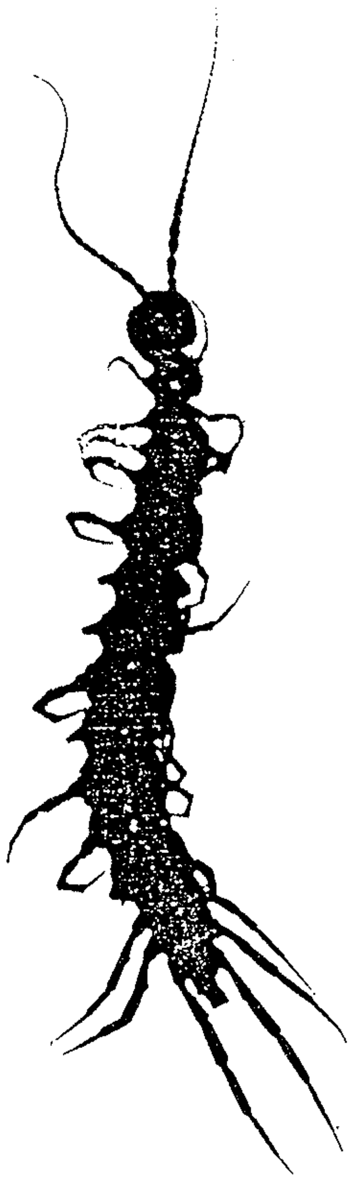
ISSN 0267-2154

BULLETIN of the BRITISH MYRIAPOD GROUP



Edited for the Group
by J. Gordon Blower

Volume 2
January 1985

BULLETIN OF THE BRITISH MYRIAPOD GROUP

Volume 2

January 1985

LIST OF CONTENTS

Hon. Editor: J. Gordon Blower, Department of Zoology, University of Manchester

Publication: A.D. Barber, Rathgar, Exeter Road, Ivybridge, Devon. PL21 OBD

Bulletin of the British Myriapod Group 2 (1984)

EDITORIAL

The first volume of this Bulletin was published in April 1972; this, and the staging of the second International Congress of Myriapodology in Britain, were manifestations of the emergence of several keen workers, noteably Tony Barber and Desmond Kime (then colleagues in the Biology Department of Guildford Royal Grammar School), Charles Brookes, Colin Fairhurst and Peter Miller at Manchester and the very small establishment of Blower, Eason, Lewis and Rolfe. Together they formed the British Myriapod Group at a field meeting at Brendon, North Devon, in April 1970. A second field meeting followed at Kington, Herefordshire in April 1971.

The gap of twelve years before the appearance of this second volume does not indicate a lull in myriapodological activity. In 1971 the British Myriapod Survey was set up under the direction of Tony Barber and Colin Fairhurst with the help and encouragement of the British Isopod Study Group, especially Paul Harding of the Biological Records Centre. A keen group of collectors has nearly doubled the number of vice-county records and, more significantly, gathered habitat data - a unique feature of the recording scheme. Progress and analysis of data was reported at the Congresses in Hamburg (1975), Gargnano (1978), Radford, Virginia (1981) and Amsterdam (1984); British delegates to these congresses made other useful contributions; the definitive text on the Biology of Centipedes by John Lewis was published in 1981. The beginning of this decade marked a resurgence of myriapodological activity. A third field meeting of BMG was arranged at Plymouth in April 1982 by Tony Barber and Ron Daniel at which the lack of formal evidence of our activity was regretted; a more recent addition to our number and a very lively mind acted rather than just regretted: Douglas Richardson published the first BMG Newsletter early in 1983. Further stimulus to our activity followed a fruitful joint field meeting of BMG and the British Isopod Study Group at Lancaster in April 1983; later in the year Douglas Richardson issued a second interesting and informative Newsletter.

At a recent meeting of the executive of the British Myriapod Survey overall charge of millipede recording was transferred to Douglas Richardson, Colin Fairhurst retaining responsibility for data analysis. Colin was largely responsible for the first surge of activity in the early seventies; he has found time from his busy research school to stimulate this second surge; we are glad to be assured of his continuing lively presence amongst us. A new determination to work towards provisional atlases in the near future is evident; the present mood within BMG suggest we will not have such a long gap in between this and a third volume of the Bulletin.

J. Gordon Blower

Bulletin of the British Myriapod Group 2 (1984)

OBITUARY

It is with sadness that we report on the loss of three British scientists who have made important contributions to Myriapodology.

Dr. SIDNIE M. MANTON (Mrs. J.P. Harding) was already a zoologist of world-wide repute, with an impressive body of published work on Crustacea, Onychophora and corals, co-author of the most respected text of Vertebrate Anatomy and Fellow of the Royal Society, before she turned her attention towards myriapods. Having already achieved what most of us would regard as a good life-time's work she began one of the most ambitious and exciting research projects in the history of Zoology. The first part of the now classic series of papers on the Evolution of arthropod locomotory mechanisms was published in 1950 when she was 47; the final part (number 11) appeared in 1973. The series covered 1,000 pages and almost as many superbly executed drawings gathered into 250 compound text figures. Seven of the eleven parts treated myriapod groups; much of what we now know of the functional significance of myriapod characters was revealed by her work. Dr. Manton died in hospital in January 1979 at the age of 76. She had just published a major book on Arthropoda (she had corrected the proofs in hospital) and was in the middle of writing a new text book on the group. Dr. Manton was still at the height of her powers; we can only attempt to fill the gap by following her example of meticulous accuracy.

The Rev. Canon Dr. STANLEY GRAHAM BRADE-BIRKS and a fellow graduate of Manchester University, Dr. HILDA K. BRADE-BIRKS had begun to study British Myriapoda long before any of the present members of BMG were born. Graham Birks and Hilda Brade published the first of their 'Notes on Myriapoda' in 1916 (on the varieties of what we now call Melogona scutellare). It is difficult to imagine what courage was needed to begin work in a field with hardly any literature in English and even before the great German and French texts had appeared, but they were in correspondence with Brolemann, Attems and Verhoeff and acknowledge the help they received from them and from Jackson and Pocock in England. Their active work culminated in Dr. Graham's Bibliographical Check List of 1939 (and where would we have been without this?), but B-B, as he was affectionately known, still retained an interest whilst busy with his Parish, writing books on soils, farming, and an Encyclopaedia, and engaging in geneological research. In 1972 he presided over the second International Congress of Myriapodology at Manchester at the age of 84, welcomed guests in three languages and generally made the meeting hum. On a visit to the Radio Telescope he was asked about luminous centipedes; he immediately started to rumage amongst the soil and litter at Jodrell and within minutes produced a couple of Geophilus carpophagus to show his questionner. B-B died peacefully in a nursing home on 28th January 1982 at the grand old age of 95. Dr. Hilda survived him but died a year later.

Dr. CHARLES HILARY BROOKES was one of the founder members of the British Myriapod Group. To say the least, he was well-liked and was good company, whether commenting on the soccer scene or on world events generally. He was respected for his distinguished contributions to the ecology of millipedes. His study of the life-cycle of Proteroiulus fuscus, along with those of Maia Rantala and Maia Peitsalmi presented at the Manchester Congress were among the highlights of the meeting. At this time Charles was developing the School of Biology at Manchester Polytechnic into an excellent group which later became the Department of Biological Sciences with Charles at the head. Despite the considerable administrative and teaching loads which this entailed, he still managed to initiate new work on Blaniulus guttulatus which he and his student presented to the Hamburg Congress in 1975.

In 1980 Charles was appointed Assistant Director of the Manchester Polytechnic with overall responsibility for the academic staff. We only had a short time to wait to discover which Polytechnic would be directed by our esteemed colleague; he was mainly concerned to bring an understanding of the Biological Sciences to as many of his countrymen as possible. Tragically, this never came to pass; Charles died as the result of a rail accident on 21st January 1983 at the age of 44. He was approaching the peak of his achievements. We shall always remember his friendly and lively presence amongst us.

Longer notices of these three colleagues have appeared in the Annuaire Mondial des Myriapodologistes for 1979, 1982 and 1983 respectively and, for Dr. Manton, in the Proceedings of the Gargnano Congress Myriapod Biology Academic Press and in Nature 278: 490-491 (1979).

J.G. Blower

Bulletin of the British Myriapod Group 2 (1984)

RECENT RECORDS OF THALASSISOBATES LITTORALIS (SILVESTRI)

Paul T. Harding, Institute of Terrestrial Ecology, Monks Wood Experimental Station, Huntingdon

The halophile species, Thalassisobates littoralis Silvestri, is among the rarer British Millipedes. Blower (1972, 1974) records it from three vice-counties - Westmorland/North Lancashire (VC.69), Bagnall (1917); Caernarvon (VC.49), Eason (1957); and the Isle of Man (VC.71), Blower (1963). This north-western occurrence in Britain noticed by Blower (1972) is not supported by recent records of this species from South Devon (VC. 3) and East Norfolk (VC.27).

Six specimens of T. littoralis were collected from the seaward side of the shingle ridge at Slapton, Devon (20/8243) during the period 27-29 June 1977, using pitfall traps. The millipedes occurred in a 10 metres deep zone of the beach from just below the sparsely vegetated seaward edge of the ridge crest, through a belt of storm drift lines, onto a fairly horizontal shelf. They did not occur in traps above this zone (15 metres) or below it, to the high tide edge (25 metres).

The shingle ridge and its form and constituents are described by Mercer (1966). At the time of my visit in June 1977, the area in which T. littoralis occurred had a surface of fairly fine shingle and some areas of sand. Oval slabs of slate and silt-stone were common in the area, lying on the surface of the fine shingle.

Subsequently I have learned from Dr. M.J. Cotton that T. littoralis occurred in pitfall traps placed in the same area of the Slapton shingle ridge, in 1974. Mr. W.A. Ely (pers. comm.) has identified material of this species in the Leicestershire Museum, which was collected at Blakeney Point, Norfolk in 1972. Pitfall trapping on the beach at Scolt Head Island, Norfolk in July and September 1977 failed to reveal its occurrence there.

More recently R.E. Jones and P. Pratley (pers. comm.) collected three specimens from the Garrison, St. Mary's, Isles of Scilly, in company with the centipedes Strigamia maritima and Schendyla nemorensis in a soil-filled crack in a low granite sea cliff. The crack was situated above the zone of black lichen, but still within the splash zone.

From these widely spaced occurrences, it seems possible that the rarity of T. littoralis may be more apparent than real. The habitats in which it occurs are difficult to work, although the somewhat improbable technique of pitfall trapping in shingle has been successful twice at Slapton.

References:

Bagnall, R.S. (1917) On some Lancashire myriapods new to the British fauna. Lancs. Chesh. Nat. 10, 104

Blower, J.G. (1963) In, Bruce, J.R. Coleman, J.S. & Jones, N.S. (1963) Marine Fauna of the Isle of Man. Liverpool University Press

Blower, J.G. (1972) The distribution of British millipedes as known at the end of 1969. Bull. Br. Myriapod Group, 1, 9-38

Blower, J.G. (1974) The distribution of British millipedes as known up to 1970. Symp. Zool. Soc. Lond. 32, 603-609

Eason, E.H. (1957) Chilopoda & Diplopoda from Caernarvonshire. Proc. Zool. Soc. Lond. 129, 273

Mercer, I.D. (1966) The natural history of Slapton Ley Nature Reserve 1. Introduction and morphological description. Fld. Studies 2, 385-405

Bulletin of the British Myriapod Group 2 (1984)

THE BRITISH CHORDEUMATIDAE

J. Gordon Blower, Department of Zoology, The University, Manchester

The first British representative of this family was found and recorded by Dr. Hilda K. Brade and Rev. S. Graham Birks in the first of their series of Notes on Myriapoda (Brade & Birks, 1916). It was a new variety of Ribaut's *Chordeumella scutellare* now known as *Melogona scutellare*. For a long time this species remained the only member of this family known to occur in Britain. Dr. Eason found another species of the genus, *M. gallica* (*Microchordeuma gallicum*), in Caernarvonshire (Eason, 1957). In my Synopsis of British Species published a year later it was a simple matter to differentiate between the two species of *Melogona* (= *Microchordeuma*) since *M. scutellare* matures at stadium VIII with 28 rings and *M. gallica* matures at IX with 30 rings. Adults of *M. gallica* are consequently larger and have a greater number of ocelli in the ocular field.

In August 1961 I found a flourishing population of a species of *Chordeuma* in a wood near to the village of Trelill in north Cornwall but had to wait until the following spring to secure adults and assign them to the species *Chordeuma sylvestre* C.L. Koch. Two years later another species of this genus, *Chordeuma proximum* Ribaut, was found in the Forest of Dean by Dr. Satchell (see Nelson, 1964). Before the discovery of these two species of *Chordeuma*, immature examples of a chordeumatid in Britain could at least be referred to a genus, but now collectors are faced with the difficulty of deciding to which of two genera to assign their captures; although adults of the two species of *Chordeuma* are larger than those of *Melogona*, the differences are useful only in the comparative sense and even these become less noticeable in sub-adult individuals. Furthermore, there is no easy distinction between adult females of the two species of *Chordeuma* as is provided by the different segment numbers of the two species of *Melogona*.

The purpose of this note is to provide the means of differentiating between the four chordeumatids and to summarize what is known of their distribution and biology. My attempt to find sub-adult characters for separation, whilst not wholly successful, has revealed some interesting features in the development of the ocular field. To comprehend the secondary sexual characters necessary for specific diagnosis, we need to become familiar with the most complex gonopodial apparatus within the Diplopoda. The distribution of all four species shows very interesting features; it is vitally important for all concerned to be able to fill in the gaps in our coverage and to further our understanding of these curious distribution patterns.

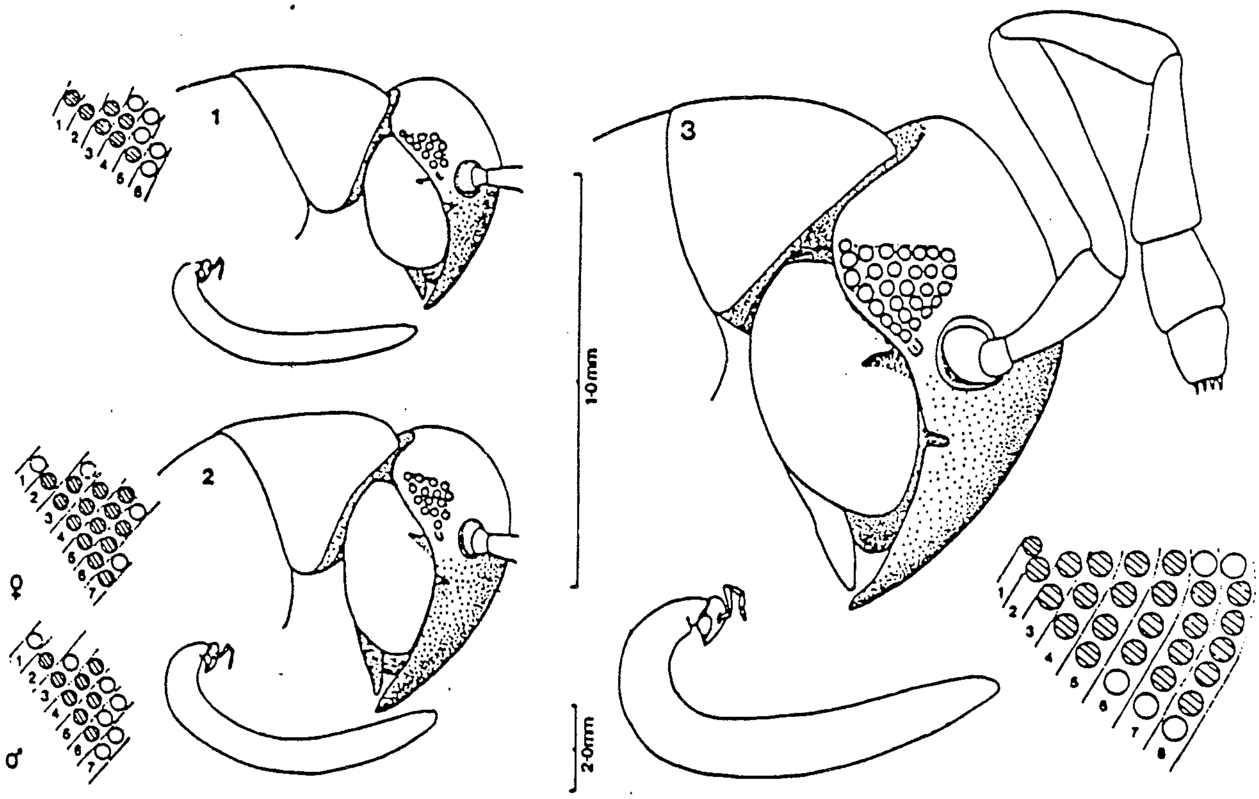
Order N E M A T O P H O R A
Sub-order CHODEUMATIDEA
Family Chordeumatidae

Dr. Jeekel has recently indicated the correct group names to be derived from the genus Chordeuma and genera which are compounds of this name (Jeekel, 1970). In my synopsis I used the spelling Chordeumidae following previous authors without fully understanding the syntax. The sub-order is of special interest partly because of the unique gonopodial equipment involving no fewer than five pairs of appendages. In addition to the modified eighth and ninth limbs of the seventh ring, limbs 7, 10 and 11 are also included in the apparatus. Females are of interest because of the sternite without appendages behind the second pair of legs which Bigler (1913) called the platosternite. Brolemann regarded this structure as the anterior somite of a diplopodous fourth ring. I have recently suggested an alternative explanation (Blower, 1978).

External Characters

If old hands will forgive me I think it worth noting the typically nematophoran features of the chordeumatids since beginners experience real difficulty in deciding whether a smoothly cylindrical animal is to be placed in this order or in the Julida. Figs. 1 - 3, 5 and 11 show clearly the three principal features which distinguish cylindrical nematophorans from julids and blaniulids. These are:

i) The distinct junction between head and collum. The collum abuts up to



Figs. 1 - 3. Comparison of the ocular fields of Chordeuma and Melogona (Microchordeuma)

1. M. scutellare ♀ from Iceridge, Cheshire, 7.11.71
2. M. gallicum ♀ from Barton Wood, Devon, 4.70
3. C. proximum ♀ from Bishop's Wood, Caswell, Gower, 27.9.67

The sketches of whole animals at a small scale to give comparative sizes. The accompanying diagrammatized ocular fields indicate the arrangement of the successive rows; ocelli invariably present are cross-hatched; ocelli which may or may not be present from one individual to another or on one side and not the other, are left open.

the head and does not overlap it.

ii) The cheek lobe is entire with only the beginnings of a division into separate cardo and stipes. The cheek protrudes laterally much more than that of the julids.

iii) There is a trio of setae on each side of each ring; the most ventral of the three is placed more posteriorly, towards the margin of the metazonite except on the posterior rings which carry progressively longer setae closer to the edge of the ring.

We can note the paired spinnerets in Fig. 11 which are characteristic of the order but are hardly of diagnostic utility for beginners.

The ocular field of Chordeuma

In some julids, as was first demonstrated by Vachon (1947) in the spiroboloid Pachybolus, ocelli are added to the ocular field moult by moult. The first ocellus appears in stadium II, two additional ocelli are added in front of this by stadium III, then a row of three ocelli appear by stadium IV and so on, building up an equilateral triangle of ocelli. From the posterior ventral edge of the head capsule, a series of rows build-up anteriorly, each consisting of one fewer ocelli than the number of the stadium. Towards maturity, later rows may have fewer than this ideal complement, since the ocular field may be restricted anteriorly by the base of the antenna.

A similar development of the ocular field occurs in Chordeuma spp. with the noteably difference that only one ocellus appears in each of stadia II and III. Thereafter, a row of two is added for stadium IV, three for stadium V and so on. The field is thus similar to that of a Julid but the initial ocellus remains as an 'odd man out', an extra ocellus oddly positioned at the posterior apex of the equilateral triangle subsequently added. Fig. 3 shows the complete field of an individual C. proximum. Each row added, after the first ocellus of stadium II now contains a number of ocelli equal to the stadium number minus two. At the antero-ventral corner of the field we find the Organ of Tomosvary which is not very easily seen but might just be mistaken for an extra ocellus.

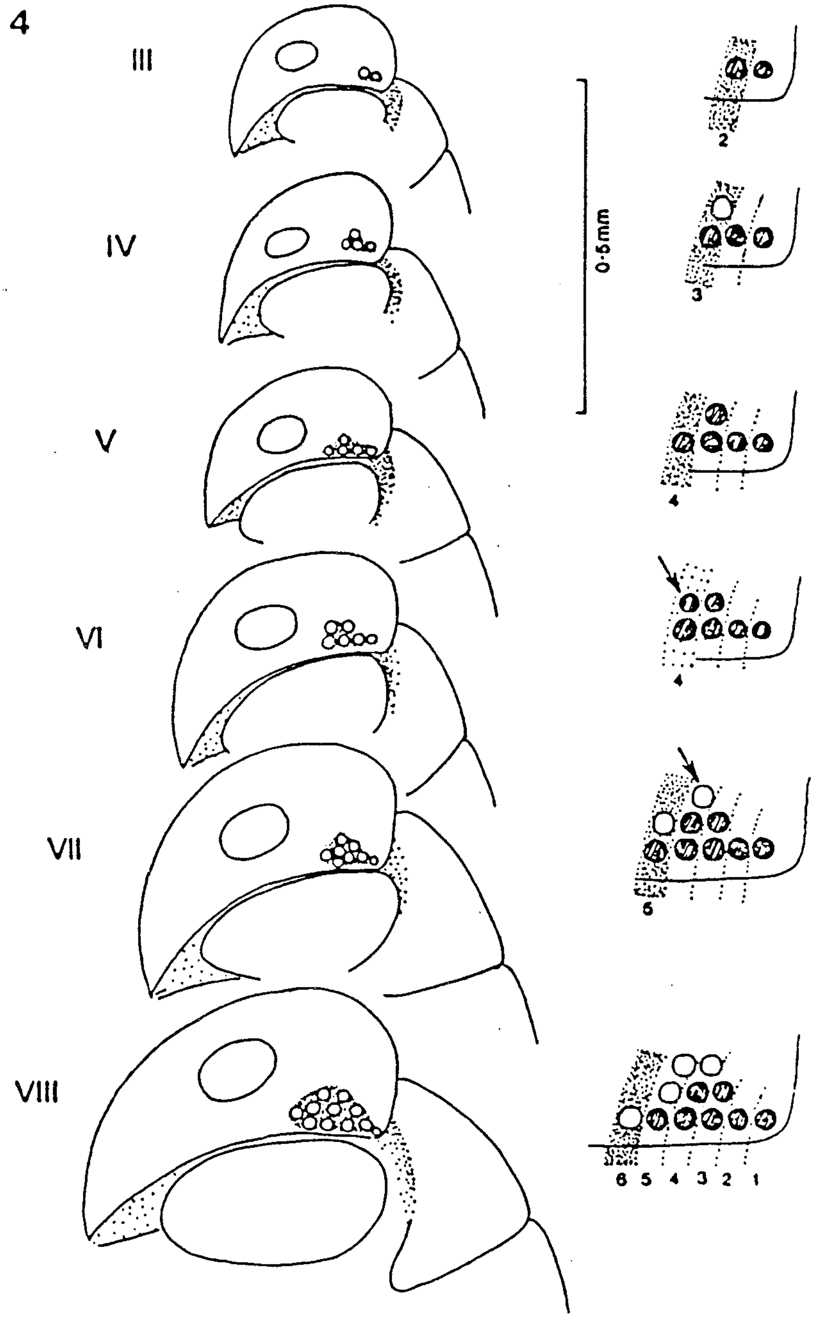


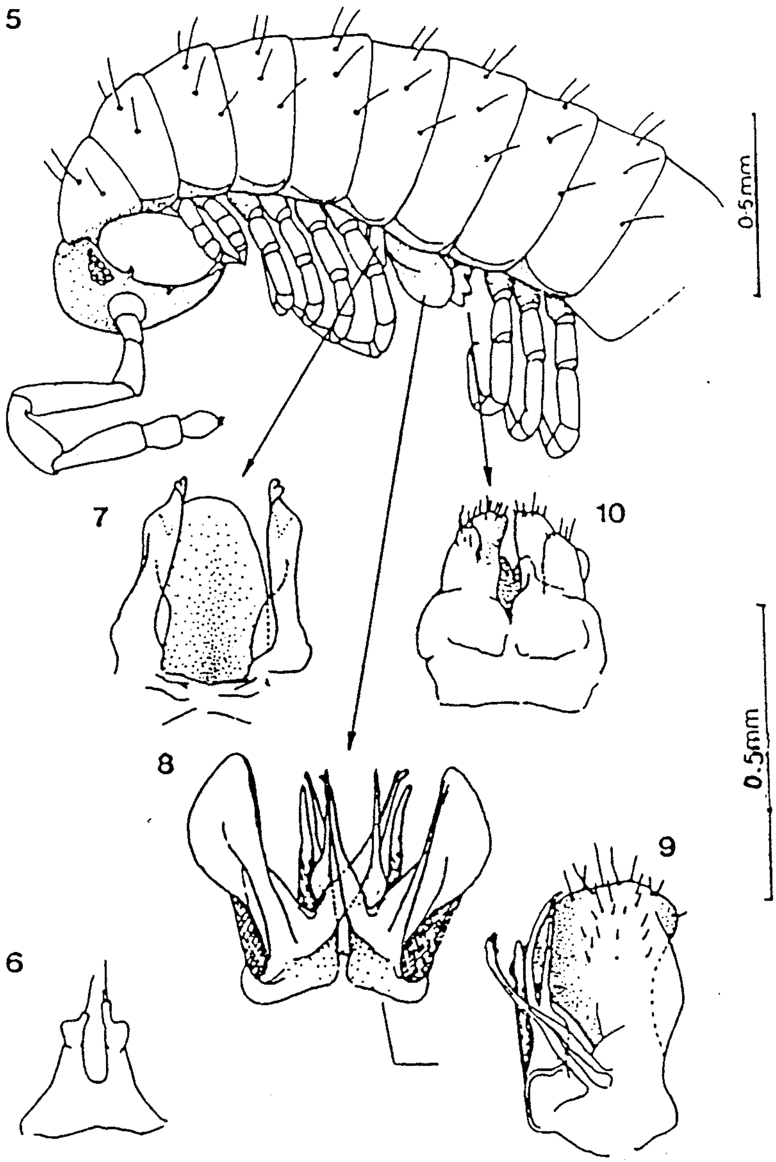
Fig. 4. M. scutellare Growth of the ocular field from stadium 3 to maturity.

Diagrammatized fields are shown at twice the scale of the drawings. The most recently added row is indicated by stipple; the arrows indicate an ocellus added into a pre-existing row. Ocelli invariably present are cross-hatched, ocelli not always present, including those which may occur on one side only, are left open.

In smaller individuals, the last three rows of ocelli added for stadia VII, VIII and IX may have fewer than the 5, 6 and 7 ocelli ideally present. There may be either one or two ocelli missing, most often it is the ventral most ocellus of the tow which fails to appear on one or both sides of the head. (See the open circles in the explanatory diagram of Fig. 3) Individuals of C. proximum are slightly smaller on average than those of C. sylvestre. Since incomplete anterior rows are associated with smaller size, we find that incomplete rows occur more frequently in C. proximum than in C. sylvestre.

The ocular field of Melogona

Since both species of Melogona are smaller than those of Chordeuma we can expect the ocular fields of Melogona to depart further from the ideal equilateral triangle often present in Chordeuma. Departures from regularity involve not only the number of ocelli in a row but also the number of rows (as we have defined them above). In the larger of the two species of Melogona, M. gallica, there are only seven instead of the eight rows characteristic of adults maturing at stadium IX but the single ocellus which appears in stadium II representing the first 'row' often becomes difficult to see in the adults which therefore appear to have only six rows. In the smaller species, M. scutellare, there are only six rows but whilst the single ocellus of the first row is always clearly visible, the last row also consists of just one ocellus and this may be absent leaving just five rows apparent. Loss of a row may also result from the insertion at a moult of one or more ocelli into a pre-existing row; this occurs for example, between stadia V and VI of M. scutellare (see Fig. 4) and a similar insertion must take place in M. gallica at some point. The maximum number of ocelli within a row is three in M. scutellare and M. gallica males but four in M. gallica females. The development of the field in M. scutellare is shown in Fig. 4. Unfortunately, I have no data for sub-adult stadia of M. gallica. The reference to M. scutellare "Pas d'ocelles" in Brolemann (1935) is probably a misprint. The formulae Brolemann (loc. cit) gives for M. gallica, 6, 5, 3 - 6, 5, 4, 2 refer to the numbers of ocelli in rows at right angles to the rows in the developmental sence to which I refer. (cf. Fig. 2)



Figs. 5 - 10. <u>M. scutellare</u>

5. Head end of ♂ from Gower to show gonopods <u>in situ</u>.

6 - 10 Isolated gonopods of ♂ from Compstall, Cheshire at larger scale:

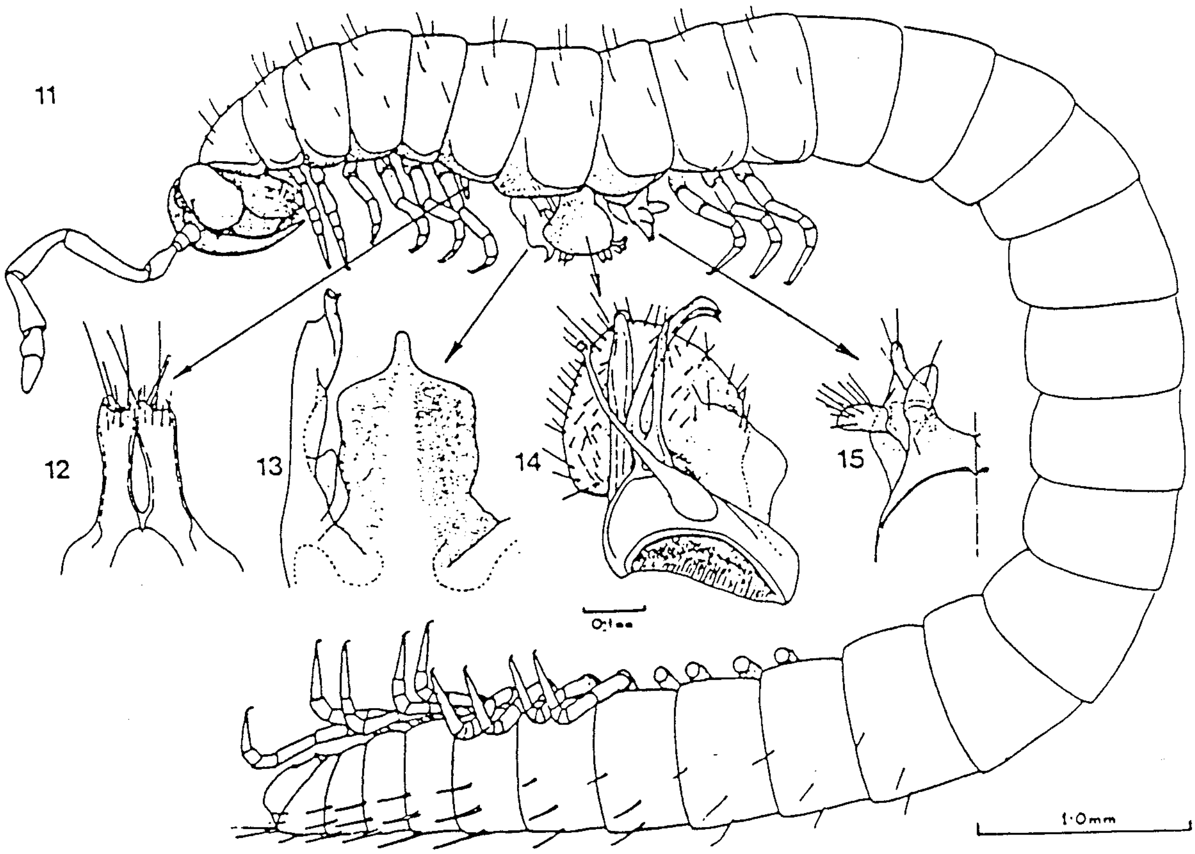
6. Anterior paragonopods (modified 7th pair of limbs) not usually visible <u>in situ</u>, anterior view.

7. Peltogonopods (8th pair) consisting of a median coxal plate, convex anteriorly, and lateral telopodites, posterior view.

8. Gonopods proper (9th pair), posterior view showing outer lobe-like telopodites (the only parts visible <u>in situ</u>) and inner coxal derivatives: an anterior pillar, an intermediate bifurcate lobe and a posterior pseudoflagellum. Each pseudoflagellum crosses over to the other side where their apices lie juxtaposed to the curved branch of the bifurcate lobe.

9. Left gonopod, internal profile.

10. Posterior paragonopods (11th pair) posterior view.



Figs. 11 - 15. M. gallicum

11. Entire ♂ showing gonopods in situ.

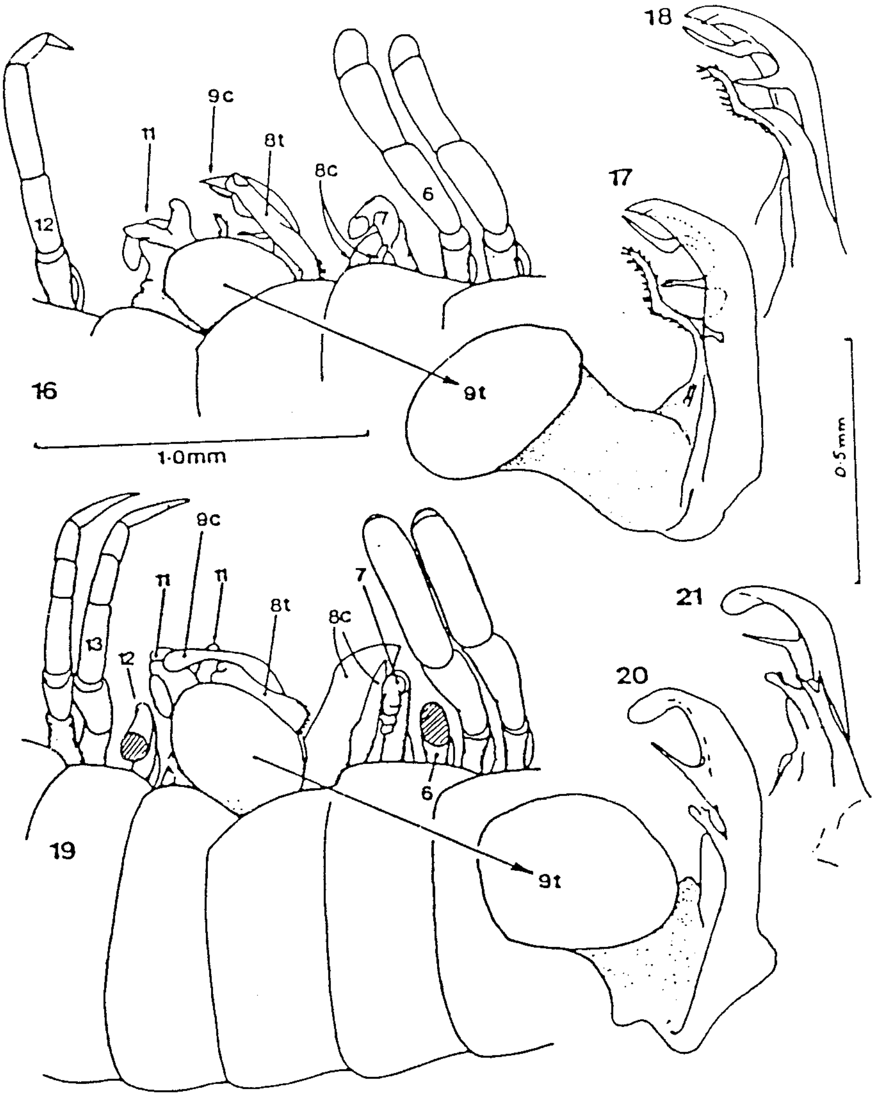
12. Anterior paragonopods (modified 7th pair).

13. Peltogonopods, anterior view.

14. Left gonopod, internal profile.

15. Posterior paragonopods, posterior view.

(12 - 13 from a ♂ from Beddgelert, Caernarvonshire, after Blower, 1957)



Figs. 16 - 18: Chordeuma sylvestre, ♂ from Trelill, Cornwall.
Figs. 19 - 21: Chordeuma proximum, ♂ from Bishop's Wood, Caswell, Gower.

The numbers of the limb-pairs and their coxal (c) and telopodal (t) derivatives are indicated in the views of the gonopodial regions, 16 and 19. The trunk of the individual C. sylvestre was more extended than that of C. proximum, from which latter limbs 6 and 12 had to be removed to obtain a clear view.

Figs. 17 and 20 show the isolated left gonopods in external profile; 18 and 21 show the coxal pillars of the same in internal profile.

Note the much smaller bifurcate pseudoflagellum of C. proximum compared with the longer pseudoflagellum of C. sylvestre. Note especially the distinctive apices of the main coxal pillars clearly visible in situ. The more prominent coxal processes (8c) of the peltogonopods in 19 is merely a feature of this particular specimen.

Gonopods

The full complement of gonopods of the two species of Melogona are shown in Figs. 5-15. In M. scutellare (Fig. 5) the only parts visible in situ are the large telopods of the gonopods-proper (limbs 8), the telopods of the peltogonopods (limbs 7) in front, and the posterior paragonopods (limbs 11) behind. The anterior paragonopods (limbs 6) are rarely visible. Males of M. gallica usually die in a more extended condition and the gonopodial apparatus is visible in much more detail, including the various coxal processes of the gonopods proper which protrude beyond the ventral edge of the large telopods (Fig. 11). The most noteable differences between the gonopods of the two species of Melogona are the more robust anterior process and the expanded apex of the unarmoured branch of the bifurcate lobe in M. gallica (cf. Figs. 9 and 14).

In Chordeuma spp. the gonopodial apparatus is similar in principle to that of Melogona. In detail, the anterior paragonopods of Chordeuma spp. have a better developed telopod and the coxal part of the peltogonopod consists of three lobes in place of the single plate of Melogona. The anterior coxal pillar of the gonopods proper is themost prominent feature and the form of its apex, pointed in C. sylvestre and rounded in C. proximum is sufficient to identify the species (16-21). In contracted specimens of Chordeuma, the telopods of the poltogonopods (8t) may obscure the apices of the anterior coxal pillars. It is often necessary to reflect or detach the legs adjacent to the gonopodial segments to examine the area properly (see Fig. 19).

The anterior paragonopods and the median plate of the peltogonopods vary in form. The prominent lateral 'elbows' of the anterior paragonopods in Fig. 6 may be produced as distinct exopodal lobes which can sometimes exceed the length of the mesial or endopodal lobes. In association with this tendancy of the anterior paragonopods to become biramous, the ventral apex of the median coxal plate of the peltogonopods changes from slightly concave to distinctly convex, with sometimes a median prominence and the beginning of a keel. Ribaut's type had the uniramous paragonopods and the slightly concave apex to the median plate. The first British individuals had the biramous paragonopods and the 'beaked' peltogonopod plate. Brade & Birks (1916) described this combination of characters as the variety brolemanni. Individuals collected later from Derbyshire were somewhat intermediate in form between typica and brolemanni and were named bagnalli. All three varieties were figured by Brolemann (1935) but Brade-Birks (1939) raised them to the rank of sub-species. More recently, I found all three forms co-existed and that the form of the para- and peltogonopods was a function of size, the smaller individuals exhibiting the typical form and the larger tending towards the brolemanni condition (Blower, 1957). The individual male figured here is of the form bagnalli (Figs. 6 & 7).

Brolemann describes a variety of M. gallica M. gallicum helviorum which differs from the type in the form of the anterior and posterior paragonopods. Meidell (1968) notes that the anterior paragonopods of the Norwegian animals vary between the condition of the type and variety. No extensive analysis of British specimens has been made.

Distribution

In the order in which I present them below, the four species form a declining series of range in Britain but an ascending series of range in Europe. Thus Melogona scutellare is our commonest species in England and Wales and yet is known from only two localities in Europe; Chordeuma sylvestre is the rarest of our species, known only from two localities in Cornwall and yet has the widest range in Europe from France and the Netherlands through to the Caucasus in the East and Southern Italy in the South.

Much of the range of the four species falls within the area with a west maritime climate, with cool (not cold) winters, warmer summers and rain throughout the year. This area does not include the Italian and Eastern extension of C. sylvestre nor does it include the area around Bergen from which M. gallica was recently recorded. On the other hand, Eire is well within the climatic zone and it is rather surprising that there is only one record of the commonest of the four species from here, and this, very recent.

<u>Melogona scutellare</u> (Ribaut, 1913)

First recorded from Lancashire by Drs. H.K. Brade and S.G. Birks (1916) and now known from 20 of the 70 English and Welsh vice-counties. The species is probably wide-spread in England and Wales but is perhaps genuinely absent from the drier South East. The most recent record is that by Mr. Bishop from Cork.

The only European records are from the type locality by Grenoble, France and Piedmont, Italy. Verhoeff refers the animals from Piedmont to the variety <u>horticola</u> but the differences from the type are probably not very significant (see Blower, 1957).

The phenology is well-known from two sites, one in Gower, South Wales, and the other in Derbyshire. In the Welsh site, stadia III appear at the end of March and proceed through to adults (stadia VIII) by October. In Derbyshire, stadia III do not appear until mid-May and proceed only as far as the penultimate stadia (VII) by October. However, the species is clearly an annual in both North and South and reaches similar densities of 30-50 adults per square metre (Blower, 1979).

<u>Melogona gallica</u> (Latzel, 1884)

First recorded from Caernarvonshire by Eason (1957). The nine vice-county records are scattered throughout the southern half of England and Wales but again, none of the records come from the extreme South East.

In Europe it occurs in North and Central France, the Netherlands, Luxenbourg, Switzerland, Germany West of the Rhine and recently from around Bergen in Norway.

Dr. Erwin Meyer sorted samples from Delamere forest and found adults (stadium IX) and young of stadia VII and earlier in April-May which is rather suggestive of a two-year life cycle but more information is required to establish the phenology of this species.

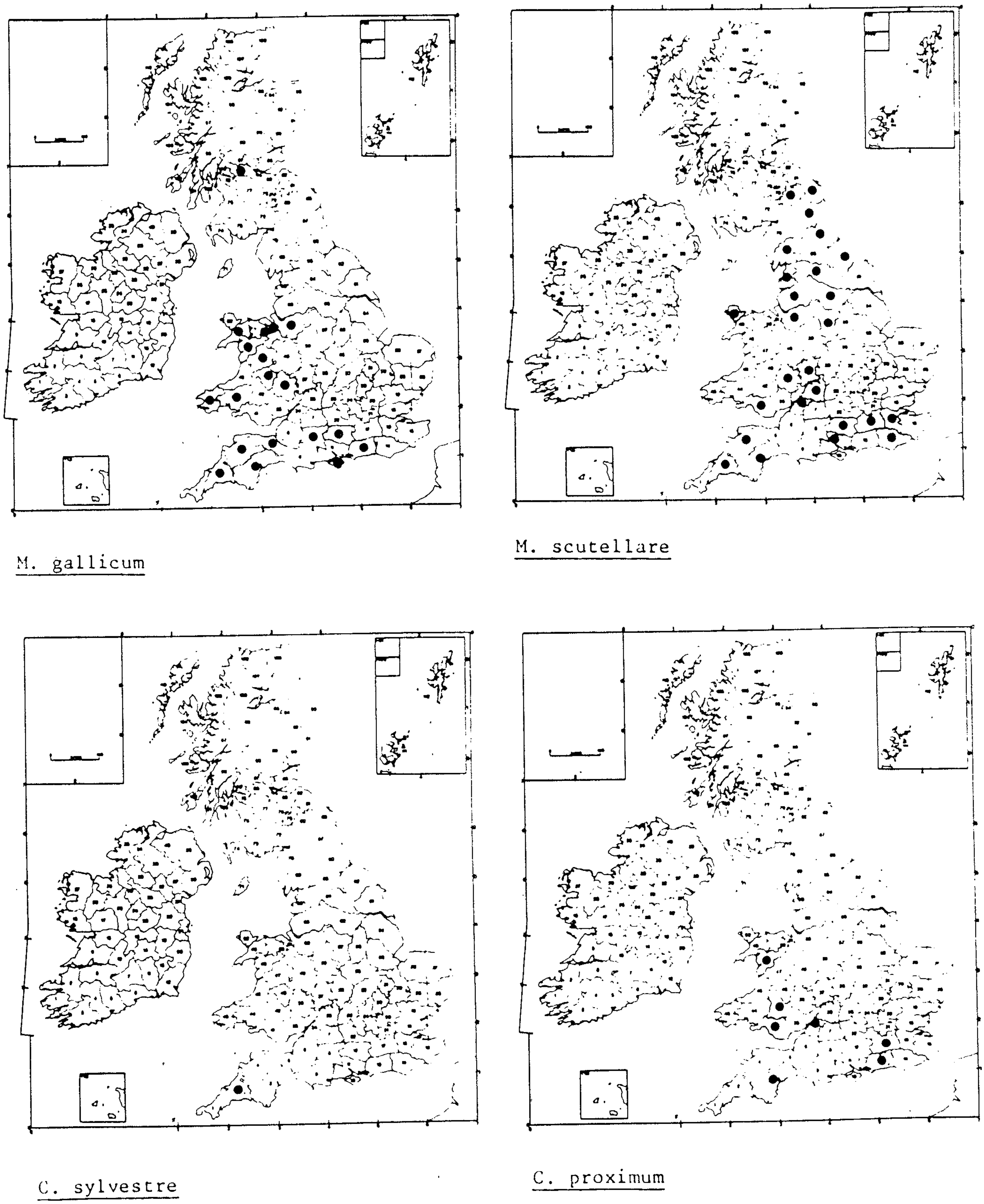


Fig. 22 Vice-County distribution of the four British Chordeumatids.

Chordeuma proximum (Ribaut, 1913)

First found by Dr. John Satchell in the Forest of Dean, 1955, and recorded by Nelson (1964); more recently by myself in Gower and by Desmond Kime from Devon, Somerset, Hampshire, Surrey and Sussex (Kime, 1978). It was first seen in Gower in a wood by Caswell Bay. A site by Llethrid in Gower has been worked by myself, colleagues and students since 1965 and a small area here has been sampled quantitatively since 1968. Not until 1969 did the species appear at Llethrid where it was found by a student near the sampling area; in 1971 it appeared in the Tullgren extractions from the site, 17 individuals in 20 units of $0.1m^2$. Since 1969 it has increased its representation and now, in 1978, it is threatening to replace M. scutellare on the site. Mr. Alloyan has had the species falling into Pitfall traps set in spoil heaps in the lower Swansea valley. The species has evidently come to stay in the area!

In Europe it is recorded by Brolemann from Orne, Puy de Dome and Tarn in the north, south central and south France.

In Gower most of the animals are adult by the end of September but some lag behind in stadia IV, VII and VIII. In the Forest of Dean, in late March I had stadia IV, VII and IX which is strongly suggestive of a two year cycle.

Chordeuma sylvestre (C.L. Koch, 1847)

I first collected this species in a wood by the village of Trelill in North Cornwall in August 1961 but was not able to be certain of the species until the following April (1962) when a return visit to the site yielded adults. It was recorded from a second Cornish site in 1982.

The species occurs throughout Europe: France, Netherlands, Germany, Switzerland, Italy (as far south as Calabria) and, Czechoslovakia and East to the Caucasus.

In spring 1962 (April) there were newly hatched young and stadia II-VII as well as adults (IX). The following April (1963) there were stadia III, IV and V plus adults. This suggests an extended period of oviposition from early in the year. The complete absence of adults in August (only stadia VII and VIII were present in August 1962) suggests the species is an annual.

Key to the species of Chordeumatidae

1. Adults larger than 10 mm long and 1.1 mm in diameter (height). Well pigmented. Ocelli in an almost equilateral triangular field. With eight rows (Fig. 3)

Stadia	VI,	VII,	VIII	and	IX	(with 23, 26, 28 & 30 rings) with
at least	10,	15,	20	and	24	ocelli
at least	5.5,	6.3,	8	and	10.8	mm long
at least	0.7,	0.8,	1.0	and	1.2	mm diameter ..... Chordeuma

1a. Visible apex of anterior coxal pillar of gonopod pointed.
(Figs. 16-18, 9c) - *Chordeuma sylvestre*

Visible apex of anterior coxal pillar of gonopod broadly rounded
(Figs. 19-21, 9c) - *Chordeuma proximum*

2. Adults smaller than 10 mm long and 0.9 mm in diameter. Lightly to moderately pigmented.
Ocellis in a more acute triangular field, with five, six or seven rows. (Figs. 1 and 2)
Never more than 3 or 4 ocelli in a row (at right angles to ventral edge of head capsule).

Stadia	VI,	VII,	VIII	and	IX	with at
most	7,	11,	15,	and	17	ocelli ..... Microchordeuma

2a. Larger, adult males 8.0 mm long and 0.75 mm diameter or larger. Females larger still. Moderately pigmented. Adults with 30 rings. Females with at least one row with four ocelli, three rows with at least 3 ocelli. Males with at least one row, possible two or three rows, with three ocelli. Total of six or seven rows, females with 14-17 ocelli, males with 8-15 ocelli.
(Fig. 2) gonopods as in Figs. 11-15 ..... *Microchordeuma gallicum*

2b. Smaller, adult females 8.0 mm long and 0.75 mm diameter or smaller, males smaller still. Poorly pigmented, amber to cream colour, adults with 28 rings.
Never more than 3 ocelli in a row, only five or six rows (only one ocellus in the sixth row if present). Total of 7-12 ocelli (Fig. 1) gonopods as in Figs. 5-9 ..... Microchordeum scutellare

References

Blower, J.G. (1957) Some new and little-known British Millipedes Ann.Mag.Nat. Hist. (12) 10: 497-508

Blower, J.G. (1958) British Millipedes (Diplopoda) Synopses Br. Fauna No. 11: 1-74

Blower, J.G. (1972) The distribution of British millipdes as known at the end of 1969 Bull.Br.Myriapod G. 1: 9-38

Blower, J.G. (1978) Anamorphosis in the Nematophora Abh.Verh. naturwiss.Ver.Hamburg 21/22: 97-103

Blower, J.G. (1979) Millipede faunas of two British limestone woodlands Proc. 4 Inter Cong. in press

Brolemann H.W. (1935) Chilognathes I., Faune de France Paris: Lechevallier

Eason, E.H. (1957) Chilopoda & Diplopoda from Caernarvonshire Proc.zool.Soc.Lond., 129: 273-349

Jeekel, C.A.W. (1970) Nomenclator generum et familiarum Diplopodorum: A list of the genus and family group names in the class Diplopoda from the 10th edition of Linneus, 1758 to the end of 1957. Nederlandse Entomologische Vereniging: Amsterdam 1970. 1-X11, 1-412

Kime, R.D. (1978) The distribution of millipedes in the south of England - A preliminary survey. Abh.Verh.naturwiss.Ver.Hamburg 21/22: 135-147

Meidell, B. (1968) Microchordeuma gallicum (Latzel 1884). (Diplopoda) New to Scandinavia. Norsk ent. Tidsskr. 15, 41-46

Nelson, J.M. (1964) Chordeuma proximum Ribaut, a millipede new to Britain. Ann.Mag.nat.Hist. (13) 7: 527-528

Schubart, O. (1934) Diplopoda. Teirwelt Dtl. 28: 318 pp. Jena.

Bulletin of the British Myriapod Group 2 (1984)

SOME NOTES ON CHAETECHELYNE VESUVIANA (NEWPORT)

Andrew N. Keay, 34 Albany Road, Newport, Isle of Wight

The large, distinctive species Chaetechelyne vesuviana (Newport) has been recorded from much of central Europe, the Iberian Peninsular, the Mediterranean and North Africa. The northern limit of its range appears to be Hungary to Normandy although there is a single record by Jeekel from Domburg in coastal Holland.

In Britain, C. vesuviana seems to be restricted to the south of the country, generally being found in coastal sites (less than 15 km from the sea). There are however a few inland synanthropic sites in the south-eastern counties. There are no known coastal sites for this species in the south-east, the first coastal V.C. records being for Hampshire (Stoke) and the Isle of Wight then continuing along coastal Dorset to Devon. There are not yet any records from Cornwall, North Devon or Somerset but recently C. vesuviana was recorded from the Avon Gorge in Bristol (V.C. 34.).

It is probable that this species will eventually be recorded from coastal sites throughout the south-western peninsular.

In the Isle of Wight C. vesuviana is widespread on the heavy clays in the north of the Island and is also found on the adjacent slope of the chalk ridge, which effectively divides the Island on an east-west axis. No specimens have yet been found on the top of the chalk ridge or, indeed, to the south of this ridge with the exception of a single female found on clayey substrate on the shore at Ventnor. Several specimens have been found in or on the sandy soils overlaying the clays to the east of the Island.

The climate of the Isle of Wight is extensively modified by the influence of the sea and this may, in part, help to explain the widespread distribution there.

ECOLOGY

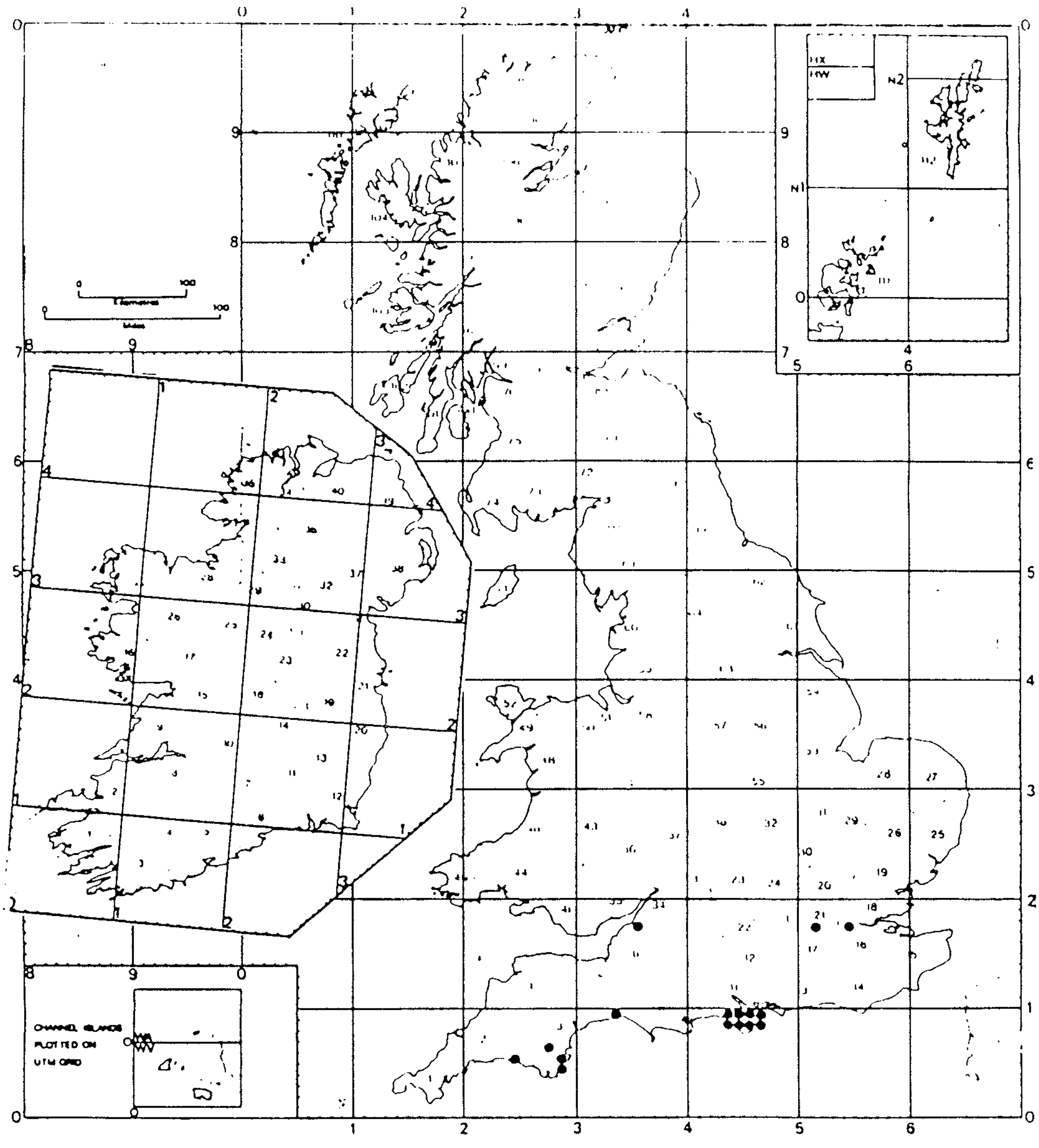
a) Habitat

The habitat data accumulated from recent records of the species are given in some detail below. Of the 50 sites for which data is available 48 are coastal (less than 15 km from the sea) and 2 are inland synanthropic ones.

Only two sites have been reported from urban areas; 15 are from suburban sites. This paucity of records from urban sites probably does not reflect the true distribution of C. vesuviana, rather the difficulty in sampling suitable urban/suburban sites. Thirty-three sites have been reported from rural areas, many of these sites being synanthropic rather than natural habitats. Waste ground with a covering of vegetation accounts for 30% of the reported sites and such sites usually have a relatively high population of C. vesuviana. Waste ground sites with in excess of 25% vegetation cover are marginally preferred to those sites with less than 25% cover.

Grassland and woodland each account for 16% of the total sites, closely followed by domestic gardens at 12%. Aquatic and marsh type habitats totalled together account for a further 12% of the sites.

Other habitats account for only 14% of the total number of sites. Table 1 below sets out in detail the number of sites per habitat type so far recorded.



Chaetechelyne vesuviana (Newport)

10 km distribution map

Table 1

Habitat Type	No. of sites
Lakeside	1
Sea shore	3
Fen	1
Carr	1
Garden, domestic	6
Waste ground 25% veg. cover	6
Waste ground 25% veg. cover	9
Arable, cereal crop	1
Arable, root crop	1
Arable, market garden	1
Grassland, ungrazed	3
Grassland, lightly grazed	3
Grassland, mown	2
Scrubland, dense	1
Scrubland, open with herbs/grass	1
Woodland, dense	2
Woodland, open with scrub	3
Woodland, open with herbs/grass	3
Sand dune, tussocky	1
Other	1
Total	50

b) Microsites

The microsite data for C. vesuviana probably reveals a bias on the collector's part for examining the obvious and easily accessible microsites rather than spending a great deal of time in one particular habitat examining all the available microsites. However, having stated that, C. vesuviana does seem to inhabit very superficial microsites. 28% of the present records indicate that specimens were located under stones and, from personal experience these stones are often recent additions to the site. If the microsites categorised under stones, rock, shingle and

and stone/brickwork are totalled together as being similar they then account for 52% of records. Dead wood is the second most preferred microsite accounting for 22% of the records. Again, it is often found that the dead wood site is very superficial in nature with specimens being found under (often small) dumped pieces of timber rather than under large logs.

The specimens found in litter (from 14% of sites) represent the first large group from a truly "natural" site.

Microsite data from all available records are set out below followed by data concerning the soil/litter in or on which the specimens were found.

Table 2

Microsite Type	No. of sites
Stones	14
Shingle	2
Soil/sand	2
Litter	7
Tussocks	2
Dead wood	11
Rock	7
Brickwork	4
Human rubbish	1
Total	50

Table 3

Soil/litter type	No. of sites
Mixed deciduous	7
Mixed decid/conifer	1
Grass-sp. unknown	11
Mixed grass/herbs	15
Reeds	1
Other	6
No information supplied	9

Table 4

Litter age	No. of sites
Fresh	1
Old	22
Both	9
No information supplied	18

Table 5

Soil type	No. of sites
Heavy clay	3
Clayey	18
Peat	3
Loam	16
Sandy	2
Pure sand	3
No information supplied	5

MORPHOLOGY

Analyses were made for (a) numbers of pediferous segments and (b) body length. In both cases it was possible to compare results with data obtained from Italy.

a) Pediferous segments

Brolemann gives a range of 61-85 pediferous segments in males and 63-87 in females for *C. vesuviana* from France. British specimens have a much smaller range in variation with between 63-67 segments in males and 69-75 segments in females. Italian specimens have a range of variation of 57-75 in males and 59-87 in females (Minelli, pers. comm. 1984).

Male segmentation - British specimens

No. of segments	No. of specimens
63	2
65	15
67	7
Total	24

Female segmentation - British specimens

No. of segments	No. of specimens
69	1
71	5
73	12
75	27
Total	45

When data from Britain is compared with data from Italy it is noticeable that the British optimum occurs at 65 segments for males and 75 segments for females whereas the Italian optimum for males occurs at 67 segments and there is no clearly defined optimum for females, rather a spread between 67-75 segments. (See Tables 1 and 2 below)

Table 1

Male segmentation

No. of segments	57	59	61	63	65	67	69	71	73	75	
No. of specimens											
BRITISH	-	-	-	2	15	7	-	-	-	-	Total 24 specimens
ITALIAN	2	-	-	5	4	17	12	5	3	5	Total 53 specimens

Table 2

Female segmentation

No. of segments	59	61	63	65	67	69	71	73	75	77	79	81	83	85	87
No. of specimens															
BRITISH	-	-	-	-	-	1	5	12	27	-	-	-	-	-	-
ITALIAN	1	5	9	7	12	14	10	14	15	7	2	2	1	-	1

The British range in segmentation is 3 degrees (1 degree = 2 segments) in males and 4 degrees in females. The Italian data shows a range of 10 degrees of difference in males and 15 degrees of difference in females.

b) Body length

A small amount of data is available on the body length of British specimens and is here compared with a larger amount of data from Italian specimens. The range in body length in British males is as follows. The results are based on data from 16 specimens.

British specimens - Male body length

Minimum length - 26 mm
Maximum length - 53 mm
Average length - 37.4 mm

The range in body length in Italian males is as follows. The results are based on data from 53 specimens.

Italian specimens - Male body length

Minimum length - 15 mm
Maximum length - 52 mm
Average length - 34.1 mm

When the Italian data is ammended to include only males with 63-67 pediferous segments (the same range as in Britain) the average length for these specimens drops to 32.4 mm from a total of 26 specimens.

The range in body length in British females is as follows. The results are based on data from 34 specimens.

British specimens - Female body length

Minimum length - 21 mm
Maximum length - 63 mm
Average length - 40.8 mm

The range in body length in Italian females is as follows. The results are based on data from 101 specimens.

Italian specimens - Female body length

Minimum length - 11 mm
Maximum length - 82 mm
Average length - 30.6 mm

When the Italian data is ammended to include only females with 69-75 pediferous segments (the same range as in Britain) the average length for these specimens increases to 36.4 mm from a total of 53 specimens.

It is therefore noticeable that British specimens of *C. vesuviana* are generally larger than those from Italy. This may well indicate that only the more robust specimens can survive the British climate, however, further study is clearly required.

Body length comparison between British and Italian specimens of *C. vesuviana*

For male specimens

Length mm	No. of British specimens	No. of Italian specimens
11 - 15	-	1
16 - 20	-	3
21 - 25	1	6
26 - 30	6	5
31 - 35	1	15
36 - 40	1	11
41 - 45	2	4
46 - 50	3	7
51 - 55	2	1
Total	16	53

For female specimens

Length mm	No. of British specimens	No. of Italian specimens
11 - 15	-	29
16 - 20	-	13
21 - 25	3	7
26 - 30	5	5
31 - 35	5	9
36 - 40	6	8
41 - 45	4	10
46 - 50	2	7
51 - 55	3	4
56 - 60	1	4
61 - 65	5	-
66 - 70	-	2
71 - 75	-	2
76 - 80	-	-
81 - 85	-	1
	Total 34	Total 101

Acknowledgements

My thanks go to Mr. Tony Barber for stimulating my interest in Chaetechelyne vesuviana and for supplying me with his data on the species; to Mr. Paul Harding of the Biological Records Centre for his endless patience and the photocopies of record cards; to Drs. E.H. Eason and A. Minelli for supplying me with both data and ideas for this study.

Bibliography

Brolemann, H.W. (1930) Elements d'une Faune des Myriapodes de France. Chilopodes Faune de France, Vol. 25

Eason, E.H. (1964) Centipedes of the British Isles. London: Warne

Eason, E.H. (1979) The effect of the environment on the number of Trunk-segments in the Geophilomorpha with special reference to Geophilus carpophagus Leach. In: Myriapod Biology, ed. M. Camatini, Academic Press

Lewis, J.G. (1981) The Biology of Centipedes. Cambridge Press

Bulletin of the British Myriapod Group 2 (1984)

THREE CHILOPOD SPECIES NOT DESCRIBED IN "CENTIPEDES OF THE BRITISH ISLES"

A.D. Barber, Plymouth College of Further Education, Devonport, Plymouth.

In the ten years since Dr. Eason published his now standard work (Eason, 1964) certain new species have been added to the British list. The following descriptions make no claim to originality but are based on the literature.

Brachyschendyla dentata Brolemann & Ribaut

Size: 9 to 12 mm long
Number of trunk segments: 39
Colour: yellowish or whitish, somewhat translucent
Head: about 1.1 times as long as broad
Antennae: 3 to 4 times as long as breadth of head capsule, about 1/12 of body length, each article as long as broad
Forcipule: well developed medial tooth on femoroid and a very prominent tooth at the base of the poison claw. Concavity of claw smooth.
Trunk: anterior sternites without pores, reticulation very faint; anterior and posterior marginal setae large and conspicuous, other setae small and variable.
Last trunk segment: coxal pores 2 + 2. Telopodite about 1.5 times as long as that of penultimate, moderately swollen; prefemur barely longer than trochanter when viewed ventrally; metatarsus rudimentary, about 1/7 the length of the tarsus, truncated, without apical armature.

Males: unknown
Juveniles: 5 - 6.5 mm long; antennae relatively short and stout; characters of forcipule less well developed but distinct. Coxal pores 1 + 1.

Occurrence: France: Haute Garonne (Saint Beat), Tarn (Montagne Noir)
(Brolemann, 1930)

Britain: Surrey, Devon (soil samples)
(Barber & Eason, 1970 & unpub.)

Denmark: North Copenhagen (garden)
(Enghoff, 1973)

Netherlands: Amsterdam (park), Limburg
(Jeekel, 1977)

Chalandea pinguis (Brolemann)

Size: up to 20 mm long x 1.6 mm broad; very short and fat for a geophilid.

Number of trunk segments: 35 - 37

Colour: pinkish

Head: a little broader than long

Antennae: relatively robust, 3 - 4 times longer than head, last article about the same length as the preceding together

Forcipular segment: tergite 3 - 4 times as broad as long, lateral borders converging. Coxosternum very short, about 2.5 times as broad as long. Poison claw without tooth at base, narrowed towards base, tapers gradually, "flattened like the blade of a sabre". Concavity smooth.

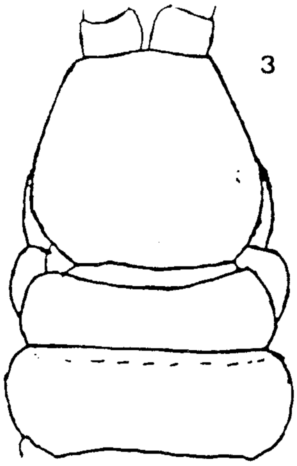
Trunk: transverse bands of pores on all but the last sternite

Last trunk segment: coxae short and swollen with 6 - 10 pores on the ventral surface; one isolated near the apex and separate from the remainder. Legs not much longer that preceding pair. Apical claw distinct in both sexes.

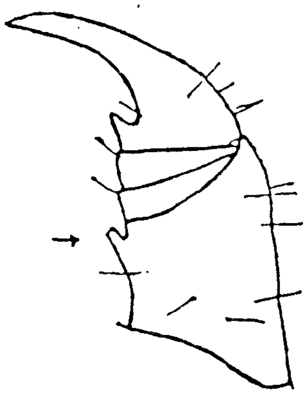
Occurrence: France: Pyrenees, Alpes-Maritimes (Peira Cava), Corsica
(Brolemann, 1930)

Britain: North Devon Coast
(Blower, 1972 & unpub.)

3

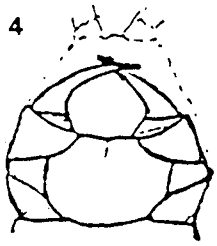


1

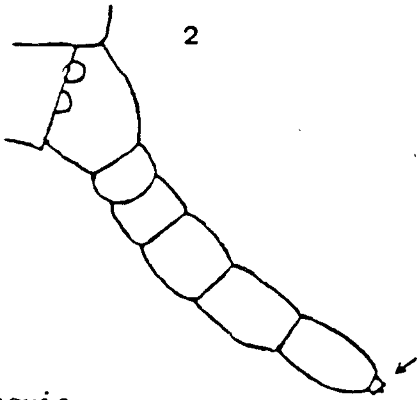


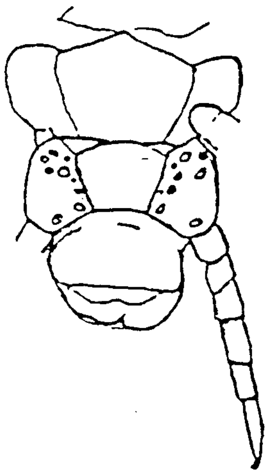
Figs. 1 - 2 Brachyschendyla dentata
(based on Barber & Eason, 1970)
1. Forcipule
2. Last leg, ventral

4



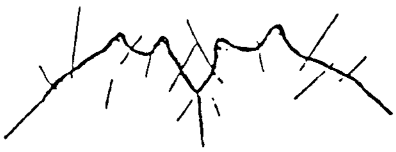
2





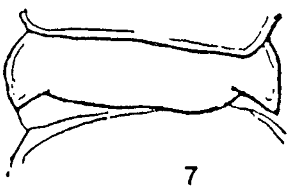
5

Figs. 3 - 5 Chalandea pinguis
(based on Brolemann, 1930)
3. Anterior end, dorsal
4. Forcipules, ventral
5. Posterior end, ventral

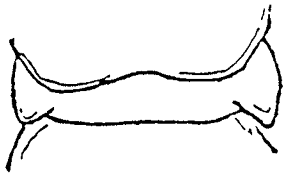


6

9

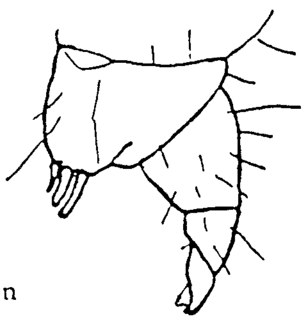


7



10

Figs. 6 - 8 Lithobius tricuspis
(based on Eason, 1965)
6. Forcipular coxosternite teeth
7. 9th tergite
8. ♀ gonopod, ventral



8

Figs. 9 - 10 Lithobius melanops
(based on Eason, 1965) for comparison
9. Forcipular coxosternite teeth
10. 9th tergite

Lithobius tricuspis Meinert

Size: 10 - 14 mm long x 1.5 - 1.9 mm broad

Colour: brown, somewhat variable

Shape: fusiform, T1 distinctly narrower that head and than T3. Trunk broadest at T8 which is broader than T 3 in the ratio 4:3

Head: a little broader than long, about as broad as T3. Marginal ridge without or with only a feeble median thickening; paired posterior depressions usually fairly distinct; posterior border straight or very feebly concave.

Antennae: about half body length; 40 - 45 articles of irregular size

Ocelli: 10 - 12 on each side; posterior much larger than largest of others which are arranged in three fairly straight rows

Forcipular coxosternite: anterior border with 2 + 2 robust teeth and without definite shoulders lateral to the paradontal spines

Tergites: posterior angles of T9, T11, T13 with prominent projections; those on T9 being rather broader than the others

Coxal pores: small and round, usually 3, 3, 3, 3

Legs: 14th and 15th slightly thickened in both sexes; no distinctive characters in male. 15th 1/3 - 2/5 of body length, accessory apical claws well developed

Spinulation: 15 VaT is deficient in some specimens and so cannot be used to separate this species from L. agilis. 15 VaC present in some, but not all, specimens.

Female gonopods: 3 + 3 somewhat spinous spurs. Claw with dorsal denticle distinct or reduced.

Occurrence: Very common in all of France especially woodland; Great Britain; Central Europe

(Brolemann, 1930)

South Devon; possibly present in Ireland

(Eason, 1965 & unpub.)

Netherlands (Limburg)

(Jeekel, 1977)

REFERENCES

Barber, A.D. & Eason, E.H. (1970) On Brachyschendyla dentata Brolemann & Ribaut (Chilopoda, Schendylidae), a centipede new to Britain. J.nat.Hist. 4: 79 - 84

Blower, J.G.(1972) The British Myriapod Group. Bull.Br.Myriapod Group 1: 1 - 4

Brolemann, H.W. (1930) Elements d'une Faune des Myriapodes de France, Chilopodes. Faune Fr. 25: 1 - 405

Eason, E.H. (1964) Centipedes of the British Isles. London; Warne.

Eason, E.H. (1965) On Lithobius tricuspis Meinert (Chilopoda, Lithobiidae) in Britain. Ann.Mag.nat.Hist. (13) 8: 285 - 295

Enghoff, H. (1973) Diplopoda and Chilopoda from suburban localities around Copenhagen. Vidensk.Meddr.dansk naturh.Foren 136: 43 - 48

Jeekel, C.A.W. (1977) Voorlopige atlas van der verspreiding der Nederlandse duizendpoten (Chilopoda). Amsterdam; Instituut voor Taxonomische Zoologie, Universiteit van Amsterdam.

Bulletin of the British Myriapod Group 2 (1984)

THE EUROPEAN MYRIAPOD SURVEY

R. Desmond Kime, 3 Square Maas, 1630 Linkebeek, Belgium

In 1978, after the British Myriapod Survey had been running successfully for several years, it was decided at the Fourth International Congress of Myriapodology in Gargnano, Italy, to implement such a scheme for the whole of Europe. At the same time it was further suggested that the results should be recorded for the European Invertebrate Survey. Thus the new scheme would result in maps which would show the geographical ranges of European species, but would also include ecological data so that the distribution of the species might be related to their habitats as well as to their geographical distribution. In general, the European atlases only show the latter. Discussion with the European Invertebrate Survey committee members elicited more encouragement for such a scheme, and since 1979 there has been an annual announcement about it in the circular of the Centre International de Myriapodologie produced by Dr. Demange and Dr. Mauries in Paris. Volunteers have been asked to contact R.D. Kime in Brussels, who is co-ordinating the Myriapod scheme and preparing the maps; however, where there is a National Recording Scheme, as in Britain, this information may eventually be sent by the National organizer. P.T. Harding and C.P. Fairhurst have prepared a babitat record card, which should soon be available to collectors, and is suitable for much of Northern and Western Europe. It should be stressed that neither the C.I.M. nor the E.I.S. has the financial structure to grant funds for this work.

Following correspondence and discussions with interested parties in many countries the following general ideas have been developed:

a) It is intended to produce separate biome cards for tundra, taiga, temperature deciduous forest, temperate grassland, montane, mediterranean and desert regions (the area of the survey extends beyond the conventional boundaries of Europe).

There are obvious difficulties in delineating these areas exactly on a map, but it must be remembered that the cards would be coded for compatibility and in a transition zone the cards for either biome could be used. For instance, the card which will shortly be available will probably be able to be used virtually anywhere North and West of the Alps - apart from the far north - and though it covers habitats in temperate deciduous forest, it includes many other possibilities, such as grassland and waste places, in an environment so often dominated by man.

b) With respect to habitat information the cards will differ from those at present used in Great Britain and Ireland. There will be more first and second order habitats and microsites, and some discarded sections. Other information will be included, such as aspect, slope and method of collection.

c) Allowance will be made in the computer codings for all species likely to be found in the area concerned, and the results of further taxonomic discoveries. List have been drawn up of the known species occurring in Britain, Ireland, France, Belgium, Holland, Luxembourg, Germany, Denmark, Norway, Sweden, Switzerland and Austria, and lists of species have been started for several other countries. As it is not sensible to have many more than 50 species on one card, selection will be made for particular regions or countries, and the cards may be printed in appropriate different languages. Also the cards for one country may be divided into groups of families or orders; in France there are 100 species listed in the Order Chordeumatidae. So a series of cards could be constructed containing the same habitat information but differing in the taxonomic groups found on them.

d) Such a scheme should be a co-operative venture, due recognition being given to work done at a regional or national level. Regular reports may be given to the C.I.M. and information received in Brussels would be freely given to interested parties. Obviously it is the intention to publish a provisional atlas as soon as the number of records received is adequate to give a fair idea of a number of species' distribution.

Contact has been made with research workers in many countries, but there are some such as Hungary, Czechoslovakia and the Soviet Union for which no contacts exist.

Altogether a few hundred maps have been started, but many contain only one record and very few give even a rough indication of the geographical range of a species. However, the foundations have been laid, and the next few years might lead to a marked improvement in our knowledge. The maps of some species, often those found in Britain and Ireland, contain a large number of records. Attempts will be made to interest persons known to be working in countries with which little or no contact has been made. Collecting will be encouraged in areas where records are scanty. Finally, old records will be sought in the literature, but this is a lengthy operation, and may prove costly.

Bulletin of the British Myriapod Group 2 (1984)

INTERIM REPORT ON THE MILLIPEDE RECORDING SCHEME

Colin Fairhurst, University of Salford

INTRODUCTION

The millipede and centipede surveys were instituted at the first meeting of the British Myriapod Group, and as a result of approaches from the Isopod Group. The record cards were first presented at the International Congress of Myriapodology in Manchester in 1970. The design owed a great deal to the involvement of the woodlice enthusiasts and the Biological Records Centre of ITE at Monks Wood. The inclusion of a habitat classification was a departure from the norm of recording schemes, but deemed to be a natural evolution from pure mapping, to include valuable information concerning the collection site.

The basis of the scheme was Gordon Blower's collation of the VC records as presented in the first edition of the British Myriapod Bulletin. The habitat scheme received its first database from not only the efforts of the collators, but also the records of Des Kime and Ted Eason. Since the inception, over 10,000 records have been received for Great Britain and the habitat information has proved most useful. This ecological information was always seen to be a supplement to population ecology research and intensive site surveys. It proved to be far more accurate than expected and results from a variety of collectors has closely matched 'in depth' research, and given much information on the species composition of sub-optimum habitats.

Some 200 recorders have been involved, and the most active of these are acknowledged in this report by name. To the rest go our thanks for their past efforts and encouragement in this novel scheme in the future. The efficiency of the millipede co-ordinator has not been particularly good and contributors have shown a great deal of patience with my procrastination. Since 1979, this situation has got worse, despite the increased pressure produced by Paul Harding now in charge of the Biological Records Centre. In this time I have been developing a research team of substantial proportions, dealing with international environmental problems unconnected with millipedes. Clearly, the time had come to either close the scheme, which would be a shame, or hand it over to someone more willing and able to become involved in the necessary administration. Such a person has always been present in Ireland, namely Declan Doogue, and Douglas Richardson has now agreed to continue the good work in Great Britain. I hope to still be involved in the analysis of the information.

It must be remembered that this habitat scheme was the first of its type, and has taken biological recording from simple mapping into sound ecological research to which many people can make a contribution and multiple records from the same area are valuable.

DATA SET

The data presented here are those which are presently held on recording cards and therefore on computer files. More information has been received in the form of letters and notebooks and include rare or new species supplied for checking. These are not, however, included at this time.

Other forms of printout are available, for example, listings by vice-county, recorder, species and habitat. Anyone desiring such information should contact Colin Fairhurst.

Any general or specific comments would be welcome.

DATA PRESENTATION

A species may have a number of records which is dependent on a combination of the following:

a) they occur in a habitat which is easily searched,
b) they are more easily seen, (and active)
c) they are more easily identified,
and d) they are more common.

Some habitats are more popular or easily searched e.g. under bark or stones in woodland, whilst few records are received for, say, arable soil. Similarly certain times of the year are more popular, as well as particular areas of the country.

Vice-county maps are the traditional means of expressing geographical distribution. However, this parameter is often difficult to map because of the administrative boundaries. Also Local Authority changes often lead to recent Ordnance Survey maps not having the Vice County boundaries. In addition, extension of the survey into Europe means that the 50km square is the standard. With the present number of records, 10 km square maps still show the distribution of collector activity more than species dispersion. Indeed, one may question whether it is necessary to prove that, for example, Cylindroiulus punctatus is present in each 10 km square when we know that it can be found throughout the majority of the country.

COLLABORATION

Any scheme is dependent on the collectors and gratitude is due to all. In particular, the following persons should be mentioned by name:

More than 1,000 records:	D.T. Richardson
More than 500 records:	W.A. Ely
	A.D. Barber
	D. Doogue
	C.P. Fairhurst
	P.T. Harding
	R.D. Kime
More than 250 records:	E.H. Eason
	A.N. Keay
	C.J. Smith
More than 150 records:	J. Chalfield
	M.H. Dolling
	A. Alexander

The printing of the cards, key punching of the information onto the computer has mainly been carried out by the staff of the Biological Records Centre.

Sorting and checking and transcription of literature and notebook records has been carried out by J. Khanna and recently Margaret Curtis, who has also been involved in the computing. Other persons who have helped in this respect are M. Armitage, K. Teare, R.D. Baker, P.M. Atkins and P. Milligan.

Throughout the operation, the constructive pressure of Paul Harding deserves special mention.

SPECIES WITH MORE THAN 20 RECORDS

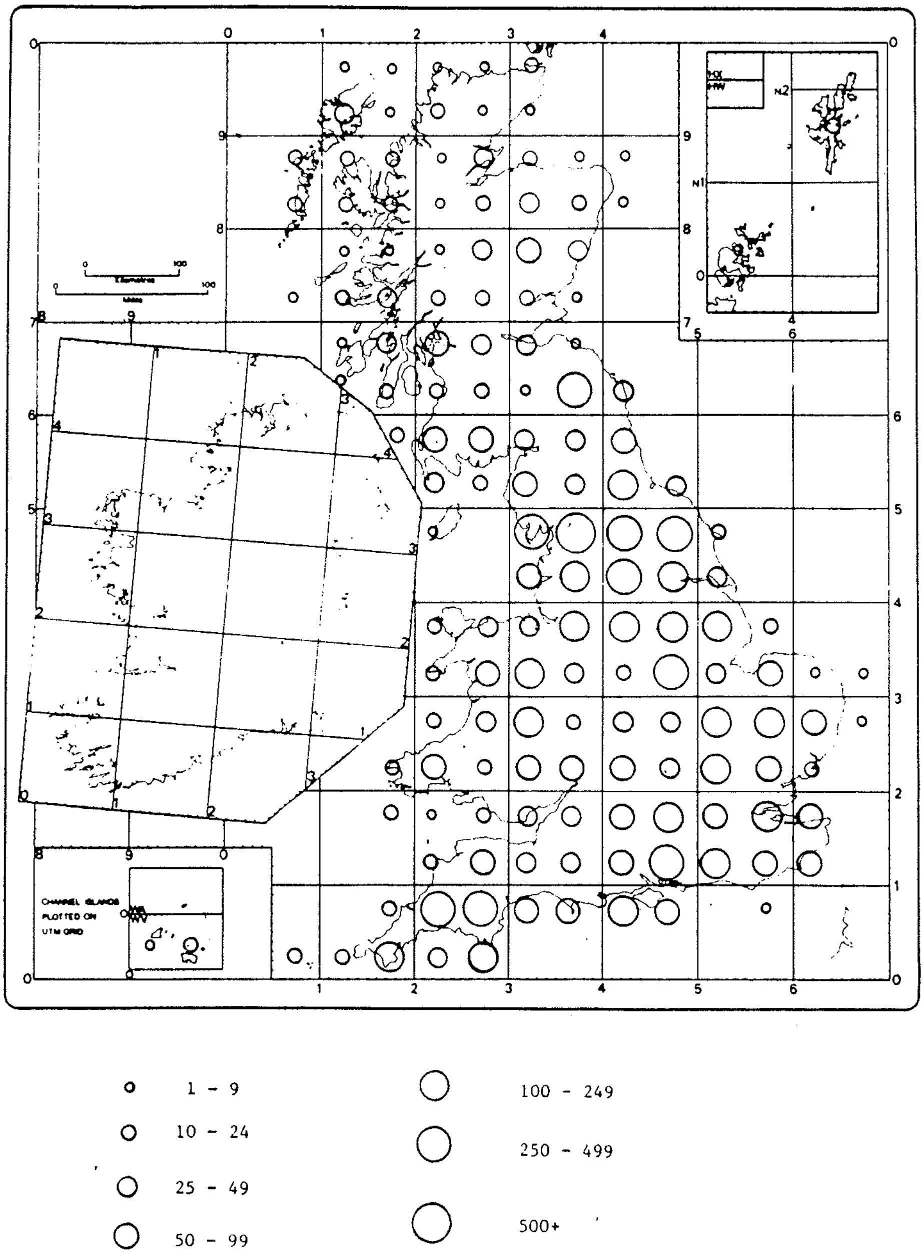
CODE	SPECIES	RECORDS
1006	Cylindroiulus punctatus	1529
3201	Tachypodoiulus niger	1489
1401	Glomeris marginata	1005
2701	Polydesmus angustus	989
2801	Polymicrodon polydesmoides	585
3101	Proteroiulus fuscus	585
2501	Ophyiulus pilosus	473
2301	Ommatoiulus sabulosus	464
1601	Lulus scandinavius	429
501	Brachydesmus superus	316
1002	Cylindroiulus latestriatus	262
201	Blaniulus guttulatus	220
1502	Isobates varicornis	162
2704	Polydesmus gallicus	138
2703	Polydesmus denticulatus	131
1003/2	Cylindroiulus londinensis var caeruleocinctus	113
2702	Polydesmus coriaceus	112
1001	Cylindroiulus britannicus	93
601	Brachyiulus pusillus	90
2901	Polyxenus lagurus	73
2102	Microchordeuma scutellare	61
101	Archeboreoiulus pallidus	42
301	Boreoiulus tenuis	41
1702	Leptoiulus kervellei	35
2401	Ophiodesmus albonanus	34
1004	Cylindroiulus nitidus	30
801	Chordeuma proximum	27
1901	Macrosternodesmus palicola	26
2101	Microchordeuma gallicum	26

Table 1: Species with more than 20 records, names as on record card

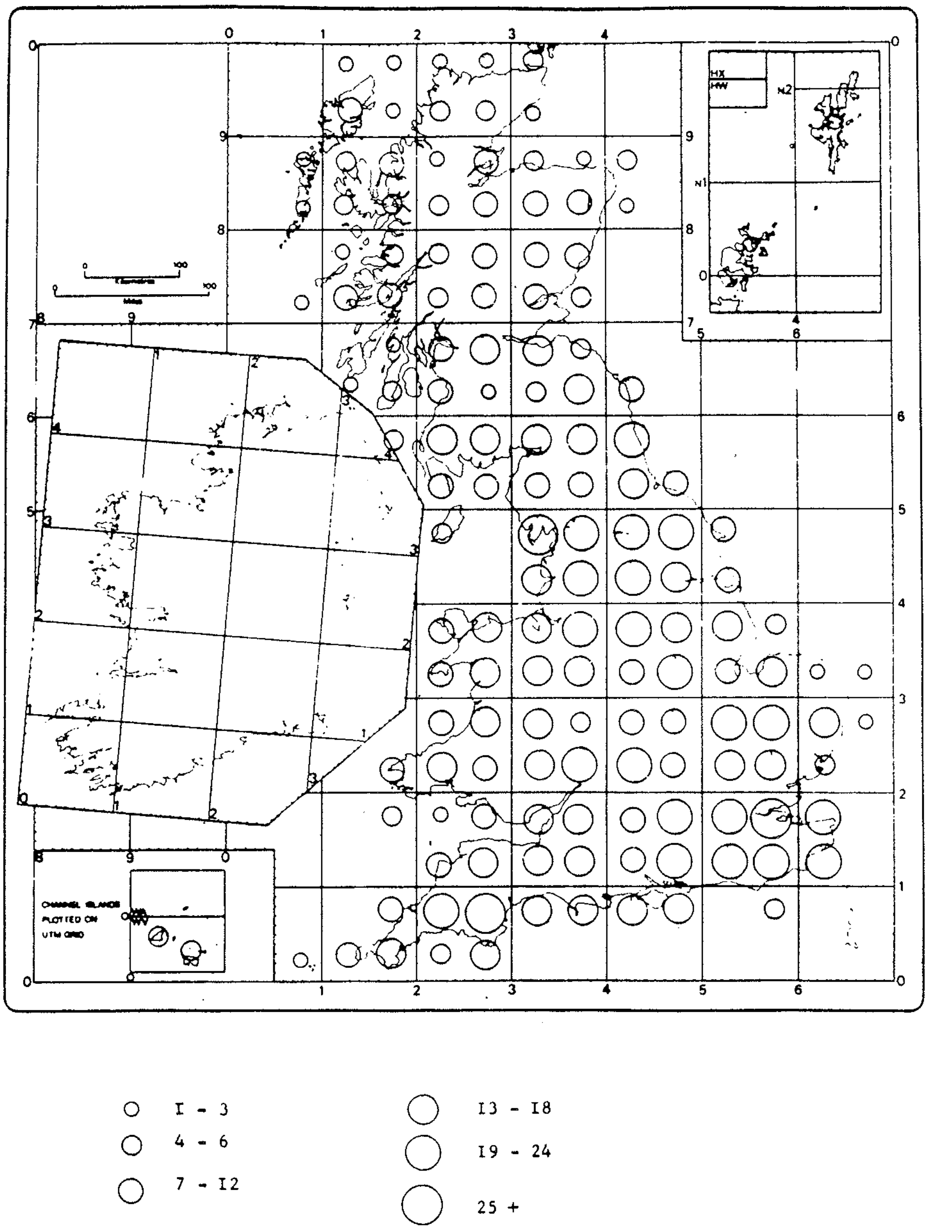
MONTH	RECORDS
January/December	180
February	166
March	409
April	1431
May	1450
June	1019
July	687
August	668
September	506
October	640
November	233

Table 2: Records by month

Number of records per 50 km² - All species



Map 1: Number of records received for each 50 km grid square.



Map 2: Number of species recorded per 50 km grid square.

Pollution Rhymes

Ate a weenie millipede
pesticide infested seed
was not on his best indeed
nevermore by seed will feed.

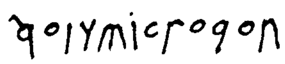
Ate another millipede
leaf with lead nearby the street
eggs she laid were full of lead
will not breed, but will be dead.

Thought another millipede
I shall revenge the whole breed
that was killed by pesticide
by producing cyanide.

Wolfgang Dohle.

Anamorphosis of a diplopod

p o
p o l
p o l y
p o l y m i
p o l y m i c r o



Wolfgang Dohle.