

I just remembered that you wanted these Peter

# The Piercer



A PIPUNCULIDAE NEWSHEET. NO 1

May 1989

A newsheet seems a useful way of circulating information even if only among a small group of people. The trouble with calling something Number 1 is that it creates anticipation of a long series. Time will tell, but currently the aim is for a timescale necessary to establish a new generation of keys to the British fauna and to update information on field craft and ecology. As a label consistent with similar small groups of people, Pipunculidae Study Group seems appropriate.

This issue is very much a personal progress report, drawing on information received in correspondence. Whilst my immediate motivation is the British fauna, a European perspective is clearly necessary. In future I hope others will feel free to contribute notes and observations to the newsheet.

## PROGRESS SO FAR

In Spring 1988 test keys on the genera Cephalops, Dorylomorpha, Nephrocerus, Pipunculus, Tomosvaryella, and Verrallia were circulated to 23 people in Britain with a known interest. Two European specialists have also been consulted. Whilst a few people had made good headway on building up a named collection, most (as with myself) had been collecting in the hope that identifications would be more easily resolvable eventually.

Response was of two types. It would seem that non-specialists felt the keys were much easier to use. However, specialists abroad were more sceptical, having great reservations over the failure to use dissected genitalia on the males in particular.

I had indicated at the outset that the first phase intended to get as far as possible on existing pinned material. In particular my keys are almost entirely based on BM (NH) specimens with Coe det. labels, usually at best 2 of each sex. With only rushed visits to the BM, there has not been time to do genitalia preparations of all species, though this may well have been the most desirable starting point. The aim is to arrive at keys that are satisfactory on pinned material if more amateurs are to encompass pipunculids. As reported below, it is now clear for some genera that much of the necessary detailed work has been done by others and I can suggest an easy sidestep on dissection which gives at least a partial solution.

Circulated with this newsletter there are revised keys to Dorylomorpha (though still not the last word) and an initial (non-dissection) key to Eudorylas.

## NEW BRITISH SPECIES

It is encouraging to be able to report three additions to the British fauna so far (even before getting deep into Eudorylas!) and a correction that places a new genus on our list.

Dorylomorpha albitarsis (Zett.) (in the earlier test key) and the true D. haemorrhoidalis (Zett.) have been obtained from Scotland. These are both in the revised key; Coe's haemorrhoidalis = hungarica (Aczel).

Pipunculus tenuirostris (Kozanek) was in a malaise trap sample (taken by Dr Keith Porter) from a fen in Oxfordshire together with newly recognised Beckerias pannonica (Becker) (ex Cephalops curtifrons).

## NOTES ON GENERA

### Chalarus

Dr Mark Jervis (Cardiff University) has been working on this genus (hence the genus has not been part of my review). He has raised the European fauna to 19 species and has now virtually completed a review with keys. He intends to continue studying the genus, including rearing adults, and is extending onto the tropical species.

### Beckerias

This genus resembles Cephalops but the anal vein is exceptionally thin and faint. I recognised it on the basis of unpublished papers from Marc de Meyer and he has subsequently informed me that Cephalops curtifrons Coe is a misidentification for Beckerias pannonicus, the only European member of the genus.

### Cephalops

Marc de Meyer (Institut Royal des Sciences Naturelles de Belgique, Brussels) is working on European pipunculids and has revised the Belgian keys to Cephalops including the related Beckerias. He kindly sent me a copy of his unpublished key and illustrations of genitalia etc. The male genitalia certainly give some very good characters. When this work is published it will be a major step forward and will largely meet our needs in Britain.

### Dorylomorpha

Dr Anders Albrecht (Zoological Museum, Helsinki) has been working on a Holarctic review of this genus. There are many more species, especially in northern Europe. He has commented on my test key, pointing out problems with colour characters and the need to critically examine male genitalia. It was his sketches that enabled me to recognise the true haemorrhoidalis. He has published on some of the species but the full work will undoubtedly give useful scope for seeing what extra species can be located in Britain.

### Eudorylas

The test key (of April 1989) is no more than a first attempt. Note that most Eudorylas female ovipositor bases are semi-rectangular in side view; this shape is not found in Cephalops but is characteristic of Beckerias.

### Nephrocerus

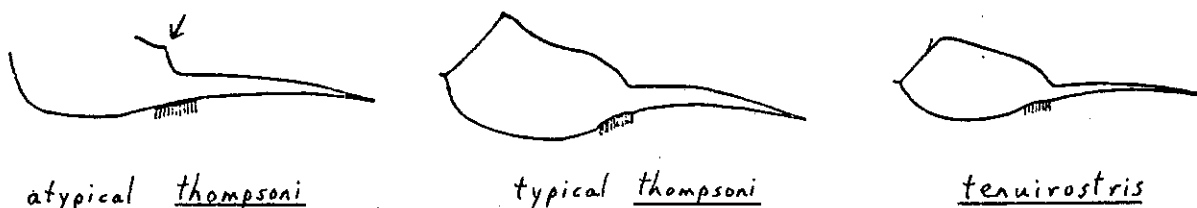
Dr Grootaert and Marc de Meyer have published a review of the three described European species, all of which occur in Belgium. They have subsequently found a fourth species resembling scutellatus in Belgium so we await with interest the formal description. N. flavicornis has the third antennal segment yellow, all the others have entirely black antennae.

I am preparing a review of the status of N. flavicornis in Britain. A second British locality for N. scutellatus is Selborne Common, Hants where several specimens were swept from grasses under young oaks.

### Pipunculus

I am now aware of the key and species descriptions by Kozanek (1981), covering the Czechoslovakian fauna, written in English. His key couplet using the shape of pulvilli in the females is unconvincing in my material. However, I am satisfied that a female from Oxfordshire is P. tenuirostris.

In my test key (April 1988) P. tenuirostris runs to couplet 5 in each sex in having an entirely dusted thoracic dorsum. In the female all the basal half of the piercer is much more slender than the slender base of the hind tibia (both side view) (thicker than base of hind tibia in the other species). In the male, which I have not seen, the hind femora is hollowed in the basal third as in thompsoni but the trochanters are dark (orange in thompsoni). My illustration of the ovipositor of thompsoni proves to be from an atypical specimen, the arrowed step normally being quite rounded.



### Tomosvaryella & Verrallia

Nothing to report at present. There may be one or two more changes in Tomosvaryella that can be considered another time.

### EUROPEAN FAUNA

Knowledge of the European fauna is still very uneven. Although we may be critical of the limitations of Coe's Handbook, it was remarkable for its time and remains one of the most important taxonomic and faunistic references. Some post Coe studies include the following.

Marc de Meyer and L de Bruyn (1985) have published a faunal list for Belgium which is very helpful in giving an indication of some extra species to look out for. Their non-British species are Nephrocerus lapponicus (Zett.), Dorylomorpha xanthocera (Kowarz), Pipunculus calceatus (v. Ros.), P. oldenbergi (Collin), Cephalops braueri (Strobl), C. seminitidus (Becker), C. vestitus (Becker) and Eudorylas sulcatus (Becker). Britain has some species not yet known in Belgium. Bankowska (1973) provides a key to the Polish fauna. This includes the following non-British species (omitting any mentioned for Belgium) - Cephalops pulchripes (Thomson), Eudorylas elephas (Becker) and E. holosericeus (Becker).

There is a Finnish check list (Hackman, 1980). It includes some further species - Dorylomorpha borealis (Wahl.), D. canadensis (Hardy), D. fennica (Albrecht), D. hackmani (Albrecht), D. occidentis (Hardy), D. platystylis (Albrecht), D. praetermissa (Albrecht), D. xanthoceroides (Aczel), Eudorylas furvulus (Collin), E. opacus (Fln) and Cephalops chlorionae (Frey) (apart from some doubtful identifications).

I have yet to see some papers on the Danish fauna.

## COLLECTING TECHNIQUES

Aerial sweeping is recommended by Michael Ackland who has been keeping pipunculids for 20 years. He catches 'a lot' of pipunculids whilst collecting anthomyiids. The net is swept above vegetation and in the air along woodland rides etc.

Malaise traps have been very successful, especially in obtaining rare species. Marc de Meyer (1986) reports his results in Luxembourg and Grootaert and Meyer (1986) report success with Nephrocerus. A new British species from an Oxfordshire fen was obtained from a malaise trap.

Dr V S van der Goot (Amsterdam) reports that in 1984 Mr G Kroon obtained 66 Nephrocerus flavicornis on land that was polder country until 1972. Within a wild plants plot 'he caught all his material in small garden houses (= prieel), open on all sides with a small white plastic, rather conical roof. Specimens flew in and up in the white plastic cones'.

Water traps have caught Cephalops perspicuus in a Norfolk fen and it is hoped that a survey programme using such traps will enable further evaluation of this technique. Andrew Godfrey (1988) took a Nephrocerus flavicornis in a water trap. As with malaise traps, a considerable volume of material needs sorting to find any pipunculids so trapping is most worthwhile if a wider spectrum of Diptera is being studied.

Searching within isolated trees and shrubs (mainly Salix) on urban wasteland is suggested by Derek Whiteley. The flies hover between the leaves and branches and can be seen in silhouette against the light.

Perhaps in common with everyone else, I have found pipunculids pretty elusive. It has been a rare event to obtain material easily, a case of certain days being more favourable than most. Sweeping both herbage and bush/tree foliage at least fits in with the search for other families of flies. However, I have found that having located a pipunculid or two in the net, it is sometimes then more efficient to search in that area for hovering individuals, especially if there is a micro habitat edge that acts as a search line.

## REARING AND HOSTS

A useful review by Mark Jervis (1978) will be found in the Dipterists' Handbook. This includes rearing methods for parasitised leaf hoppers. A distended abdomen suggests a fairly mature larva, most obviously so in the male, a female bug reaching a similar state through being bloated with eggs. Hopefully a future newsletter will include a more considered note than this but it is the case that even a single new rearing record may substantially advance our knowledge of the ecology of pipunculids since information is still very incomplete. Should you have the chance to rear material, keep each puparium (+ bug host skin) separate since several species of pipunculids may be using the same host and some of the leaf hoppers may appear to be all the same species when they are not.

There is a recent review of available information (Waloff & Jervis, 1987). Their Appendix III tabulates known host/pipunculid records, a simplified version being:-

- |   |  |
|---|--|
| Cercopidae ( <u>Philaenus</u> & <u>Neophilaenus</u> ) | - <u>Verrallia aucta</u>   |
| Cicadellidae <u>Oncopsis</u>                          | - other <u>Verrallia</u>   |
| Typhlocybinae   | - <u>Chalarus</u>  |
| Deltocephalinae                                       | - <u>Tomosvaryella</u><br><u>Dorylomorpha</u><br><u>Eudorylas</u><br><u>Cephalops</u> (on <u>Speudotettix</u> )<br><u>Pipunculus</u> |
| Cixidae   | - <u>Cephalops furcatus</u> (on<br><u>Tachycixius pilosus</u> )  |
| Delphacidae   | - <u>Cephalops</u> (most species)  |

Verallia aucta infests adult spittal bugs, in other cases it can be nymphs that act as the hosts. Infestation rates can be high (even 25% or over 40%). Oncopsis are common on birch and aspen. Among the common easily identified delphacids are the short-winged Ditropis pteridis on bracken and Conomelus anceps on Juncus (eg effusus). Such bugs seem very small for a pipunculid but clearly they are utilised. The taxonomy of Deltocephalinae is not easy, since there are many genera, but it is a major group of leaf hoppers with many species. Hymenoptera hyperparasites have been reared from pipunculid puparia.

#### DISTRIBUTION AND ECOLOGY

In addition to Nephocerus flavicornis, where I have already put out a call for information, it would be interesting to see what advance can be made on knowledge of the distribution and ecology of other selected species. In particular the circulated keys should have resulted in more records after Steven Falk called in data for the rarest species. The selected species are those where confidence on identification should be reasonably good or at least getting better:-

Cephalops germanica, C. furcatus  
All Dorylomorpha (based on revised key)  
Eudorylas horridus, E. halteratus, E. melanostolus

Most species are scarce so there should not be a great chore in writing out records. Whilst some Dorylomorpha may need re-examination when Dr Albrecht's figures are published, most specimens should be identifiable (and if in doubt at this stage, withhold records or place a query against them). The hope is that the next issue of 'The Piercer' will have some maps and ecological statements.

#### MOUNTING MATERIAL

Micro-vials are used by continental specialists. They allow genitalia to be preserved intact or in pieces and to be re-examined from different viewpoints. They are the best technique for storing genitalia for subsequent examination and should always be retained on the same mount as

the specimen from which the genitalia originated. Currently micro-vials are expensive and difficult to obtain but resolution of these problems may bring more of us into using them. Meanwhile, read on.

When pinning material, the ovipositor of females should be hinged down, anchored by a pin if necessary whilst specimens dry. I have also been hinging down the male genitalia, giving a view of claspers, the aedeagus and other structures. By doing so, many of the features that are illustrated by those using micro-vials are visible. This makes reliable identification much easier in many cases, sometimes revealing excellent characters in otherwise difficult parts of a key. There are limitations in that the membranous area may become a bit misshapen and delicate features of the aedeagus may remain obscure; some damage can result from pinning (some Dorylomorpha are not easily hinged) but a little experience soon improves the technique. Especially if there are two male specimens that may reasonably be regarded as the same species, it is worth hinging out the genitalia of one.

We all know that pipunculid heads can readily fall off. One person knocks off the heads and glues them on again as a routine procedure. I prefer to avoid the use of glue that may mask features or discolour them. Some museum material has the head glued onto a piece of card. My own rapid and simple procedure, if a head falls off or is unduly loose, is to mount the head on a micropin run through a compound eye and out of the back of the head, staged on the same strip as the rest of the body.

I have limited experience with material in alcohol but found the material had stiffened and was easily damaged in trying to hinge out the genitalia. This was resolved as follows. Specimens were floated out on small bits of paper, lifted out of the alcohol so that the wings were not crumpled and left just long enough till the wings dried out. The specimens were side pinned, giving some purchase to hinge out the genitalia. On drying out completely, the material was often about as good as new.

#### LITERATURE

This selected reference list concentrates on the period subsequent to the bibliography in Coe, 1966(a).

Albrecht, A., 1979(a). Descriptions of seven new Dorylomorpha Aczel species from Europe (Diptera: Pipunculidae). Entomologica Scand. 10:211-218.

Albrecht, A., 1979(b). Dorylomorpha fennica sp.n., a new Pipunculid species (Diptera) from Finland. Notul. ent. 59: 15-17.

Benton, F.P., 1975. Larval taxonomy and bionomics of some British Pipunculidae. Ph.D. Thesis. University of London.

Coe, R.L., 1966(a). Diptera Pipunculidae. Handb. Ident. Br. Insects X, 2(c); 83pp.

Coe, R.L., 1966(b). Some British species of Chalarus and Verrallia (Diptera: Pipunculidae). Proc. R. ent. Soc. Lond. (B). 35: 149-160.

Coe, R.L., 1967. Notes on British Pipunculidae (Diptera). Proc. R. ent. Soc. Lond. (B) 36: 181-182. [Key amendment to include female curtifrons].

- Collin, J.E., 1956. Scandinavian Pipunculidae. Klucze Oznacz. Owad. Pol. 28 (33), 52pp.
- Grootaert, P. & Meyer, M. de, 1986. On the taxonomy and ecology of Nephrocerus Zetterstedt (Diptera, Pipunculidae) with a redescription of N. lapponicus and a key to the European species. Bull. Inst. r. Sci. nat. Belg; Entomologie 56: 85-91.
- Hackman, W., 1980. Enumeratio Dipterorum Fenniae. Helsinki, 164 pp.
- Jervis, M.A., 1978. Leaf hoppers (Homoptera: Auchenorrhyncha). In Stubbs, A.E. & Chandler, P.J. (Eds.). A Dipterist's Handbook. Amateur Entomologist's Society Vol 15. (See pp 173-176).
- Jervis, M.A., 1980(a). Studies on the oviposition behaviour and larval development in species of Chalarus (Diptera, Pipunculidae), parasites of typhlocybine leaf hoppers (Homoptera, Cicadellidae). J. nat. Hist. 14: 759-768.
- Jervis, M.A., 1980(b). Life history studies of Aphelopus species (Hymenoptera: Dryinidae) and Chalarus species (Diptera, Pipunculidae), parasites of typhlocybine leaf hoppers (Homoptera, Cicadellidae). J. nat. Hist. 14: 769-780.
- Jervis, M.A., 1980(c). Ecological studies on the parasite complex associated with typhlocybine leaf hoppers (Homoptera, Cicadellidae). Ecol. Ent. 5: 123-136.
- Kozanek, M., 1981(a). Genus Pipunculus Latreille (Diptera, Pipunculidae) in Czechoslovakia. Annotnes Zool. Bot. Bratislava 142:1-16.
- Kozanek, M., 1981(b). Description of a new species of Pipunculus Latr. (Diptera, Pipunculidae) and a re-description of P. omissinervis Beck. Biologia Bratisl. 36: 605-609.
- Lauterer, P., 1981. Contribution to the knowledge of the family Pipunculidae of Czechoslovakia (Diptera). Acta Mus. Moraviae Sci. Nat. 66: 123-150.
- Lauterer, P., 1983. Contribution to the knowledge of the distribution and bionomics of some representatives of the family Pipunculidae in Central and Southern Europe. Acta Mus. Moraviae Sci. nat. 68: 131-138.
- De Meyer, M. 1986. Enkele merkwaardige Pipunculidae mit les Epioux (Provincie Luxemburg) (Diptera). Phegea 14: 27-29 [malaise trap results].
- De Meyer, M. & L. de Bruyn, 1984. On the phenology of some Pipunculidae (Diptera) in Belgium. Bull. Anns Soc. r. ent. belq. 120: 123-131.
- De Meyer, M. & L. de Bruyn, 1985. On the occurrence of Pipunculidae (Diptera) in Belgium. Inst. r. Sci. nat. belq. Studiedocumenten 24, 52pp.
- Rothschild, G.H.L., 1964. The biology of Pipunculus semifumosus (Kowarz) (Diptera: Pipunculidae), a parasite of Delphacidae (Homoptera) Parasitology 54: 763-769.

- Stubbs, A.E., 1980. The largest pipunculid in the land: Nephrocerus scutellatus (Maquart, 1834) (Diptera, Pipunculidae) new to Britain, with observations on its behaviour in Greece. Proc. Trans. Br. ent. nat. Hist. Soc. 13 46-48.
- Waloff, N., 1975. The parasitoids of the nymphal and adult stages of leaf hoppers (Auchenorrhyncha: Homoptera) of acid grassland. Trans. R. ent. Soc. Lond. 126: 637-686.
- Waloff, N. & Jervis, M.A., 1987. Communities of parasitoides associated with leaf hoppers and plant hoppers in Europe. Adv. ecol. Res. 17: 281-402.
- Whittaker, J.B., 1969. The biology of Pipunculidae (Diptera) parasitising some British Cercopidae (Homoptera). Proc. R. ent. Soc. Lond. 44: 17-24.

Alan Stubbs

Nature Conservancy Council  
Northminster House  
Peterborough  
Cambs  
PE1 1UA  
England