

Fungus Gnats Recording Scheme

Newsletter 5 Autumn 2011

Progress on Fungus Gnat Handbook

The introduction to fungus gnats provided at the 2011 Spring Workshop at Preston Montford included the testing of some of the keys in preparation for the handbook to British Mycetophilinae. The handouts included draft keys illustrated mainly by figures taken from the literature so it was stressed that these should not be regarded as publications for that reason; they also included the wing photographs provided by the NHM photographic units from slides made by Erica McAlister. These comprised the following, of which A4 copies are available by request from me for anyone who did not attend the workshop:

- (1) Characters of Fungus Gnats 6pp (describing the diagnostic features of the group and the characters used in keys)
- (2) Key to Families and Subfamilies of Sciaroidea 6pp
- (3) Key to Tribes and Genera of Subfamily Mycetophilinae 10pp [including wing photographs representing each genus]
- (4) Literature for Identification of British Species 2pp [this is as the references given in the Dipterist's Handbook except for addition of the two more recent papers: Chandler & Perry 2011 and Gibbs 2011 which are also listed here]
- (5) Key to Species of the Genus *Mycetophila* 24pp key + genitalia figures from literature and 8pp wing photographs of 63 of the 72 British species. This is an updated version of the manuscript key to this genus that has been in circulation for a number of years.

Some points where the keys could be improved were identified during the workshop and any other comments to this end would be welcomed

Recent publications on British fungus gnats

The latest issues of *Dipterists Digest* have included 4 papers on fungus gnats and another (Drake 2011) with significant records of the group. Alexander & Chandler (2011) included 4 additions to the Irish list, of which *Docosia morionella* was the second record and first male reported from the British Isles, only previously being recorded on a single female collected by Francis Jenkinson on a window of Logie House, Scotland in 1904. Other papers (Chandler & Perry 2011, Gibbs 2011) formally added two species (*Exechia spinigera*, *Phronia forcipula*) whose presence in Britain had been noted in the previous 2010 newsletter and two further species newly added (*Exechiopsis davatchii*, *Synplasta exclusa*) whose occurrence in Britain is as yet based on single specimens, both collected by Ivan Perry. Both are brightly coloured species with extensive yellow markings. The photograph reproduced here of Ivan's specimen of *Synplasta*

exclusa was kindly taken by Chris Spilling, as were all the other photographs in this newsletter.



Fig. 1. Habitus of *Synplasta exclusa* (wing 4.2mm).

There are also two name changes affecting the British gnat fauna due to recognition (Chandler & Perry 2011) that *Exechia frigida* of the British list is *E. borealis*, recently recognised as a distinct species in Iceland and Scandinavia, and (Kjærandsen & Chandler 2011) that *Macrorrhyncha rostrata* of the British list is a previously unrecognised species, newly described as *M. hugoi*.

Two more species new to Britain

Another two species have come to notice this year, one of which is new to science. This is a species of the genus *Grzegorzekia* that was present in a trap sample from Bushy Park, Middlesex, one of the Royal Parks of London. The other species *Mycetophila sublunata* was found at two woodland sites during the DF summer field meeting in Devon in July 2011. Both species will be formally added to the British list elsewhere but details by which they may be recognised are given here to alert recorders to their existence.

Mycetophila sublunata Zaitzev, 1998

Details of the localities where this species was found are given in Roger's account of the summer field meeting in this Bulletin. This species is allied to *M. lunata* and *M. dziedickii*, which it resembles in the structure of its genitalia. Preliminary examination of the two males collected during the meeting indicated that they belonged to this group but was puzzling as the ventral lobe of the gonostylus appeared more elongate than in *M. lunata*, more resembling *M. dziedickii* in this respect, but they lacked the setulae under vein tb that are present in *M. dziedickii*. Subsequent examination and comparison with figures in Zaitzev (2003) showed that they agreed with *M. sublunata* in genital structure. This species was described from Russia, where it is widespread and found both in European Russia and the Far East, and it has since been recorded only from Finland and Sweden so Devon is not the most likely part of the country for such a species to first be recorded. That one of the sites was a mature conifer plantation may give a clue to its requirements but the other site was broad-leaved woodland. The biology is as yet unrecorded.

In the manuscript key to species of *Mycetophila* mentioned above, *M. dziedickii* is separated into GROUP 5 because of the presence of setulae beneath vein tb while *M. sublunata* will like *M. lunata* run to GROUP 9. It has wing markings very similar to those species and other members of that group and agrees with *M. lunata* in the combination of other characters listed for it. It is distinguished from *M. lunata* among other details of the genitalia by the presence of a pair of short spines near the middle of the external margin of the ventral lobe of the gonostylus as shown in the photograph of the ventral view of the genitalia taken by Chris Spilling (position indicated by arrow).



Fig. 2 Ventral view of male genitalia of *Mycetophila sublunata*, with right gonostylus deflected to show dorsal lobe.

Grzegorzekia species – a new gnat from Bushy Park



Fig. 3. Dorsal view of *Grzegorzekia* species from Bushy Park (wing length of 2 males 3.8 and 4.2mm).

Samples of fungus gnats trapped at Bushy Park, Middlesex in 2010 were passed to me early in 2011 by Martin Drake, who was identifying the Diptera from these traps. Most of the fungus gnats (59 of the 66 species recorded) were from a fairly small woodland enclosure called Round Plantation, fenced off from the surrounding deer park and without public access. The trap used at Round Plantation was a “ground trap”, which was a flight interception trap at ground level, comprising a single vertical net about two metres wide and about a metre tall staked out like a Malaise trap but with water traps into which the catch dropped at the base.

The samples from this area included two males of the genus *Grzegorzekia* of which one was the only known British species *G. collaris* but the other (Fig. 3) obviously differed in the structure of the genitalia, although it was similar in most other respects. This has proved to be a species new to science, which will be formally described elsewhere.

Following up this discovery I made a preliminary visit to Bushy Park on 25 July 2011 and was shown the area where trapping had taken place by Nigel Reeve, Head of Ecology at the Royal Parks.

Despite recent rain, conditions were very dry and although Diptera were numerous in Round Plantation, few fungus gnats were on the wing. These included 11 species, mostly represented by single individuals, of which 6 were not recorded during the 2010 trapping there. The woodland comprised scattered oaks, which had been infilled by sycamore and the frequent dead wood on the ground mostly comprised trunks and branches of sycamore. We then visited Canal Plantation, which was more open and produced no fungus gnats, and returned through the public access woodland garden, where the wilder part at the north end included a number of fallen trunks and stumps. Sweeping there produced 3 species of fungus gnat, one of which was later found to be a male of the new *Grzegorzekia* species, but this was not realised at the time. This area had not previously been surveyed for Diptera so the finding of this species there was of considerable interest.

Further visits will be made to these and other areas of the Park to search for females and assist in establishing the status and biology of the species.

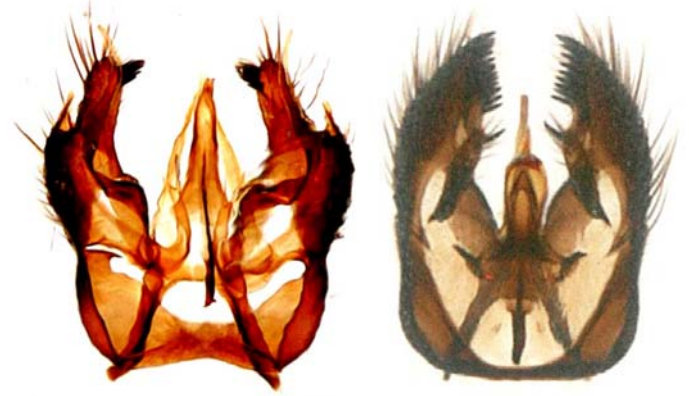
Recognition of *Grzegorzekia* species

Chandler (1999) redefined the genus *Grzegorzekia* Edwards to include only a single European species *G. collaris* (Meigen) and removed the only other species previously assigned to the genus, the Mediterranean species *G. phoenix* Väisänen, to a new genus *Phoenikiella*. He discussed the relationships between these and allied genera, including the newly discovered Scottish gnat *Creaghubhia mallochorum*. A second species belonging to the revised concept of *Grzegorzekia* was, however, described from Hungary as *G. hungarica* by Papp & Ševčík (2007); it resembled *G. collaris* in most respects other than the structure of the genitalia but differed in lacking setulae on vein Sc, which are present in *G. collaris* and the new species from Bushy Park but absent in *Phoenikiella* and *Creaghubhia*.

When the discovery of this new species was circulated to the Sciaroidea web group, Jan Ševčík kindly forwarded a male specimen of this genus that had been collected in Thailand and represented a further undescribed species with some characters in common with *Phoenikiella*. This will be described at the same time as the new species from Bushy Park.

The species of *Grzegorzekia* now known are similar in many respects including the mainly shining black body coloration with some pleural sclerites and basal triangles on some abdominal tergites yellow, yellow legs and distribution of wing markings as shown in the photograph of the 2010 Bushy gnat. Wing venation is also similar but there is variation in the position of vein R₄ and consequently the shape of the radial cell. The larger material available of *G. collaris* shows that this variation can be intraspecific and the condition may differ between the two wings of an individual gnat. Remarkably the two 2010 specimens of the genus from Bushy Park each have R₄ present on one wing but absent (new species) or represented only by a spur (*collaris*) on the other. The second (2011) specimen of the new species from Bushy has R₄ absent on both wings but its left wing is also teratological, in having an additional fork, the posterior branch of the median fork (M₂) being forked on its apical fifth.

Differences between the species are mostly in the structure of the genitalia.



Figs 4-5. Ventral view of gonocoxites and aedeagal complex of *Grzegorzekia* spp: (4, left) *G. collaris*, (5, right) Bushy species.

Grzegorzekia species agree in lacking differentiated gonostyli and bearing a comb of tooth-like spines on the inner margin of each dorsal lobe of the gonocoxites (Figs 4-5). The genital structure of the Bushy species is otherwise markedly different from both described species, including a much broader comb of teeth (Fig. 5), extended along most of the apical margin of the gonocoxites. There is some infraspecific variation in the form of some parts in *G. collaris* but it can be distinguished by its broad sides to the gonocoxites which are concave apically and extended to an angular process ventrally (Fig. 6), while in the new species they are narrow and cut away in lateral view, revealing more of the aedeagus and processes of the gonocoxal apodemes (Fig. 7).

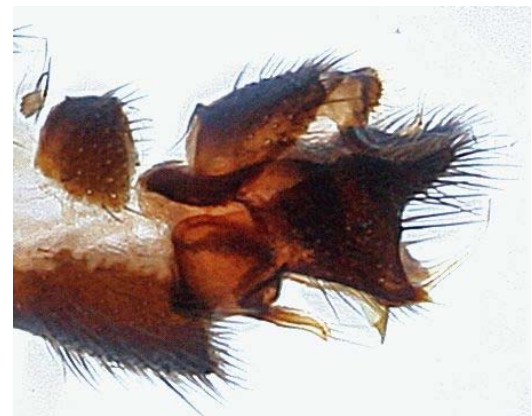


Fig. 6. *Grzegorzekia collaris* side view of male genitalia.



Fig. 7. Bushy *Grzegorzekia* species side view of male genitalia.

Status of *Grzegorzekia* species

This is a remarkable and unexpected find, indicating the genus *Grzegorzekia* to be more diverse than previously realised but comprising mainly rare species of uncertain status. Without any other known material of the new species it is not possible to know if this represents a relict population or is a recent colonist like some other gnats first found in Britain in recent years.

The only biological information concerning the genus results from the rearing by Reg Evans of *G. collaris* at Oversley Wood, Warwickshire in 1969 (reported by Chandler 1993). Larvae were found to live communally but suspended in individual webs on the surface of wet rotten wood and they pupated on the wood without a cocoon. A similarly saproxylic biology may be anticipated for the new species, but it remains to be established whether there is any specific fungus association in the development of this genus.

Grzegorzekia collaris was accorded Nationally Scarce status in the 2005 Review (Falk & Chandler 2005) where it was mentioned that there were then 29 known localities scattered throughout Britain. However, apart from one Yorkshire record there is a wide gap between the bulk of records in southern England and Wales and a cluster of records in northern Scotland. The 2009 map shown here (Fig. 8) incorporates 32 mainland localities and two in Jersey. Some of these records are based only on females, for which distinguishing characters of the new species are as yet unknown, and some other material in collections needs to be re-examined in the light of this new discovery to ensure that the new species has not previously been confused with *G. collaris*.

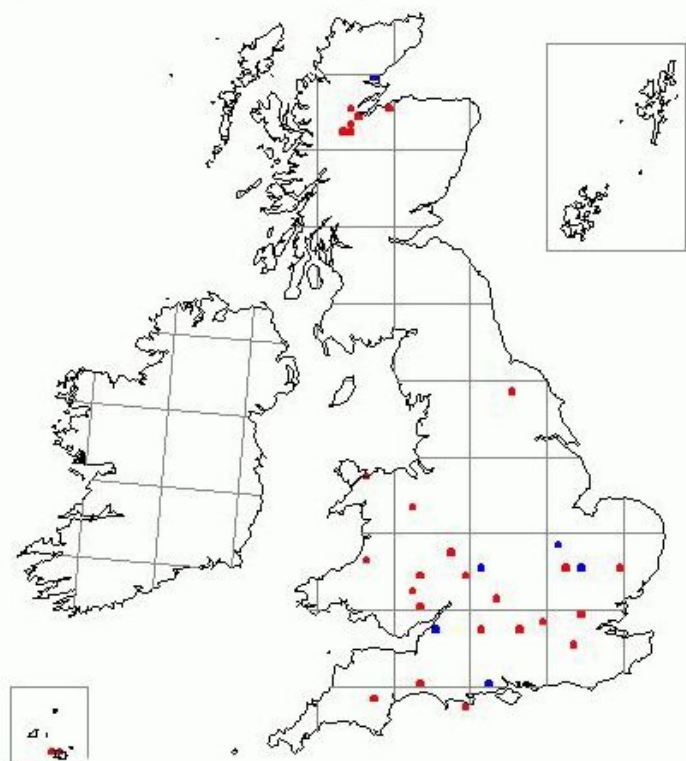


Fig. 8. Distribution map of *Grzegorzekia collaris*.

Acknowledgements

I am grateful to Chris Spilling for his excellent efforts in taking the photographs illustrating this newsletter, Claudia Watts and Martin Drake for their involvement in bringing the Bushy gnat to notice, Nigel Reeve for conducting me around Bushy Park, Jan Ševčík for supplying the new species from Thailand, Una Garland for enabling the excursion to Harpford Wood that produced the second specimen of *M. sublunata*, BRC for providing distribution maps, Erica McAlister for providing wing photographs, Judy Webb for her help at the Preston Montford workshop and all who participated in the workshop for assistance and encouragement in developing new keys.

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