

## New rearing records of fungus gnats (Diptera: Mycetophilidae and allied families)

Peter J. Chandler

Many batches of fungus gnats reared over the past twenty years have been referred to me by Mr. R.E. Evans. As he is an experienced mycologist, these records have the advantage of precise determination of the fungus concerned and most of the fungi involved had not previously been the subject of rearing studies. Although the commoner species of gnat have predominated, altogether 59 species have been reared, 51 of them from named fungi, the others from rotten wood or decayed fungi. Earlier rearings were from sites in Warwickshire but from 1975 onwards most were from Norfolk. Several species reared mainly in East Anglia by Mr. P. Withers are also included.

Some of the more notable rearings have already been published: *Keroplatus testaceus* Dalman, from cocoons on rotten wood (Chandler, 1977b and in press), *Anatelia flavomaculata* Edwards and *Mycetophila lunata* Meigen (Chandler, 1977a) and *Sciophila nonnisilva* Hutson (Chandler, 1987). The three latter and five other species had not been reared previously. Stubbs & Chandler (1978) also incorporated some records in the list of food plants provided. Other rearings such as those of *Brachycampta* species have been useful in providing associated females where these were not previously distinguished.

Here full details are given of the species reared on one or a few occasions; only the fungus hosts are listed for other species. New host records additional to those listed (or summarised in the case of the less often reared species) by Stubbs & Chandler are marked \* except in the case of genera known to be attacked by polyphagous species.

*Bolitophilidae*

*Bolitophila cinerea* Meigen - \**Panaeolus campanulatus* (Bull.) Quél., several MF, 26.vii.88, Thompson Common, Norfolk

*B. hybrida* (Meigen) - \**Lyophyllum decastes* (Fr.) Sing., M emerged 14.x.80, collected ix., Frosts Wood, Norfolk

*B. pseudohybrida* Landrock - *Clitocybe cerussata* (Fr.) Kummer, F, xi.76, Warren Wood, Honingham, Norfolk; \* *Physisporinus sanguinolentus* (Alb & Schw.: Fr.) Pilát, F, v.77, Honingham Fen, Norfolk

*B. saundersi* (Curtis) - \* *Panaeolus campanulatus* (Bull.) Quél., M, reared with *B. cinerea*

*Diadocidiidae*

*Diadocidia ferruginosa* (Meigen) - on *Peniophora* species, M, ix.74, Wellesbourne Wood, Warwicks.

### Ditomyiidae

*Symerus annulatus* (Meigen) - \**Hypoxyton rubiginosum* (Pers.) Fr., 2.xi.85, Honingham Fen, Norfolk (this fungus grows on tree bark and previous rearing records of this species have been from decaying wood).

*Ditomyia fasciata* (Meigen) - *Bjerkanderu adusta* (Willd.) Karst., x.84, Narford Hall, Norfolk; \**Hydnellum spongiosipes* (Peck) Pouzar, ix.81, emerged x.81, Felthorpe Woods, Norfolk

### Keroplastidae

*Orfelia unicolor* (Staeger) - ex pupa suspended in threads on *Trametes versicolor* (L.) Pil., emerged 4.vi.73, Bubbenhall Wood, Warwicks. (first rearing record).

### Mycetophilidae

*Mycomya marginata* (Meigen) - *Trametes versicolor* (L.) Pil., \**Naucoria* species, *Tremella mesenterica* Retz. ex Hock.

*M. winnerzi* (Dziedzicki) - *Phellinus ferruginosus* (Schrad. ex Fr.) Pat., x.75, Edgbaston N.R., Warwicks; indet. resupinate fungus, x.76, Foxley Wood, Norfolk

*Leptomorphus walkeri* Curtis - pink resupinate fungus, probably \**Corticium roseum* Pers., 7.vi.85, Honingham Fen, Norfolk

*Sciophila buxtoni* Freeman - [\**Laetiporus sulphureus* (Fr.) Murr., M emerged 23.ix.86, West Harling Common, Norfolk (P. Withers)]

*S. nonnisilva* Hutson - \**Auricularia auricula-judae* (L.) Schroet., emerged 14.x.80, collected 11.ix, Lenwade Pits, Norfolk (first rearing record).

*S. lutea* Macquart - \**Morchella elata* Fr., 5M, 5F, 25.v.91, Alderford Common, Norfolk; \**M. esculenta* (L.) Pers., 2M, 17.v.84, Honingham Fen, Norfolk; \**Russula cyanoxantha* (Sch.) Fr., M, 28.vii.80, Wells, Norfolk; \**R. fellea* (Fr.) Fr., F, emerged 30.viii.78, collected 10.viii., Warren Wood, Honingham, Norfolk. (Also from *Gymnopilus junonius* (Fr.) P.D. Orton, 30.x-7.xi.88 by P. Withers)

*Grzegorzekia collaris* (Meigen) - surface of damp rotten wood or often suspended in web, communal, but individual webs, pupate on wood without cocoon, emerged iv-v and 18.viii;69, Oversley Wood, Warwicks. (this record was the basis of the comments on biology by Hutson, Ackland & Kidd, 1980)

*Leia bimaculata* (Meigen) - [\**Russula krombholzii* Shaffer, F, collected 26.ix.86, emerged 23.x.86, Wheatfen Broad, Norfolk (P. Withers)]

*Docosia gilvipes* (Haliday) - \**Morchella elata* Fr., \**Tremella mesenterica* Retz. ex Hock., \**Peziza vesiculosa* Bull., \**Bolbitius vitellinus* (Pers.) Fr. [also reared from stipe of *Amanita muscaria* (L.) Hook. by P. Withers]

*Anatella flavomaculata* Edwards - *Cudoniella aciculare* (Bull.) Schroet., on rotten oak stump, 2M, 1F, Oversley Wood, Warwicks. (only known rearing record)

*Tarnania fenestralis* (Meigen) - \**Melanoleuca grammopodia* (Bull.) Pat., 5M, 16.x.88, East Wretham, Norfolk; \**Lactarius quietus* (Fr.) Fr., emerged 13.i.90, collected 21.xi.89, Foxley Wood, Norfolk

*Synplasta excogitata* (Dziedzicki) - \**Pleurotus dryinus* (Pers.) Kummer, emerged 25.xi., collected 19.x.80, Daffy Wood, Norfolk; \**Mycoacia uda* (Fr.) Donk, MF emerged 8.xi., collected 27.x.80, Warren Wood, Norfolk ( first rearing records)

*Allodiopsis domestica* (Meigen) - *Calocybe gambosa* (Fr.) Donk, M, 2F, 30.iv.75, Bannams Wood, Warwicks.; *Marasmius oreades* (Bolt) Fr., MF, 1.x.84, Belstead House, Ipswich, Suffolk; 2M 3F, emerged 6-12.viii.88, East Wretham Heath, Norfolk; \**Clitocybe odora* (Bull.) Kumm., F, viii.88, Felthorpe Woods, Norfolk

*A. rustica* (Edwards) - \**Hygrophoropsis aurantiaca* (Wulf.) Maire, emerged 22.x, collected ix.80, Ringland Wood, Norfolk; \**Clitocybe nebularis* (Batsch) Kumm., 15.x.84, Lenwade Pits, Norfolk

*Pseudexechia irisignata* (Edwards) - \**Naucoria pseudoamarescens* (K. & R.) K. & R., F, iii.90, Holt Country Park, Norfolk [also reared from \**Galerina mutabilis* (Schaeff. ex Fr.) P.D. Orton 23.x-3.xi.89, West Harling Common, Norfolk by P. Withers] (not previously reared)

*P. trivittata* (Staeger) - \**Panaeolus sphinctrinus* (Fr.) Qué., MF, emerged vii.88, Denver, Norfolk; \**P. campanulatus* (Bull.) Qué., 5M, emerged 26.vii.88, Thompson Common, Norfolk; \**Psathyrella candolleana* (Fr.) Maire, 4M, 11F, 17.viii.88, emerged 28.viii.88, Foulden Common, Norfolk

*Allodia (sensu stricto) lugens* (Wiedemann) - \**Psathyrella microrhiza* (Lasch) Fr., \**P. candolleana* (Fr.) Maire, \**Panaeolus papillionaceus* (Bull. ex Fr.) Qué., *Mycena galericulata* (Scop.) S.F. Gray (twice), \**Lepiota rhacodes* (Vitt.) Sing., \**Meripilus giganteus* (Pers.) Karst.

*A. (sensu stricto) ornaticollis* (Meigen) - *Inocybe geophylla* (Bull.) Karst., *I. griseoililacina* J. Lange, *I. lucifuga* Kummer, *I. asterospora* Qué., *I. rimosa* (Bull.) Kumm., *Hygrocybe nigrescens* (Qué.) Kühn, \**Agrocybe semiorbicularis* (Bull.) Fayod, \**Melanoleuca melaleuca* (Pers. ex Fr.), \**Tricholoma leucocephalum* (Fr.) Qué., \**Pluteus cervinus* (Batsch) Fayod, *Collybia butyracea* (Bull.) Kummer, *Hebeloma crustuliniforme* (Bull.) Qué., \**Panaeolus papillionaceus* (Bull. ex Fr.) Qué., \**P. campanulatus* (Bull. ex Fr.) Qué., \**Laccaria laccata* (Scop.) Bk. & Br., *Russula nitida* (Pers.) Fr., *R. fragilis* (Pers.) Fr., *R. pectinata* Fr., *Suillus granulatus* (L.) O. Kuntze, *Xerocomus subtomentosus* (Bull.) Qué.

*A. (sensu stricto) truncata* Edwards - *Inocybe lacera* (Fr.) Kummer, 3M, 4F, collected 1.vii.88, emerged 13.vii.88, Holt Country Park, Norfolk

*A. (Brachycampta) barbata* Lundström - *Peziza vesiculosa* Bull., 6M, 4F, emerged viii.87, Quidenham, Norfolk

*A. (Brachycampta) czernyi* Landrock - *Cortinarius semisanguineus* (Fr.) Gill., collected 16.ix.87, 3M, 1F, emerged ix.87, Corsican and Scots pine plantation, Holkham N.R., Norfolk (first rearing record: only 6 other British records known to me, all from Scottish Highlands)

*A. (Brachycampta) grata* (Meigen) - *Pluteus cervinus* (Batsch) Fayod (3 rearings, 1 with *A. ornaticollis*); *P. salicinus* (Pers.) Kummer; *Xerocomus chrysenteron* (Bull.) Qué.

*A. (Brachycampta) silvatica* Landrock - *Aleuria aurantia* (Pers.) Fuckel, 19M, 11F, emerged 3.vii.88, Beetley, Norfolk; *Peziza varia* (Hedw.) Fr., M, 2F, emerged 14.viii.80, collected 23.vii.80, Warren Wood, Norfolk

*Exechia bicincta* (Staeger) - *Pluteus salicinus* (Pers.) Kummer, 2M, 2F, emerged 3.ix.88, collected 24.viii., Pentney Common, Norfolk

*E. dorsalis* (Staeger) - *Hebeloma strophosum* (Fr.) Sacc., *Collybia maculata* (Alb. & Schw.) Kummer [also reared from *Inocybe* species, *Tricholoma columbetta* (Fr.) Kummer and *Amanita muscaria* (L.) Hook. by P. Withers]

*E. fusca* (Meigen) - *Collybia dryophila* (Bull.) Kummer, *C. confluens* (Pers.) Kummer, *Naucoria pseudoamarens* (K. & R.) K. & R., *Psathyrella* species, *Conocybe tenera* (Schaeff.) Fayod, *Inocybe cervicolor* (Pers.) Qué., *Psathyrella lachrymabunda* (Bull.) Moser, *Mycena pura* (Pers.) Kummer, *Panaeolus sphinctrinus* (Fr.) Qué., *Pluteus cervinus* (Batsch) Fayod, *Lepiota clypeolaria* (Bull.) Kummer, *L. alba* (Bres.) Sacc., *Lactarius tabidus* Fr., *Stropharia aurantiaca* (Cooke) P.D. Orton, *S. cyanea* (Bolt. ex Secr.) Tuomikoski, *Russula ionochlora* Romagn., *R. cyanoxantha* (Schaeff.) Fr., *R. grisea* (Pers. ex Secr.) Fr., *R. fellea* (Fr.) Fr., *R. alutacea* (Pers.) Fr.

*E. separata* Lundström - *Chroogomphus rutilus* (Sch.) O.K. Miller, 2M, 3F, emerged 12.xi.80, collected 30.x., Welborne, Norfolk [also from *Suillus bovinus* (L.) O. Kuntze, M, 4F, 20.ix.86, West Harling Woods, Norfolk by P. Withers]

*E. spinuligera* Lundström - *Panaeolus sphinctrinus* (Fr.) Qué., M, emerged vii.88, Denver, Norfolk; M emerged 12.vi.90, collected 1.vi.90, Rush Meadow, Dereham, Norfolk

*Cordyla brevicornis* (Staeger) - *Russula ionochlora* Romagn., MF, emerged 4.ix.88, collected 26.viii., Honingham, Norfolk; old *Boletus* species, emerged 21.ix.80, Bawdeswell Heath, Norfolk. [also from *Amanita muscaria* (L.) Hook. stipe by P. Withers]

*C. fusca* Meigen - [*Russula krombholzii* Shaffer, 3M, emerged 23.x.86, Wheatfen Broad, Norfolk (P. Withers)]

*Trichontia terminalis* (Walker) - *Peniophora incarnata* (Fr.) Karst., M 10F, 3.iii.89, Hockering Wood, Norfolk

*T. vita* (Meigen) - *Schizophora paradoxa* (Schrad.: Fr.) Donk., iii.73, Dumble Wood, Warwicks

*Phronia braueri* Dziedzicki - *Pluteus salicinus* (Pers.) Kummer, 2M F, emerged 3.vii.80, Lenwade Pits, Norfolk

*Dynatosoma fuscicorne* (Meigen) - *Daedalopsis confragosa* (Bolt) Schröt., 2M 4F, iv.84, Lenwade Pits, Norfolk [also from *Grifola frondosa* (Dicks.) Gray, 6M, 4F, collected 26.ix.86, emerged 21.x.86, Wheatfen Broad, Norfolk by P. Withers]

*Mycetophila britannica* Lastovka & Kidd - *Entoloma clypeatum* (L.) Kummer, *Russula fellea* (Fr.) Fr. (3 times)

*M. cingulum* Meigen - [*Polyporus squamosus* FR., many MF, 27.vii.85, near Jervaulx Abbey, N. Yorks., by P. Withers]. This species has been considered specific to *P. squamosus*, but I observed it assembling in numbers on *Grifola frondosa* (Dicks.) Gray at Padley Gorge, Derbyshire, 11.x.91.

*M. fraterna* Winnertz - *Physisporinus vitreus* (Pers. : Fr.) Donk, MF, emerged 2.xi.80, collected 30.x., Warren Wood, Norfolk (first rearing)

*M. fungorum* (DeGeer) - *Entoloma clypeatum* (L.) Kummer, *Armillaria mellea* (Vahl.) Kummer, *Inocybe godeyi* Gill., *Russula claroflava* Grove, *R. vesca* Fr., *R. pectinata* Fr., *R. alutacea* (Pers.) Fr. [also reared from *Suillus bovinus* (L.) O. Kuntze and *Chamaemyces fracidus* (Fr.) Donk by P. Withers]

*M. sp. near fungorum* (a common species recently recognised as distinct from *fungorum*) - *Xerocomus chrysenteron* (Bull.) Qué.

*M. fungorum* group (not determined to species) - from the following genera: *Lyophyllum*, *Russula*, *Pluteus*, *Boletus*, *Leccinum*, *Stropharia*, *Psathyrella*, *Amanita*, *Lactarius*, *Hebeloma*, *Lepiota*, *Exidia* and *Clavaria*

*M. ichneumonaea* Say - *Lactarius tabidus* Fr., MF, 20.ix.88, Hockering Wood, Norfolk; *Mycena pelianthina* (Fr.) Qué., 2M, 3F, 17.vi.87, emerged 29.vi; rotten *Pleurotus* species, 12.vii.88, Abington, Cambs. [also from *Gymnopilus junonius* (Fr.) P.D. Orton by P. Withers]

*M. luctuosa* Meigen - decaying agaric on beech trunk, x.83, West Harling Woods, Norfolk; *Lactarius rufus* (Scop.) Fr., 14.ix.87, MF emerged 19.ix.87, Holkham N.R., Norfolk; *Sebacina incrustans* (Pers. ex Fr.) Tul., 17.vi.85, Santon Downham, Norfolk

*M. lunata* Meigen - \**Coniophora puteana* (Schum.) Karst., M 3F, emerged 19.xi.75, Dumble Wood, Warwicks. (first rearing record)

*M. marginata* Winnertz - *Trametes versicolor* (L.) Pil., *Fistulina hepatica* (Schaeff.), \**Russula vesca* Fr., *Pleurotus ostreatus* (Jacq.) Kumm., \**Hebeloma crustuliniforme* (Bull.) Quéf.

*M. ocellus* Walker - *Coniophora puteana* (Schum.) Karst., \**Bjerkandera adusta* (Willd.) Karst., \**Stereum sanguinolentum* (Alb. & Schw.) Fr., \**Mycoacia uda* (Fr.) Donk, wood bearing \**Hypocrea rufa* (Pers.) Fr., \**Chroogomphus rutilus* (Schaeff.) O.K. Miller, \**Psathyrella candolleana* (Fr.) Maire, \**Amanita rubescens* Pers.

*M. ornata* Stephens - \**Chondrostereum purpureum* (Pers.) Pouzar, \**Polyporus squamosus* (Huds.) Fr., *Pleurotus* species

*M. signatoides* Dzierdzicki - deformed *Lactarius* species, probably \**quietus* (Fr.) Fr., \**Paxillus atromentosus* (Batsch.) Fr., \**Boletus luridus* Schaeff.

*M. tridentata* Lundström - [\**Laetiporus sulphureus* (Bull.) Murr., numerous MF, emerged 23.ix onwards, collected 20.ix.86, West Harling Common, Norfolk and *Inonotus cuticularis* (Bull. ex Fr.) Karst., 16.iv.89, Hickling Broad, Norfolk (P. Withers). I have also reared large numbers, emerging i-ii.92, from *L. sulphureus* collected at Windsor Great Park, Berks., 28.xii.91; cocoons were embedded within the dry fungus and adults had evidently already developed within some of these cocoons]

*Platurocypta testata* (Edwards) - *Lycogala epidendrum* L., *Tubifera ferruginosa* (Batsch.) J. Gmel.

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#### Two undescribed larvae of the genus *Jungiella* Vaillant (Diptera, Psychodidae) with a key to the known larvae

Rüdiger Wagner

#### Introduction

*Jungiella* Vaillant is one of the easiest to recognise genera of palaeartic Psychodidae. Adult males are as well characterised as the larvae. The basic features of males apparently are found in the genitalia. The dorsal apodemes of the gonocoxites form a "dorsal bridge". A Y-shaped, movable furca connects this "dorsal bridge" and the aedeagus apodeme. The apodeme is dorsoventrally flattened and also Y-shaped. Often, two movable and specifically shaped appendages are articulated to this apodeme. During opening and closing of the aedeagus, furca, apodeme and appendages change their positions and therefore may appear in a different shape or seemingly disappear when viewed dorsoventrally.

The small adults are mainly caught in the vicinity of streams (alder brook) and springs in early summer. Some taxa, however, apparently prefer moist places in damp peaty biotopes. In this special environment, the water is standing or flowing only slowly. The presence of decaying organic material, preferably packs of alder and willow leaves is necessary in localities where the *Jungiella* larvae are assumed to live. Hundreds of larvae may be extracted from half a square metre of organic material layer, coexisting with larvae of *Peripsychoda* Enderlein and *Panimeris* Eaton. Extracted *Jungiella* larvae can be separated from other genera by naked eye. They are comparatively small, dark and the setae are remarkably short, so that the larvae appear "naked" (i.e. without bristles) compared with