more sandy and drier soils of the eastern parts of the county. On one chalk grassland site there were large number in the soils immediately below sheep droppings. A comparative rarity with a limited distribution pattern. First record June 1950: P.M. Butler Spurn (54/41)

(7) (MAP 30)

Poldesmus angustus

Ubiquitous. First record 1920: H.W. Thompson,Manor Farm, Garforth (44/43)

(129) (MAP 31)

Polydesmus inconstans

Certainly not as thick on the ground as P.angustus but fairly evenly distributed across the county. First record 1915: A.R. Jackson, Ilkley (44/14)

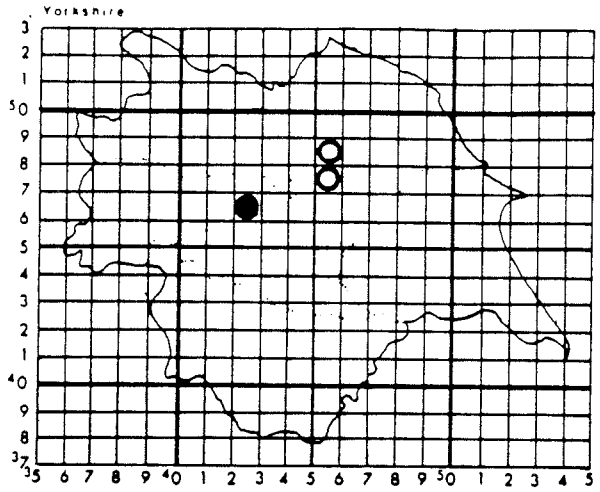
(19) (MAP 32)

Polydesmus gallicus

Another late addition to the county list. These records represent the most northerly records for the species for mainland Britain. One might legitimately ask whether or not this is an example of a species which is the process of extending its range and whether or not the River Tees will act as a barrier to it crossing the borders into County Durham. The majority of the records so far are from the southern part of the county or is this an example of collector bias; after all this is the heart of the W.A. Ely territory. Whilst at the moment it must be classed as somewhat rare, it is interesting to note when found it is often in colonies of considerable numbers. First record March 1986: W.A. Ely, Rotherham area (43/49)

(14) (MAP 33)

27



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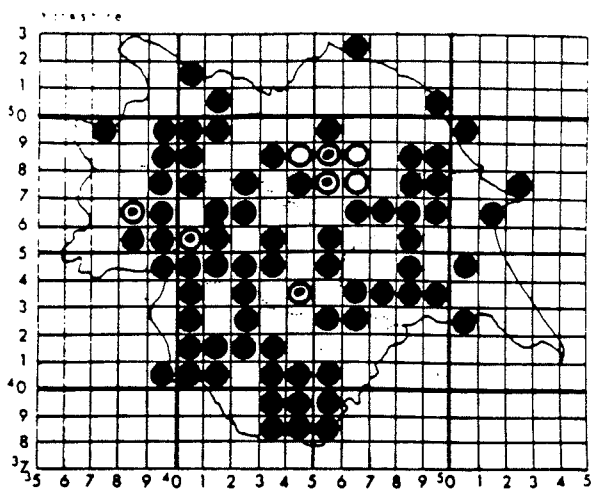

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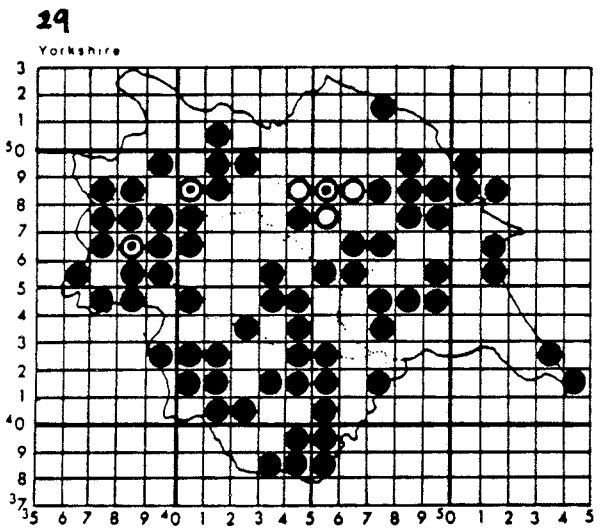

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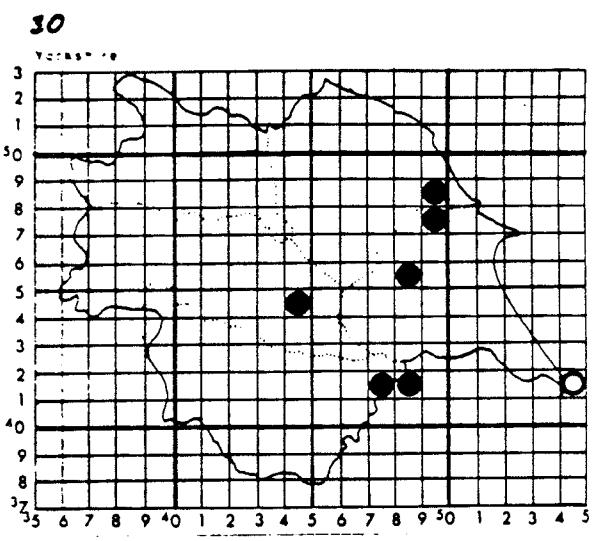

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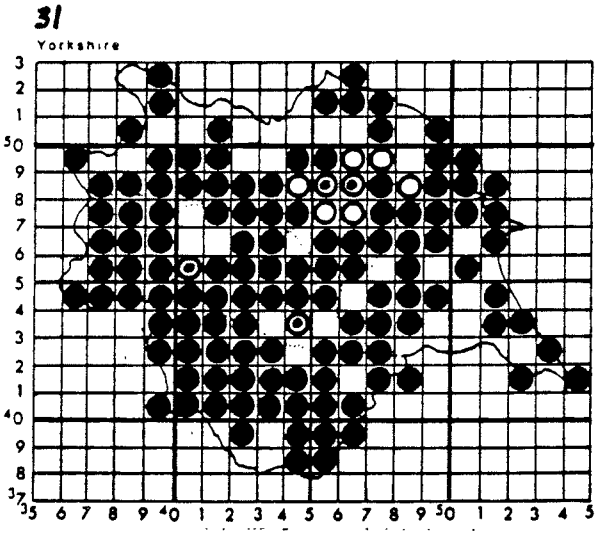

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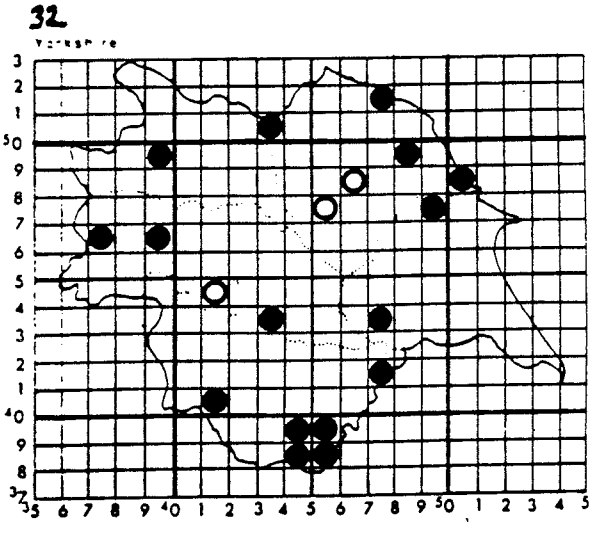

Polydesmus denticulatus

Our 'mystery species'. It has never turned up in any numbers and most of the records can be referred to single specimens found quite at random and whilst some records are from woodland, in our case calcareous, an equal number are from under stones on calcareous grassland. Which is somewhat of a contradiction to the observations by Blower who quotes it as a common inhabitant of often acid oak and mixed deciduous woodlands (Blower 1985). First record August 1954: J.G. Blower, Easingwold area (44/57)

(21) (MAP 34)

Brachydesmus superus

Given its size and the ease with which it can be confused with immature polydesmid species in the field unless extra care is taken, one can with some confidence predict that its distribition within the county will eventually prove to be ubiquious. First record June 1950: P.M. Butler, Spurn (54/41)

(45) (MAP 35)

Macrosternodesmus palicola

Another latecomer to the county list. Its extremely small size has no doubt contributed towards the paucity of records and we have to thank B.M.G. member Paul Lee for having taken a specific interest in the species and rapidly "got his eye in" when it comes to recognising conditions and habitat favoured by this beast. There may be some significance in the fact that so far all the records are from sites with synanthropic associations. First record Oct 1985: P.Lee Riddlesden near Keighley (44/04) - domestic garden.

(8) (MAP 36)

Ophiodesmus albonanus

A rarity, or too small for the average collector to easily see, may well be the question. The first record for the county was way back in 1921 by R.S. Bagnall. Bagnall writes Malton, Yorks (Nr Richmond); Blower interprets this as Moulton, near Richmond (Blower 1952) - it should read Mouldron, near Richmond (45/16-03). No further records were made until July 1988 when P.Lee and D.T. Richardson unearthed specimens from under top-stones on a wall in the grounds of Lotherton Hall Leeds (44/43). All the records are from synanthropic sites. Another species adopted by "hawk-eyed" Paul Lee.

(5) (MAP 37)

Oxidus gracilis

My own feeling is that this should not be represented as a Yorkshire species; it is an introduced one which is totally dependent upon artificial conditions for its survival. In any case it is declining as more and more heated greenhouses, particularly those in municipal care, disappear from the scene. Some may argue 'What about the garden centre?' I would have thought few will provide a permanent home for Oxidus; as stock is changed and moved round too frequently and managers are usually heavy handed with horticultural chemicals. First record 1912 R.S. Bagnall. Ravensworth (45/14-07-) heated greenhouse - no doubt long gone. Up to 1981 there was more than a thriving population under plant pots on gravel-filled staging in the heated "Fern House" at the Univeristy of Leeds Botany Department Experimental Gardens (44/289357) - no doubt still there - particularly as this was the one greenhouse which was never fumigated or treated with chemicals of any kind.

(3) (MAP 38)

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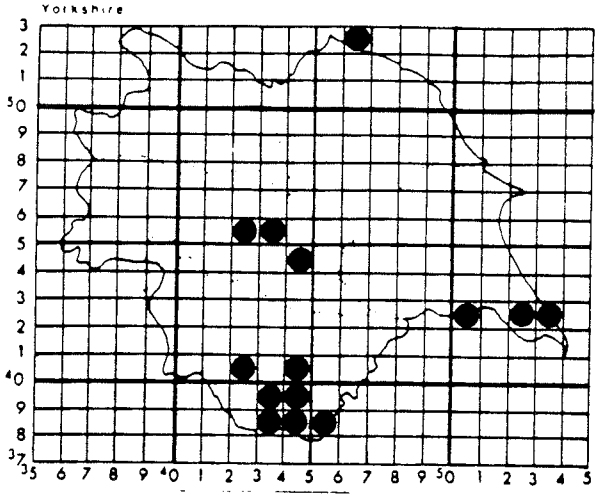

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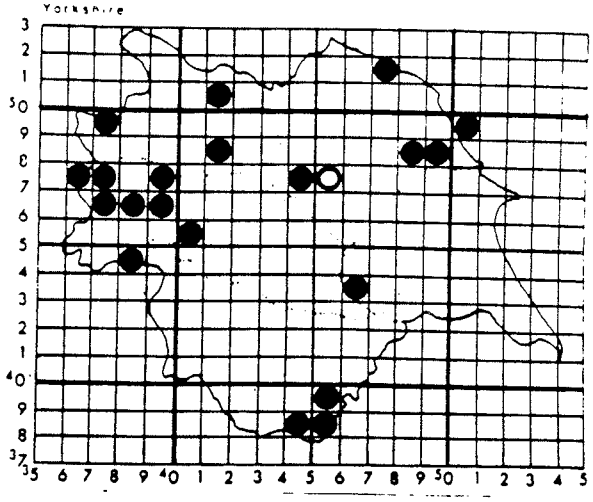

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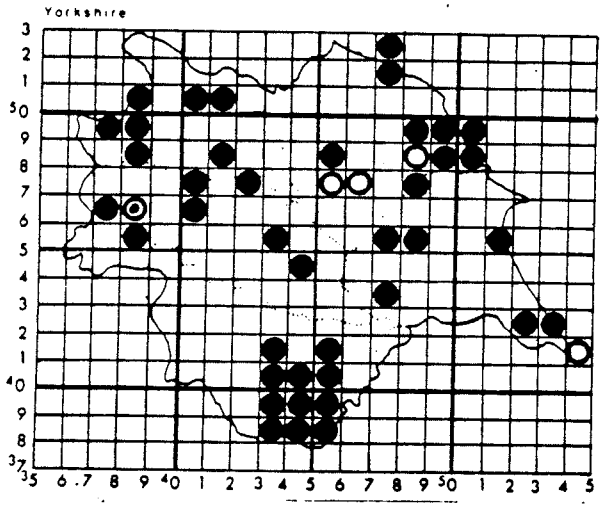

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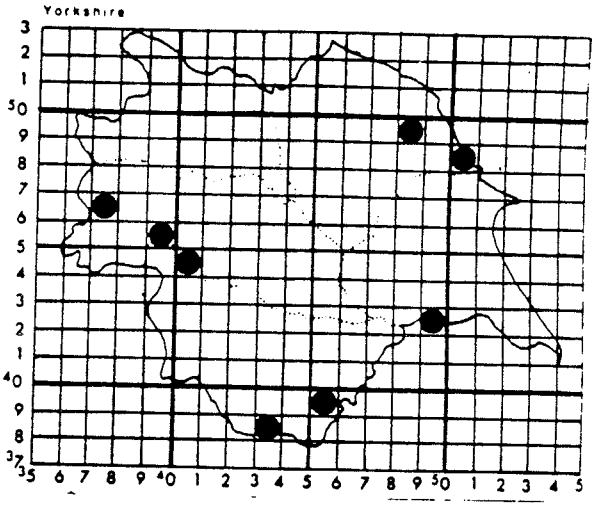

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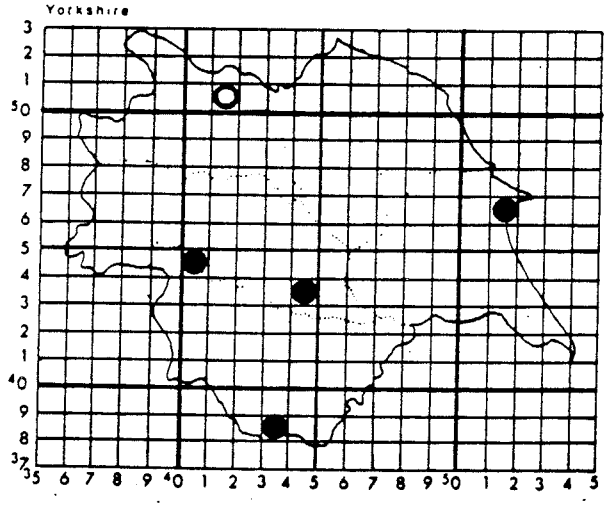

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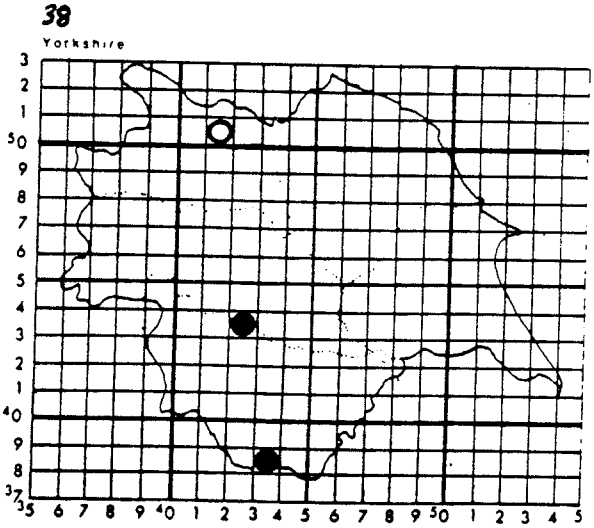

PROBABLES

Those who attend B.M.G. annual gatherings are fully aware that anything can turn up at these meetings - there has not been one yet that has not seen something new added to a county list - why not Yorkshire? Here goes - what are the odds in favour of the following?

Brachychaeteuma bradeae (Brolemann & Brade Birks 1917)

The most recent north of England record for this species was in 1983 from the grounds of St Martin's College, Lancaster, Lancashire (Blower, J.G. 1986). Any reason why it should not turn up in adjacent Yorkshire?

Chordeuma proximum (Ribaut 1913)

Whilst possibly a "rank outsider" one cannot ignore its apparent rapid spread in Carmarthen and Cardigan in South Wales (Morgan I.K. 1986). No harm being aware of such phenomena; be ready should the species appear! (Blower 1985)

Melogona gallica (Latzel 1884)

There seems to be some evidence that this species is gradually extending its range northwards although it is decidedly western. At the moment its nearest approach to Yorkshire is the Delamere Forest in Cheshire (33/57) some 100km to the west and 10km south. Perhaps a remote possibility.

Thalassisobates littoralis (Sylvestri 1903)

Coastline of the Isle of Man, Kent estuary in Lancashire - all warmed by the Gulf Stream and with the characteristics of mud-flats. Whether or not it will turn up in sites like the Humber estuary and the more sandy much colder shorelines of the east coast of Yorkshire is perhaps another question, but one should keep an open mind.

Eumastigonodesmus boncii (Brolemann 1908)

The only claim for inclusion on this list is that the only British record stems from adjacent County Durham (Bagnall 1922), where it was found in association with Macrosternodesmus palicola - as our knowledge of the latter species increases will yet another Eumastigonodesmus come to light? Luck, not expertise, may well be the criteria in this case - not very scientific but it may well prove to be true.

IMPROBABLES

A study of the habitat and distribution data in Blower (1985) leaves little doubt that none of the following species are likely to turn up in Yorkshire:

Adenomeris gibbosa, Mauriès, Polyzonium germanicum, Brandt, Brachychaeteuma melanops, Brade-Birks, Chordeuma sylvestre, C.L. Koch, Cylindroiulus vulnerarius (Berlese), Cylindroiulus truncorum (Silvestri), Entantiulus armartus (Ribaut), Leptoiulus belgicus (Latzel), Leptoiulus kervillei (Brolemann), Metaiulus pratensis, Blower & Rolfe, Unciger foetidus (C.L. Koch), Prosopodesmus panporus, Blower & Rundle, Polydesmus testaceus C.L. Koch.

RECORDS, RECORDING AND RECORDERS

All records have been made in accordance with the guide-lines set out in the "Instructions to Collectors" issued to members of the British Isopod and Myriapod Survey Schemes. Emphasis has been placed on accuracy of identification and it is hoped that no records of doubtful nature have slipped through.

Copies of all records have been transferred to Biological Records Centre on record cards. The writer's own personal records and those of the Yorkshire Naturalist's Union are stored on a 3-card system having a 6" x 4" format which is conveniently stored in standard office equipment. Cards as follows:

1. A Y.N.U. 10Km square map card as illustrated elsewhere in this paper - one for each individual species.

2. A 10Km square card - a single card for each 10Km square on which is entered all the species found in the square. The advantage of this should be quite obvious to anyone working on a 10Km square unit basis.

3. A species, locality, habitat card - again one for each species on which is entered:

   Locality, Habitat, N.G.R., 10km Square, Altitude, Vie County, Date, Collector, Determiner

   A format which allows easy transfer to electronic data base.

The system has proved very effective but like all systems it is not perfect, and if a large number of species have to be dealt with, entries along these lines become very time consuming.

As from 1st January 1990, following the introduction of the Yorkshsire Naturalists' Union "Other Arthropods" field record card, records are being filed on a 10Km square basis sub-divided within each 10km square into 1km square order.

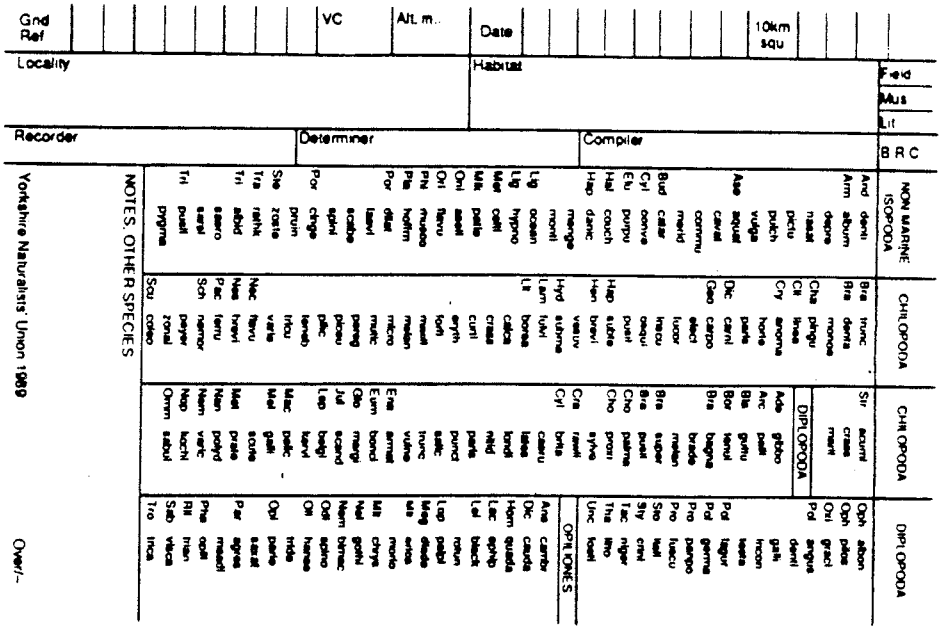

Figure 1: Y.N.U. Record card

The system has been extended to the introduction of a single card for each individual 10km square, these listings providing a rapid method of assessing what has and what has not been found in a 10km square. The main disadvantage is that it is necessary to know the 10 or 1km square in which a site is located in order to run down an individual site; the advantages are that the cards can be filled-in in the field and a lot of information can be stored in a relatively small space. The panel marked BRC is only crossed through after details have been transmitted to Biological Records Centre.

RECORDERS

The following have contributed to the survey, those singled out for special mention are listed elsewhere. Names marked '*' are members of the Yorkshire Naturalists' Union.

Addey, J.E.
* Armitage, J.S.
Barber, A.D.
* Blower, J.G.
Butterfield, J.
* Crawshaw, D.I.
* Denton, M.L.
* Ely, W.A.
Fairhurst, C.P.
Fogan, M.
* Frost, C.
* Fussey, G.D.
Garland, S.P.
Harding, P.T.
Jackson, N.
Keay, A.N.
* Kendall, P.
Kime, R.D.
* Lee, P.
* Lloyd-Evans, L.
Maude, D.
* Norris, A.
Pearce, E.J.
Redgate, N.
* Richardson, D.T.
* Skidmore, P.
* Smith, C.J.
Speck, K.
* Sutton, S.L.
Varndell, J.M.
Whiteley, D

VOUCHER SPECIMENS

The personal collection of the writer consisting of over 1500 tubes mainly Yorkshire material, in 70% alcohol collected between 1973 and 1985 has been passed to Leeds City Museum; access is by arrangement with the museum authorities. This is the only up to date collection of Yorkshire material.

REFERENCES

Bagnall, R.S. 1918 Records of some new British Diplopods and Pauropods with a preliminary check list of the British 'Myriapoda'. Journ,Zool.Res. 111,(2:3) 87-93

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LOOKING AHEAD

The publication of this paper does not signal the end of the work, in fact it is quite obvious from the distribution maps alone that there are many avenues which can be advantageously explored. Emphasis will be placed on what currently appear to be rare and/or sparsely distributed species - only time will tell whether the pictures currently presented are the correct ones, like Cylindroiulus londinensis and Oxidus gracilis some species may be on the decline, others may not.

Bulletin of the British Myriapod Group 7 (1990)

MYRIAPOD RECORDING IN THE LOTHIANS

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In a short note published in this Bulletin (April 1987) I described how I came to start collecting Myriapoda within the Lothians (Vice Counties 82, 83, 84). The area concerned covers 753 square miles (195,000 ha) of southern Scotland and my intention was to plot distribution on a 10km National Grid square basis. Collecting was carried out by myself, identification by the national recording scheme organisers.

Collecting commenced on 17/06/82 and the last date included in this report is 30/06/89. Virtually all results have been achieved by hand searching although a few records are derived from pitfall trapping and also the use of a home-made Tullgren funnel.

I am unaware of any other collecting being done in the Lothians during the period of study. From the published literature the last major reports of collecting here were by Richard Bagnall (Bagnall, 1917)(VC82; North Berwick area) and Williams Evans (Evans, 1907, 1918)(Forth area, Bass Rock). Specimens from the various houses of the Royal Botanic Gardens, Edinburgh are not included here although several species of interest have been collected. In this account the term "garbage" is used to describe domestic rubbish as distinct from, say, builder's rubbish. Total specimens collected during the period of study were 247 centipedes (Chilopoda) and 459 millipedes (Diplopoda).

Species Recorded:
(* First recorded for vice-county)

CHILOPODA

GEOPHILOMORPHA

Himantariidae

Haplophilus subterraneus (Shaw) VC83(8), VC84(4)
Under stone, rubbish and in soil and leaf litter

Geophilidae

Strigamia crassipes (C.L. Koch) VC82(1)*
Under stone on beach.

Strigamia maritima (Leach) VC83(2), VC84(2)
On the shore above HWM, Barns Ness.

Geophilus carpophagus (Leach) VC82(2), VC83(4), VC84(3)
Under stone; in dead wood. Found over a wide altitude range from 3m to 460m.

Geophilus electricus (Linné) VC83(2), VC84(4)*
Under stone on beach, and in domestic garden; in soil in domestic garden.

Geophilus insculptus (Attems) VC82(1), VC83(8), VC84(5)
Under stones, in and under dead wood, in leaf litter, in soil and in debris on old quarry face.

Necrophloeophagus flavus (de Geer) VC82(5), VC83(11), VC84(8)
Under stones, under stones on sandy beach and in shingle on beach, under polythene sheeting; under old clothing; under bark; in soil.

Brachygeophilous truncorum (Bergsoe & Meinert) VC82(1), VC83(10), VC84(6)
Under stones, garbage (including polythene sheeting), bark; in soil, leaf litter and dead wood. Greatest altitude 310m.

SCOLOPENDROMORPHA

Cryptopsidae

Cryptops parisi (Brolemann) VC83(1)*
The first record of this species for Scotland was found in leaf litter in the grounds of an Edinburgh church.

LITHOBIORPHA

Lithobiidae

Lithobius forficatus (L.) VC82(15), VC83(31), VC84(25)
With a total of 71 records this was the species most often found. Under stones; bricks, garbage, pottery tiles, broken asbestos roofing, stone setts, stones on beach, dead wood, bark; in soil, dead wood, leaf litter (including oak and beech); in a crevice in a beech tree above ground.

Lithobius melanops (Newport) VC82(3), VC83(8), VC84(5)
Under stones, under stones in sand on beach, bark; in dead wood, and in dead wood on beach.

Lithobius macilentus (L. Koch) VC83(1)
The only record of this was from the Moorfoots, at a farm 400m; found in soil at the edge of a field.

Lithobius calcaratus (C.L. Koch) VC82(1), VC83(1)
It is remarkable how different these two records are, one from under stone in the Pentlands, the other from under a small plank on dunes in the John Muir Country Park almost at sea level.

Lithobius crassipes (L. Koch) VC82(16), VC83(23), VC84(16)
Under stone, garbage (including polythene sheeting), old bricks, old straw, bark, logs. In balast on old railway line, in dead wood, in dead wood on beach, in leaf litter (including holly, beech, rhododendron and larch needles) and in soils (woodland). Found over a wide altitude range, from sea level (1m) to 460m in the Moorfoots.

Lithobius microps (Meinert) VC83(3), VC84(1)
The 3 records from VC83 were all found within the built up area of Edinburgh, from under plastic sheeting, and on soil and in leaf litter. The one from VC84 was found on bark.

Henicopidae

Lamyctes fulvicornis (Meinert) VC82(2), VC83(1), VC84(1)*
All four records were from under stones; Craigie Hill Quarry, White craig, Lammermuir Hills, Whiteadder. Three of the sites were disused quarries.

DIPLOPODA

GLOMERIDA

Glomeridae

Glomeris marginata VC82(1), VC83(1)*
Under stone, roadside bank, Gala water; under plank of wood, Humbie Quarry.

CHORDEUMATIDA

Craspedosomatidae

Nanogona polydesmoides (Leach) VC82(1), VC83(8), VC84(8)*
Under stone, log, bark; in moss, dead wood, leaf litter (including spruce needles).

Chordeumatidae

Melogona gallica (Latzel) VC83(5)*
All the records from VC83 are from the city of Edinburgh built-up area
Under stone, leaf litter and in soil and debris on an old quarry face.

Melogona scutellare (Ribaut) VC83(2)
In moss on a tree stump, Langskaill; in dead wood, Bawsinch (SWT reserve).

JULIDA

Nemasomatidae

Nemasoma varicorne (C.L. Koch) VC83(3)
Under stone; garbage and in dead wood by Union Canal, Ratho in roadside bank, Gala Water.

Blaniulidae

Proteroiulus fuscus (AM Stein) VC82(7), VC83(21)*, VC84(9)*
Under stone, dead wood, garbage, bark, moss, slates, in leaf litter, soil, dead wood, and debris on old quarry face and in a cleft in a tree.

Blaniulus gattulatus (Fabricius) VC83(10)*, VC84(2)
Under stone, bricks, plywood sheet, and in strawberries and leaf litter.

Archiboreoiulus pallidus (Brade-Birks) VC83(2)*, VC84(1)*
Under stone, path verge, Beecraig Country Park; in dead wood, woodland, Heriot Watt University grounds; in dead wood, woodland Bawsinch SWT reserve.

Boreoiulus tenuis (Bigler) VC83(2), VC84(1)
Under stone above HWM, Gramond Island off mouth of River Almond; on beach above HWM, Blackness; in soil on bank of old cutting, Roseburn Cycle Track (from a disused railway), Edinburgh.

Julidae

Ommatoiulus sabulosus (L) VC82(11), VC83(13)*, VC84(8)*
Under stone, asbestos roofing, garbage, bark, old clothing, stone on beach, and on sand in beach, in soil, dead wood, ripe brambles, leaf litter (including sycamore and conifer), in soil in a tree cleft, and on a stone beside a loch, from a tree trunk. This species has a wide range of habitats; its altitude range extends from sea level to 270m where it was found in conifer litter.

Tachypodoiulus niger (Leach) VC82(20), VC83(38)*, VC84(14)*
Under stone, pottery tiles, foam sheet, garbage, (plastic sheeting, asbestos roofing, slates), bark, dead fungus, stone on beach, in stones of dry-stone dyke and mortared walls. In soil (including sandy soil), moss, ripe brambles, needle litter, dead wood (including tree stumps), debris on face of old quarry, on stinging nettles, and trapped in pitfall. Like the preceeding species this one has an extensive habitat range, plus an altitude range from sea level to 460m. (Moorfoots, in soil): remarkably, it has not yet been found in leaf litter.

Allajulus nitidus (Verhoeff) VC83(1)*
This is another rarity, found in Edinburgh, on a disused railway, under a stone.

Cylindroiulus caeruleocinctus (Wood) VC83(1)*
Found near Whitcraigs (3cm), disused road, under garbage. According to R. Jones (pers.comm.) this record "is the furthest north by about 100 miles".

Cylindroiulus punctatus (Leach) VC82, VC83, VC84
Under stone, wood, bark, garbage (old clothing), asbestos roofing, chipboard, old straw, garden rubbish. In leaf litter, (beech, spruce, oak, pine, beech, twigs) in moss, and old bird's nest.

Cylindroiulus latestriatus (Curtis) VC82(10), VC83(6)*, VC84(3)
Under stone (also on shore), garbage, bark, small stones on shore, plastic sheet, dead vegetation on tide line, dead wood; in soil and in sand.

Cylindroiulus britannicus (Verhoeff) VC82(6)*, VC83(16)*, VC84(3)*
Under stone, bark, dead wood, concrete block, garbage (including old clothing) old straw. In tree stump, soil, moss. Base of charlock root.

Julus scandinavius (Latzel) VC82(6), VC83(8), VC84(9)*
Under stone, bark, asbestos roofing, plastic sheet, garbage, dead wood. In dead wood, dry stone dyke, ripe brambles, leaf litter (including ivy, oak, beech, holly) and in soil.

Ophyiulus pilosus (Newport) VC82(4), VC83(16)*, VC84(3)
Under stone, dead wood, railway ballast, old clothing, bark, log, plastic sheet, garbage. In soil, leaf liter (including beech) up to 270m.

Brachyiulus pusillus (Leach) VC83(3)
An uncommon species; under stone, and garbage; (Whitecraigs;) and in soil, railway cutting Polton (Rosewell).

POLYDESMIDA

Polydesmidae

Polydesmus angustus (Latzel) VC82(10), VC83(20), Vc84(10)*
Under stone, asbestos roofing, pottery tiles, garbage, plastic sheeting, plywood, dead wood, log. In cleft in beech tree, dry stone dyke, tree stumps, leaf litter, dead wood; also pitfall trapped at Hopetown. Alt. range 30m - 340m (Moorfoots, under stone).

Polydesmus inconstans (Latzel) VC83(4)
Four records, all occuring within a comparatively small area in the south of VC83, but at separate locations (Castliton, Fala Luggie, Fala Moor, River South Esk) and all within a very short time, 02/06/88 to 16/06/88.

Polydesmus gallicus (Latzel) VC84(1)*
Found at Hopetown House.

Brachydesmus superus (Latzel) VC82(1), VC83(8)*. VC84(2)
Under stone, wood, old straw and in soil.

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NEW COUNTY RECORDS OF MYRIAPODA IN THE LOTHIANS
1982 - 1990 (VC's 82, 83 & 84)

(all records CPR except where indicated *S = new to Scotland)

CHILOPODA				
Strigamia crassipes	VC82	Hadd	36/719772	Under stone on beach
(*S) Crytops parisi	VC83	Edin	36/241748	In leaf litter, grounds of an Edinburgh church
Lamyctes fulvicornis	VC84	Lin	36/154760	Under stone, floor of disused quarry
DIPLOPODA				
Glomeris marginata	VC83	Edin	36/43.46.	Gala Water; under stone
Nanogona polydesmoides	VC84	Lin	8.8.1985 36/085793	
Melogona gallica	VC83	Edin	.7.1982 36/243742	Hopetown House Under stone, Dean
Proteroiulus fuscus	VC83	Edin	9.1.1988 36/43.46	Gardens, Edinburgh Gala Waters under stone
Proteroiulus fuscus	VC84	Lin	8.8.1985 36/085793	
Blaniulus guttulatus	VC83	Edin	14.10.1982 36/230745	Hopetown House In strawberries,
Archiboreoiulus pallidus	VC83	Edin	30.6.1984 36/173693	Edinburgh Domestic Gdn In dead wood, Heriot
A.pallidus	VC84	Lin	16.8.1988 36/000741	Watt Uni. Riccarton
Ommatoiulus sabulosus	VC83	Edin	27.6.1987 36/33.61	Beecraigs Country Park
Ommatoiulus sabulosus	VC84	Lin	7.6.1984 36/085793	Gore Glen
Tachypodoiulus niger	VC83	Edin	21.6.1984 36/243651	Hopetown House
T.niger	VC84	Lin	16.5.1985 36/085793	Boghall Farm Under pottery tile
Allajulus nitidus	VC83	Edin	20.6.1982 36/249751	Hopetown House Under stone
(*S)Cylindroiulus caeruleocinctus	VC83	Edin	11.10.1988 36/359711	Edinburgh In garbage
C.punctatus	VC83	Edin	8.5.1989 36/33.61	Whitecraigs
C.punctatus	VC84	Lin	7.6.1984 36/085793	Gore Glen Under bank
C.latestriatus	VC83	Edin	17.6.1982 36/24.65	Hopetown House
C.britannicus	VC82	Hadd	18.7.1985 36/73.73	Boghall Farm
C.britannicus	VC83	Edin	27.10.1983 36/36.51	Thornhill Glen SWT Res
C.britannicus	VC84	Lin	7.7.1984 36/08.79	Raeshaw Charlock root
Julus scandinavius	J.Carlyle VC84	Lin	17.6.1982 36/085793	Hopetown House
Ophyiulus pilosus	VC83	Edin	.7.1982 36/24.65	Hopetown House
Polydesmus angustus	VC84	Lin	18.7.1985 36/085793	Boghall Farm Under pottery tiles
Polydesmus gallicus	VC84	Lin	20.6.1982 36/085793	Hopetown House
Brachydesmus superus	VC83	Edin	4.11.1983 36/24.65	Hopetown House
			18.7.1985	Boghall Farm

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THE GENERIC COMPOSITION OF THE CYLINDROIULINI WITH REFERENCE TO BRITISH SPECIES

(Summary of a revision published in Entomologica Scandinavica 1990)

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INTRODUCTION

The tribe Cylindroiulini, according to Hoffman (1979:110), consists of 8 genera, 6 of which contain only one (or possibly two) species (5 of these are not found in Britain). One genus Allajulus contains a large number of species (over 100) which have been divided into 15 subgenera. Several of the subgenera have been used as generic names, one in particular, Cylindroiulus is used extensively and has several representatives in Britain. According to Hoffman (1979) Allajulus should be used in place of Cylindroiulus which is the junior name (for example in punctatus and latestriatus etc.).

The genus Allajulus can be split into two clear groups. One of the more obvious features separating the two groups is the presence or absence of metazonite setae (i.e., hairs on the body). The species having metozonite setae show some similarities with the genus Enantiulus which is also in the Cylindroiuliuni and contains nine species at present, inlcuding armatus found in Britain.

The revision undertaken was to examine the genera in the Cylindroiulini and try to clarify the relationships between them. The results given here relate principally to the genera Allajulus and Enantiulus as they have representatives in Britain. The results concerning the remaining genera, Styrioiulus, Solaenoiulus, Micromastigoiulus, Dendroiulus and Olisteroiulus can be found in the original publication (Read 1990). The final genus of Hoffman's Cylindroiulini, Tachypodoiulus, will be dealt with here in a later paragraph.

Analysis of the groups was undertaken using cladistic principles. In order to do this, each species of millipede was observed and scored for many different charcters. It is necessary, as far as possible, to determine for each character used which is the primitive state and which is the derived or advanced state.

Characters used in the Analysis

Some characters were based on external observation, and others after disection of the male gonopods and female vulvae. A scanning electron microscope was used in addition to a binocular light microscope.

External Features

The Cylindroiulini appear very similar externally, thus it is difficult to find useful characters. Some of those used are given below:

Metazonite setae - As already mentioned, the presence or absence of setae on the body is important. it is generally thought that primitive millipedes are setose whereas those with less setae are more advanced.

Pre-anal Ring - The shape of the pre-anal ring of the telson is a reliable and widely used character for separating the British julid species. The shape is extremely variable however and there does not seem to be much pattern to the variation so it is not easy to use phylogenetically.

Sub-anal Scale - Most species have a fairly small sub-anal scale, in a few e.g., E.armatus it is strongly projecting. Like the pre-anal ring, this character is difficult to interpret.

Number of Ocelli - The theoretical total complement of ocelli is the result of additions of complete rows at each moult. In many cases, fewer than a complete row are added. On occasions this can lead to a very strong reduction in the number of ocelli (as in C.salicivorus, found recently from Edinburgh) or complete lack of numbers (e.g., C.vulnerarius); this is probably a derived situation. Degree of reduction in number of ocelli (i.e., reduction from maximum number) was recorded.

Cheek Plate - The males of some julids have an expanded cheek plate when mature (see Blower 1985, Fig. 12b). Others have a normal shaped cheek like the females. A normal cheek plate is probably the primitive situation.

General Similarity - General size and colouring can link some species together. Although somewhat subjective this can help as a supportive character in some instances.

Gonopod Characters

A generalised Cylindroiulini gonopod is shown in Figure 1. The gonopod consists of 3 main parts.

1. Promerite which seems to vary relatively little.
2. Mesomerite, which forms a pair of pincers with the promerite used to grasp the female vulvae in mating (Haacker & Fuchs 1970), and which may be single or forked.
3. Opisthomerite which contains the solenomerite. Sperm are passed into the female vulvae from a canal in the solenomerite. The opisthomerite may bear numerous flanges and hooks e.g., a brachite - which projects anteriorly and is usually a hook shaped structure with or without small spines; a phylacum - a thin plate extending posteriorly from the opisthomerite; a membrane - found at the base of the opisthomerite (see figure of C.nitidus in Blower 1985, Fig. 46c) seen most clearly with scanning electron microscope.

Some species have a long flagellum stemming from the promerite which helps in sperm transfer, others have a shortened flagellum or lack it completely.

Posterior to the opisthomerite there is sometimes another structure which is the paracoxal projection; this may continue laterally to a ridge running parallel to the gonopod but separated from the main bulk by a 'valley'; this is known as the paracoxal rim and is only found in a few tribes of julids.

THE TWO PRINCIPAL GENERA AS THEY STAND AT THE MOMENT

Allajulus

Enghoff (1982) defined Cylindroiulus (=Allajulus) as Julidae lacking frontal setae (2 setae on the head missing in all Cylindroiulini), with gonopods bearing a flagellum and with a deep incision between the opisthomerite and a free mesomerite (i.e., opisthomerite and mesomerite not joined as seen in Unciger Blower 1985, Fig. 59d). Other characters may vary within the genus e.g., metazonite setae may be present or absent, the mesomerite may be single or forked.

Enantiulus

This genus is characterised by the presence of metozonite setae and the absence of a flagellum in the gonopods. The genus has been divided into two groups according to whether the mesomerite was forked or single (Verhoeff 1908). Subsequently one of the single mesomerite species (pelindnus) was removed to a separate genus (Styrioiulus).

THE RESULT OF THE CLADISTIC ANALYSIS

The genus Allajulus in the sense of Hoffman (1979) has been split into three parts. The name Allajulus being retained for species with metazonite setae and with a forked mesomerite. The name Cylindroiulus is now applied to the rest which have no metazonite setae and a single mesomerite. One species (occultus) does not fit into either group and has very different gonopods so a new genus (Kryphioiulus) has been erected for it. The genus Enantiulus remains for most of the species originally in that genus. A few other smaller changes are made.

THE CLADOGRAM (numbers refer to those in Figure 2)

Figure 2 shows a much simplified version of the final analysis. The cladogram should represent the best possible outcome i.e., the lowest number of branches and the fewest reversals of character states (these being when characters revert to a more primitive state). Each split is ideally a bifurcation and each branch should be marked by a character which applies to all those taxa above it but not to those below it. This character should be apomorphic i.e., one which is a derived or advanced situation.

Two characters unite this group of millipedes, that of a free mesomerite (1) and the absence of frontal setae (2). The Schizophyllini are considered a separate tribe from the rest, as the genera have rather more complex gonopods, ozopores opening posterior to the suture and an enlarged leaf like accessory claw on the legs of young stadia (3). The three remaining lineages represent the Cylindroiulini.

The two genera Cylindroiulus and Styrioiulus are characterised by the loss of metazonite setae (4) (Cylindroiulus here refers to the non setose species of Hoffman's (1979) Allajulus).

Styrioiulus is distinguished by the loss of the flagellum in the gonopods (5). The species in the last major branch of the tetrachotomy are united by the development of a forked mesomerite (6). Subsequent loss of flagellum (5) and presence of a spinose brachite (7) designate the genus Enantiulus. The genus Allajulus is distinguished by the development of a membrane on the opisthomerite (8) and by a smooth brachite. The final lineage is for occultus

which does not show apomorphies for either of the other lines and is here designated a separate genus.

Figure 2 is not a perfect cladogram; some of the problems are indicated below.

First, the base of the phylogeny is a tetrachotony which it is not possible to resolve at present. Secondly, the genus Cylindroiulus has no apomorphy i.e., no character by which it is separated from the ancestor of both the genera Styrioiulus and Cylindroiulus. In fact it is possible that these two genera should be combined, the only difference being the loss of flagellum in Styrioiulus. Many Cylindroiulus species show distinct shortening of the flagellum. (Recent studies of the Cylindroiulus from the USSR have revealed an individual of a new species in which the flagellum is very short and double on one gonopod and lacking on the other). Thirdly, there are some reversals of character states. One species of Enantiulus and one species of Allajulus have only single mesomerites where the others are forked, but these species in all other respects conform to their respective species. Fourthly, one species of Enantiulus (armatus) has a membrance on the gonopods like the species of Allajulus. armatus clearly belongs to Enantiulus and the membrane is not the only feature characterising Allajulus.

Despite these shortcomings the final analysis is a great improvement on the previous classification and links Enantiulus and Allajulus as being more closely related to each other than to Cylindroiulus. The genera are now defined as such:

Allajulus C.L. Koch, 1847

Fairly small, often unpigmented species. Ocelli muddled and often reduced in number. Metazonite setae present. Pre-anal projection present, either horizontal or upturned. Mesomerite forked (except for spinosus (Ribaut, 1904)). Opisthomerite with a large membrane and usually a smooth brachite. Gonopods with flagellum. Male cheek sometimes expanded. British species; nitidus (Verhoeff, 1891).

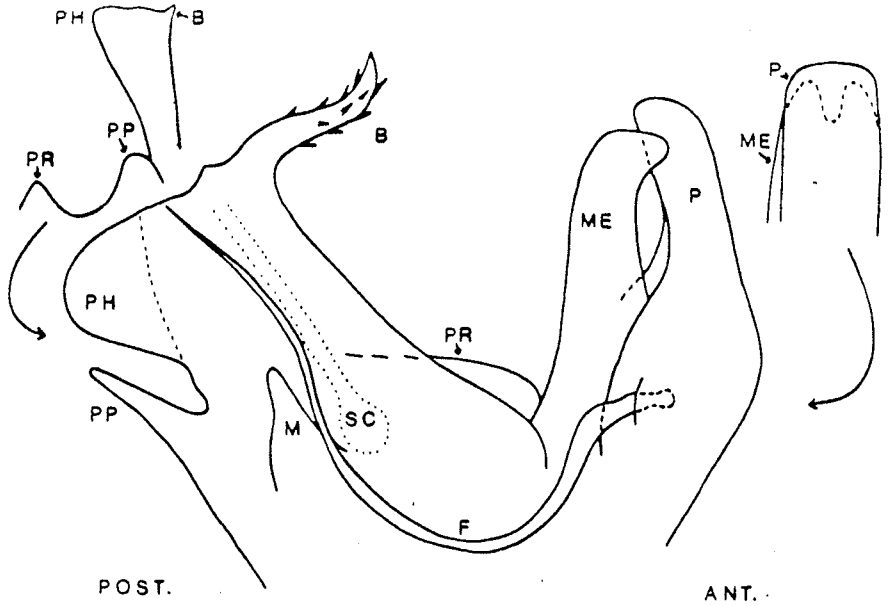
Enantiulus Attems, 1894 (=Leptophyllum Verhoeff, 1895)

Pale species often with reduced and jumbled eyes. Metazonites with setae. Gonopods without flagellum, with forked mesomerite (except for transsilvanicum Verhoeff, 1899) and brachite with spines. Projection on telson pointing downwards. British species; armatus (Ribaut, 1909).

Cylindroiulus Verhoeff, 1894

Variable in size and colour, often larger than Allajulus and with some pigmentation. Variable number of ocelli often in clear rows (may be absent). Pre-anal projection variable, not always present. Metazonites without setae, gonopods with flagellum (which may be reduced). Mesomerite simple. Male cheek plate expanded. British species; londinensis (Leach, 1815), caeruleocinctus (Wood, 1864), vulnerarius (Berlese, 1888), punctatus (Leach, 1815), latertriatus (Curtis, 1945), britannicus (Verhoeff, 1891), parisiorum (Brolemann & Verhoeff, 1896), truncorum (Silvestri, 1896) and salicivorus (Verheoff, 1907).

This genus is a large and variable one (containing over 100 species), further studies may indicate that further splitting is necessary.

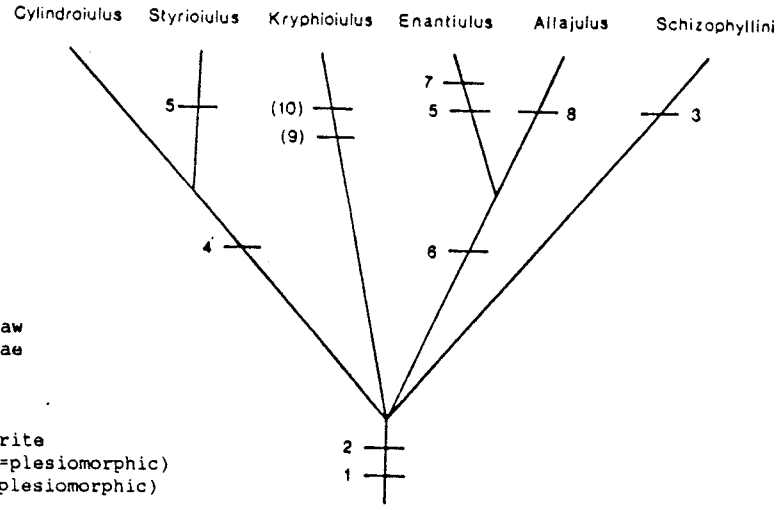


Ant. - anterior
Post. - posterior
P - promerite
ME - mesomerite
F - flagellum

M - membrane
PH - phylacum
B - brachite
PP - paracoxal process
PR - paracoxal rim

FIGURE 1

A generalised Cylindroiulini gonopod seen in mesal view and in anterior and posterior views. The gonopod is one of a pair, the other is joined to this one in the forground of the figure, thus is the 'inside' view.



1. Free mesomerite
2. Frontal setae absent
3. Leaf like accessory claw
4. Loss of metazonite setae
5. Loss of flagellum
6. Forked mesomerite
7. Spinose brachite
8. Membrance on opisthomerite
(9) Paracoxal rim absent (=plesiomorphic)
(10) Spines on promerite (=plesiomorphic)

FIGURE 2

Cladogram showing the positions of the taxa. Numbers refer to apomorphic characters.

FINAL POINTS

The classification of Hoffman (1979) places Tachypodoiulus (with one species, niger) as a genus of the Cylindroiulini. It is now replaced in the Schizophyllini (where it was situated prior to 1979), together with Ommatoiulus and Rossiulus, as it shows the characters mentioned above, including the enlarged accessory claw.

Various other changes are given in the original paper which do not concern the British species. A discussion is also given of the position of the cylindroiulini within the Julidae.

As in Britain it has become customary to refer to the genus Allajulus as Cylindroiulus, the only major nomenclature change for British workers to note is that the species Cylindroiulus nitidus now becomes Allajulus nitidus.

ACKNOWLEDGEMENTS

The work here reported was carried out at the Zoologisk Museum, University of Copenhagen where much help and advice were given by Henrik Enghoff. Andy Keay read through this version of the paper, for which I am very grateful. Financial support was provided by a Royal Society European Science Exchange Program Fellowship.

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Bulletin of the British Myriapod Group 7 (1990)

ABNORMALITIES IN THE COXAL PORES OF LITHOBIUS VARIEGATUS LEACH

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Lewis (1987, 1989) has described abnormal specimens of Lithobius variegatus from Lydeard Hill, Somerset (NGR ST182339). Further examples are described here.

During 1989, 326 specimens of L.variegatus from Lydeard Hill were examined. 250 of these were of the mature stadia 5 and 6. Two of the mature specimens were found to have abnormal coxal pores.

Specimen 1, a female, length 19.0 mm was collected on 31 October 1989. It was a post larval stadium 5 which normally has 6 pores on the coxae of the twelfth pair of legs and 5 on each of the thirteenth, fourteenth and fifteenth pairs (Eason, 1964). This may be written right 6.5.5.5 and left 6.5.5.5. This specimen, however, had 6.3.4.5 on the right and 6.4.4.5 on the left. The coxal pores of the twelfth pairs of legs (Fig. 1a and e) are normal, those of the thirteenth pair (Fig 1b and f) are reduced in number with the posterior one or two very small. The pores of the fourteenth pair (Fig. 1c and g) are also reduced in number and the third and fourth are very small. The fifteenth pair of legs (Fig 1d and h) have the normal number of coxal pores but the second and third are very small.

Specimen 2, a male, length 17.0 mm was collected on 12 December 1989 and was also a post larval stadium 5. It has the normal number of coxal pores but the second on each of the fifteenth pair of legs is very small (Fig 2a and b).

The abnormalities here described are bilateral, affecting equally the coxal pores of both legs of a particular segment. Eason (personal communication) believes that such abnormalities are due to problems at some critical stage in the development of the organs. In specimen 1, the pores affected are 3, 4 and 5 on legs 13 and 14 but pores 2 and 5 on leg 15. One pore is added at each moult, pore 1 first then pore 2 followed at the next moult by pore 3 and so on (Eason, 1964). Any factor influencing the development of the pores must have acted earlier on the fifteenth where pore 2 is small than on the thirteenth and fourteenth pairs of legs where pore 2 is of normal size. In specimen 2 only the pores on the coxae of leg 15 are abnormal, suggesting that their development is controlled independently of that of legs 13 and 14. This could explain the observations made on specimen 1.

ACKNOWLEDGEMENTS

I am very grateful to Dr D. J. Stradling and The Royal Society and Association for Science Education Research in Schools Committee for advice and support.

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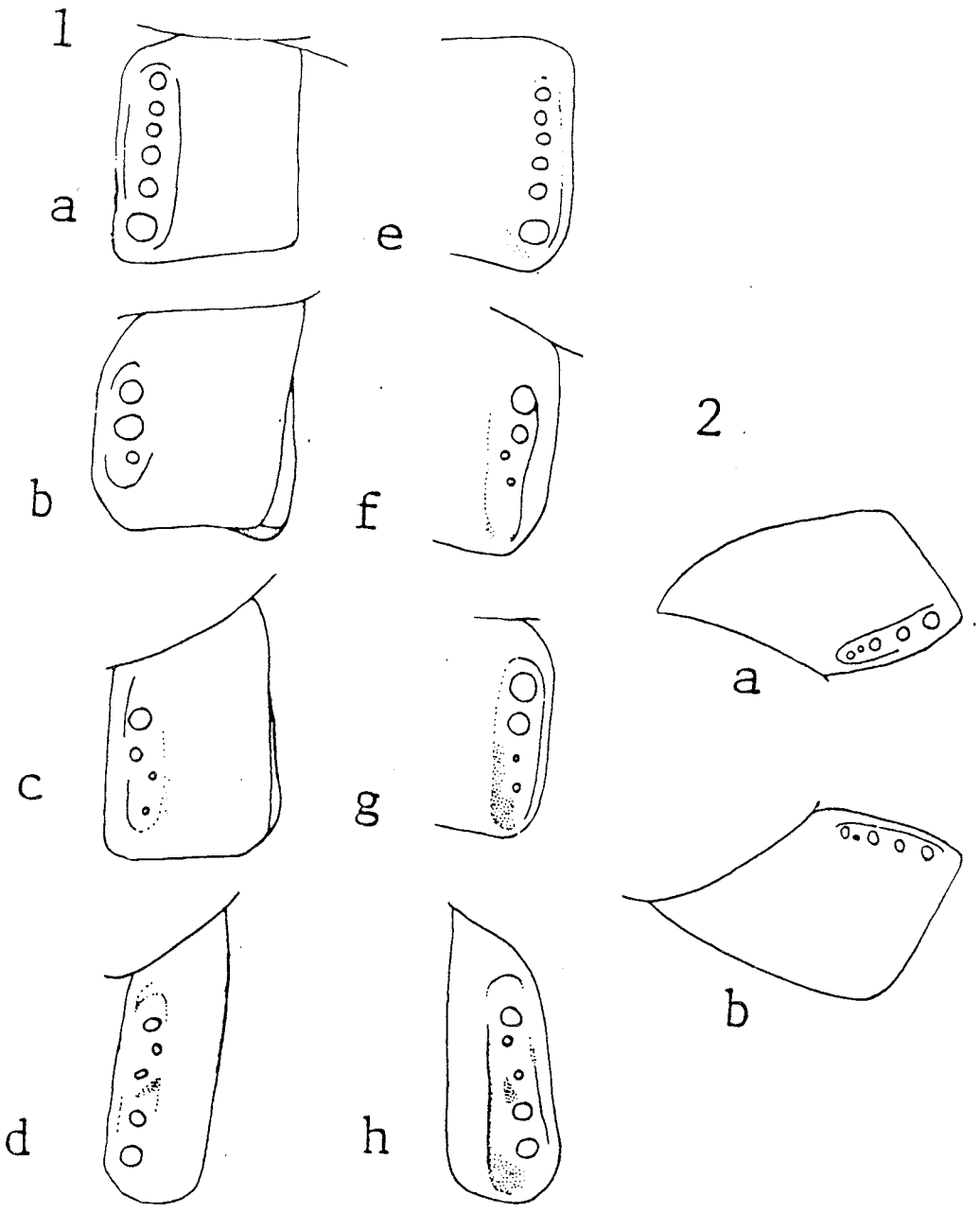

Figure 1 a-h Left and right coxae of legs 12-15 of Lithobius variegatus specimen 1. For further details see text.

Figure 2 a,b Left and right coxae of fifteenth pair of legs of Lithobius variegatus specimen 2.

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THE EIGHTH INTERNATIONAL CONGRESS OF MYRIAPODOLOGY, INSTITUTE OF ZOOLOGY, UNIVERSITY OF INNSBRUCK, 15-21 JULY 1990

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As befits a Congress organised by Erwin Meyer and Konrad Thaler, the emphasis was on ecological studies; 66 papers and posters were presented, 41 of which (62%) were devoted to Ecology and Distribution (24), Detritivory (11) and Life histories (6); such a preponderance of field studies has not occurred previously. The remaining papers covered the more classical fields of Physiology (6), Morphology (6), Taxonomy (3), Palaeontology (3), Post-embryonic development (3), Embryology (2) and Onychophora (2).

The contributors came from 22 countries, in order of size of delegation: France (11), U.K. (9), Germany (6), U.S.S.R. (5), Austria (4), Hungary (4), Italy (3), Czechoslovakia, Greece, Rumania, Poland, Spain (2)(, New Zealand, Belgium, Denmark, Finland, Switzerland, India, Ivory Coast, Sweden, U.S.A. and Yugoslavia (1). There were others who just went to listen and confer.

Aspects of DISTRIBUTION and ECOLOGY applied to must European countries and Brazil and Australia. France, Switzerland, Hungary and Rumania dealt with millipedes only, Bulgaria, Yugoslavia, Italy and U.K. covered centipedes only. The French Millipede Survey (yes!) have published and proposed atlases of distribution by Departments; already Geoffroy has increased the 250 species listed in Demange's book (1980) by 10%; the record however goes to Ceuca (Rumania) who produced a list of 655 species of Balkan diplopods of which 495 are endemic to the area, probably the most diverse fauna in Europe, perhaps due to the extensive Karst country and many true troglobionts. British species (if we may refer to them thus) figured in many of the surveys: Korsos included C.latestriatus and B. superus in anthropogenic habitats in Hungary; Zapparoli had L. forficatus and Henia vesuviana (of course) in urban Rome; Wytwer listed L. crassipes, curtipes, mutabilit, Pachymerium ferrugineum and Schendyla nemorensis in Polish pine forests; Barber gave an impressive account of the habitat preferences which are emerging from our record cards; he and I were most interested to hear Zulka's fascinating account of east Austrian flood plains in which he mentioned Polydesmus denticulatus able to survive submersion for 75 days and Lamyctes fulvicornis the eggs of which survived two weeks; these two species were present only in the inundated areas; Lamyctes was present from June to October during which time it has a lightning period of development from eggs to adults; the rest of the year it passes in the egg stage when lower temperatures allows survival in the spring inundation; later in the year it climbs trees to avoid summer submersion; now we can see why we only encounter it in September! Lithobium forficatus nd Julus scandinavius were also mentioned but these avoided the inundated areas.

On the other side of the world, Adis (Germany) described the survival strategy of Mestosoma hyalaecium (Paradoxosomatidae) from central Amazon flood plains; juveniles climb blades of grass as the water rises, mate and then move into the inundation forest, climb trees, feed in the lower canopy and also inside freshwater sponges above the water.

The subject of DETRITIVORY was introduced in an invited paper given by Crawford on Millipedes as model detritivores; he provided a useful overview of the field and (naturally) gave some time to the special problems of arid areas. Most of the contributions on litter feeding, humification and pedogenic processes came from eastern Europe which was the cradle of some pioneer studies in this field. Tajovsky and students (Czechoslovakia) dealt with litter feeding, pellet production and their decomposition in Glomeris hexasticha. Pobozny (Budapest) studied consumption of conifer litter in Hungary and found G. hexasticha to be the most active consumer. Karamaouna (Greece) found litter preference of Symphioiulus to account only partly for its aggregation in pin litter. Kokhia studied litter consumption in the forests of the Transcaucasus. Striganova fed Pachyiulus flavipes from the Crimea on oak litter. She found pellets to have seven times more free amino acids than the surrounding litter, ten times greater nitrate flux. Szabo (Hungary) studied the role of intestinal bacteria of millipedes; Brüggl (Austria) had a novel photometric method of measuring the time taken to pass through the alimentary canal of Ophyiulus pilosus and Ommatoiulus sabulosus. Theprixe for the best presentation and most novel approach goes to DAniel Bourdanne (Ivory Coast) who has sampled moulting chambers of each stadium of Oxydesmus granulosus and estimated a production of 27.5 Kg/ h (= 2.75 g/m²); the chamber material had an enhanced texture, organic content, cation affinity and water holding capacity.

There were several incisive studies of LIFE CYCLES. Sahli described the variable incidence of juvenile to adult moults, MMJ's in Ommatoiulus sabulosus in the Maritime Alps, in good and bad years. He delivered his talk in impeccable English, spiced with his own brand of humour: when asked by the locals why he was busy collecting millipedes he explained he needed them to make an omelette!! As a reminder that language difficulty afflicts others besides the English, a questionner in discussion requested clarification!.

David (France) gave a thoughtful appraisal of what we know of life-history traits. Geoffroy (France) illustrated his account of activity cycles in Melogona gallica, Polydesmus angustus, Glomeris marginata and Allajulus nitidus with the excellence and clarity of visual aid we remember from Langford. Sahli had collaborated with Descamps and Gharib to study the effects of ecdysosteroids on the control of moulting in O. sabulosus. IOn addition to these French contributions Kofler (Austria) had an interesting poster on the life-cycle of Enantiulus nanus. Her figure for density, 895/m² must be a record. Stamou (Greece) indulged in mathematical modelling of life-history parameters in Glomeris.

Two papers on POST-EMBRYONIC DEVELOPMENT were important for future life-history studies. Nguyen-Duy (Paris) described a new aid to the determination of stadia in Spirobolida; the apical sensory cones on the terminal antennomere of Anadenobolus martinique are added at each moult; there are four in early stadia and these are supplemented moulted by moult until there are over 30 in adults; the later stadia do not always acquire new ocelli. Peitsalmi (Finland) had made a thorough analysis of the addition of ocelli into the field in Proteroiulus fuscus.

Dohle (Berlin) had new data on the post-embryonic development in the Sphaerotheriida (giant pills of the southern hemisphere) which enabled him to debate the possible ancestral number of segments in diplopods. Some striking sequences in the EMBRYOLOGY of Glomeris marginata were shown on film, accompanied by Mozart (Peruffo, Italy). Radl (Germany spoke of brood care in

Scolopendromorpha. I include this here in Embryology since we did not have any strictly behavioural studies.

In the area of PHYSIOLOGY there were notable contributions. When the judges were deliberating on the award to Bourdanne it should be leaked that another very close contender was Steve Hopkin with an arresting presentation on flue glands in Henia illustrated by superb photos and a fascinating insight into the way he disentangled electron scan and transmission pictures to solve the anatomy of the valves which enables the animal to wait until it feels his enemy before engaging him. No one has recently looked at the flue from the rear telopods of Lithobius but Fründ (Germany) has resourcefully obtained evidence of the attacks suffered by Lithobius by a careful study of wound scars. A contributor whose careful research and find presentation we now take for granted is Descamps (France who described the endocrine control of moulting and oocyte growth in Lithobius forficatus. The only reserve came from an after dinner speaker who wondered about the predation suffered by this centipede around Lille. Aided by Fabre and Baert, Descamps also reported on vitellogenetic agents in the haemolymph of Scolopendra, thus spreading the Lille predation further afield. Breaking new ground was an investigation of the immune defence reactions of myriapods. Xylander (Germany) investigated cellular and humural components in the blood of Scolopendra, Lithobius and exotic juliforms. There were three interesting posters of sense organ anatomy revealed by TEM and SEM studies; receptors on the legs of Scutigera (Xylander), antennae of Polyxenus (Nguyen-Duy) and a photoreceptor in the brain of Lithobius (Navarro).

MORPHOLOGY of extant forms include an ultra-structural study of the cuticle of Ophyiulus pilosus. Thorez, Compere and Goffinet (Belgium) found the inner epicuticle impregnated a very thin, hardly resolvable exocuticle; perhaps my refusal to separate the two in julids using light microscopy forty years ago may be excused. Two thought provoking discursive papers debated the concepts of segmentation and serial homology in myriapods (Minelli, Italy) and the size of millipedes (Eghoff, Denmark). Prunesco (Rumania) looked inside anopobiids and Scutigera and found similarities in the genital systems involving micro- and macrotestes suggesting two separate evolutionary pathways from scutigeromorph to Lithobiomorph. FOSSILS of some of the earliest land animals were described by Jeram and Selden (U.K.) from siltstones of Upper Silurian date (15 million years earlier than the Rhynie; kampercarids were included by they question their terrestrial origin, but also included were multiarticulate tarsi and other parts remarkably like scutigermorph structures. A later fossil from the mid-Devonian of New York described as a scorpion was re-interpreted as an Eoarthropleura (Selden, U.K. and Shear, U.S.A.) . Mauriès demonstrated that Protosilvestri from the phosphorites of Quercy was not a callipodid but a cambalopsid.

TAXONOMY used to have the lion's share of space in Congress; at Innsbruck the three contributions made-up for their minority position by their quality. The doyen of Myriapodology, Dr Eason gave an invited lecture on the Taxonomy and geographical distribution of four sub-families of Lithobiidae and two of henicopidae; his delivery was clear, authoritative and very well received. Our giovane signora (the nearest I can get to an antonym of doyen), Helen Read gave a précis of her recent paper on a cladistic analysis of the generic composition of the Cylindroiulini. This was well received, not only because of her clear presentation; there was an almost palpable feeling of relief in the theatre (not to mention the sotto voce shouts of Bravo from the U.K. and French contingents) on the realization that she had rescued most of the

species of Cylindroiulus (90% of our British species) from the genus Allajulus, not to mention her defence of Tachypodoiulus niger from a take-over bid. An excellent Swiss contribution by Pedroli-Crristen and Scholl had reduced a troublesome pair of craspedosomatids (Rhymogona supp.) to synonymy by establishing identical types and frequencies of alleles by electrophoresis.

Ruhberg (Germany) gave an invited lecture on ONYCHOPHORA. She reviewed the results of modern taxonomic methods applied to 'Peripatus', originally described as an abberrant mollusc, now an omnibus term for a group with 100 described species, and many others within the Peripatopsidae remain to be described. Walker (U.K.) described an exceptional African Peripatopsid in which females give birth to young throughout the year; unlike all others described, segmentation of the young embryos appears to be delayed until after elongation.

SCUTIGERA COLEOPTRATA (L.) (CHILOPODA, SCUTIGEROMORPHA) IN JERSEY, CHANNEL ISLANDS

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The so called 'house centipede', Scutigera coleoptrata has been recorded only rarely from houses in Britain and its extraordinary appearance makes it unlikely to have been overlooked. It has, however, been described as 'well established in the Channel Islands' (Eason, 1964). The actual records in the literature seemed to be only two but a letter from Dr W.J. Le Quesne of St Brelade has allowed us to establish its status more clearly.

Turk (1946) recorded an adult sent to him by Miss Harthan from a bath at St Helier that year (27.5.46). The collector reported that she could remember seeing a similar specimen some seven years before. Browning (1956) reported an immature specimen from in a glass house, St Helier (23.7.50). Dr Le Quesne has drawn my attention to a report by Le Seur, Attenborough and Dobson (1960) of a specimen taken in St Ouen's Bay in July 1959 confirmed by G. Owen Evans. The latter authors comment 'This species has now been found on a number of occasions in Jersey'.

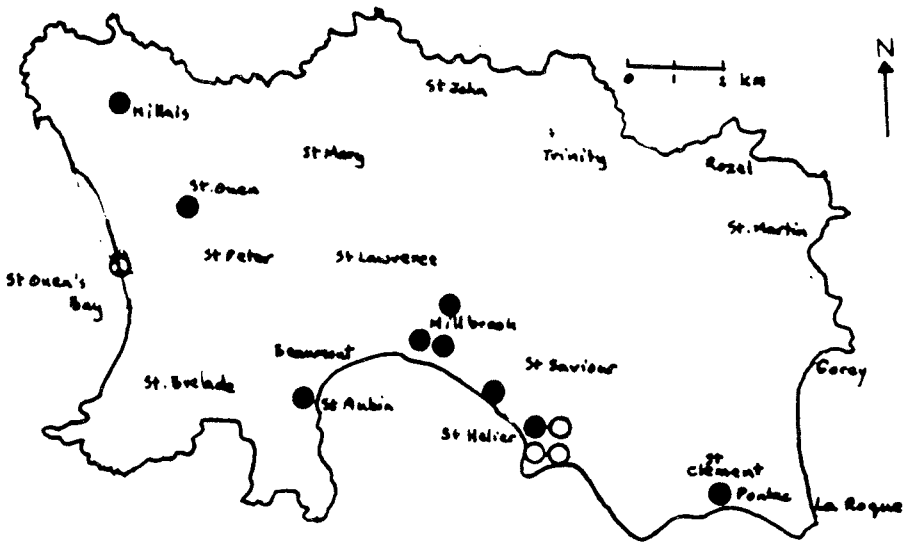
In response to a letter Dr Le Quesne, who had originally reported it from James Road, St Helier where it was causing concern to the residents of a house there, has kindly sent me a list of localities from which it has been reported:

LOCATION	DATE	GRID REFERENCE
Clos de la Chapelle; nr St Aubin's Church	c1985	WV 6048
Millbrook; St Mathew's Vicarage	1988-9	WV 6250
Millbrook; St Mathew's Church Vestry	c1980	WV 6250
First Tower; St Andrew's Road	c1985	WV 6349
Mont Felard; La Pepinière	c1985	WV 6250
Pontac; La Vielle Gare	c1988	WV 6946
St Ouen; Les Hâtiveaux	c1980	WV 5752
St Ouen; Millais	1990	WV 5554
St Hellier; James Road	1990	WV 6548
St Helier; Pomona Road	c1950-60	WV 6448

Taking these ten records together with the earlier ones leaves little doubt about the species being well established in the island in suitable locations i.e., buildings including outbuildings apparently. Interestingly we have no records at the present time from Brittany/Normandy nor from Guernsey. The only report from the latter was by Barber and Kime (1971) when only a limited range of species of myriapod were recorded so that it may possibly occur there in buildings.

Records from mainland Britain are extremely sparse; Evans (1907) reported it from a paper mill and a wine cellar in the Edinburgh area and Blower (1955) from Colchester. It was also collected from a house at Hyde, Cheshire about twenty years ago (J.G. Blower, pers.comm.). It is a widespread animal of the meditteranean and elsewhere and is probably conspecific with the Selista forceps (Raf.) of the United States (Brolemann, 1930).

These are photographs of the living animal in Demange (1981).



MAP 1: Jersey showing locations for S.coleoptrata

pre 1960 ● post 1960

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MISCELLANEA

SOME CUMBERLAND CENTIPEDE RECORDS

1. Lithobius macilentus

On 7/x/1987 a single female L.macilentus was taken at Errerby Scar (NY 389571) near Carlisle. This is the first record of this species in vice-county 70. The centipede was found below an old decaying carpet dumped at the top of the gorge of the River Eden. L.macilentus has a wide distribution in Britain (Barber, A.D. & Keay, A.N. 1988, Provisional Atlas of the Centipedes of the British Isles. BRC, Monks Wood) rarely being common in one place. Such facts are often true for parthenogenetic species, and indeed only females of this species have ever been recorded in Britain. The habitat analysis for L.macilentus given in the atlas does not show any strong preference for synanthropic sites, most records coming from the litter of deciduous woods.

2. Geophilus fucorum seurati

On 3/i/1990 two individuals of this centipede were found below stones on the shore at Ravenglass (SD 08-95-). This is a new record for vice-county 70. The geophilids occurred in a mixture of fine silt, sand and gravel around the high water mark of spring tides, on the seaward edge of the estuary. Other species present were the centipede Strigamia maritima (Leach), the oniscid isopod Ligia oceanica (L.), the beetle Aleochara algarum Fauvel, littoral amphipods, and littorinid molluscs. In the British Isles G.f.seurati is exclusively coastal or estuarine. Its distribution is largely south-western, but a recent Scottish record (Barber, A.D. & Keay, A.N. 1988, Provisional Atlas of the Centipedes of the British Isles BRC, Monks Wood) indicates the possibility of a much wider occurrence. The species has recently been rediscovered in Ireland (Bilton, D.T. in press). Abroad G.fucorum is recorded from the Atlantic and Mediterranean coasts of France, with the sub-species seurati being known from Algeria. In the future the species may be found to have a wider distribution, since many countries remain poorly investigated for Myriapoda.

3. Cryptops hortensis

On 26/iii/1987, a single adult C.hortensis was found at St. Bees Head (NX 94-13-, VC 70). A further visit on 3/iv/1987 produced more specimens. At St. Bees the centipede was found under loose stones in a area of slumping cliff grassland in the splash zone on the shore. The animals were taken from a mixture of grass litter and heavy reddish clay, together with the isopods Oniscus asellus L. (of which an albino example was found), Porcellio scaber Latreille and Trichoniscoides saeroeensis Lohmander. The only other record to date from vice-county 70 is that of a single female found in an old manure heap at Beechgrove (NY 40-57-) near Carlisle during September 1987. This centipede does often occur in rural sites, but shows a marked preference for synanthropic urban localities, particularly in the north of its British

range. It becomes less frequent from the Midlands northwards, with only three Scottish records (Barber, A.D. & Keay, A.N. 1988, Provisional Atlas of the Centipedes of the British Isles. BRC, Monks Wood). Also from the Atlas note that of all records 73% are coastal (≤15Km from the sea). Coastal sites are well-known as thermal refugia for cold-sensitive species, but the importance of urban sites as such is less well documented. Barber (1985, Bijdr. Dierk. 55:16-24) discusses the role of such localities in the distribution of some British Chilopoda. The distribution of C.hortensis, which is most abundant in urban or coastal localities in southern England seems to suggest that this is a species which reaches the limits of its temperature tolerance in the British Isles. In the far north it may be entirely restricted to seaside thermal refugia and the heat islands provided by towns, though more work is needed here to clarify the situation. It is interesting to note that St. Bees Head also supports two other 'southern' species near the northern edge of their ranges, namely the millipede Polydesmus gallicus (Latzel) and the woodlouse Armadillidium vulgare (Latreille). The former of these is also known from the Beechgrove site (Bilton, D.T. 1988, Bull.Brit.Myriapod Gp. 5:37-38).

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CLINOPODES LINEARIS (KOCH) (CHILOPODA: GEOPHILIDAE) IN OXFORDSHIRE AND SURREY

In October 1987 this large soil centipede was found to be abundant in sandy calcareous loam below Pinus and Populus in the University Parks (SP 51-07-), Oxford. This represents a new record for vice-county 23. The animals were all found at depths of 3-15 cm in the soil. In the field they closely resembled the common Haplophilus subterraneus (Shaw), but when examined under a microscope the highly characteristic coxal pore arrangement on the last legs was clear. On 17/xii/1989 two large adult C.linearis were taken from litter at Alderhurst (SU 99-69-, VC 17) near Egham. These had almost certainly been forced out of the soil by previous heavy rains. As at the Oxford site the Egham soil was sandy loam which had been cultivated. This centipede is well-known from the Surrey area, but other British records are very few (Barber, A.D. & Keay, A.N. 1988, Provisional Atlas of the Centipedes of the British Isles. BRC, ITE). The species is found as a synanthrope in many parts of northern Europe and Scandinavia, and is believed to be native to the shores of the Mediterranean (Brolemann, H.W. 1930, Fauna de France 25).

D.T. BILTON

RECENT RECORDS OF CYLINDROIULUS VULNERARIUS (BERLESE)(DIPLOPODA: JULIDAE) IN THE BRITISH ISLES.

This blind snake millipede was first reported as British by Blower (1985, Millipedes Synopses Br. Fauna (N.S.) 35:1-242), who noted records from Manchester, Swansea, Dublin and the London area, most of these being for ornamental parks and gardens. The species has since been recorded from the Scilly Isles (Jones, R.E. & Pratley, P. 1987. Bull.Brit.Myriapod Group 4:7-15), Cardiganshire (Morgan, I.K. 1988, Bull.Brit.Myriapod Group 5:11-25) and

the New Forest area (British Myriapod Group 1988, Preliminary Atlas of the Millipedes of the British Isles. BRC, ITE). Abroad C.vulnerarius is known from northern Italy where it is believed to be native, and as a synanthrope from Sweden, Holland and Belgium (Blower, op.cit.). To the previously published records I can add the following, all of which are new for their respective vice-counties: 20/iii/1986 Beechgrove (NY 40-57-, VC 70) Carlisle, under plastic sheet in old nursery garden; 1/v/1987 Iffley Road (SP 52-05- VC 23) Oxford, amongst garden rubbish on rich soil; 1/v/1987 Botanic Gardens (SP 52-06-, VC 23) Oxford, in compost heap; 1/iii/1988 St Cross Road (SP 51-06-, VC 23) Oxford, in soil below rotting newspapers; 10/vi/1988 The Queen's College (SP 51-06-, VC 23) Oxford, under paving slab in garden; 7/ii/1990 West's Garden Centre (SP 54-06-, VC 23) Oxford, in compost heap; April 1988 roadside verge (SO 25-16-, VC 42) nr Gilwern, under car tyre. With the exception of the Beechgrove and St. Cross Road sites all these records are for one or two specimens only. At these two localities C.vulnerarius has been monitored at various times of the year, since its discovery until winter 1989/1990. At both sites it has been noticed that the millipede can only be found close to the soil surface from November to April. Surprisingly for a blind species C.vulnerarius was found to be surface active at night when kept in captivity. Blower (op.cit.) notes its occurrence in pitfall traps near Manchester. It seems likely then that this species is capable of dispersing itself, as well as being moved around extensively by man. It is interesting to note that the two colonies examined were both small, containing in the region of 25-50 adult individuals in an area of around 70cm^2, and apparently stable in size. Judging by present information C.vulnerarius is a widespread species in England and Wales, occurring in urban and suburban synanthropic localities.

D.T. BILTON

NOPOIULUS KOCHII (GERVAIS)(DIPLOPODA: BLANIULIDAE) IN TWO SUBURBAN LOCALITIES

Blower (1985, Millipedes, Synopses Br. Fauna (N.S.) 35:1-242) notes that all old British records of this small millipede are erroneous, many arising from nomenclatural confusions. He also indicates that the species may occur in Britain. The first certain record of the species is for an intercalary male from Manchester (Hopkin, S.P. & Blower, J.G. 1987, Bull.Brit.Myriapod Group 4:27-29). Morgan (1988, Bulletin of the British Myriapod Group 5:11-23) details the finding of N.kochii in two sites in Carmarthenshire, and the recent atlas (British Myriapod Group 1988, Preliminary Atlas of the Millipedes of the British Isles. BRC, Monks Wood) also lists records for vice-counties 58, 64 and 67, these being all the British records to date. On 4/vii/1987 N.kochii was found to be abundant under wood and chipboard on soil derived from an old manure heap at Beechgrove (NY 40-57-, VC 70) near Carlisle. This site on the northern edge of the city is a disused nursery garden with a rich fauna of Myriapods (Bilton, D.T. 1988, Bull.Brit.Myriapod Group 5:37-38). The Blaniulid was found to be still present at the site in January 1990. I have also discovered Nopoiulus on the site of a 1960's municipal dump near Donnington Bridge (SP 524043, VC 23) in Oxford. Here it was common in soil below a decaying matress during October 1987. Records of N.kochii to date indicate that it is widespread in England and Wales, always apparently occurring in synanthropic locations.

D.T. BILTON

DEAD MILLIPEDES, OMMATOIULUS SABULOSUS (L.), ON SAND DUNES AT BRAUNTON BURROWS, DEVON.

On 10 May 1990 during a field trip to Braunton Burrows, Bideford Bay (NGR SS 453353) a large number of apparently dead and dying Ommatoiulus sabulosus (L.) were found by Sixth Form pupils of Taunton School at the top of a large sand dune on both its east and west faces. Twenty-three specimens were collected in addition to three active specimens; two O.sabulosus and one Tachypodoiulus niger (Leach).

Blower (1985) notes that O.sabulosus is often seen in large numbers on the foreshore adjacent to duneland as, for example, on the Lancashire coast at Ainsdale, Newborough Warren, Anglesey and West Gower in South Wales.

It proved difficult to assign the specimens to a stadium using the ocular field method, so the number of rings were counted. Of the 25 specimens of O.sabulosus 23 were females. They has between 46 and 51 rings. Of the two males, one had 48 rings, the other was damaged. Reference to Blower's (1985) data on anamorphosis in Iulidae shows that the specimens could be in any of the stadia IX to XIII in all of which adults occur.

The specimens were collected during a dry period and may have been dying of desiccation.

REFERENCE

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J.G.E. LEWIS

LITHOBIUS FORFICATUS (L.) CARRYING A WOODLOUSE

Late in the evening of 10 May 1990 a Lithobius forficatus (female, length 25 mm, coxal pores 7.8.8.6) was observed carrying an Armadillidium vulgare (Latreille) of about 6.5 mm diameter when rolled up. Examination of the woodlouse showed the head, segment 1 and the last 5 segments to be partially crushed.

L.forficatus has previously been reported to feed on woodlice (Cloudsley-Thompson, 1953, 1958).

REFERENCES

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Entomologist's Mon.Mag. 84: 106-108

J.G.E. LEWIS

ARE ALLOTMENTS SANCTUARIES FOR CENTIPEDES?

Allotments can be surprisingly interesting places for the urban naturalist. I say 'surprisingly' since many of our Association Members (not synonymous with best growers!) are over free in their application of super strength biocides of one sort or another. However the local allotments occupy a very large area surrounded by housing and are bordered mainly by elm hedges containing mature oaks and standard hawthorns and also by rubbish heaps strategically built against boundary fences.

Note that I refer to 'rubbish heaps' - containing cabbage stalks, beer cans, broken glass, old window frames, fertilizer bags, stones and even the occasional ancient garden tool, firmly anchored with copious quantities of soil filched from the vegetable bed. A compost heap is a different matter and less permanent. The tidy gardener will pride himself on his compost heap and will take his rubbish to the local amenity tip. It is the untidy, neglectful allotment holder who provides the best habitat for wild life.

I was bequeathed a large and ancient rubbish heap which contained all the items mentioned above. Unfortunately I wanted the space for flowers so last spring several days were spent carting the offending garbage away. It was not wasted time for I found Lithobius forficatus and three geophilomorph species during my labourings. Haplophilus subterraneus was inevitable and abundant but equally common was Henia vesuviana - my first finding of this species and a great thrill! At 60 mm some of the females seemed incredibly large. A single specimen of Geophilus osquidatum was also collected. Lithobius forficatus was abundant in various sizes and this species like H.subterraneus I often turn up when digging the long-cultivated vegetable plot.

It seems to me that 4 species of centipede within such a small area is a fairly rich habitat and while I am guilty of destroying this particular one. I do not think there is any risk of some of the other even larger heaps being cleared! Acutally I found a specimen of H.vesuviana when forking over the new flower/shrub bed this April so it would appear that they have not all moved home!

My thanks to Tony Barber for checking my specimens and for identifying G.osquidatum. He tells me that neither it not H.vesuviana are unexpected in Exmouth but both are nice finds. He can say that again!

PAULINE IVIMEY-COOK
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AN UNUSUAL HABITAT FOR LITHOBIUS FORFICATUS?

Taking down the shade from a circular fluorescent light in order to insert a new starter I made the usual cursory inspection of the mummified livestock within it. On this occasion there was a very dried out L.forficatus among the expected Diptera and Lepidoptera. It seems unlikely that the centipede would have climed up the walls and across the ceiling to reach its goal so I imagine it crawled down the light flex from the loft above. But surely it is not likely to have been living there from 'choice' and I expect it was carried up amongst the flotsam which is stored in my roof space.

P. IVIMEY-COOK

HENIA GOES WALKABOUT!

One October morning in 1988, when the air was heavy with mist and the pavements damp, I came fact to face with Hena vesuviana setting out to cross the road. Like all good Samaritans I helped it one its way so it would not get run over. I bet, though, that the minute I was out of footfall it turned and headed back from whence it came like the headless caterpillers I rescued from public footpaths!

One does not often see centipedes out in broad daylight, does one? I assume the damp weather was an attraction.

Pauline Ivimey-Cook

EDITORS NOTE

The notes from Pauline Ivimey-Cook were sent to us last year and refer to incidents in 1988. It is possible that the record of L.forficatus is in fact due to its climbing of the walls, a vertical movements such as this are well known in centipedes and other arthropods. H.vesuviana has in fact been reported before in the daytime by Ron Daniel of Plymouth.

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