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Acomopterella martinovskyi sp. n., the first Palaearctic record of the genus *Acomopterella* Zaitzev (Diptera: Mycetophilidae)

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Abstract

A new species of Mycetophilidae (Diptera), *Acomopterella martinovskyi* **sp. n.**, is described from the Czech Republic and Austria. This is the first record of the genus from the Palaearctic region. Its relationships with other genera and variation in wing characters are briefly discussed. A new combination and synonymy is proposed: *Acomopterella fallax* (Sherman, 1921) comb.n. = *Acomopterella arnaudi* Zaitzev, 1989 syn.n.

Key words: Sciaroidea, fungus gnats, new species, Austria, Czech Republic, Europe

Introduction

The genus *Acomopterella* Zaitzev, 1989 was established for a single Nearctic species, *A. arnaudi*, described on the basis of three males collected in Alaska and Canada (Zaitzev 1989).

Studying unnamed fungus gnats in the Natural History Museum, London, and in the private collection of the late Czech dipterist J. Martinovský, we found an undescribed species, which may be assigned to this genus. The new species is described in this contribution and its systematic position is briefly discussed.

Material and methods

The material of the new species was collected either by sweep-netting or by means of Malaise traps in mixed submontane and montane forests. A total of 11 males and 1 female have been examined. Most specimens are pinned with cleared terminalia placed in a microvial with glycerol, several specimens are in ethanol.

The specimens are deposited in the collections with following abbreviations: BMNH = Natural History Museum, London, Great Britain; CNC = Canadian National Collection, Ottawa, Canada; JŠ = Collection of Jan Ševčík; SMOC = Silesian Museum, Opava, Czech Republic.

The morphological terminology principally follows Søli (1997). The measurements were taken from the specimens stored in ethanol.

Systematic account

Acomopterella martinovskyi sp. n.

Type material. Holotype male: CZECH REPUBLIC, Moravia & Silesia, Horní Lipová, Jesenný potok

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brook, 650 m, 8.7.1975, J. Martinovský leg. (SMOC, pinned).

Paratypes: CZECH REPUBLIC, Bohemia: Krkonoše Mts., Liščí hora, 1300 ♂, 26.7.-23.8.2003, 1 ♂, Krkonoše Mts., Medvědín, 1300 ♂, 27.7.-28.8.2003, 2 ♂♂ all M. Barták leg., Šumava Mts., Nová Hůrka, peat-bog, 880 ♂, 16.6.-22.7.1999, 1 ♂, M. Barták & Š. Kubík leg., Jizerské hory Mts., Mt. Poledník, 830 ♂, 14.7.-30.7.2004, 1♂, J. Preisler & P. Vonička leg. (all Malaise traps material, coll. JŠ, in ethanol); Moravia & Silesia: Horní Lipová, Jesenný potok brook, 650 ♂, 8.7.1975, 4 ♂♂, J. Martinovský leg., Vápenná - Polka, 800 ♂, 16.7.1975, 1 ♀, J. Martinovský leg. (JŠ, pinned).

AUSTRIA, Tyrol: Obergurgl, Pirchhüttberg, 1850 ♂, 6-7.8.1973, Malaise trap, A.C. & B. Pont leg. (BMNH, pinned; one wing and cleared abdomen and head mounted separately in dimethylhydantoin-formaldehyde, DMHF).

Diagnostic characters. A relatively large grey-brownish gnat (Fig. 9). All three ocelli in one line, lateral ocelli separated from the eye margin for a distance of about 1.7 times their diameter. Mesonotum and scutellum with long bristles, mediotergite and all lateral sclerites bare. Wings only with microtrichia, irregularly arranged. Sc long, entirely bare, ending in R1 just before base of ta. Vein ta long, nearly horizontal, subequal in length to the stem of M-fork. R4 present, forming short trapezium-shaped R-cell. The basal portion of CuA1 reduced, but sometimes traceable as a fold line ending in the point of junction of CuA with tb. Mid tibia with a small but traceable sensory organ.

Description. Male. Body length 6.5 mm. General coloration dark brownish grey, legs brownish yellow.

Head. Dark brown, almost as high as wide. Postgena with normal setae, irregularly arranged, its median convexity well developed. Three ocelli, all in one line. Lateral ocellus (0.042 mm in diameter) larger than the median one (0.028 mm in diameter), the former separated from the eye margin for a distance of about 1.7 times their diameter. Compound eyes shortly pubescent. Frons bare, anteriorly prolonged into a triangular frontal tubercle. No cleft between median or lateral ocellus and eye. Face bare. Clypeus setose, apically pointed, separated from face. Length of antenna 3.6 mm, length of flagellum 3.3 mm. Scape dark brown, slightly wider than long. Pedicel light brown, almost twice as wide as long, especially its apical part, which is prolonged backwards, darker and bearing several dark setae. Flagellum dark brown (except the first flagellomere), cylindrical, tapering towards apex, with 14 flagellomeres densely covered with setae, slightly longer than the flagellar diameter. The first flagellomere (=F1) yellowish brown, basally yellow. Length of F1 is 0.31 mm, relative lengths of flagellomeres 1 to 14: 1; 0.86; 0.86; 0.82; 0.82; 0.77; 0.73; 0.68; 0.68; 0.68; 0.64; 0.59; 0.59; 0.73. The apical flagellomere (= F14) relatively long (0.22 mm) and tapered. Ratio of length to width for F7 is 4.0, that for F14 is 5.3.

Mouthparts and palpi light brown. Palpus with 5 palpomeres, covered with setae. Second palpomere (= P2) very short but separated from basal palpomere (= P1). Lacinia narrow, as long as P1. Stipes separated. Sensilla on third palpomere not traceable. Palpomere 5 (apical) longer than the other palpomeres together, 5 times as long as wide, apically slightly bevelled. Relative lengths of palpomeres 1 to 5: 1; 0.5; 2; 4; 8.

Thorax. Mesonotum dark brown, grey dusted, with long acrostichal, dorsocentral and lateral bristles (longer than scutellum). Scutellum dark brown, with several short and two long apical bristles, the latter being about twice as long as scutellum. Mediotergite, laterotergite, anepisternum and preepisternum 2 bare, grey dusted, dark brown. Proepisternum with 2-3 and antepronotum with 4-6 long dark setae. Haltere brownish yellow, covered with pale setae, as long as the second abdominal tergite (0.8 mm).

Wings (Fig. 10). Hyaline, unmarked, membrane densely covered with microtrichia, without macrotrichia. Wing length 4.6-5.3 mm (n=6). Ratio of length to width 2.86. Costa produced beyond R5 to one third of the distance of the tips of R5 and M1. Costa and R1 entirely covered with macrotrichia. Sc long, entirely bare, ending in R1 just before base of ta, but well behind the visible proximal end of CuA1. The total wing length to the length of R1 is 1.18. The length of R1 to the length of Sc is 2.25. R4 present (bare), forming with Rs (also bare) a R-cell, which is about twice as long as high (but its length variable even within one specimen). The shape of the R-cell is trapezoidal (broader in front). Vein R5 is slightly turned down, covered with macrotri-

chia. Crossvein ta relatively long (almost as long as the stem of M), nearly horizontal, with macrotrichia only on distal two thirds. Vein tb horizontal, bare. The length of M-stem to the length of M1 is 0.28, that to the length of M2 is 0.34. Both M1 and M2 with macrotrichia except on their curved base. Stem of M bare. The basal portion of CuA1 is reduced, but in several specimens (including the holotype) traceable as a more or less distinct fold line ending in the point of junction of CuA with tb. The fully visible part of CuA1 is covered by macrotrichia and starts well basad of the distal end of Sc. CuA and CuA2 with macrotrichia. CuP thin but distinct, shorter than A1. A1 fully distinct, with several macrotrichia apically, reaching slightly behind the level of the end of Sc, but basad to the base of ta. Alula with long setae along its margin.

Legs. Yellowish, covered with dark trichia and setae. All coxae with a longitudinal row of long black setae, c1 and c2 anterolaterally and c3 posterolaterally, the longest setae are on c3, slightly longer than the width of coxa. All trochanters with a black spot ventrally. Femora laterally compressed and thickened medially, clothed with numerous dark trichia and with a row of longer pale setae along ventral edge. All tibiae with numerous small trichia and dark setae about as long as tibial diameter. The apex of the fore tibia with a poorly developed anteroapical depressed area (Fig. 11). Mid-tibia in its basal fifth with a small sensory organ in the form of an indistinct swollen pit (more distinct in *Acomopterella fallax*, see fig. 12). One spur on fore tibia, two spurs of subequal length on both mid and hind tibia. The length of spur to the length of the first tarsomere for legs 1–3: 0.09; 0.18; 0.25. Relative lengths of coxa, femur (including trochanter), tibia and tarsus for legs 1–3: 1:1.84:2.32:4.76; 1:1.75:2.53:3.63; 1:2.81:3.69:4.05. Length of tarsus 1 to 3: 4.40 mm, 3.63 mm, 3.65 mm. Length of tarsomere 1 for legs 1 to 3: 2.28 mm, 1.90 mm, 2.00 mm. Relative lengths of tarsomere 1 to 5 for legs 1–3: 1:0.39:0.24:0.15:0.11; 1:0.36:0.24:0.16:0.12; 1:0.31:0.21:0.15:0.11. Empodium present, tarsal claws with subbasal tooth.

Abdomen. Dark brown, all tergites and sternites covered with long pale setae. Total length of abdomen (including terminalia) 4.6 mm. Length of T1 is 0.43 mm. Relative lengths of tergites 1 to 8: 1:1.88:1.94:1.76:1.76:1.29:0.94:0.12. Sternites 2 to 6 with a more or less distinct medial longitudinal concave fold.

Terminalia. (Figs 1–6). Brown. Length of terminalia 0.7 mm. Tergite 9 short (Fig. 1), twice as broad as long, bearing peculiar oval appendages directed inwards (tergite 10?), which are covered with very dense fine setae. Cerci relatively small, hidden behind T10. Sternite 8 as long as S7, narrower, subrectangular. Gonocoxites basally fused, but caudally well separated, forming incision almost as wide as one gonocoxite (Fig. 3). Aedeagal complex (Fig. 6) with tapered s-shaped parameres. Gonostylus 0.4 times as long as gonocoxite, with a finger-like processus apically (Figs 4–5).

Female. Similar to male. Length of wing 5.4 mm. Terminalia as in Figs 7 and 8. Gonocoxites 8 basally fused, forming a strongly sclerotized triangular incision caudally. Tergite 10 narrow (not seen in fig. 7). Sternite 10 rounded caudally in ventral view (Fig. 8). Cercus I subrectangular, cercus II missing on the only female specimen examined and thus not figured.

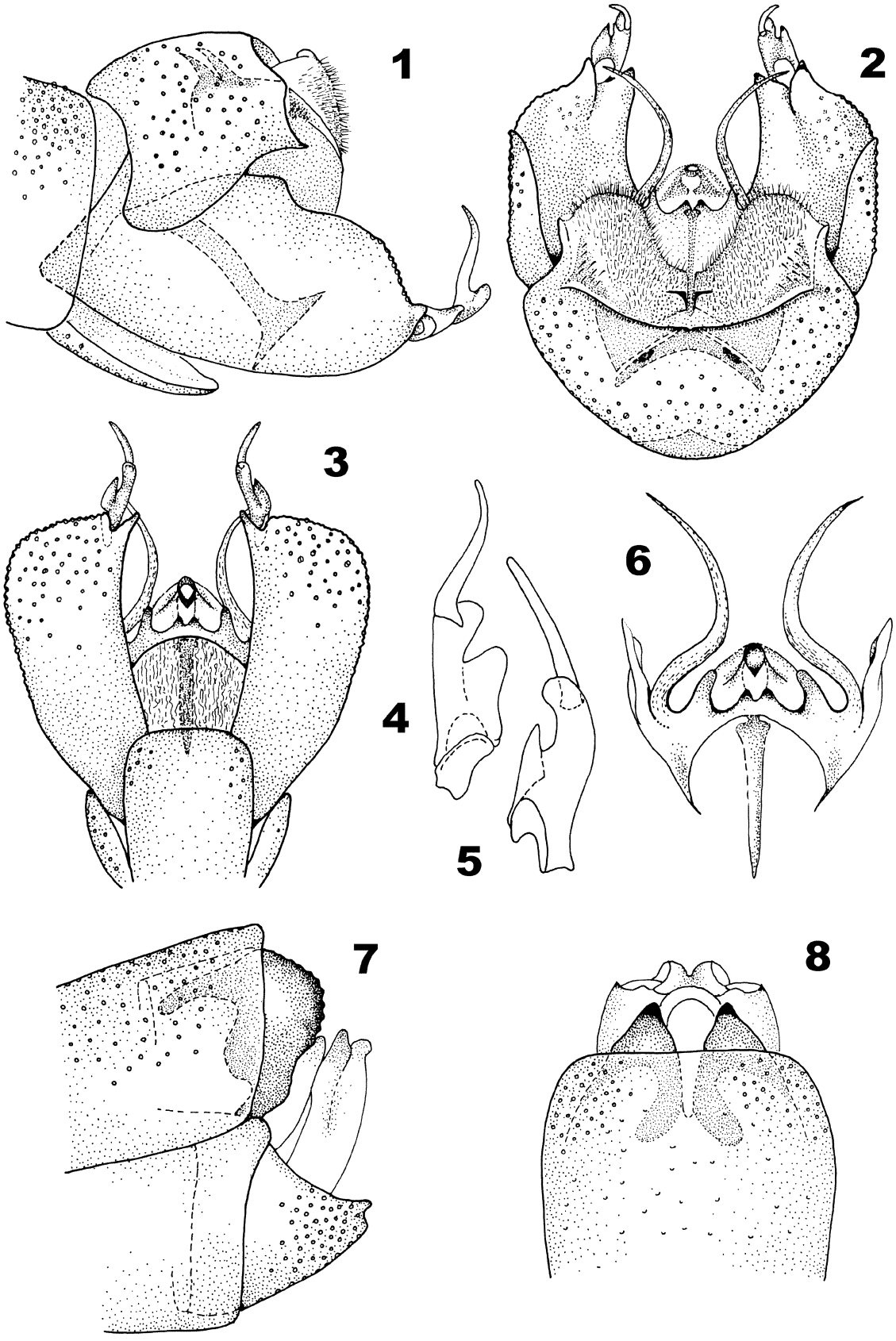
Biology. Almost unknown. The Czech adults were collected from the second half of June to July in submontane and montane mixed forests (mainly *Picea abies, Fagus sylvatica*) and in mountain peat-bogs.

Etymology. This species is named in honour of the late Czech specialist on nematoceran flies, Dr. Jaroslav Martinovský (1939–2001), who recognized it as new more than 30 years ago.

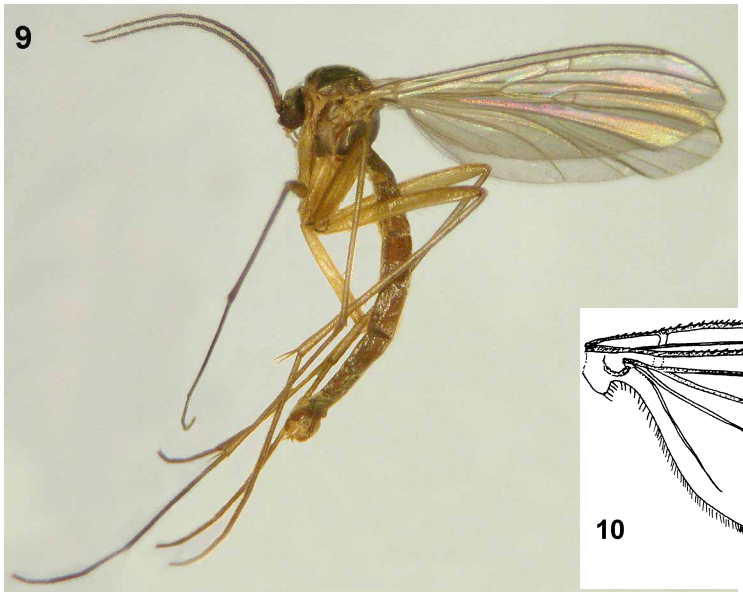
Comments. The new species differs from the Nearctic *A. fallax* mainly by the structure of the male terminalia. Although many of the wing characters are variable in this group, the basal interruption of CuA1 is typical for the new species and in some specimens this vein is traceable towards the base of wing.

***Acomopterella fallax* (Sherman, 1921) comb. n.**

Tetragoneura fallax Sherman, 1921
Acomopterella arnaudi Zaitzev, 1989 **syn. n.**



FIGURES 1–6. *Acomopterella martinovskyi* **sp. n.**, male terminalia (1—lateral view, 2—dorsal view, 3—ventral view, 4—dorsal view of left gonostylus, 5—ventral view of left gonostylus, 6—aedeagal complex), orig. J. Martinovský.
FIGURES 7–8. *Acomopterella martinovskyi* **sp. n.**, female terminalia (7—lateral view, 8—dorsal view), orig. J. Martinovský.



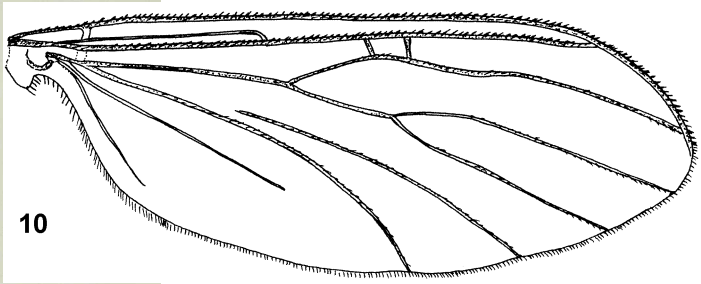


FIGURE 9–11. *Acomopterella martinovskyi* **sp. n. 9.** male habitus; **10.** wing venation; **11.** fore tibia.
FIGURE 12. *Acomopterella fallax* (Sherman, 1921), mid tibia.

Material examined. CANADA, British Columbia, Savary Island, 7.4.1917, 1♂, 11.4.1917, 2 ♂♂, Vancouver, 22.4.1917, 1♂, 28.4.1917, 1♂ (syntypes of *T. fallax*, CNC); Canada, British Columbia, Vancouver, Point Grey, 18.4.1973, 1♂, J.R. Vockeroth (CNC); USA, California, Lily Pond, Alpine Lk., Marin Co., 1500‘, 4.-10.5.1971, 6 ♂♂, 17.-25.5.1971, 9 ♂♂, 19.-27.9.1971, 7 ♂♂, all D.D. Munroe (Malaise trap, CNC).

Comments. Figures of male terminalia provided by Zaitzev (1989) are sufficient to establish this synonymy. Females have not yet been associated as there are at least two related, probably undescribed species of the same genus in CNC and further may still remain overlooked in various collections identified as *Tetragoneura*.

Discussion

Systematic position of the genus

The relatively long vein ta probably led Sherman to include *A. fallax* in *Tetragoneura* Winnertz, 1846, a genus traditionally placed in the tribe Leiini, but following Väisänen (1986) now usually included in Gnoristini (or Gnoristinae). However, the type species of this genus, the common European species *Tetragoneura sylvatica* (Curtis, 1837), has different habitus, more similar to *Docosia* Winnertz, 1863 and *Ectrepesthoneura* Enderlein, 1911, with shorter body, legs, wings, flagellomeres and also very short Sc ending free.

Acomopterella is very similar in habitus to several larger gnats of the tribe Gnoristini, mainly *Acomoptera* Vockeroth, 1980 and *Drepanocercus* Vockeroth, 1980, but it differs from both of them by Sc ending in R, a character typical for the genus *Dziedzickia* Johannsen, 1909. The latter genus is still rather poorly characterised and many tropical species hitherto referred to it undoubtedly belong to different, mostly undescribed genera. Its type species, *Dziedzickia marginata* (Dziedzicki, 1885), is uncommon but widespread in Europe. It is smaller than *Acomopterella* and has more horizontal and shorter vein ta.

Acomopterella thus apparently stands between two traditionally defined tribes, Gnoristini and Leiini. The difficulty to separate safely those two tribes was already mentioned by Vockeroth (1980, 1981). Väisänen (1986) presented a new delimitation of the Gnoristini, to which he attributed a subfamilial rank. Most characters from his revised diagnosis of Gnoristinae are present also in *Acomopterella*, mainly bare mediotergite, simple anapleural suture, small but traceable mid-tibial organ, median longitudinal fold on sternites. However, some of these characters are found also in several genera of Sciophilini and Leiini. Although the Gnoristinae is probably more heterogeneous than other mycetophilid subfamilies and usually considered paraphyletic (cf. Søli 1997, Chandler 1999), we prefer to include *Acomopterella* tentatively in this group.

Variation in wing characters

As pointed out already by Sherman (1921), there is a considerable variation in several wing characters of *A. fallax*, mainly in relative length of Sc, relative position of Cu-fork and length of cell R4. In *A. martinovskyi*, there is definite variation in the shape of R4 cell, but other characters appear to be more stable. Also basal interruption of Cu-fork was present in all hitherto studied specimens of *A. martinovskyi*. Both absence and presence of the base of anterior branch of Cu fork was reported by Ševčík (2004) for *Drepanocercus spinistylus* Søli, 1993. The complete Cu-fork in *D. spinistylus* is not reaching the wing base (see Fig. 1 in Ševčík 2004), suggesting its possible affinity to *Acomoptera* or *Paratinia*.

Acknowledgements

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