

## Fungus gnats (*Diptera: Mycetophilidae* and *Keroplastidae*) reared from grass and sedge tussocks in the Czech Republic

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Fungus gnats (*Diptera: Mycetophilidae* and *Keroplastidae*) reared from grass and sedge tussocks in the Czech Republic – Čas. Slez. Muz. Opava (A), 57: 175-178, 2008.

**Abstract:** Five species of *Mycetophilidae* and two species of *Keroplastidae* have been reared from tussocks of 5 species of grasses and sedges (*Glyceria maxima*, *Calamagrostis epigejos*, *Carex brizoides*, *Carex remota* and *Scirpus sylvaticus*). Two species of *Mycetophilidae* (*Leia arsona* Hutson, 1978 and *Mycomya britteni* Kidd, 1955) are recorded as new for the Czech Republic.

**Key words:** *Mycetophilidae* & *Keroplastidae* spp., host plant association, Czech Republic

### Introduction

Fungus gnats (*Diptera: Mycetophilidae* and *Keroplastidae*) are generally considered to be associated with fungi – many species have been reared from larvae found in various groups of fungi and from *Myxomycetes* (Søli et al. 2000; Jakovlev 1994; Ševčík 2006). For most species of *Keroplastidae*, larvae are presumed to be predaceous and numerous species of fungus gnats are associated with rotting wood. A few species have been reared from the nests of birds, e.g. *Docosia fumosa* Edwards, 1925 (see Rulik & Kallweit 2006). Larvae of *Leia arsona* Hutson, 1978 have been recorded as feeding on stored root-ginger (Hutson 1978) and found in the funnel of a bromeliad (Chandler 1994). In this contribution, new rearing records from plant material are presented.

### Material and methods

A total of 153 specimens of fungus gnats were obtained during breeding experiments within the study of host plant associations of *Anthomyzidae* and other acalyprate *Diptera* (JR). They were identified by JŠ and deposited in his private collection and in the collection of the Silesian Museum in Opava.

Breeding method: individual (one-species) samples = tussocks of grasses and sedges (species listed below) including a root ball with soil (about 25 x 25 cm) were placed (single plant species per box) in plastic breeding boxes (Fig. 3) equipped with a collecting head of similar construction to that used in Malaise traps and containing a 0.51 PE bottle filled with 75% ethanol in which all emerged insects were caught, killed and preserved. The reared material was emptied at monthly intervals.

Fungus gnats have been reared from tussocks of 5 monocot species: two spp. of grasses (*Poaceae*) – *Glyceria maxima* (Hartman) Holmberg and *Calamagrostis epigejos* (L.) Roth, and three spp. of sedges (*Cyperaceae*) – *Carex brizoides* L., *Carex remota* Forselles and *Scirpus sylvaticus* L.

Samples of these plants were collected in two localities covering three habitats:

(1) Czech Republic: Silesia: Polanka nad Odrou, Přemyšov Nature Reserve, 49°47'24"N 18°11'23"N, 212m, boggy (fen) meadow (Fig. 1), 10.vii.2008 (samples of *Glyceria maxima* and *Scirpus sylvaticus*); the same locality, 214m, partly inundated alder (*Alnus*) forest (Fig. 4), 10.vii.2008 (samples of *Carex brizoides* and *Carex remota*).

(2) Czech Republic: Silesia: Karviná-Doly, Mokroš pond, 49°49'17"N 18°29'35"E, 256m, partly forested and boggy pond shore, 29.vii.2008 (sample of *Calamagrostis epigejos*).

The records are given in the following order: locality, collecting date/ emerging date, number of males/ number of females, grass or sedge species.

## Survey of species

### Mycetophilidae

*Mycomya britteni* Kidd, 1955

Material examined: Loc. 1, 10.7.2008/10.7.-19.8.2008, 1/1, ex *Carex remota*; Loc. 1, 10.7.2008/10.7.-19.8.2008, 0/1, ex *Carex brizoides*.

A rare species, hitherto recorded only from Great Britain (where it has been recorded mostly by trapping at wetland sites) and Finland, but possibly identical with the very similar Nearctic *Mycomya marginalis* Johannsen, 1910. Its biology has not yet been recorded. New species for the Czech Republic.

*Mycomya marginata* (Meigen, 1818)

Material examined: Loc. 2, 29.7.2008/29.7.-26.8.2008, 1/0, ex *Calamagrostis epigejos*.

A common Palaearctic species. The larvae are known to feed on the surface on various wood-decaying fungi, so in this case its occurrence in the grass tussock was probably only accidental.

*Acnemia nitidicollis* (Meigen, 1818)

Material examined: Loc. 2, 29.7.2008/29.7.-26.8.2008, 3/3, 27.8.-26.9.2008, 1/1, ex *Calamagrostis epigejos*.

Although this is a very common Palaearctic species, the biology of larvae has not been reliably documented, except for accidental rearing from *Leccinum* boletes (Jakovlev 1994). Our findings suggest possible association of larvae with rotting plant material.

*Leia arsona* Hutson, 1978

Material examined: Loc. 1, 10.7.2008/10.7.-19.8.2008, 0/1, 20.8.-19.9.2008, 6/8, 20.9.-24.10.2008, 60/62, ex *Glyceria maxima* (Fig. 2).

A mainly Mediterranean species with possible Afrotropical or Neotropical origin, usually considered as introduced in other parts of its range (Hutson 1978, Chandler 1994, Chandler & Ribeiro 1995, Chandler & Gatt 2000). It was recorded to develop in rotting Brazilian root ginger (*Zingiber* sp.) imported to a warehouse previously used for banana ripening in London (Hutson 1978). Burger et al. (1984) found larvae in fungal mycelium between rotting leaves of cultivated *Gerbera* (*Asteraceae*) in the Netherlands. Halstead (2004) recorded it in a house in England in association with decayed bulb scales of a potted cultivar of *Hippeastrum* (*Amaryllidaceae*), imported from the Netherlands. Recently it has been found to be well established in nurseries in the Netherlands in association with *Peperomia* (*Piperaceae*) as well as *Gerbera* (Chandler & Pijnakker in press). In Israel, the larvae were found in a damp funnel of the bromeliad *Neoregelia carolinae* (see Chandler 1994). Also recorded externally from Switzerland by Chandler (1998) and from the Channel Islands (Jersey) by Chandler & Ribeiro (1995). Rearing of long series from a tussock of *Glyceria maxima* (Fig. 2) is highly interesting. As the Czech locality is a relatively well-preserved natural wetland, the origin of this population of *Leia arsona* remains unclear. It is the northernmost external finding of this species and the first record from the Czech Republic.

*Phronia taczanovskyi* Dziedzicki, 1889

Material examined: Loc. 2, 29.7.2008/29.7.-26.8.2008, 1/0, ex *Calamagrostis epigejos*.

A rather rare Holarctic species, known from several localities in the Czech Republic. The biology of larvae has not yet been reported.

### Keroplastidae

*Macrocera fascipennis* Staeger, 1840

Material examined: Loc. 1, 10.7.2008/10.7.-19.8.2008, 1/0, ex *Scirpus sylvaticus*.

A rare European species, within the Czech Republic hitherto known only from three localities

in southern Moravia (Ševčík & Martinovský 1999, Ševčík et al. 2005). The biology of larvae is unknown.

### *Macrocera stigmoides* Edwards, 1925

Material examined: Loc. 1, 10.7.2008/10.7.-19.8.2008, 1/0, 20.8.-19.9.2008, 1/0, ex *Carex brizoides*.

A rather common species, reported from several localities in the Czech Republic, mainly from wetland habitats, such as floodplain forests. Its biology has not yet been reported but larvae of some other members of the genus develop on the surface or under bark of rotting wood.

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### **Bedlobytky (*Diptera: Mycetophilidae* a *Keroplatidae*) vypěstované z trsů trav a šáchorovitých rostlin v České republice**

Pět druhů čeledi *Mycetophilidae* a dva druhy čeledi *Keroplatidae* byly vychovány z trsů 5 druhů trav, ostříc a skřípín (*Glyceria maxima*, *Calamagrostis epigejos*, *Carex brizoides*, *Carex remota* and *Scirpus sylvaticus*). Dva druhy čeledi *Mycetophilidae* (*Leia arsona* Hutson, 1977 a *Mycomya britteni* Kidd, 1955) jsou zaznamenány jako nové pro Českou republiku.

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Figs 1-4: 1 – boggy meadow in Přemyšov Nature Reserve; 2 – *Glyceria maxima*, same locality; 3 – equipment for breeding flies from plant tussocks; 4 – inundated alder forest in Přemyšov Nature Reserve. Photo by J. Roháček.