

SOME BIOLOGICAL NOTES ON BRITISH LESSER DUNG FLIES (DIPTERA, SPHAEROCERIDAE), WITH A LIST OF SPECIES KNOWN TO BE ATTRACTED TO FUNGI

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The recently published Handbook to the British species of this family (Pitkin, 1988) has permitted more confident determination especially of the Limosininae for which comprehensive genitalia figures are provided. While this included good coverage of biological information, the association of some species with fungi was not as fully treated as those associated with dung or carrion, although fungus associations were cited for 16 species. Records of 45 species which have been collected from fungi are given here. These include 16 species which have been reared from fungi, although only four of these have been reared in Britain.

Some notes on other habitats which augment the information given by Pitkin (1988) are also included as well as some data on little known species.

FUNGUS ASSOCIATIONS

A summary of information on this subject is given here, including previously unpublished data from my collection (P.J.C. in list). It is not expected that the list is complete but it is hoped that it will stimulate further observations. Several species reported from fungi elsewhere in Europe have not yet been found to have this relationship in Britain, but are included here to give some idea of the possibilities of further study. The identification of some species by Canzanelli (1941), however, must be regarded as dubious.

Most species involved are principally attracted to decaying rather than fresh fungi. Some may only be visiting as adults and single finds of adults on fungi may be fortuitous. However, several species are regularly found to be fungus feeders as larvae and some others may develop in fungi occasionally. None of the species listed appear to be confined to fungi or to have any monophagous association. Those species which have certainly been reared from fungi in Britain are marked *, those reared elsewhere are marked †.

Lotophila atra (Meigen)

On decaying fungi (Richards, 1930; Séguy, 1934; Papp, 1973; Roháček, 1989).

Borborillus vitripennis (Meigen)†

Ex *Boletus edulis* (Canzanelli, 1941).

Crumomyia nitida (Meigen)

On fungi (Richards, 1930; Hackman, 1965; Papp, 1973; Roháček, 1984); larvae in fungus (Macquart, 1835, believed by Roháček (pers. comm.), to be a misidentification, as he considers this species only occurs accidentally on fungi).

Crumomyia fimetaria (Meigen)†

On decaying fungi (Richards, 1930; Séguy, 1934; Duda, 1938; Papp, 1973; Roháček, 1980; Norrbom & Kim, 1985; Pitkin, 1988); on *Boletus*, *Armillaria*, *Meripilus* (P.J.C.); ex *Pyronema*, *Gyromitra*, *Morchella* (Papp, 1979); ex fungus-impregnated wood (Richards, 1934).

Crumomyia roserii (Rondani)*

Common on decaying fungi (Richards, 1930; Séguy, 1934; Duda, 1938; Pitkin, 1988); on *Phallus* (Smith, 1956); on *Armillaria mellea* and reared from it, Kent, Hosey Common, 29.x.1968, emerged 28–29.xi.68 (P.J.C.).

Crumomyia notabilis (Collin)

Holotype taken on fungi (Collin, 1902; cited by Roháček, 1976 and Pitkin, 1988); rotting *Boletus* species (Hackman, 1965; cited by Norrbom & Kim, 1985).

Ischiolepta pusilla (Fallén)†

Ex compost for cultivated mushrooms (Austin, 1937); on *Polyporus squamosus* (P.J.C.); ex *Coprinus atramentarius* (Papp, 1972); ex *Leccinum* (Papp, 1979).

Sphaerocera monilis Haliday†

Ex decaying fungi (Duda, 1920, 1938; Canzanelli, 1941); on decaying fungi (Richards, 1930; Papp, 1973; Roháček, 1980 and eight unpublished records); fungus on beech (Pitkin, 1988).

Sphaerocera curvipes Latreille

Decaying fungi (Roháček, 1984); rotting tree fungi and *Polyporus squamosus* (Roháček, pers. comm.).

Apteromyia claviventris (Strobl)*

Ex *Chondrostereum*, on *Pleurotus* (Chandler, 1973); ex *Inonotus hispidus*, *Boletus versipellis*, *Piptoporus betulinus*, *Bjerkandera adusta*, *Meripilus giganteus*, rotten *Polyporus squamosus*, *Lactarius turpis* (P.J.C.); ex *Suillus*, *Leccinum*, *Boletus*, *Gyromitra* (Papp, 1979; cited by Pitkin, 1988); ex *Lyophyllum fumosus*, *Russula vinosa*, *Lactarius deliciosus* group, *L. flexuosus*, *L. trivialis* (Hackman & Meinander, 1979). A frequent fungus feeder (also reported from fungi by Papp, 1973; Roháček, 1983, 1984; Marshall & Brown, 1984).

Chaetopodella scutellaris (Haliday)

On decaying fungi (Roháček, 1984); a series on *Coprinus micaceus*, Kent, Bromley, 11.ix.1971 (P.J.C.).

Coproica ferruginata (Stenhammar)

Ex many agarics and boleti (Canzanelli, 1941; not confirmed from other data and considered very dubious by Roháček, pers. comm.).

Coproica hirticula Collin

On decaying fungi (Roháček, 1984).

Coproica vagans (Haliday)

One male on decaying fungi (Roháček, pers. comm., who considers that *Coproica* are not true fungus feeders).

Gigalimosina flaviceps (Zetterstedt)

On decaying fungi (Roháček, 1983, 1984; Kuznetzova, 1987; cited by Pitkin, 1988).

Halidayina spinipennis (Haliday)†

Four reared from decaying tree fungi (Roháček, pers. comm.); on fungi (Roháček, 1983).

Kimosina plumosula (Rondani)

Visiting *Phallus* in Finland (Smith, 1956).

Leptocera fontinalis (Fallén)

On fungi (Haliday, 1836); on *Pholiota squarrosa* (P.J.C.).

Limosina silvatica (Meigen)

On decaying fungi (Haliday, 1836; Richards, 1930).

Minilimosina fungicola (Haliday)†

The types were collected on fungi (Haliday, 1836) but Collin (1956) found that three species had been confused under the name by Haliday, the others being *M. vitripennis* (Zetterstedt) and *M. v-atrum* (Villeneuve). More recently, Roháček (1981) found that most authors had confused *parvula* (Stenhammar) with *fungicola* and (1984) he considered *parvula* to be commonly associated with fungi while *fungicola* was only occasionally found on fungi. Kuznetzova (1986) reared one male

from *Lactarius mitissimus*. The rearings from ten genera of fungi reported for *fungicola* by Papp (1979), from *Leccinum* and *Lyophyllum* by Hackman & Meinander (1979) and that from *Boletus* by Canzanelli (1941) presumably require confirmation.

Minilimosina parvula (Stenhammar)†

Found on decayed fungi of the genera *Lactarius*, *Russula*, *Amanita*, *Phallus* and *Pleurotus* (Roháček, 1983) and reared from decaying fungi (Roháček, 1981, 1984).

Minilimosina splendens (Duda)

On decaying fungi (Papp, 1973; Roháček, 1977a, 1983; Pitkin, 1988); decayed *Lactarius*, *Leccinum* (Roháček, pers. comm.).

Opalimosina liliputana (Rondani)

On decaying fungi (Richards, 1930; Roháček, 1983, 1984; Marshall & Brown, 1984; Pitkin, 1988); on *Polyporus squamosus*, *Russula*, *Lactarius* species (Roháček, pers. comm.).

Opalimosina collini (Richards)

Two records from decaying tree fungi (Roháček, pers. comm., surprising for a coprophilous species).

Opalimosina czernyi (Duda)†

On *Hypholoma fasciculare* (Duda, 1938); on *Russula*, *Lactarius* and *Pleurotus ostreatus* (Roháček, 1983); predominantly fungivorous (Pitkin, 1988).

Opalimosina denticulata (Duda)

Two females on decaying tree fungi (Roháček, pers. comm.).

Opalimosina mirabilis (Collin)

On decaying fungi, especially tree fungi (Roháček, 1983 and pers. comm.).

Opalimosina simplex (Richards)

Two records from decaying tree fungi (Roháček, pers. comm.).

Paralimosina fucata (Rondani)

On *Phallus*, *Russula* (Roháček, 1977b); on fungi (Roháček, 1983, 1984; Pitkin, 1988).

Pullimosina heteroneura (Haliday)*

Larvae infesting cultivated mushrooms (Austin, 1937; Marshall, 1986; Marshall & Brown, 1984); ex *Leccinum scabrum* group (Hackman & Meinander, 1979).

Pullimosina moesta (Villeneuve)

Often common on fungi (Richards, 1930; this record may represent *P. antennata* (Duda) of Pitkin, 1988 according to Pitkin (pers. comm.)); on decaying fungi (Roháček, 1975, 1983).

Puncticorpus cribratum (Villeneuve)†

Ex *Gyroporus*, *Oudemansiella*, *Psathyrella*, *Cortinarius*, *Russula* (Papp, 1972; cited by Roháček, 1974, Pitkin, 1988 and Roháček & Marshall, 1982); on decaying fungi (Séguy, 1934).

Spelobia cambrica (Richards)

On decaying fungi (Roháček, 1983, 1984; Pitkin, 1988); decayed *Lactarius* species, *L. piperatus*, various tree fungi (many records, Roháček, pers. comm.); on *Meripilus giganteus*, Ireland, Wicklow, Avondale Forest Park, 4.x.1980 (P.J.C.).

Spelobia clunipes (Meigen)

Rarely on fungi (Haliday, 1836; Roháček, 1983; cited by Pitkin, 1988); on fungus (Richards, 1930); traps baited with decayed fungus (Marshall & Brown, 1984).

Ex many agarics and boleti (Canzanelli, 1941, refers to rearings by Dufour under the name *lugubris* Dufour nec Zetterstedt; this is more likely to refer to *parapusio* (Dahl) as there is no other evidence that the very common species *clunipes* is a fungus feeder).

Spelobia luteilabris (Rondani)†

Ex *Leccinum scabrum* group (Hackman & Meinander, 1979); on *Meripilus giganteus* and *Armillaria mellea* (P.J.C.).

Spelobia palmata (Richards)

Sometimes found on fungi (Richards, 1930; probably a misidentification according to Pitkin (pers. comm.) as there are no specimens of *palmata* in Richards's collection); decayed fungi (Roháček, 1983); tree fungus (Coe, 1962); decayed *Lactarius*, *Lentinus*, *Phallus*, tree fungi (Roháček, pers. comm.).

Spelobia parapusio (Dahl)*

This is the most frequent fungus feeder in the family in Britain; the rarity of males has been noted by Richards (1930), Papp (1972), Roháček (1983) and Pitkin (1988). Okely (1974) found that it could be parthenogenetic and she reared no males from her cultures. However, I have found males visiting *Meripilus* and *Hypholoma* and have reared both sexes in smaller proportions from *Pholiota* and *Russula*, so further study to establish the conditions influencing parthenogenesis is required. On fungi (Séguy, 1934; Duda, 1938; Papp, 1973; Roháček 1983); abundantly reared from fungi (Richards, 1930); ex decaying fungi (Canzanelli, 1941); ex *Phallus* (Smith, 1956); ex *Russula ochroleuca* (Buxton, 1960); ex nine species of fungi (Papp, 1972); on *Pleurotus cornucopiae* (Chandler, 1973); ex fungi (Okely, 1974); ex *Russula*, *Gyromitra* (Papp, 1979); ex *Leccinum scabrum* group, *Gomphidius roseus*, *Tricholoma album*, *Amanita rubescens*, *Agaricus campestris*, *Cortinarius triumphans*, *Russula flava*, *Lactarius trivialis*, *L. rufus* (Hackman & Meinander, 1979); ex *Russula ochroleuca* (Kuznetzova, 1986); ex *Russula emetica*, *Pholiota squarrosa* and adults on *Armillaria mellea*, *Mycena* species, *Pleurotus ostreatus* (three localities), *Meripilus giganteus*, rotten *Polyporus squamosus* and rotten *Hypholoma fasciculare* (P.J.C.).

Spelobia rufilabris (Stenhammar)

On *Meripilus giganteus* (P.J.C.).

Telomerina flavipes (Meigen)†

On fungi (Papp, 1973); ex fungi (Duda, 1938); ex *Boletus edulis* (Bonnamour, 1926, as *minutissima* Zetterstedt); ex *Coprinus atramentarius* (Papp, 1972); on decaying tree fungi and *Lactarius piperatus* (Roháček, pers. comm.).

Telomerina pseudoleucoptera (Duda)

On decaying fungi (Roháček, 1984).

Terrilimosina schmitzi (Duda)†

Ex *Ramaria*, *Lactarius*, *Leccinum* (Papp, 1979); male on *Pleurotus* on an elm stump, Surrey, Runnymede, 10.viii.1985 (P.J.C.).

Trachyopella coprina (Duda)

Rotting toadstools (Pitkin, 1988).

Trachyopella lineafrons (Spuler)

Rarely on rotting fungi (Roháček & Marshall, 1986).

Trachyopella melania (Haliday)

Male on *Agaricus* species, Bucks, Old Slade, woods, 3.vii.1977 (P.J.C.).

Xenolimosina setaria (Villeneuve)

On fungi in Hereford (Richards, 1930); on *Hypholoma fasciculare* (Duda, 1938); decaying fungi (Pitkin, 1988); male on rotting *Meripilus giganteus*, Kent, Chislehurst, Pond Wood, 28.x.1973 (P.J.C.).

OTHER HABITAT ASSOCIATIONS

Apteromyia claviventris (Strobl)

Adults were found in bird's nests and a squirrel's drey at Leckford, Hants., iii.1972 (P.J.C.).

Coproica pusio (Zetterstedt)

Male on a dead fox, Kent, Leaves Green, 14.ii.1971 (P.J.C.). New record for Kent.

Leptocera caenosa Rondani

I have found this species in wet decomposing materials in flour mills and bakeries in Essex, Bucks, Northants and Northern Ireland, Belfast, mainly indoors but it can be numerous outside in drainage systems conveying warm effluent. I also have outdoor records from Hook Farm, Bromley, Kent, 6.i.1964, on decomposing vegetables and from Burnham Beeches, Bucks, 1.vii.1967 (P.J.C.). New record for Northants.

Minilimosina fungicola (Haliday)

Two males on damp bonfire ash with *Trachyopella melania* (Haliday) (q.v.), Kent, Cuckoo Wood, 23.vii.1972 (P.J.C.).

Spelobia cambrica (Richards)

Both sexes were found on a dead sheep at Kenna Craig, Argyllshire, 11.vii.1974 (P.J.C.). New record for Argyll.

Telomerina flavipes (Meigen)

Males have been found on a dead rabbit in Durham, on a dead sheep on sand dunes in Sutherland and in decomposing waste material at a bakery in Basildon, Essex, 14.ix.1986 (P.J.C.). New record for Essex.

Telomerina pseudoleucoptera (Duda)

Both sexes were reared from cow dung at Leckford, Hants., 2.x.1971, adults emerging 10–12.xii.1971 (P.J.C.). New record for Hants.

Trachyopella lineafrons (Spuler)

A male was found in a drain conveying effluent from a factory at Corby, Northants., 9.iii.1989 together with numerous *Leptocera caenosa* (P.J.C.). New record for Northants.

Trachyopella melania (Haliday)

Both sexes were found on damp bonfire ashes at Cuckoo Wood, Kent, 23.vii.1972 and a female in bonfire smoke at East Tisted, Hants., 28.viii.1972 (P.J.C.). New records for Kent and Hants.

OTHER NEW RECORDS OF THE LESS WELL KNOWN SPECIES

Gigalimosina flaviceps (Zetterstedt)

A distinctive species, swept in woods in Scotland (Inverness), Ireland (Wicklow), Bucks, and Kent (P.J.C.). New records for Kent, Bucks and Ireland. Roháček (1980) found it not rare on decayed wet leaves in Czechoslovakia.

Kimosina plumosula (Rondani)

Males from three old woodland localities: Kent, Knole Park, 6.ix.1966, around a fungus encrusted log; Berks., Windsor Forest, 27.vi.1977; Bucks., Cliveden, 3.vii.1984, on log pile (P.J.C.). New records for Berks and Bucks.

Leptocera finalis (Collin)

Male in saltmarsh in Ireland, Sligo, Ballysadare Bay, 13.v.1970 (P.J.C.). New record for Ireland.

Minilimosina v-atrum (Villeneuve)

Seen from several localities in Scotland (Inverness, Ross, Sutherland), and Ireland (Offaly, Kildare), both from woodland and marsh habitats. New records for Ross, Sutherland and Ireland.

- Opacifrons septentrionalis* Stenhammar
Both sexes from the banks of the Spey at Aviemore, Inverness, 13.vi.1982 (P.J.C.).
- Spelobia talparum* (Richards)
Male on sand dunes at Strathy Bay, Sutherland, 2.viii.1972 (P.J.C.). New record for Sutherland.
- Terrilimosina schmitzi* (Duda)
Male from Hants., Brockenhurst, by the Oberwater stream, 4.vi.1982 (P.J.C.). New record for Hants.
- Xenolimosina setaria* (Villeneuve)
Female from Kent, Knole Park, 12.xi.1967 (P.J.C.). New record for Kent.

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